RADIAN GROUP INC
Form 10-K
February 28, 2019

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2018
OR

o **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to
Commission file number 1-11356

RADIAN GROUP INC.

(Exact name of registrant as specified in its charter)

Delaware	**23-2691170**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
1500 Market Street, Philadelphia, PA	**19102**
(Address of principal executive offices)	**(Zip Code)**

(215) 231-1000
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, $.001 par value per share	**New York Stock Exchange**
Preferred Stock Purchase Rights	**New York Stock Exchange**

Securities registered pursuant to Section 12(g) of the Act: None

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Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES x NO o
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. YES o NO x
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES x NO o

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). YES x NO o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check One):

Large accelerated filer x Accelerated filer o Non-accelerated filer o Smaller reporting company o Emerging growth company o

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No x

As of June 30, 2018, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was$3,449,403,478 based on the closing sale price as reported on the New York Stock Exchange. Excluded from this amount is the value of all shares beneficially owned by executive officers and directors of the registrant. These exclusions should not be deemed to constitute a representation or acknowledgment that any such individual is, in fact, an affiliate of the registrant or that there are not other persons or entities who may be deemed to be affiliates of the registrant.

The number of shares of common stock, $.001 par value per share, of the registrant outstanding on February 25, 2019 was 213,657,506 shares.

DOCUMENTS INCORPORATED BY REFERENCE

	Form 10-K	Reference Document
Definitive Proxy Statement for the Registrant's 2019 Annual Meeting of Stockholders	Part III (Items 10 through 14)	

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

The following list defines various abbreviations and acronyms used throughout this report, including the Business Section, Management's Discussion and Analysis of Financial Condition and Results of Operations, Consolidated Financial Statements, the Notes to Consolidated Financial Statements and the Financial Statement Schedules.

1995 Equity Plan	The Radian Group Inc. 1995 Equity Compensation Plan
2008 Equity Plan	The Radian Group Inc. 2008 Equity Compensation Plan
2014 Equity Plan	The Radian Group Inc. 2014 Equity Compensation Plan, which was amended and restated as the Radian Group Inc. Equity Compensation Plan on May 10, 2017
2014 Master Policy	Radian Guaranty's master insurance policy, setting forth the terms and conditions of our mortgage insurance coverage, which became effective October 1, 2014
2016 Single Premium QSR Agreement	Quota share reinsurance agreement entered into with a panel of third-party reinsurance providers in the first quarter of 2016 and subsequently amended in the fourth quarter of 2017
2018 Single Premium QSR Agreement	Quota share reinsurance agreement entered into with a panel of third-party reinsurance providers in October 2017 to cede a portion of Single Premium NIW beginning January 1, 2018
ABS	Asset-backed securities
Alt-A	Alternative-A loans, representing loans for which the underwriting documentation is generally limited as compared to fully documented loans (considered a non-prime loan grade)
Amended and Restated Equity Compensation Plan	The Radian Group Inc. Equity Compensation Plan, which amended and restated the 2014 Equity Plan and was approved by our stockholders on May 10, 2017
Amended and Restated Radian Group Inc. ESPP	The Radian Group Inc. Employee Stock Purchase Plan, as approved by our stockholders on May 9, 2018
Assured	Assured Guaranty Corp., a subsidiary of Assured Guaranty Ltd.
Available Assets	As defined in the PMIERs, assets primarily including the liquid assets of a mortgage insurer, and reduced by premiums received but not yet earned
Back-end	With respect to credit risk transfer programs established by the GSEs, policies written on loans that are already part of an existing GSE portfolio, as contrasted with loans that are to be purchased by the GSEs in the future
Borrower	With respect to our securities lending agreements, the third-party institutions to which we loan certain securities in our investment portfolio for short periods of time
CCF	Conservatorship Capital Framework
CFPB	Consumer Financial Protection Bureau
Claim Curtailment	Our legal right, under certain conditions, to reduce the amount of a claim, including due to servicer negligence
Claim Denial	Our legal right, under certain conditions, to deny a claim
Claim Severity	The total claim amount paid divided by the original coverage amount
Clayton	Clayton Holdings LLC, a Delaware domiciled indirect non-insurance subsidiary of Radian Group
CMBS	Commercial mortgage-backed securities
Convertible Senior Notes due 2017	Our 3.000% convertible unsecured senior notes due November 2017 ($450 million original principal amount)
Convertible Senior Notes due 2019	Our 2.250% convertible unsecured senior notes due March 2019 ($400 million original principal amount)
Cures	Loans that were in default as of the beginning of a period and are no longer in default because payments were received such that the loan is no longer 60 or more days past due
Default to Claim Rate	The percentage of defaulted loans that are assumed to result in a claim

Deficiency Amount	The assessed tax liabilities, penalties and interest associated with a formal Notice of Deficiency from the IRS
Discrete Item(s)	For tax calculation purposes, certain items that are required to be accounted for in the provision for income taxes as they occur, and are not considered components of the estimated annualized effective tax rate for purposes of reporting interim results. Generally, these are items that are: (i) clearly defined (such as changes in tax rate or tax law); (ii) infrequent or unusual in nature; or (iii) gains or losses that are not components of continuing operating income, such as income from discontinued operations or losses reflected as components of other comprehensive income. These items impact the difference between the statutory rate and Radian's effective tax rate.
Dodd-Frank Act	Dodd-Frank Wall Street Reform and Consumer Protection Act, as amended
Eagle Re	Eagle Re 2018-1 Ltd., an unaffiliated special purpose reinsurer (a variable interest entity) domiciled in Bermuda
EnTitle Direct	EnTitle Direct Group, Inc., a wholly-owned indirect subsidiary of Radian Group, acquired in March 2018
EnTitle Insurance	EnTitle Insurance Company, a wholly-owned subsidiary of EnTitle Direct
Equity Plans	The 1995 Equity Plan, the 2008 Equity Plan and the Amended and Restated Equity Compensation Plan, together
ERM	Enterprise Risk Management
Excess-of-Loss Program	The credit risk protection obtained by Radian Guaranty in November 2018, including: (i) the excess-of-loss reinsurance agreement with Eagle Re, in connection with the issuance by Eagle Re of mortgage insurance-linked notes and (ii) a separate excess-of-loss reinsurance agreement with a third-party reinsurer. Excess-of-loss reinsurance is a type of reinsurance that indemnifies the ceding company against loss in excess of a specific agreed limit, up to a specified sum.
Exchange Act	Securities Exchange Act of 1934, as amended
Extraordinary Distribution	A dividend or distribution of capital that is required to be approved by an insurance company's primary regulator that is greater than would be permitted as an ordinary distribution (which does not require regulatory approval)
Fannie Mae	Federal National Mortgage Association
FASB	Financial Accounting Standards Board
FEMA	Federal Emergency Management Agency, an agency of the U.S. Department of Homeland Security
FEMA Designated Area	Generally, an area that has been subject to a disaster, designated by FEMA as an individual assistance disaster area for the purpose of determining eligibility for various forms of federal assistance
FHA	Federal Housing Administration
FHFA	Federal Housing Finance Agency
FHLB	Federal Home Loan Bank of Pittsburgh
FICO	Fair Isaac Corporation ("FICO") credit scores, for Radian's portfolio statistics, represent the borrower's credit score at origination and, in circumstances where there is more than one borrower, the FICO score for the primary borrower is utilized
Five Bridges	Five Bridges Advisors, LLC. Radian acquired the assets of Five Bridges in December 2018.
Flow Basis	With respect to mortgage insurance, includes mortgage insurance policies that are written on an individual loan basis as each loan is originated or on an aggregated basis (in which each individual loan in a group of loans is insured in a single transaction, typically shortly after the loans have been originated). Among other items, Flow Basis business excludes Pool Insurance, which we originated prior to 2009.
Foreclosure Stage Default	The Stage of Default indicating that the foreclosure sale has been scheduled or held
Freddie Mac	Federal Home Loan Mortgage Corporation
Freddie Mac Agreement	The Master Transaction Agreement between Radian Guaranty and Freddie Mac entered into in August 2013

Front-end	With respect to credit risk transfer programs established by the GSEs, policies written on loans that are to be purchased by the GSEs in the future, as contrasted with loans that are already part of an existing GSE portfolio
GAAP	Generally accepted accounting principles in the U.S., as amended from time to time
Green River Capital	Green River Capital LLC, a wholly-owned subsidiary of Clayton
GSE(s)	Government-Sponsored Enterprises (Fannie Mae and Freddie Mac)
HAMP	Homeowner Affordable Modification Program
HARP	Home Affordable Refinance Program
HPA	Homeowners Protection Act of 1998
IBNR	Losses incurred but not reported
IIF	Insurance in force, equal to the aggregate unpaid principal balances of the underlying loans
Independent Settlement Services	Independent Settlement Services, LLC, a wholly-owned indirect subsidiary of Radian Group, acquired in November 2018
IRC	Internal Revenue Code of 1986, as amended
IRS	Internal Revenue Service
IRS Matter	Our dispute with the IRS related to the assessed tax liabilities, penalties and interest from the IRS's examination of our 2000 through 2007 consolidated federal income tax returns. See Note 10 of Notes to Consolidated Financial Statements for more information.
LAE	Loss adjustment expenses, which include the cost of investigating and adjusting losses and paying claims
Loss Mitigation Activity/Activities	Activities such as Rescissions, Claim Denials, Claim Curtailments and cancellations
LTV	Loan-to-value ratio, calculated as the percentage of the original loan amount to the original value of the property
Master Policies	The Prior Master Policy and the 2014 Master Policy, together
Minimum Required Assets	A risk-based minimum required asset amount, as defined in the PMIERs, calculated based on net RIF (RIF, net of credits permitted for reinsurance) and a variety of measures related to expected credit performance and other factors
Model Act	Mortgage Guaranty Insurance Model Act, as issued by the NAIC to establish minimum capital and surplus requirements for mortgage insurers
Monthly and Other Premiums	Insurance policies where premiums are paid on a monthly or other installment basis, in contrast to Single Premium Policies
Monthly Premium Policies	Insurance policies where premiums are paid on a monthly installment basis
Moody's	Moody's Investors Service
Mortgage Insurance	Radian's mortgage insurance business segment, which provides credit-related insurance coverage, principally through private mortgage insurance, as well as other credit risk management solutions to mortgage lending institutions and mortgage credit investors
MPP Requirement	Certain states' statutory or regulatory risk-based capital requirement that the mortgage insurer must maintain a minimum policyholder position, which is calculated based on both risk and surplus levels
NAIC	National Association of Insurance Commissioners
NIW	New insurance written
NOL	Net operating loss; for tax purposes, accumulated during years a company reported more tax deductions than taxable income. NOLs may be carried back or carried forward a certain number of years, depending on various factors which can reduce a company's tax liability
Notices of Deficiency	Formal letters from the IRS informing the taxpayer of an IRS determination of tax deficiency and appeal rights
OCI	Other comprehensive income (loss)
PDR	Premium deficiency reserve

Persistency Rate	The percentage of IIF that remains in force over a period of time
PMIERs	Private Mortgage Insurer Eligibility Requirements effective on December 31, 2015, issued by the GSEs under oversight of the FHFA to set forth requirements an approved insurer must meet and maintain to provide mortgage guaranty insurance on loans acquired by the GSEs
PMIERs 2.0	Revised PMIERs issued by the GSEs on September 27, 2018, which will become effective on March 31, 2019
Pool Insurance	Pool Insurance differs from primary insurance in that our maximum liability is not limited to a specific coverage percentage on an individual mortgage loan. Instead, an aggregate exposure limit, or “stop loss,” is applied to the initial aggregate loan balance on a group or “pool” of mortgages.
Prior Master Policy	Radian Guaranty’s master insurance policy, setting forth the terms and conditions of our mortgage insurance coverage, which was in effect prior to the effective date of the 2014 Master Policy
QSR Program	The quota share reinsurance agreements entered into with a third-party reinsurance provider in the second and fourth quarters of 2012, together
Radian	Radian Group Inc. together with its consolidated subsidiaries
Radian Asset Assurance	Radian Asset Assurance Inc., a New York domiciled insurance company that was formerly a subsidiary of Radian Guaranty
Radian Asset Assurance Stock Purchase Agreement	The Stock Purchase Agreement dated December 22, 2014, between Radian Guaranty and Assured to sell Radian Asset Assurance to Assured
Radian Group	Radian Group Inc.
Radian Guaranty	Radian Guaranty Inc., a Pennsylvania domiciled insurance subsidiary of Radian Group
Radian Guaranty Reinsurance	Radian Guaranty Reinsurance Inc., a Pennsylvania domiciled insurance subsidiary of Enhance Financial Services Group Inc., a New York domiciled non-insurance subsidiary of Radian Group
Radian Insurance	Radian Insurance Inc., a Pennsylvania domiciled insurance subsidiary of Radian Group
Radian Mortgage Assurance	Radian Mortgage Assurance Inc., a Pennsylvania domiciled insurance subsidiary of Radian Group
Radian Mortgage Insurance	Radian Mortgage Insurance Inc., a Pennsylvania domiciled subsidiary of Radian Group
Radian Reinsurance	Radian Reinsurance Inc., a Pennsylvania domiciled insurance subsidiary of Radian Group
Radian Settlement Services	Radian Settlement Services Inc., a wholly-owned subsidiary of Clayton, formerly known as ValuAmerica
RBC States	Risk-based capital states, which are those states that currently impose a statutory or regulatory risk-based capital requirement
Red Bell	Red Bell Real Estate, LLC, a wholly-owned subsidiary of Clayton
Reinstatements	Reversals of previous Rescissions, Claim Denials and Claim Curtailments
REMIC	Real Estate Mortgage Investment Conduit
REO	Real estate owned
Rescission	Our legal right, under certain conditions, to unilaterally rescind coverage on our mortgage insurance policies if we determine that a loan did not qualify for insurance
RESPA	Real Estate Settlement Procedures Act of 1974, as amended
RIF	Risk in force; for primary insurance, RIF is equal to the underlying loan unpaid principal balance multiplied by the insurance coverage percentage, whereas for Pool Insurance it represents the remaining exposure under the agreements
Risk-to-capital	Under certain state regulations, a minimum ratio of statutory capital calculated relative to the level of net RIF
RMBS	Residential mortgage-backed securities
RSU	Restricted stock unit

S&P	Standard & Poor's Financial Services LLC
SAFE Act	Secure and Fair Enforcement for Mortgage Licensing Act, as amended
SAPP	Statutory accounting principles and practices, including those required or permitted, if applicable, by the insurance departments of the respective states of domicile of our insurance subsidiaries
SEC	United States Securities and Exchange Commission
Senior Notes due 2017	Our 9.000% unsecured senior notes due June 2017 ($195.5 million original principal amount, of which the remaining outstanding principal was redeemed in August 2016)
Senior Notes due 2019	Our 5.500% unsecured senior notes due June 2019 ($300 million original principal amount)
Senior Notes due 2020	Our 5.250% unsecured senior notes due June 2020 ($350 million original principal amount)
Senior Notes due 2021	Our 7.000% unsecured senior notes due March 2021 ($350 million original principal amount)
Senior Notes due 2024	Our 4.500% unsecured senior notes due October 2024 ($450 million original principal amount)
Services	Radian's Services business segment, which is primarily a fee-for-service business that offers a broad array of mortgage, real estate and title services to market participants across the mortgage and real estate value chain
Single Premium NIW / RIF / IIF	NIW, RIF or IIF, respectively, on Single Premium Policies
Single Premium Policy / Policies	Insurance policies where premiums are paid in a single payment, which includes policies written on an individual basis (as each loan is originated) and on an aggregated basis (in which each individual loan in a group of loans is insured in a single transaction, typically shortly after the loans have been originated)
Single Premium QSR Program	The 2016 Single Premium QSR Agreement and the 2018 Single Premium QSR Agreement, together
Stage of Default	The stage a loan is in relative to the foreclosure process, based on whether a foreclosure sale has been scheduled or held
Statutory RBC Requirement	Risk-based capital requirement imposed by the RBC States, requiring a minimum surplus level and, in certain states, a minimum ratio of statutory capital relative to the level of risk
Surplus Note	An intercompany 0.000% surplus note issued by Radian Guaranty to Radian Group
TCJA	H.R. 1, known as the Tax Cuts and Jobs Act, signed into law on December 22, 2017
Time in Default	The time period from the point a loan reaches default status (based on the month the default occurred) to the current reporting date
TRID	Truth in Lending Act - RESPA Integrated Disclosure
U.S.	The United States of America
U.S. Treasury	United States Department of the Treasury
VA	U.S. Department of Veterans Affairs
ValuAmerica	ValuAmerica, Inc., a wholly-owned subsidiary of Clayton, renamed in 2018 to Radian Settlement Services Inc.

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Cautionary Note Regarding Forward-Looking Statements—Safe Harbor Provisions

All statements in this report that address events, developments or results that we expect or anticipate may occur in the future are “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, Section 21E of the Exchange Act and the U.S. Private Securities Litigation Reform Act of 1995. In most cases, forward-looking statements may be identified by words such as “anticipate,” “may,” “will,” “could,” “should,” “would,” “expect,” “intend,” “pl “contemplate,” “believe,” “estimate,” “predict,” “project,” “potential,” “continue,” “seek,” “strategy,” “future,” “likely” or the other variations on these words and other similar expressions. These statements, which may include, without limitation, projections regarding our future performance and financial condition, are made on the basis of management’s current views and assumptions with respect to future events. Any forward-looking statement is not a guarantee of future performance and actual results could differ materially from those contained in the forward-looking statement. These statements speak only as of the date they were made, and we undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. We operate in a changing environment where new risks emerge from time to time and it is not possible for us to predict all risks that may affect us. The forward-looking statements, as well as our prospects as a whole, are subject to risks and uncertainties that could cause actual results to differ materially from those set forth in the forward-looking statements. These risks and uncertainties include, without limitation:

- changes in economic and political conditions that impact the size of the insurable market, the credit performance of our insured portfolio, and our business prospects;
- changes in the way customers, investors, ratings agencies, regulators or legislators perceive our performance, financial strength and future prospects;
- Radian Guaranty’s ability to remain eligible under the PMIERs and other applicable requirements imposed by the FHFA and by the GSEs to insure loans purchased by the GSEs, including PMIERs 2.0 and potential future changes to the PMIERs which, among other things, may be impacted by the general economic environment and housing market, as well as the proposed CCF that would establish capital requirements for the GSEs, if the CCF is finalized;
- our ability to successfully execute and implement our capital plans, including plans for expanding our risk distribution strategy through the capital markets and reinsurance markets, and to maintain sufficient holding company liquidity to meet our short- and long-term liquidity needs;
- our ability to successfully execute and implement our business plans and strategies, including plans and strategies to reposition and grow our Services segment as well as plans and strategies that require GSE and/or regulatory approvals and licenses;
- our ability to maintain an adequate level of capital in our insurance subsidiaries to satisfy existing and future state regulatory requirements;
- changes in the charters or business practices of, or rules or regulations imposed by or applicable to, the GSEs, which may include changes in the requirements to remain an approved insurer to the GSEs, the GSEs’ interpretation and application of the PMIERs, as well as changes impacting loans purchased by the GSEs, such as the GSEs’ requirements regarding mortgage credit and loan size and the GSEs’ pricing;
- changes in the current housing finance system in the U.S., including the role of the FHA, the GSEs and private mortgage insurers in this system;
- any disruption in the servicing of mortgages covered by our insurance policies, as well as poor servicer performance;
- a significant decrease in the Persistency Rates of our mortgage insurance on monthly premium products;
- competition in our mortgage insurance business, including price competition and competition from the FHA and VA as well as from other forms of credit enhancement;
- the effect of the Dodd-Frank Act on the financial services industry in general, and on our businesses in particular, including future changes to the QM Rule;
- legislative and regulatory activity (or inactivity), including the adoption of (or failure to adopt) new laws and regulations, or changes in existing laws and regulations, or the way they are interpreted or applied;
- legal and regulatory claims, assertions, actions, reviews, audits, inquiries and investigations that could result in adverse judgments, settlements, fines, injunctions, restitutions or other relief that could require significant

expenditures or have other effects on our business;

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- the amount and timing of potential settlements, payments or adjustments associated with federal or other tax examinations;
- the possibility that we may fail to estimate accurately the likelihood, magnitude and timing of losses in establishing loss reserves for our mortgage insurance business or to accurately calculate and/or project our Available Assets and Minimum Required Assets under the PMIERs, including PMIERs 2.0, which will be impacted by, among other things, the size and mix of our IIF, the level of defaults in our portfolio, the level of cash flow generated by our insurance operations and our risk distribution strategies;
- volatility in our results of operations caused by changes in the fair value of our assets and liabilities, including a significant portion of our investment portfolio;
- potential future impairment charges related to our goodwill and other acquired intangible assets;
- changes in GAAP or SAPP rules and guidance, or their interpretation;
- our ability to attract and retain key employees; and
- legal and other limitations on dividends and other amounts we may receive from our subsidiaries.

For more information regarding these risks and uncertainties as well as certain additional risks that we face, you should refer to the Risk Factors detailed in Item 1A, and to subsequent reports filed from time to time with the SEC. We caution you not to place undue reliance on these forward-looking statements, which are current only as of the date on which we issued this report. We do not intend to, and we disclaim any duty or obligation to, update or revise any forward-looking statements to reflect new information or future events or for any other reason.

PART I
Item 1. Business.
General

We are a diversified mortgage and real estate services business. We provide mortgage insurance and products and services to the real estate and mortgage finance industries through our two business segments—Mortgage Insurance and Services. Our Mortgage Insurance segment provides credit-related insurance coverage, principally through private mortgage insurance, as well as other credit risk management solutions to mortgage lending institutions and mortgage credit investors. We provide our mortgage insurance products and services mainly through our wholly-owned subsidiary, Radian Guaranty. Our Services segment is primarily a fee-for-service business that offers a broad array of mortgage, real estate and title services to market participants across the mortgage and real estate value chain. These services include technology and turn-key solutions, which provide information and other resources used to originate, evaluate, acquire, securitize, service and monitor residential real estate and loans secured by residential real estate. These services are primarily provided to mortgage lenders, financial institutions, investors and government entities. In addition, we provide title insurance to mortgage lenders as well as directly to borrowers. Our mortgage services include transaction management services such as loan review, RMBS securitization and distressed asset reviews, review and valuation services related to single family rental properties, servicer and loan surveillance and underwriting. Our real estate services include software as a service solutions and platforms, as well as managed services, such as REO asset management, real estate valuation services and real estate brokerage services. Our title services provide a comprehensive suite of title insurance products, title settlement services and both traditional and digital closing services. We provide our Services offerings primarily through our subsidiaries, including Clayton, Green River Capital, Radian Settlement Services and Red Bell. In 2018, we also acquired the businesses of EnTitle Direct (in March 2018) and Independent Settlement Services (in November 2018), as well as the assets of Five Bridges (in December 2018), to enhance our Services offerings.

Radian Group serves as the holding company for our insurance and other subsidiaries and does not have any operations of its own.

2018 Highlights. Below are highlights of our key accomplishments that furthered our strategic objectives and contributed to our financial and operating results during 2018.

- Wrote $56.5 billion of NIW on a Flow Basis, the highest flow volume in Radian's 40-year history
  - Represents a 5% increase over 2017
- Grew primary IIF by 10%, from $200.7 billion at December 31, 2017 to $221.4 billion at December 31, 2018
- Earned pretax income of $684.2 million in 2018, compared to $346.7 million in 2017
- Grew adjusted pretax operating income to $745.5 million, an increase of 21% compared to $617.2 million for 2017 [(1)]
- Improved composition of mortgage insurance portfolio
  - 94% of our primary RIF consists of business written after 2008, including HARP loans
  - Increased risk-based pricing granularity and our volume of higher value products
- Took steps to optimize our capital and liquidity position
  - Repurchased over 3 million shares of Radian Group's common stock
  - Added $450 million to Radian Group liquidity as a result of Radian Guaranty's return of $450 million in capital to Radian Group in December 2018
  - See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—*Radian Group—Short-Term Liquidity Needs*"
- Expanded our risk distribution strategy to optimize the amounts and types of capital and risk distribution deployed against insured risk in order to: (i) support our overall capital plans; (ii) lower our cost of capital; and (iii) reduce portfolio risk and financial volatility through economic cycles
  - Executed the mortgage insurance industry's first simultaneous insurance-linked note and excess-of-loss reinsurance placement totaling $455 million
  - See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Overview—*Other 2018 Developments—Reinsurance*"
- Increased excess of Available Assets over Minimum Required Assets under PMIERs to $567 million, or 19% of Minimum Required Assets
- Finalized a settlement with the IRS regarding the IRS Matter
- Launched our new branding to reflect One Radian, beginning the process to unite all of our businesses under one brand
- Aligned our sales team to provide integrated enterprise solutions to our customers

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(1) Adjusted pretax operating income is a non-GAAP measure. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Consolidated—*Use of Non-GAAP Financial Measures*" for the definition and reconciliation of this measure to the most comparable GAAP measure, pretax income.

For additional information regarding these items as well as other factors impacting our business and financial results in 2018, see "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations."

Business Strategy. Radian's objectives include driving strong growth, increasing value creation and providing attractive stockholder returns. Consistent with these objectives, our business strategy, as highlighted below, is focused on growing our businesses and diversifying our revenue sources, while at the same time enhancing our operations and developing a one-company market view by integrating our product and services offerings more effectively.

- Write high-quality and profitable NIW to drive future earnings, in a manner that enhances the long-term economic value of our insured mortgage portfolio
- Leverage our core competencies and increase our competitive differentiation in order to:
  - Grow our traditional mortgage insurance business in innovative ways
  - Expand our presence in the mortgage and real estate value chain beyond traditional mortgage insurance
  - Enhance our value to customers with increased diversification of services delivered by our integrated team
  - Maintain strong comprehensive enterprise risk management based on sound data and analytics
  - Enhance the quality, efficiency and performance of our operations and delivery of products and services
- Manage our capital and financial flexibility to optimize stockholder value
- Drive positive operating leverage by maintaining accretive revenue growth and effective expense management

We utilize various tools to assess the long-term economic value of our portfolio in order to identify opportunities to optimize stockholder value. For our Mortgage Insurance business, we evaluate the long-term economic value of our existing and future insured portfolio by using a measure that incorporates expected lifetime returns for our insurance policies, taking into consideration projected premiums, credit losses, investment income, operating expenses and taxes. These lifetime cash flows are then offset by the estimated cost of required capital, derived from our average cost of capital, to arrive at an estimated long-term economic value of our portfolio. We use this economic value to assist us in evaluating various portfolio strategies.

A key element of our business strategy is to use our Services segment to diversify our business and revenue streams by increasing our participation in multiple facets of the residential real estate and mortgage finance markets. In 2017, we undertook a strategic review of our Services business and made several decisions with respect to the business strategy that are designed to reposition this business to drive future growth and profitability. Following this strategic review, we committed to a restructuring plan and are focusing our efforts on offering mortgage, real estate and title services that we believe will satisfy demand in the market, diversify our revenue sources, strengthen our existing mortgage insurance customer relationships, attract new customers and differentiate us from our mortgage insurance peers. See "Services—Services Business Overview."

Through the combination of our Mortgage Insurance and Services business segments, our broad array of capabilities within the primary stages of the mortgage value chain are illustrated below.

Corporate Background. Radian Group has been incorporated as a business corporation under the laws of the State of Delaware since 1991. Our principal executive offices are located at 1500 Market Street, Philadelphia, Pennsylvania 19102, and our telephone number is (215) 231-1000.

Additional Information. Our website address is *www.radian.biz*. Copies of our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, as well as any amendments to those reports, are available free of charge through our website as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. In addition, our guidelines of corporate governance, code of business conduct and ethics (which includes the code of ethics applicable to our chief executive officer, principal financial officer and principal accounting officer) and the governing charters for each standing committee of Radian Group's board of directors are available free of charge on our website, as well as in print, to any stockholder upon request.

The public may read materials we file with the SEC, including reports, proxy and information statements, and other information, on the Internet site maintained by the SEC. The address of that site is *www.sec.gov*.

The above references to our website and the SEC's website do not constitute incorporation by reference of the information contained on the websites and such information should not be considered part of this document.

Operating Environment

As a seller of mortgage credit protection and other credit risk management solutions, as well as a provider of mortgage, real estate and title services, the demand for our products and services is largely driven by the macroeconomic environment generally, and more specifically by the health of the housing, mortgage finance and related real estate markets.

Mortgage Insurance. Our mortgage insurance business is impacted by specific macroeconomic conditions and events that impact the mortgage origination environment and the credit performance of our portfolio of insured loans. The improvement in macroeconomic conditions since the financial crisis of 2007-2008, together with tighter credit requirements on new loans and an improvement in loan servicing, has contributed to the positive credit trends in our mortgage insurance portfolio, including a

lower level of new defaults and higher cure rates. Although this more restrictive credit environment has improved overall credit quality, it also has made it more challenging for many first-time home buyers to finance a home. In response, lenders and the GSEs recently have expanded their mortgage lending products, including to accommodate higher LTVs and debt-to-income ratios to address first-time home buyer demand and affordability considerations.
Among other factors, private mortgage insurance industry volumes are impacted by total mortgage origination volumes and the mix between mortgage originations that are for purchased homes versus refinancings of existing mortgages. Generally, mortgage insurance penetration in the overall insurable mortgage market has been three to five times higher for purchase originations than for refinancings. As a result, despite an overall reduction in mortgage origination volume in 2018 compared to 2017 due to reduced refinancings, the private mortgage insurance market was larger in 2018 compared to 2017. Industry forecasts for 2019 project a mortgage origination market comparable to the market in 2018; however, purchase loan volume is expected to continue to increase, which is a favorable trend for private mortgage insurance. Given our expected mortgage insurance penetration rates, we expect the private mortgage insurance market in 2019 to be comparable to 2018. Based on industry forecasts and our projections, we currently expect our NIW for 2019 to be in the range of $50 billion.
The environment for private mortgage insurers is highly competitive. We compete with other private mortgage insurers primarily on the basis of price, underwriting guidelines, overall service, customer relationships, perceived financial strength and reputation. In addition to other private mortgage insurers, we compete with governmental agencies, principally the FHA and the VA. See “Mortgage Insurance—Competition.”
Services. The macroeconomic conditions and other events that impact the housing, mortgage finance and related real estate markets also affect the demand for our mortgage, real estate and title services offered through our Services business segment. Sales volume in our Services business varies based on the overall activity in the housing and mortgage finance markets and the health of related industries. While non-GSE or “private label” securitization remains limited compared to the pre-financial crisis market, this market continued to expand in 2018 due to larger institutions re-entering the market, suggesting increased potential growth in 2019. Similarly, the single-family rental market continued to experience strong demand in 2018, driven in part by early refinance activity in the rising interest rate environment, as well as a GSE program that drove volume, but was later suspended at the end of 2018. While regulatory demands on mortgage market participants continue to be significant following the financial crisis, regulatory enforcement actions on mortgage industry participants have been less frequent, reducing the demand for our servicing quality control services as target customers form alternative strategies on how best to manage risk in the current and projected environment. Post-financial crisis, REO inventory levels also continue to decline due to lower delinquencies and foreclosure activity, reducing demand for our REO asset management services. Further, as the mortgage market continues to develop post-financial crisis, alternatives for managing costs have become more critical to the overall value proposition for market participants. As a result, we have observed increasing market trends towards use of non-appraisal valuation alternatives, which we expect will continue to grow. See “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations-Overview—*Business Strategy.*” We believe that the combination of our mortgage insurance business with our unique set of diversified mortgage, real estate and title services provides us with an opportunity to become increasingly more relevant to our customers and that this combination serves as a competitive differentiator for us compared to other private mortgage insurance companies.
Regulatory Environment
Our subsidiaries are subject to comprehensive regulations and other requirements. State insurance regulators impose various capital requirements on our mortgage insurance subsidiaries, including Risk-to-capital, other risk-based capital measures and surplus requirements. In addition, the GSEs, as the largest purchasers of conventional mortgage loans and therefore the primary beneficiaries of most of our mortgage insurance, impose eligibility requirements, or PMIERs, that private mortgage insurers must satisfy to be approved to insure loans purchased by the GSEs. The PMIERs aim to ensure that approved insurers will possess the financial and operational capacity to serve as strong counterparties to the GSEs throughout various market conditions. The PMIERs are comprehensive, covering virtually all aspects of the business and operations of a private mortgage insurer. The PMIERs financial requirements require

that a mortgage insurer's Available Assets meet or exceed its Minimum Required Assets. Radian Guaranty currently is an approved mortgage insurer under the PMIERs and is in compliance with the PMIERs financial requirements. See "Regulation."

Changes in the charters or business practices of the GSEs, including the GSEs' interpretation and application of the PMIERs, can have a significant impact on our business. On September 27, 2018, the GSEs updated their eligibility requirements by issuing PMIERs 2.0, which will become effective on March 31, 2019. Radian expects to comply with PMIERs 2.0 and to maintain a significant excess of Available Assets over Minimum Required Assets (PMIERs "cushion") as of the effective date. If applied as of December 31, 2018, the changes under PMIERs 2.0 would not have resulted in a material change in Radian Guaranty's Minimum Required Assets, but would have reduced Radian Guaranty's Available Assets and therefore

would have reduced Radian Guaranty's PMIERs cushion. The reduction in Radian Guaranty's Available Assets is primarily due to the elimination in PMIERS 2.0 of any credit for future premiums for insurance policies written prior to and including 2008, which is permitted under the current PMIERs. We expect the GSEs to continue to update the PMIERs periodically in the future, including potentially if and when the CCF is finalized. See "Regulation" and "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—*Radian Group—Short-Term Liquidity Needs—Capital Support for Subsidiaries.*"

Mortgage Insurance

Mortgage Insurance Business Overview

Overview

Our Mortgage Insurance segment provides credit-related insurance coverage, principally through private mortgage insurance, as well as other credit risk management solutions, to mortgage lending institutions and mortgage credit investors. Private mortgage insurance plays an important role in the U.S. housing finance system because it promotes affordable home ownership and helps protect mortgage lenders, investors and other beneficiaries by mitigating default-related losses on residential mortgage loans. Generally, these loans are made to home buyers who make down payments of less than 20% of the purchase price for their home or, in the case of refinancings, have less than 20% equity in their home. Private mortgage insurance also facilitates the sale of these loans in the secondary mortgage market, most of which are currently sold to the GSEs.

See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Key Factors Affecting Our Results—*Mortgage Insurance*."

Mortgage Insurance Products

Primary Mortgage Insurance. Primary mortgage insurance provides protection against mortgage defaults at a specified coverage percentage. When there is a valid claim under primary mortgage insurance, the maximum liability is determined by multiplying the claim amount, which consists of the unpaid loan principal, plus past due interest and certain expenses associated with the default, by the coverage percentage. Claims may be settled for the maximum liability or for other amounts. See "—Claims Management" below.

We mainly provide primary mortgage insurance on an individual loan basis as each mortgage is originated, but we also can provide primary mortgage insurance on individual loans in an aggregate group of mortgages after they have been originated. We primarily write insurance in a "first loss" position, where we are responsible for the first losses incurred on an insured loan subject to a policy limit. See "—Mortgage Insurance Portfolio—*Mortgage Loan Characteristics.*"

The terms of our primary mortgage insurance coverage are set forth in a master insurance policy that we enter into with each of our customers. Our Master Policies are filed in each of the jurisdictions in which we conduct business. Among other things, our Master Policies set forth the terms and conditions of our mortgage insurance coverage, including: loan eligibility requirements; premium payment requirements; coverage term; provisions for policy administration, servicing standards and requirements; exclusions or reductions in coverage; claims payment and settlement procedures; and dispute resolution procedures. Although the mortgage insurance we write protects the lenders from a portion of losses resulting from loan defaults, it does not provide protection against property loss or physical damage. Among other exclusions, our Master Policies contain an exclusion against physical damage, including damage caused by hurricanes or other natural disasters. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Overview—*Operating Environment—Hurricanes.*"

We wrote $56.5 billion and $53.9 billion of first-lien primary mortgage insurance in 2018 and 2017, respectively. Substantially all of our primary mortgage insurance written during 2018 and 2017 was written on a Flow Basis. The combination of our NIW and a higher Persistency Rate resulted in an increase in IIF, from $200.7 billion at December 31, 2017 to $221.4 billion at December 31, 2018. Our total direct primary mortgage insurance RIF was $56.7 billion at December 31, 2018, compared to $51.3 billion at December 31, 2017.

Other Mortgage Insurance Products. We also have other mortgage insurance products that had RIF of $0.5 billion at December 31, 2018, as described below:

- *GSE Credit Risk Transfer.* Part of our business strategy includes leveraging our core expertise in credit risk management and expanding our presence in the mortgage finance industry. We are currently participating in Front-end and Back-end credit risk transfer programs developed by Fannie Mae and Freddie Mac as part of their

initiative to distribute mortgage credit risk and increase the role of private capital in the mortgage market. As of December 31, 2018, the total RIF under the Front-end and Back-end credit risk transfer transactions was $196.8 million. We will only experience claims under these Front-end and Back-end credit risk transfer transactions if the borrower's equity, any existing primary mortgage insurance (if applicable) and the GSEs' retained risk are depleted. In participating in these GSE transactions, we assume incremental risk (beyond that which we typically cover in our traditional mortgage insurance business) associated with the risk of defaults caused by physical damage, including natural disasters such as hurricanes and wildfires, which is not covered by the underlying primary mortgage insurance. We regularly evaluate this risk, including the geographic diversity of the loans included in these transactions and our remote risk position, in assessing our participation in these transactions. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Overview—*Business Strategy*."

- *Pool Insurance.* Prior to 2008, we wrote Pool Insurance on a limited basis. At December 31, 2018, Pool Insurance made up only $324.6 million of our total direct first-lien insurance RIF, as compared to $339.0 million at December 31, 2017. With respect to our Pool Insurance, an aggregate exposure limit, or "stop loss" (usually between 1% and 10%), is generally applied to the initial aggregate loan balance on a group or "pool" of mortgages. In addition, an insured pool of mortgages may contain mortgages that are already covered by primary mortgage insurance. In these transactions, Pool Insurance is secondary to any primary mortgage insurance that exists on mortgages within the pool. Our Pool Insurance policies are privately negotiated and are separate from the Master Policies that we use for our primary mortgage insurance.
- *Non-Traditional Risk.* In the past, we provided other forms of credit enhancement on residential mortgage assets. Our non-traditional products included mortgage insurance on second-lien mortgage loans and we also provided mortgage insurance on an international basis. As of December 31, 2018, we have terminated all of our international mortgage insurance. Our total amount of non-traditional risk was $15.2 million at December 31, 2018, which consisted entirely of second-lien RIF, as compared to $24.4 million at December 31, 2017.

Premium Rates

Primary Mortgage Insurance. A premium rate is determined when insurance coverage is requested on a mortgage, which is generally near the time of loan origination. Premiums for our mortgage insurance products are established based on performance models that consider a broad range of borrower, loan and property characteristics as well as current and projected market and economic conditions. Our premium rates are generally subject to regulation, and in most states where our insurance subsidiaries are licensed, our premiums must be filed, and in some cases approved, before their use. See "Regulation—State Regulation—*State Insurance Regulation*."

We establish our premium levels to be competitive within the mortgage insurance industry and to achieve an overall risk-adjusted rate of return on capital given our modeled performance expectations. Our actual returns may differ from our expectations based on changing market conditions and other factors. Among other factors, we set our premium rates based on assumptions about policy performance, including, without limitation, our expectations and assumptions about: (i) the likelihood of default; (ii) how long the policy will remain in place; (iii) the costs of acquiring and maintaining the insurance; (iv) taxes; and (v) the capital that is required to support the insurance. Our performance assumptions for claim frequency and policy life are developed based on data regarding our own historical experience, as well as data generated from independent, third-party sources.

Premiums on our mortgage insurance products are generally paid either on a monthly installment basis ("Monthly Premiums") or in a single payment ("Single Premiums") generally paid at the time of loan origination. There are also alternative products ("Other Premiums") where premiums may be paid on an annual installment basis or as a combination of up-front premium at origination plus a monthly installment. In addition, Other Premiums may be paid after loan origination or may include a refundable component. Some programs, subject to certain conditions, provide coverage for the life of the loan while others terminate when certain criteria are met. There are many factors that influence the types of premiums we receive, including: (i) the percentage of mortgage originations derived from refinancing transactions versus new home purchases; (ii) the customers with whom we do business (e.g., mix of Single Premium Policies and policies with Monthly and Other Premiums varies by customer); and (iii) the relative

premium levels we and our competitors set for the various forms of premiums offered.
Mortgage insurance premiums can be funded through a number of methods, and while the coverage remains for the benefit of the insured or third-party beneficiary, the premiums may be paid by the borrower or by the lender. Borrower-paid mortgage insurance premiums are generally paid either through separate escrowed amounts or financed as a component of the mortgage loan amount. Lender-paid mortgage insurance premiums are paid by the lender and are typically passed through to

the borrower in the form of additional origination fees or a higher interest rate on the mortgage note. Our Monthly and Other Premiums are generally established as either: (i) a fixed percentage of the loan's amortizing balance over the life of the policy or (ii) as a fixed percentage of the initial loan balance for a set period of time (typically 10 years), after which the premium declines to a lower fixed percentage for the remaining life of the policy.

The impact of market conditions on our returns will vary based on, among other factors, whether the insurance is borrower-paid or lender-paid, and whether the payments are made monthly or in a single premium payment at the time of origination. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Key Factors Affecting Our Results—*Mortgage Insurance—Premiums.*" A change in capital requirements on insured loans can also affect our returns. See "Regulation—GSE Requirements—*PMIERs—Private Mortgage Insurer Eligibility Requirements.*"

As the mortgage insurance industry migrates away from a predominantly rate-card-based pricing model, various pricing methodologies are being deployed with differing degrees of risk-based granularity, which may also lead to an increased frequency of pricing changes. We currently use proprietary risk and customer analytics, as well as a digital pricing delivery platform, to deliver loan level pricing electronically to our customers, including Radian's RADAR Rates as further discussed below. Our pricing options vary in the level of granularity and we deliver them to our customers based on their business needs and loan origination process. In January 2019, we broadly introduced RADAR Rates as our newest pricing option that is powered by Radian's proprietary RADAR risk model and analyzes credit risk inputs to customize a rate quote to a borrower's individual risk profile, loan attributes and property characteristics. Our strategy is to consistently apply an approach to pricing that is customer-centric, flexible and customizable based on a lender's loan origination process, as well as balanced with our own objectives for managing the risk and return profile of our insured portfolio.

GSE Credit Risk Transfer Transactions. Credit risk transfer premium rates are established through a sealed-bid auction process in which potential insurers/reinsurers provide their desired allocation of the offering(s) at a specified premium rate. Radian evaluates each transaction and determines its bid based on performance models that consider a broad range of borrower, loan and property characteristics as well as market and forecasted future economic conditions. The GSEs set a uniform premium based on an assessment of the bids received and, based on their desired counterparty exposure, assign allocations to insurers/reinsurers.

Underwriting

Mortgage loan applications are underwritten to determine whether they are eligible for our mortgage insurance. We perform this function directly or, alternatively, we delegate to our insured lenders the ability to underwrite the mortgage loans based on compliance with our underwriting guidelines.

Delegated Underwriting. Through our delegated underwriting program we approve insured lenders to underwrite mortgage loan applications based on our mortgage insurance underwriting guidelines. Each lender participating in the delegated underwriting program must be approved by our risk management group. Utilization of our delegated underwriting program enables us to meet lenders' demands for immediate insurance coverage and increases the efficiency of the underwriting process. We use quality control sampling and performance monitoring to manage the risks associated with delegated underwriting. Under the terms of the program, we have certain rights to rescind coverage if there has been a deviation from our underwriting guidelines. For a discussion of these limited Rescission rights, see "—Claims Management—*Rescissions.*" As of December 31, 2018, 63% of our total first-lien IIF had been originated on a delegated basis, compared to 66% as of December 31, 2017.

Non-Delegated Underwriting. In addition to our delegated underwriting program, insured lenders may also submit mortgage loan applications to us and we will perform the mortgage insurance underwriting. In general, we are less likely to exercise our Rescission rights with respect to underwriting errors related to loans that we underwrite for mortgage insurance. As a result, following a period of high Rescissions after the financial crisis, many lenders have chosen to have us perform the mortgage insurance underwriting on a non-delegated basis. Given the professional resources we need to maintain to underwrite mortgage loans, an increase in non-delegated underwriting demand generally increases our operating costs to support this program.

Contract Underwriting. We also provide third party contract underwriting services to our mortgage insurance customers through our Services segment. See "Services—Services Business Overview—*Services Offered—Mortgage Services.*" During 2018, mortgage loans underwritten through contract underwriting accounted for 3.8% of insurance certificates issued on a Flow Basis, as compared to 5.4% in 2017.

Mortgage Insurance Portfolio

Direct Risk in Force

Exposure in our mortgage insurance business is measured by RIF, which for primary insurance is equal to the underlying loan unpaid principal balance multiplied by our insurance coverage percentage.

Our total direct primary mortgage insurance RIF was $56.7 billion at December 31, 2018. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*" for additional information about the composition of our primary RIF. See "—Mortgage Insurance Business Overview—*Mortgage Insurance Products*" for additional information regarding other mortgage insurance RIF.

We analyze our mortgage insurance portfolio in a number of ways to identify any concentrations or imbalances in risk dispersion. We believe that, among other factors, the credit performance of our mortgage insurance portfolio is affected significantly by:

- general economic conditions (in particular, interest rates, home prices and unemployment);
- the age and performance history of the loans insured;
- the geographic dispersion and other characteristics of the properties securing the insured loans and the condition of local housing markets;
- the quality of underwriting at loan origination; and
- the credit characteristics of the borrower and the characteristics of the loans insured.

Direct Primary RIF by Year of Policy Origination and Persistency

The following table shows our direct primary mortgage insurance RIF by year of origination and selected information related to that risk as of December 31, 2018:

	December 31, 2018					
($ in millions)	RIF	Number of Defaults	Delinquency Rate	Percentage of Reserve for Losses	Average FICO (1) at Origination (2)	Original Average LTV (2)
2008 and prior	$5,749	13,095	8.8 %	70.3 %	698	89.9 %
2009	199	156	3.1	0.7	752	88.5
2010	170	67	1.7	0.3	765	91.7
2011	465	141	1.4	0.6	763	91.9
2012	2,094	457	1.1	1.8	763	91.8
2013	3,504	892	1.4	3.7	758	92.2
2014	3,464	1,174	1.8	4.7	747	92.3
2015	5,806	1,366	1.3	5.9	749	92.0
2016	9,544	1,649	1.0	6.1	750	91.8
2017	11,958	1,586	0.8	4.9	748	92.3
2018	13,775	510	0.2	1.0	746	92.5
Total	$56,728	21,093 (3)		100.0 %		

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(1) Represents the borrower's credit score at origination. In circumstances where there is more than one borrower, the FICO score for the primary borrower is utilized.

(2) Average FICO at origination and original average LTV are weighted averages based on the unpaid principal balances of the underlying mortgage loans in our portfolio at December 31, 2018.

(3) Includes 2,627 defaults at December 31, 2018 in the FEMA Designated Areas associated with Hurricanes Harvey and Irma, both of which occurred during the third quarter of 2017. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Mortgage Insurance—*NIW, IIF, RIF—Provision for Losses.*"

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The amount of time that our insurance certificates remain in force, which is affected by loan repayments and terminations of our insurance, has a significant impact on our revenues and our results of operations. Our Persistency Rate is one key measure for assessing the impact that insurance terminations resulting in certificate cancellations have on our IIF. Because our insurance premiums are earned over time, higher Persistency Rates on Monthly Premium Policies increase the premiums we receive and generally result in increased profitability and returns. Conversely, assuming all other factors remain constant, higher Persistency Rates on Single Premium business lower the overall returns from our insured portfolio, as the premium revenue for our Single Premium Policies is the same regardless of the actual life of the insurance policy and we are required to maintain regulatory capital and Available Assets supporting the insurance for the life of the policy. The Persistency Rate of our primary mortgage insurance was 83.1% at December 31, 2018, compared to 81.1% at December 31, 2017. Historically, there is a close correlation between interest rates and Persistency Rates. Lower interest rate environments generally increase refinancings that result in the cancellation of our insurance. See “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*” for the details regarding our Persistency Rates. A higher Persistency Rate results in our IIF remaining in place for a longer period of time. Our IIF is one of the primary drivers of future premiums that we expect to earn over time. We expect our IIF to generate substantial income in future periods, due to the high credit quality of our current mortgage insurance portfolio and our expected Persistency Rate over multiple years. See “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Key Factors Affecting Our Results—*Mortgage Insurance—IIF; Persistency Rate; Mix of Business*” for more information.

Geographic Dispersion

The following table shows, as of December 31, 2018 and 2017, the percentage of our direct primary mortgage insurance RIF and the associated percentage of our mortgage insurance reserve for losses (by location of property) for the top 10 states in the U.S. (as measured by our direct primary mortgage insurance RIF as of December 31, 2018):

	December 31,			
	2018		2017	
Top Ten States	RIF	Reserve for Losses	RIF	Reserve for Losses
California	12.3%	7.1 %	12.4%	6.7 %
Texas	8.9	6.6	8.3	5.5
Florida	7.0	11.8	6.8	12.2
Illinois	5.2	4.9	5.4	4.7
Georgia	4.0	3.9	4.0	3.3
Virginia	3.5	1.6	3.5	1.7
Arizona	3.2	1.6	3.1	1.4
Colorado	3.1	1.0	3.0	0.9
Maryland	3.0	3.6	2.9	3.4
New Jersey	3.0	7.7	3.3	10.8
Total	53.2%	49.8 %	52.7%	50.6 %

The following table shows, as of December 31, 2018 and 2017, the percentage of our direct primary mortgage insurance RIF and the associated percentage of our mortgage insurance reserve for losses (by location of property) for the top 15 Core Based Statistical Areas, referred to as "CBSAs," in the U.S. (as measured by our direct primary mortgage insurance RIF as of December 31, 2018):

	December 31,			
	2018		2017	
Top Fifteen CBSAs (1)	RIF	Reserve for Losses	RIF	Reserve for Losses
Chicago, IL-IN-WI	4.9 %	4.7 %	5.2 %	4.5 %
New York, NY-NJ-PA	4.0	16.6	4.2	18.9
Washington, DC-MD-VA	3.7	2.7	3.6	2.9
Dallas, TX	3.4	2.1	3.1	1.6
Los Angeles - Long Beach, CA	3.4	1.8	3.5	1.8
Atlanta, GA	3.2	2.9	3.2	2.5
Phoenix/Mesa, AZ	2.4	1.1	2.3	1.0
Philadelphia, PA-NJ-DE-MD	2.3	3.0	2.4	3.5
Miami, FL	2.2	4.4	2.1	4.6
Houston, TX	2.2	2.5	2.1	2.1
Minneapolis-St. Paul, MN-WI	2.0	0.7	2.0	0.7
Denver, CO	1.8	0.5	1.8	0.4
Riverside-San Bernardino, CA	1.8	1.4	1.8	1.3
Boston, MA-NH	1.7	1.5	1.8	1.6
Seattle, WA	1.6	0.7	1.5	1.0
Total	40.6 %	46.6 %	40.6 %	48.4 %

(1) CBSAs are metropolitan areas and include a portion of adjoining states as noted above.

Mortgage Loan Characteristics

In addition to geographic dispersion, other factors also contribute significantly to our overall risk diversification and the credit quality of our RIF, including product distribution, underwriting and our risk management practices. We consider a number of borrower, loan and property characteristics in evaluating the credit quality of our portfolio and developing our pricing and risk management strategies.

LTV. An important indicator of claim incidence in our mortgage insurance business is the relative amount of a borrower's equity that exists in a home. Generally, absent other mitigating factors such as high FICO scores and other credit factors, loans with higher LTVs at inception (i.e., smaller down payments) are more likely to result in a claim than lower LTV loans. The average original LTV of our primary NIW in 2018 was 92.5%, compared to 92.2% and 91.4% in 2017 and 2016, respectively.

Loan Grade/FICO Score. The risk of claim on non-prime loans is significantly higher than that on prime loans. We use our proprietary models to classify a loan as either prime or non-prime on the basis of a borrower's FICO score, the level of loan file documentation and other factors. In general we consider a loan to be a prime loan if the borrower's FICO score is 620 or higher and the loan file meets "fully documented" standards of our credit guidelines and/or the GSE guidelines for fully documented loans. Substantially all of our NIW after 2008 has been on prime loans.

Loans that we categorize as Alt-A and A minus and below are considered non-prime loans due to lower FICO scores, reduced loan file documentation, and/or the presence of other risk characteristics.

Loan Size. Relatively higher-priced properties with larger mortgage loan amounts generally have experienced wider fluctuations in value than more moderately priced residences and have been more likely to result in a claim. The average loan size of our direct primary mortgage IIF as of December 31, 2018, 2017 and 2016 was $216.5 thousand, $210.0 thousand and $203.2 thousand, respectively.

Loan Purpose, Property Type and Occupancy. We consider other factors, including property type, occupancy type and loan purpose in assessing our risk of loss. In general, it has been our experience that our risk of claim is lower on loans secured by single family detached housing than loans on other types of properties, and is higher on non-owner occupied homes purchased for investment purposes than on either primary or second homes. Loan purpose may also impact our risk of loss. For example, cash-out refinance loans, where a borrower receives cash in connection with refinancing a loan, have been more likely to result in a claim than new purchase loans or loans that are refinanced only to adjust rate and term.

See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*" for additional information about the credit quality and characteristics of our direct primary mortgage insurance.

Defaults and Claims

Defaults. In our Mortgage Insurance segment, the default and claim cycle begins with the receipt of a default notice from the loan servicer. We consider a loan to be in default for financial statement and internal tracking purposes upon receipt of notification by servicers that a borrower has missed two monthly payments. Defaults also can occur due to a variety of specific events affecting borrowers, including death or illness, divorce or other family problems, unemployment, factors impacting regional economic conditions (e.g., hurricanes, floods, wildfires or other natural disasters), or other events.

The default rate in our mortgage insurance business can be subject to seasonality. Historically, our mortgage insurance business experiences a fourth quarter seasonal increase in the number of defaults and a first quarter seasonal decline in the number of defaults and increase in the number of Cures. While historically this has been the case, macroeconomic factors in any given period may influence the default rate in our mortgage insurance business more than seasonality.

The loans from our origination years after 2008 possess significantly improved credit characteristics compared to our portfolio originated in the years prior to and including 2008, including higher average FICO scores for the borrowers of these insured mortgages. In addition, refinancings under the HARP programs have positively impacted the overall credit quality and composition of our mortgage insurance portfolio because the refinancing generally results in terms under which a borrower has a greater ability to pay and more financial flexibility to cover the loan obligations. Our portfolio of business written after 2008 is now the predominant portion of our total primary RIF. The sum of our policies written after 2008 through 2018 and our HARP refinancings accounted for approximately 94% of our total primary RIF at December 31, 2018, compared to 92% at December 31, 2017.

The following table shows the states that have generated the highest number of primary insurance defaults (measured as of December 31, 2018) in our insured portfolio and the corresponding percentage of total defaults as of the dates indicated:

	December 31,					
	2018		2017		2016	
States with highest number of defaults:						
Florida (1)	2,023	9.6%	5,337	19.1%	2,666	9.2%
Texas (1)	1,779	8.4	2,885	10.3	1,897	6.5
New York	1,241	5.9	1,588	5.7	2,211	7.6
Illinois	1,230	5.8	1,283	4.6	1,534	5.3
California	1,214	5.8	1,264	4.5	1,426	4.9

(1) Certain areas within these states are FEMA Designated Areas associated with Hurricanes Harvey and Irma and, as a result, defaults in these states are elevated at December 31, 2017.

Claims. Defaulted loans that fail to become current, or "cure," may result in a claim under our mortgage insurance policies. Mortgage insurance claim volume is influenced by the circumstances surrounding the default. The rate at which defaults cure, or do not go to claim, depends in large part on a borrower's financial resources and circumstances (including whether the borrower is eligible for a loan modification), local housing prices and housing supply (i.e.,

whether borrowers are able to cure defaults by selling the property in full satisfaction of all amounts due under the mortgage), interest rates and regional economic conditions. In our first-lien primary insurance business, the insured must acquire title to the property (typically through a foreclosure proceeding) before submitting a claim. The time for a lender to acquire title to a property through foreclosure varies depending on the state, and in particular whether a state requires a lender to proceed through the judicial system in order to complete the foreclosure. Following the financial crisis, the time between a default and a request for

claim payment increased, largely as a result of foreclosure delays due to, among other factors, increased scrutiny within the mortgage servicing industry and foreclosure process. These delays have been improving as the economy recovers from the financial crisis. For Pool Insurance, which represents less than 1% of our RIF at December 31, 2018, ur policies typically require the insured to not only acquire title but also to actively market and ultimately liquidate the real estate asset before filing a claim, which generally lengthens the time between a default and a claim submission.

Claim activity is not spread evenly throughout the coverage period of a book of business. Historically, for prime business relatively few claims are received during the first two years following issuance of a policy.

See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Mortgage Insurance—*NIW, IIF, RIF—Provision for Losses*" for various claims paid tables, including Direct Claims Paid by Origination Year.

The following table shows the states with the highest direct claims paid (measured as of December 31, 2018) for the periods indicated:

	Year Ended December 31,		
(In millions)	2018	2017	2016
States with highest direct claims paid (first-lien):			
New Jersey	$37.2	$54.7	$46.1
Florida	22.5	45.7	59.4
New York	20.4	34.2	26.6
Illinois	13.8	23.4	32.3
California	8.9	16.3	23.1

In addition to claim volume, Claim Severity is another significant factor affecting losses. We calculate the Claim Severity by dividing the claim paid amount by the original coverage amount. Factors that impact the severity of a claim include, but are not limited to, the size of the loan, the amount of mortgage insurance coverage placed on the loan, the amount of time between default and claim during which we are expected to cover certain interest (capped at two years under our Prior Master Policy and capped at three years under our 2014 Master Policy) and expenses, and the impact of our Loss Mitigation and other loss management activities with respect to the loan. Pre-foreclosure sales, acquisitions and other early workout efforts help to reduce overall Claim Severity, as do actions we may take to reduce a claim payment due to servicer negligence, as discussed below in "Claims Management." See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Mortgage Insurance—*NIW, IIF, RIF—Provision for Losses*."

Claims Management

Our claims management process is focused on promptly analyzing and processing claims to ensure that valid claims are paid in a timely and accurate manner. In addition, our mortgage insurance claims management department pursues opportunities to mitigate losses both before and after claims are received.

Claims. In our traditional mortgage insurance business, upon receipt of a valid claim, we generally have the following three settlement options:

(1) Percentage Option: Pay the maximum liability and allow the insured lender to keep title to the property. The maximum liability is determined by multiplying *(x)* the claim amount (which consists of the unpaid loan principal, plus past due interest for a period of time specified in our Master Policies and certain expenses associated with the default) by *(y)* the applicable coverage percentage;

(2) Approved Sale Option: Pay the amount of the claim required to make the lender whole (not to exceed our maximum liability), following an approved sale; or

(3) Acquisition Option: Pay the full claim amount and acquire title to the property.

Approved sales in which the underlying property has been sold for less than the outstanding loan amount are commonly referred to as "short sales." Although short sales may have the effect of reducing our ultimate claim

obligation, in many cases, a short sale will result in the payment of a claim in an amount that is equal to the maximum liability amount. Under our Master Policies, we retain the right to consent prior to the consummation of any short sales. We have entered into agreements with each of the GSEs, pursuant to which we delegated to the GSEs our prior consent rights with respect to short sales on loans owned by

the GSEs, as long as the short sales meet the GSE guidelines and processes for short sales and subject to certain other factors set forth in these agreements. We also provide for limited delegation authority to certain loan servicers for short sales under specific circumstances. For loans that are not owned by the GSEs and for which we have not granted specific delegation authority to the loan servicer, we perform an individual analysis of each proposed short sale and provide our consent to these sales when appropriate. Historically, we have consented to a short sale only after reviewing various factors, including among other items, the sale price relative to market and the ability of the borrower to contribute to any shortfall in the sale proceeds as compared to the outstanding loan amount.

After a claim is received, our loss management specialists may focus on:

- a review to determine compliance with applicable loan origination programs and our mortgage insurance policy requirements, including: (i) whether the loan qualified for insurance at the time the certificate of coverage was issued, (ii) whether the insured has satisfied its obligation in meeting all necessary conditions in order for us to pay a claim, including submitting all necessary documentation in connection with the claim (commonly referred to as "claim perfection") and (iii) whether the loan was appropriately serviced in accordance with the standards set forth in our Master Policies;
- analysis and prompt processing to ensure that valid claims are paid in an accurate and timely manner;
- responses to loss mitigation opportunities presented by the insured; and
- management and disposal of acquired real estate.

Radian Guaranty has entered into a Factored Claim Administration Agreement with Fannie Mae that applies to certain loans owned by Fannie Mae that were insured under the 2014 Master Policy for which a claim is submitted on or after October 1, 2018. Pursuant to the agreement, Radian Guaranty will determine the amount of covered expenses forming part of a loss (other than unpaid principal balance and delinquent interest) using pre-negotiated expense factors based on certain characteristics of the applicable loan and property.

Claim Denials. We have the legal right under our Master Policies to deny a claim under certain conditions, such as when the loan servicer does not produce documents necessary to perfect a claim, including evidence that the insured has acquired title to the property, within the time period specified in our Master Policies. Most often, a Claim Denial is the result of a servicer's failure to provide the loan origination file or other critical servicing documents for review. If, after requests by us, the loan origination file or other servicing documents are not provided to us, we generally deny the claim. If we deny a claim, we continue to allow the insured the ability to perfect the claim for a period of time specified in our Master Policies. If the insured successfully perfects the claim on a timely basis, we will process the claim, including a review of the loan to ensure appropriate underwriting and loan servicing. If, after completion of this process, we determine that the claim was not perfected, the insurance claim is denied and we consider the Claim Denial to be final and resolved. Although we may make a final determination internally with respect to a Claim Denial, it is possible that after we have a denied coverage a legal challenge to our decision to deny coverage may be brought within a period of time specified under the terms of our Master Policies.

Rescissions. Under the terms of our Master Policies we have the legal right, under certain conditions, to unilaterally rescind coverage on our mortgage insurance policies. If we rescind coverage based on a determination that a loan did not qualify for insurance, we provide the insured with a period of time to challenge, or rebut, our decision.

Typical events that may give rise to our right to rescind coverage include: (i) we insure a loan under one of our Master Policies in reliance upon an application for insurance that contains a material misstatement, misrepresentation or omission, whether intentional or otherwise, or that was issued as a result of an act of fraud or (ii) we find that there was negligence in the origination of a loan that we insured. We also have rights of Rescission arising from a breach of the insured's representations and warranties contained in an endorsement to our Master Policies that is required with our delegated underwriting program.

If a rebuttal to our Rescission is received and the insured provides additional information supporting the continuation (i.e., non-rescission) of coverage, we have the claim re-examined internally by a separate, independent investigator. If the additional information supports the continuation of coverage, the insurance is reinstated and the claim is paid. After completion of this process, if we determine that the loan did not qualify for coverage, the insurance certificate is

rescinded (and the total premiums paid are refunded) and we consider the Rescission to be final and resolved. Although we may make a final determination internally with respect to a Rescission, it is possible that a legal challenge to our decision to rescind coverage may be brought after we have rescinded coverage during a period of time that is specified under the terms of our Master Policies.

In 2012, we began offering a limited rescission waiver program under our Prior Master Policy for our delegated underwriting customers, in which we agree not to rescind coverage due to non-compliance with our underwriting guidelines so

long as the borrower makes 36 consecutive payments (commencing with the initial required payment) from his or her own funds. This program does not restrict our rights to rescind coverage in the event of fraud or misrepresentation in the origination of the loans we insure.

Following the financial crisis, the FHFA and the GSEs identified specific requirements to be included by all private mortgage insurers in their master policies for new mortgage insurance applications received on or after October 1, 2014. Among others, these included specific requirements related to loss mitigation and claims processing activities that limited the potential for Loss Mitigation Activity throughout the private mortgage insurance industry. Radian Guaranty incorporated these principles into its 2014 Master Policy. Radian Guaranty also offers 12-month and 36-month rescission relief programs in accordance with the specified terms and conditions set forth in the 2014 Master Policy. Loans that were already insured prior to the October 1, 2014 effective date of the 2014 Master Policy continue to be subject to the terms and conditions of Radian Guaranty’s Prior Master Policy.

The FHFA and the GSEs have proposed revised GSE Rescission Relief Principles to, among other things, further limit the circumstances under which mortgage insurers may rescind coverage. We are in the process of incorporating these principles into a new master policy, which we expect will be effective during the second half of 2019. We currently are in discussions with the GSEs regarding the form of this new master policy, including as it relates to these proposed principles, which if adopted, are likely to further reduce our ability to rescind insurance coverage in the future, potentially resulting in higher losses than would be the case under our existing Master Policies.

Claim Curtailments. We also have rights under our Master Policies to curtail, and in some circumstances, deny claims due to servicer negligence. Examples of servicer negligence may include, without limitation:

- a failure to report information to us on a timely basis as required under our Master Policies;
- a failure to pursue loss mitigation opportunities presented by borrowers, realtors and/or any other interested parties;
- a failure to pursue loan modifications and/or refinancings through programs available to borrowers or an undue delay in presenting claims to us (including as a result of improper handling of foreclosure proceedings), which increases the interest or other components of a claim we are required to pay; and
- a failure to initiate and diligently pursue foreclosure or other appropriate proceedings within the timeframe specified in our Master Policies.

Although we could seek post-claim recoveries from the beneficiaries of our policies if we later determine that a claim was not valid, because our loss mitigation process is designed to ensure compliance with our policies prior to payment of a claim, historically we have not sought recoveries from the beneficiaries of our mortgage insurance policies once a claim payment has been made.

Customers

The principal customers of our mortgage insurance business are mortgage originators such as mortgage bankers, commercial banks, savings institutions, credit unions and community banks. Sources of primary NIW by type of mortgage originator for the year ended December 31, 2018 are shown in the chart below.

Our largest single mortgage insurance customer (including branches and affiliates) measured by primary NIW, accounted for 4.7% of NIW during 2018, compared to 6.8% and 5.7% in 2017 and 2016, respectively. No customer had earned premiums that accounted for more than 10% of our consolidated revenues in 2018, 2017 or 2016.

Since 2009, we have taken steps to diversify our customer base. As a result of these efforts, the percentage of NIW generated by our top 10 customers has decreased from 62.3% in 2009 to 29.1% in 2018. Since 2010, we have added over 1,000 net new customers and significantly increased the amount of business derived from mid-sized mortgage banks. See "Item 1A. Risk Factors—*Our NIW and franchise value could decline if we lose business from significant customers.*"

Competition

We operate in the highly competitive U.S. mortgage insurance industry. Our competitors primarily include other private mortgage insurers and federal and state governmental agencies, principally the FHA and VA.

In addition to Radian Guaranty, the private mortgage insurers that are currently approved and eligible to write business for the GSEs are:

- Arch U.S. MI;
- Essent Guaranty Inc.;
- Genworth Financial Inc.;
- Mortgage Guaranty Insurance Corporation;
- NMI Holdings, Inc.; and
- United Guaranty Corp. (acquired by Arch Capital Group LLC in December 2016).

We compete directly with other private mortgage insurers primarily on the basis of price, underwriting guidelines, overall service, customer relationships, perceived financial strength (including comparative credit ratings) and reputation. Overall

service competition is based on, among other things, effective and timely delivery of products, timeliness of claims payments, customer service, timely and accurate servicing of policies, training, loss mitigation efforts and management and field service expertise. We also believe that service includes our ability to offer services to customers through our Services business that complement our mortgage insurance products.

Pricing has always been and continues to be competitive in the mortgage insurance industry, as industry participants compete for market share and customer relationships. We monitor various competitive and economic factors while seeking to increase the long-term value of our portfolio by balancing both profitability and volume considerations in developing our pricing and origination strategies. We have taken a disciplined approach to establishing our premium rates and writing a mix of business that we expect to produce our targeted level of returns on a blended basis and an acceptable level of NIW. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Overview—*Competition and Pricing—Radian's Pricing*." As demonstrated by our strong NIW generated in 2018, we believe we remain well positioned to compete for the high-quality business being originated today, while at the same time maintaining projected returns on NIW within our targeted ranges. Based on publicly available information, we estimate that our share of NIW within the private mortgage insurance market (excluding HARP refinancings) was approximately 19% for 2018.

Certain of our private mortgage insurance competitors are subsidiaries of larger corporations, may have access to greater amounts of capital and financial resources than we do at a lower cost of capital (including off-shore reinsurance vehicles) and currently have better financial strength ratings than we have. As a result, they may be better positioned to compete outside of traditional mortgage insurance, including in the private label securitization market or if the GSEs expand their use of, or pursue alternative forms of, credit enhancement outside of private mortgage insurance in its traditional form. In addition, because of tax advantages associated with being off-shore, certain of our competitors have been able to reinsure to their offshore affiliates and achieve higher after-tax rates of return on the NIW they write compared to on-shore mortgage insurers such as Radian Guaranty, which could allow these off-shore competitors to leverage reduced pricing to gain market share, while continuing to achieve acceptable returns on NIW.

We also compete with governmental agencies, principally the FHA and the VA. We compete with the FHA and VA on the basis of loan limits, pricing, credit guidelines, terms of our insurance policies and loss mitigation practices. Beginning in 2008, the FHA, which historically had not been a significant competitor, substantially increased its share of the mortgage insurance market which peaked at approximately 74% in 2009. Since then, the private mortgage insurance industry generally had been recapturing market share from the FHA, primarily due to: (i) improvements in the financial strength of private mortgage insurers; (ii) the development of new products and marketing efforts directed at competing with the FHA; (iii) increases in the FHA's pricing; (iv) the U.S. government's pursuit of legal remedies against FHA-approved lenders related to loans insured by the FHA; and (v) various policy changes at the FHA, including the general elimination of the premium cancellation provision. We believe that we are well-positioned to effectively compete with the FHA based on our current pricing strategies. In addition, we believe that better execution for borrowers with higher FICO scores, lender preference and the inability to cancel FHA insurance for certain loans are factors that continue to provide a competitive advantage for private mortgage insurers. The FHA's share of the total insured mortgage market (which includes FHA, VA and private mortgage insurers) was 31% in 2018, compared to 35% in 2017. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Key Factors Affecting Our Results—*Mortgage Insurance—NIW; Origination Market; Penetration Rate.*" If the FHA reduces its pricing in the future, it could have a negative effect on our ability to compete with the FHA.

We also have faced increasing competition from the VA. Based on publicly available information, the VA's share of the total insured mortgage market was 25% in 2018. We believe that the VA's market share has generally been increasing because the VA offers 100% LTV loans and charges a one-time funding fee that can be included in the loan amount with no additional monthly expense, and because of an increase in the number of borrowers that are eligible for the VA's program.

In addition, as market conditions change, alternatives to traditional private mortgage insurance may become more prevalent, which could reduce the demand for private mortgage insurance in its traditional form, including structures commonly referred to as “investor paid mortgage insurance” in which affiliates of traditional mortgage insurers directly insure the GSEs against loss. For additional information about these structures, see “Regulation—Federal Regulation—*Housing Finance Reform*.” It is difficult to predict what other types of credit risk transfer transactions and other structures might be used by the GSEs in the future. If any of the credit risk transfer transactions and structures that are being developed were to displace primary loan level, standard levels of mortgage insurance, the amount of insurance we write may be reduced.
See “Item 1A. Risk Factors—*Our mortgage insurance business faces intense competition.*”

Services

Acquisition of Clayton and Other Acquisitions

On June 30, 2014, we acquired Clayton, a leading provider of services and solutions to the mortgage and real estate industries. Since then, we have strategically acquired additional companies and businesses to enhance the mortgage, real estate and title services offered through our Services business. These acquisitions comprise:

- Red Bell, a real estate brokerage, valuation and technology company, in March 2015;
- ValuAmerica, a title insurance agency and appraisal management company, in October 2015;
- EnTitle Direct, a national title insurance and settlement services company, in March 2018;
- Independent Settlement Services, a technology-driven national appraisal and title management services company, in November 2018; and
- The assets of Five Bridges, a provider of consumer and real estate analytics through a cloud-based portal that provides customers with valuation and risk management tools, in December 2018.

Services Business Overview

Overview

Our Services segment offers a broad array of services to market participants across the mortgage and real estate value chain. These services comprise mortgage services, real estate services and title services, including technology and turn-key solutions, that provide information and other resources used to originate, evaluate, acquire, securitize, service and monitor residential real estate and loans secured by residential real estate. These services are primarily provided to mortgage lenders, financial institutions, investors and government entities. In addition, we provide title insurance to mortgage lenders as well as directly to borrowers.

Our mortgage services help loan originators and investors evaluate, acquire, surveil and securitize mortgages. These services include loan review, RMBS securitization and distressed asset reviews, review and valuation services related to single family rental properties, servicer and loan surveillance and underwriting. Our real estate services help lenders, investors and real estate agents evaluate, manage, monitor and sell properties. These real estate services include software as a service solutions and platforms, as well as managed services, such as REO asset management, real estate valuation services and real estate brokerage services. Our title services provide a comprehensive suite of title insurance products, title settlement services and both traditional and digital closing services.

A key element of our overall business strategy is to use our Services segment to diversify our business and revenue streams by increasing our participation in multiple facets of the residential real estate and mortgage finance markets. In 2017, we undertook a strategic review of our Services business and made several decisions with respect to the business strategy to reposition this business to drive future growth and profitability. Following this strategic review, we committed to a restructuring plan and have refined our Services business strategy to focus on a more limited set of services. See "Item 7. Management's Discussion and Analysis Financial Condition and Results of Operations-Overview-Business Strategy." We believe that the combination of our mortgage insurance with our unique set of diversified mortgage, real estate and title services provides us with an opportunity to become increasingly more relevant to our customers and is a competitive differentiator for us compared to other private mortgage insurance companies.

Services Offered

Mortgage Services. Our mortgage services loan review and surveillance products help customers understand risk associated with originating, buying, selling and servicing pools of loans. In this business, we primarily provide loan-level due diligence for various asset classes (residential, single family rental and non-residential) and securitizations, including single family rental and other private label securitizations and securitizations of GSE loans, with offerings focused on credit underwriting, regulatory compliance, compliance with representation and warranties and collateral valuation. Our engagements may take place, among other contexts, prior to or after the sale of a pool of loans, in connection with securitizations, transactions involving warehouse lines of credit, GSE credit risk transfer transactions and transactions involving master servicing rights. We utilize skilled professionals and proprietary technology to deliver customized solutions that help our clients identify and understand areas of risk and opportunity

across the residential home mortgage spectrum.

As part of our underwriting services, we offer contract underwriting services and compliance reviews to verify that loan file documentation conforms to specified guidelines and regulatory requirements. In our contract underwriting business we underwrite our customers' mortgage loan application files for secondary market compliance (e.g., for sale to the GSEs), and may concurrently assess the file for mortgage insurance eligibility. Generally, we offer limited indemnification to our contract underwriting customers. We train our underwriters, require them to complete continuing education and routinely audit their performance to monitor the accuracy and consistency of underwriting practices.

We offer a full range of services to support the single family rental asset class. Our comprehensive single family rental services provide a centralized, single point of contact for facilitating the valuation, diligence and underwriting services needed to support single family rental securitizations, multi-borrower transactions and warehouse facilities.

Our surveillance services utilize data, technology and skilled professionals to provide ongoing, independent monitoring of mortgage servicer and loan performance. We offer risk management and servicing oversight solutions, including RMBS and single family rental securitization surveillance, regulatory and operational loan level oversight and asset representation review services in connection with securitizations. RMBS surveillance services monitor the servicers of mortgage loans underlying outstanding RMBS. Regulatory and operational loan level oversight provides regular monitoring of servicing operations to measure and assess compliance with applicable policies and regulations. Our asset representation review services provide targeted loan and receivable oversight for ABS issuers and their investors, including on asset classes other than mortgage loans, in the event of certain default triggers within the ABS.

Real Estate Services. Our real estate services provide data, analytics, process technologies, REO asset management and residential property valuation services to financial institutions, the GSEs, and private investment funds to support the acquisition, sale and management of real estate properties.

Our real estate services include: full appraisal products; property inspection/condition reports; appraisal review products; hybrid/ancillary appraisal products; automated valuation products; broker price opinions (BPOs); asset watch; and rental analysis. These valuation services primarily are provided to originators, owners, purchasers and servicers of, and to investors in, performing and non-performing mortgage loans and REO properties.

We further provide asset management services that include turn-key and component solutions for REO asset management, single family rental services and transition financing services management. These services are designed to support the management of the entire REO disposition process, including management of the eviction and redemption process, as well as property preservation and repairs.

Title Services. We also offer a comprehensive suite of title, closing and settlement services for residential mortgage loans. We offer title insurance as well as a full complement of title services that include tax and title data services; centralized recording services; document retrieval; default curative title services; deed reports; and property reports. Our closing and settlement services include electronic execution of some or all mortgage loan closing documents in a secure digital environment (eClosing), including full eClosing, hybrid eClosing and remote eClosing, as well as signing services, centralized closing and settlement services and local closing and settlement services.

Services Revenue Drivers

For the most significant revenue drivers for our Services business, see "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Key Factors Affecting Our Results—*Services.*"

Fee-for-Service Contracts

Our Services segment is primarily a fee-for-service business. Our services revenue is generated under three basic types of contracts:

Fixed-Price Contracts. Under fixed-price contracts, we agree to perform the specified services and deliverables for a pre-determined per-unit or per-file price or day rate. We use fixed-price contracts in our real estate valuation and component services, our loan review, underwriting and due diligence services as well as our title and closing services. We also use fixed-price contracts in our surveillance business for our servicer oversight services and RMBS surveillance services, and in our asset management business activities.

Time-and-Expense Contracts. Under a time-and-expense contract, we are paid a fixed hourly rate, and we are reimbursed for billable out-of-pocket expenses as work is performed. These contracts are used in our loan review, underwriting and due diligence services.

Percentage-of-Sale Contracts. Under percentage-of-sale contracts, we are paid a contractual percentage of the sale proceeds upon the sale of each property. These contracts are only used for a portion of our REO management services and our real estate brokerage services. In addition, through the use of our proprietary technology, property leads are sent to select clients. Upon the client's successful closing on the property, we recognize revenue for these transactions based on a percentage of the sale.

In most cases, our contracts with our clients do not include minimum volume commitments and can be terminated at any time by our clients. Although some of our contracts and assignments are recurring in nature, and include repetitive monthly assignments, a significant portion of our engagements are transactional in nature and may be performed in connection with securitizations, loan sales, loan purchases or other transactions. Due to the transactional nature of our business, our Services segment revenues may fluctuate from period to period as transactions are commenced or completed. In addition, our segment revenues are impacted by the origination volumes of our customers, which may fluctuate from period to period.

Title Insurance Premiums

In addition to the fees for services discussed above, we earn net premiums on title insurance written by EnTitle Insurance.

Customers

We have a broad range of customers for our Services segment due to the breadth of services we are able to offer across the mortgage value chain. Our principal third-party customers are:

- Banks, credit unions, independent mortgage banks and other originators of mortgage loans;
- RMBS/ABS issuers, securitization trusts, the GSEs, private equity, hedge funds, real estate investment trusts, investment banks and other investors in mortgage-related debt instruments, whole loans and other securities;
- Owners of single family rental homes;
- Mortgage servicers;
- Real estate brokers and agents; and
- Regulators and rating agencies involved in the mortgage, real estate and housing finance markets.

Our customers include many of the largest financial institutions and participants in the mortgage sector and, as such, our services revenue is concentrated among our largest customers. For the year ended December 31, 2018, the top 10 Services customers generated approximately 42% of the Services segment's services revenue. See "—Services Business Overview—*Services Revenue Drivers.*"

Competition

We believe our Services business is uniquely positioned as a single provider of an array of services to participants across the residential mortgage and real estate value chain. We are not aware of any other mortgage insurance company that provides a comparable range of services to the residential mortgage and real estate industries. However, our Services business has multiple competitors within each of its individual lines of business. Our competitors mainly include small privately-held companies and subsidiaries of large publicly-traded companies.

Significant competitors include:

- *Mortgage Services* - American Mortgage Consultants, Inc., Digital Risk, LLC, Opus Capital Markets Consultants, LLC, FTI Consulting, Inc., Pentalpha Surveillance LLC, TENA Companies, Inc., Adfitech Inc. and Navigant Consulting, Inc.
- *Real Estate Services* - ClearCapital.com, Inc., CoreLogic, Inc., Pro Teck Valuation Services, First American Financial Corporation, Black Knight, Inc., VRM Mortgage Services, Fidelity National Financial, Inc. and ServiceLink
- *Title Services* - First American Financial Corporation, Fidelity National Financial, Inc., Stewart Information Services Corporation, Old Republic Title Insurance Group, Inc., Westcor Land Title Insurance Company and WFG National Title Insurance Company

Across all business lines, we compete on the basis of industry expertise, price, technology, service levels and relationships.

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We believe that combining our mortgage insurance franchise with our diversified set of mortgage and real estate products and services provides us with an opportunity to become increasingly relevant to our customers and enhances our ability to compete in the insured market by differentiating us from other mortgage insurance competitors.

Enterprise Sales and Marketing

Our enterprise sales and marketing team is centralized to create a unified focus on selling all of our mortgage insurance and mortgage and real estate products and services across our customer base. Our Enterprise sales and marketing team offers a coordinated sales effort under single management and is supported by dedicated business unit and account management teams organized in various geographic regions across the U.S., as well as a telesales team located in our corporate headquarters in Philadelphia. At the enterprise level, we have a senior sales executive dedicated to each of the following areas: credit unions, banking institutions, investment bankers/private equity and fund managers, mortgage bankers, GSEs and servicers. We expect that our enterprise approach to selling the complementary products and services of our Mortgage Insurance and Services businesses will strengthen our relationships with our customers, attract new customers and enhance our ability to compete.

Our Mortgage Insurance dedicated business unit sales team includes a business development group that is focused on developing new mortgage insurance relationships and an account management group that is responsible for supporting our existing mortgage insurance relationships.

Our Services dedicated business unit sales team includes a title services sales team focused on developing new title services relationships and expanding and supporting existing customer relationships, and a mortgage and real estate services team responsible for selling other services offered by our Services business.

All sales efforts are supported by our telesales team that serves customers using any and all of our products and services, and is responsible for managing and growing customer relationships and promoting increased customer adoption.

All sales personnel are compensated by salary, and other incentive-based pay, which may be tied to the achievement of certain business objectives and sales goals or the promotion of certain products.

Customer Support

We have developed training programs for our customers to help their employees develop the knowledge and skills to respond to changing market demands. Our learning solutions are provided to customers to promote the role of private mortgage insurance in the marketplace as well as to promote Radian’s specific products and offerings. We offer training in three format options: instructor-led classroom sessions, instructor-led webinars and self-directed on-demand learning.

Sale of Financial Guaranty Business

Radian completed the sale of Radian Asset Assurance Inc. to Assured Guaranty Corp. on April 1, 2015 and exited the financial guaranty business. Radian Asset Assurance provided direct insurance and reinsurance on credit-based structured finance and public finance risks.

Investment Policy and Portfolio

Our investment portfolio is our primary source of claims paying resources.

We have developed an investment strategy that uses an asset allocation methodology that considers our business environment and consolidated risks as well as current investment conditions. With respect to our fixed income investments, the following internal investment policy guidelines, among others, are applied at the time of investment:

- At least 75% of our fixed income portfolio, based on market value, must consist of investment securities that are assigned a quality designation of NAIC 1 by the NAIC or equivalent ratings by a nationally recognized statistical ratings organization (“NRSRO”) (i.e., “A-” or better by S&P and “A3” or better by Moody’s);
- A maximum of 25% of our fixed income portfolio, based on market value, may consist of investment securities that are assigned a quality designation of NAIC 2 by the NAIC or equivalent ratings by a NRSRO (i.e., “BBB+” to “BBB-” by S&P and “Baa1” to “Baa3” by Moody’s); and
- A maximum of 10% of our fixed income portfolio, based on market value, may consist of investment securities that are assigned quality designations NAIC 3 through 6 or equivalent ratings by a NRSRO (i.e., “BB+” and below by S&P

and “Ba1” and below by Moody’s).

Our portfolio has been constructed to maximize long-term expected returns while maintaining an acceptable risk level. Our investment objectives are to utilize appropriate risk management oversight to optimize after-tax returns, while preserving capital. We target the level of our short-term investments to manage our expected short-term cash requirements.

Our investment policies and strategies are subject to change, depending on regulatory, economic and market conditions and our then-existing or anticipated financial condition and operating requirements, including our current and future tax positions. The investments held at our insurance subsidiaries are also subject to insurance regulatory requirements applicable to such insurance subsidiaries.

Oversight responsibility of our investment portfolio rests with management, and allocations are set by periodic asset allocation studies, calibrated by risk, return and after-tax considerations. The risks we consider include, among others, duration, liquidity, market, interest rate and credit risks. As of December 31, 2018, we internally manage 6.8% of the investment portfolio (the portion of the portfolio largely consisting of U.S. Treasury obligations, money market funds and certain exchange-traded funds), with the remainder primarily managed by three external managers. External managers are selected by management based primarily upon the selected allocations, as well as factors such as historical returns and stability of their management teams. Management's selections are presented to and approved by the Finance and Investment Committee of Radian Group's board of directors.

At December 31, 2018, our investment portfolio had a cost basis of $5.3 billion and a carrying value of $5.2 billion, which includes $0.6 billion of investments maturing within one year or less. Our investment portfolio did not include any direct residential real estate or whole mortgage loans at December 31, 2018. At December 31, 2018, 97.1% of our investment portfolio was rated investment grade. For additional information about our investment portfolio, see the information that follows, as well as Notes 5 and 6 of Notes to Consolidated Financial Statements.

Investment Portfolio Diversification

The composition of our investment portfolio, presented as a percentage of overall fair value at December 31, 2018, was as follows:

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(1) Primarily consists of taxable state and municipal investments.

As of December 31, 2018, we did not have any investment in any person (including affiliates thereof) that exceeded 10% of our total stockholders' equity.

Investment Portfolio Scheduled Maturity

The weighted-average duration of the assets in our investment portfolio as of December 31, 2018 was 4.0 years. We seek to manage our investment portfolio to maintain sufficient liquidity within our risk and return tolerances and to satisfy our operating and other financial needs based on our current liabilities and business outlook. The following table shows the scheduled maturities of the securities held in our investment portfolio at December 31, 2018:

($ in millions)	Fair Value	Percent
Short-term investments	$538.8	10.4 %
Due in one year or less (1)	87.3	1.7
Due after one year through five years (1)	1,118.8	21.6
Due after five years through ten years (1)	1,125.5	21.7
Due after ten years (1)	517.3	10.0
RMBS (2)	353.2	6.8
CMBS (2)	591.4	11.4
Other ABS (2)	704.7	13.6
Other investments (3)	144.0	2.8
Total (4)	$5,181.0	100.0%

(1) Actual maturities may differ as a result of calls before scheduled maturity.
(2) RMBS, CMBS and other ABS are shown separately, as they are not due at a single maturity date.
(3) No stated maturity date.
(4) Includes $27.9 million of securities loaned to third-party Borrowers under securities lending agreements, classified as other assets in our consolidated balance sheets. See Note 6 of Notes to Consolidated Financial Statements for more information.

Investment Portfolio by Rating

The following chart provides the ratings of our investment portfolio, presented as a percentage of overall fair value, as of December 31, 2018:

Enterprise Risk Management

Risk Philosophy, Vision and Appetite

As a financial services organization, risk management is a critical part of our business. Our ERM vision is to remain one of the housing industry's leading risk management organizations by providing solutions that effectively identify, assess and profitably manage risks across the entire mortgage life-cycle. The following goals guide our strategy and actions as a risk management organization:

- Embed and continually reinforce a disciplined, corporate-wide risk culture that utilizes an understanding of risk/return tradeoffs to drive quality decisions, utilizing a disciplined approach designed to achieve long-term, through-the-cycle profitability;
- Maintain credit, underwriting and risk/return disciplines based on sound data and analytics and continuous feedback throughout the organization;
- Proactively monitor origination, portfolio and market trends to identify and mitigate emerging risks;
- Continually refine analytical and technological capabilities, processes and systems to effectively identify, assess and manage risks; and
- Develop and leverage tools and capabilities to analyze the risk/return trade-offs of corporate strategy and business decisions in order to inform and optimize capital allocation.

Our risk appetite is driven by our business strategy, which is established by executive management and overseen by Radian's board of directors. Risk appetite is defined as the amount of risk, on a broad level, that an organization is willing to take on in pursuit of value. Based on our risk appetite, management then determines our risk tolerances. Risk tolerances represent the typical measures of risk used to monitor exposure in a particular risk category or for a specific initiative, compared with the stated risk appetite. The illustration below depicts our framework for developing risk appetite and tolerance.

We define our risk appetite qualitatively through the key risk categories where strategic execution can take place. We develop risk appetite statements that are designed to achieve the following:

- Define the risk Radian is willing to accept and manage in pursuit of long-term value on a risk-adjusted basis;
- Incorporate risk management into our strategic planning process;
- Enhance risk understanding and awareness at the board and executive management levels;
- Develop risk tolerances for business units within the context of the defined risk appetite; and
- Improve the quality of decision-making on significant business decisions.

Risk Categories

Our key risk categories are:

- **Credit**: The risk of default or failure to fulfill a financial obligation in a timely manner;
- **Financial**: The risk of market forces on the ability to meet financial obligations;
- **Strategic**: The risk of failure to properly respond to changes in the business environment;
- **Operational**: The risk that business practices, processes, policies and systems are not adequate to meet enterprise objectives; and
- **Regulatory and Compliance**: The risk of non-compliance with laws, rules, regulations and prescribed practices in any jurisdiction in which the business operates.

We do not identify reputational risk as a distinct category of risk. Rather, we view reputational risk as pervasive throughout our entire risk portfolio, as each risk on its own can impact our reputation if not mitigated or managed properly.

Risk Governance

Our ERM program is subject to a comprehensive governance structure, as illustrated in the following chart and further described below.

Board of Directors. The full board of directors is responsible for the general oversight of risks. Our board of directors seeks to understand and oversee the most critical risks relating to our business, allocates responsibilities for the oversight of risks among the full board and its committees, and reviews the systems and processes that management has in place to manage the current risks facing Radian, as well as those that could arise in the future.

The full board of directors oversees our strategic risks, regulatory risks, risks related to our information technology activities and cyber security risks. As noted above, the board conducts certain aspects of its risk oversight function through the following board committees: Audit Committee; Credit Management Committee; Finance and Investment Committee; Governance Committee; and Compensation and Human Resources Committee.

Each Committee Chair provides regular reports to the full board regarding the Committee's specific risk oversight responsibilities. The board regularly meets with management to receive reports derived from (i) our ERM function regarding the most significant risks we are facing, and the steps being taken to assess, manage and mitigate those risks; and (ii) the Company's information security function regarding cybersecurity risks and the Company's efforts to mitigate such risks. The full board further considers current and potential future strategic risks facing the company as part of its annual strategic planning session with management.

Integrated ERM Framework. We have adopted an integrated approach to risk management, which includes: (i) a centralized ERM function that resides within the office of our Chief Financial Officer and is responsible for overseeing the process for risk identification, assessment, management and mitigation across the organization; (ii) various management committees that oversee specific risks; (iii) business units that manage specific risks associated with their business activities; and (iv) an internal audit function that performs periodic, independent reviews and tests compliance with risk management policies, procedures and standards across the company.

The various management committees include, but are not limited to, a Pricing and Credit Committee, a Capital and Liquidity Review Committee and a Model Governance Committee (collectively "ALCO"), an Information Security and Resilience Committee, a Regulatory Compliance Council, a Mortgage Insurance Reserve Committee, a Title Insurance Underwriting Committee, a Title Insurance Claims Committee and an Enterprise Data Governance Committee.

Our integrated ERM framework is designed to identify the risks we are facing, and to assess, manage and mitigate those risks. Our ERM process is designed to provide executive management with the ability to evaluate the most significant concerns we face and to calibrate the risk mitigation strategies to account for challenges in the current business environment, as well as external factors that may negatively impact our operations. The risks that fall under the program span the entire spectrum of organizational risks and include risks that may not be easily quantifiable or measurable. These include critical risks that fall into our credit, financial, operational, regulatory and compliance, and strategic risk categories. Enterprise level risk reviews are conducted for both our Mortgage Insurance and Services businesses.

Our ERM process is illustrated in the following chart:

Our ERM program takes a holistic approach to managing risks that we face in our businesses. A cross-functional team, guided by subject matter experts and experienced managers, follows a systematic method to identify, evaluate and monitor both known and emerging risks. Our ERM program is a dynamic process, which includes ongoing analysis and ranking of the most significant risks and the alignment of risk management activities with business strategies. Risk assessments and mitigation plans are developed to address these risks. These assessments and plans are subject to review and modification to account for changes in markets and the regulatory environment, as well as other internal or external factors. Risk scoring and validation of

the effectiveness of risk management plans through management reporting facilitate program sustainability and promote accountability for risk management activities throughout the company.

An ERM Council, consisting of mid-senior level employees, meets at least quarterly to review the organization's top risks, as well as any risks that may have been upgraded or downgraded during the review cycle. The output (reports, dashboards, etc.) from the ERM Council is consolidated and presented to an ERM Executive Steering Committee (consisting of executive management) at least quarterly. The ERM Executive Steering Committee, along with the ERM Council, is responsible for assisting the board of directors in the fulfillment of its risk oversight responsibilities.

Radian currently employs more than 60 dedicated risk management professionals and has developed and established credit, portfolio, and counterparty risk policies, enterprise risk management policies, procedures for monitoring compliance with these policies and comprehensive capabilities and tools to identify, communicate, and mitigate credit and risk-related issues.

Mortgage Insurance Risk Management

Our mortgage insurance business employs a comprehensive risk management function, which is responsible for establishing our credit and counterparty risk policies, monitoring compliance with our policies, managing our insured portfolio and communicating credit related issues to management, the Credit Management Committee of Radian Group's board of directors and to our customers.

Risk Origination and Servicing. We believe that understanding our business partners and customers is a key component of managing risk. Accordingly, we assign individual risk managers to specific customers so that they can more effectively perform ongoing monitoring of loan performance, underwriting quality and the risk profile and mix of business of a customer's mortgage insurance applications. This also allows us to address specific needs of individual customers. The risk managers are located across the country, and their direct interaction with our customers and their access to local markets improves our ability to observe business patterns and manage risk trends. This oversight provides us with the ability to review and study best practices throughout the industry and develop robust data management analysis. The risk managers leverage a suite of customer-level reports to monitor trends at the customer level, identify customers who may exceed certain risk tolerances, and share meaningful data with our customers. The risk managers are also responsible for lender corrective action in the event we discover credit performance issues, such as high early payment default levels.

Portfolio Management. We have developed risk and capital allocation models that support our mortgage insurance business. These models provide robust analysis to establish portfolio limits for product type, loan attributes, geographic concentrations and counterparties. We proactively monitor market concentrations across these and other attributes. We also identify, evaluate and negotiate potential transactions for terminating insurance risk and for distributing risk to others, including through reinsurance arrangements. See "—*Ceded Reinsurance*" for more information about the use of reinsurance as a risk management tool in our mortgage insurance business.

As part of our portfolio management function, we monitor and analyze the performance of various risks in our mortgage insurance portfolio. We use this information to develop our mortgage credit risk and counterparty risk policies, and as a component of our default and prepayment analytics.

The portfolio management group analyzes the current composition of our mortgage insurance portfolio, and assesses risks to the portfolio from the market (e.g., the effects of changes in home prices and interest rates) as well as risks from particular lenders, products and geographic locales.

Credit Policy. We have developed and maintain mortgage-related credit risk policies. These policies reflect our tolerance levels regarding counterparty, portfolio and operational risks involving mortgage collateral. Our credit policy function develops and updates our mortgage insurance eligibility and guidelines through regular monitoring of competitor offerings, customer input regarding lending needs, analysis of historical performance and portfolio trends, quality assurance results, underwriter experience and observations and risk tolerances. The credit policy function also maintains the policies for loan and lender-level exceptions to published guidelines and under-performing lenders, which are administered by mortgage insurance underwriters and risk managers. The credit policy function works closely with our mortgage insurance underwriters to ensure that underwriting decisions align with risk tolerances and

principles.

Quality Assurance. Quality assurance is a key element of our credit analytics function, and as part of our quality control program, we audit individual loan files to examine underwriting decisions for compliance with agreed-upon underwriting guidelines. These audits are conducted across loans submitted through our delegated and non-delegated underwriting channels. Our quality assurance team audits both our customers and our underwriters to ensure quality in our NIW. Observations and trends derived from our quality assurance process serve as critical inputs into portfolio monitoring, eligibility and guideline

updates and customer surveillance, while also providing valuable feedback to our customers and our underwriters regarding the quality of their mortgage insurance underwriting decisions.

Loss Mitigation. We have a dedicated loss mitigation group that works with servicers to identify and pursue loss mitigation opportunities for loans in both our performing and non-performing (defaulted) portfolios. This includes regular surveillance and benchmarking of servicer performance with respect to default reporting, borrower retention efforts, foreclosure alternatives and foreclosure processing. Through this process, we seek to hold servicers accountable for their performance and communicate to servicers identified best practices for servicer performance.

Risk Modeling. We have expertise in the development and deployment of integrated credit and interest rate risk models. Using analytical techniques, we have developed loan level default and prepayment models for a wide range of risk management applications, including portfolio analysis, credit decision making, forecasting, and reserving.

Ceded Reinsurance. Radian's reinsurance programs represent a component of our long-term risk distribution strategy. We use reinsurance as a capital and risk management tool in our mortgage insurance business. We have entered into third-party reinsurance transactions as part of our capital and risk management activities, including quota share reinsurance programs that are utilized to proactively manage Radian Guaranty's capital position under the PMIERs financial requirements, and manage the mix of business in our portfolio. During 2018, we expanded our risk distribution strategy in an effort to optimize the amounts and types of capital and risk distribution deployed against insured risk. The objectives of our risk distribution strategy include: (i) supporting our overall capital plans; (ii) lowering our cost of capital; and (iii) reducing portfolio risk and financial volatility through economic cycles. For additional information regarding our third-party quota share reinsurance programs, see Note 8 of Notes to Consolidated Financial Statements.

Cybersecurity Risk Management

Information security is a significant operational risk for financial institutions such as Radian and includes the risk of loss resulting from cyber-attacks. In an effort to mitigate this risk, Radian has built an Information Security Program that is dedicated to protecting our corporate data as well as data entrusted to us by our customers and partners. At the core of our program is a defense-in-depth strategy, which utilizes multiple layers of security controls to protect data and solutions. Radian utilizes the National Institute of Standards and Technology Cybersecurity Framework (the "NIST CSF"), as a guideline to manage our cybersecurity-related risk. The NIST CSF outlines 98 information security measures over five functions: Identify, Protect, Detect, Respond and Recover. We have developed key security services, including but not limited to, Enterprise Data Protection, Vulnerability Management and Application Security, Managed Threat Detection and Incident Response. We test our incident response readiness and reporting through table top exercises, external and internal penetration testing and other means in our efforts to ensure that risks and incidents are escalated and communicated to appropriate personnel.

Our commitment to growing and maintaining our Information Security Program extends across the organization. Our core Information Security Team is comprised of industry-certified practitioners who are committed to adopting security technologies and practices that meet regulatory standards. We have an Information Security and Resilience Committee comprised of company executives, cross-functional Incident Response teams, and strong governance mechanisms designed to ensure compliance with our security policies and protocols. Additionally, our full board of directors is actively engaged in the Information Security Program's oversight and receives regular updates and reporting from the Company's Chief Information Security Officer on information security strategies, defense initiatives, event preparedness and continuous improvement efforts. While we have an Information Security Program in place in order to attempt to prevent, detect and respond to unauthorized use or disclosure of confidential information, including non-public personal information, there can be no assurance that such use or disclosure will not occur. See "Item 1A. Risk Factors—*The security of our information technology systems may be compromised and confidential information, including non-public personal information that we maintain, could be improperly disclosed.*"

Regulation

We are subject to comprehensive regulation by both federal and state regulatory authorities. Set forth below is a description of significant state and federal regulations and other requirements of the GSEs that are applicable to our businesses. The descriptions below are qualified in their entirety by reference to the full text of the laws and regulations discussed. In Item 1A. Risk Factors, see "*—Our insurance subsidiaries are subject to comprehensive state insurance regulations and other requirements, which we may fail to satisfy.*" and "*—Legislation and administrative and regulatory changes and interpretations could impact our businesses.*"

State Regulation

Overview of State Insurance Regulation and Our Insurance Subsidiaries

We and our insurance subsidiaries are subject to comprehensive regulation by the insurance departments in the various states where they are licensed to transact business. Insurance laws vary from state to state, but generally grant broad supervisory powers to agencies or officials to examine insurance companies and enforce rules or exercise discretion affecting almost every significant aspect of the insurance business. These regulations principally are designed for the protection of policyholders, rather than for the benefit of investors.

Insurance regulations address, among other things, the licensing of companies to transact business, claims handling, reinsurance requirements, premium rates and policy forms offered to customers, financial statements, periodic reporting, permissible investments and adherence to financial standards relating to surplus, dividends and other measures of solvency intended to assure the satisfaction of obligations to policyholders.

Our insurance subsidiaries' premium rates and policy forms are generally subject to regulation in every state in which they are licensed to transact business. These regulations are intended to protect policyholders against excessive, inadequate or unfairly discriminatory rates and to encourage competition in the insurance marketplace. In most states where our insurance subsidiaries are licensed, premium rates and policy forms must be filed with the state insurance regulatory authority and, in some states must also be approved, before their use. With respect to mortgage insurance, premium rates may be subject to actuarial justification, generally on the basis of the mortgage insurer's loss experience, expenses and future projections. In addition, states may consider general default experience in the mortgage insurance industry in assessing the premium rates charged by mortgage insurers. As to title insurance, forms and rates must be filed, and in most states approved, prior to usage. Forms require approval to ensure that the coverage and exceptions conform to state insurance regulations. Rates subject to approval often must be supported by actuarial data or a study of financial impact of the rate on the company.

Each insurance subsidiary is required by the insurance regulatory authority of its state of domicile, and the insurance regulatory authority of each other jurisdiction in which it is licensed to transact business, to make various filings with those insurance regulatory authorities and with the NAIC, including quarterly and annual financial statements prepared in accordance with statutory accounting principles. In addition, our insurance subsidiaries are subject to examination by the insurance regulatory authority of their state of domicile, as well as each of the states in which they are licensed to transact business.

Radian Group is an insurance holding company and our mortgage insurance subsidiaries belong to an insurance holding company system. All states regulate insurance holding company systems, including the non-insurer holding company within that system. These laws generally require each insurance subsidiary within an insurance holding company system to register with the insurance regulatory authority of its domiciliary state, and to furnish to the regulators in these states applicable financial statements, statements related to intercompany transactions and other information concerning the holding company and its affiliated companies within the holding company system that may materially affect the operations, management or financial condition of insurers or the holding company system.

We are subject to the insurance holding company laws of Pennsylvania and Ohio because all of our mortgage insurance subsidiaries are domiciled in Pennsylvania and EnTitle is domiciled in Ohio. These insurance holding company laws regulate, among other things, certain transactions between Radian Group, our insurance subsidiaries and other parties affiliated with us. The holding company laws of Pennsylvania also govern certain transactions involving Radian Group's common stock, including transactions that constitute a "change of control" of Radian Group and, consequently, a "change of control" of its insurance subsidiaries. Specifically, no person may, directly or indirectly, seek to acquire "control" of Radian Group or any of its mortgage insurance subsidiaries unless that person files a statement and other documents with the Pennsylvania Insurance Commissioner and receives prior approval from the Commissioner. Under Pennsylvania's insurance statutes, "control" is defined broadly and is "presumed to exist if any person, directly or indirectly, owns, controls, holds with power to vote or holds proxies representing 10% or more of the voting securities" of a holding company of a Pennsylvania domestic insurer. The statute further defines "control" as the "possession, direct or indirect, of the power to direct or cause the direction of the management and policies of" an

insurer.
In addition, material transactions between us or our affiliates and our insurance subsidiaries or among our insurance subsidiaries are subject to certain conditions, including that they be “fair and reasonable.” These conditions generally apply to all persons controlling, or who are under common control with, us or our insurance subsidiaries. Certain transactions between us or our affiliates and our insurance subsidiaries may not be entered into unless the Pennsylvania Insurance Commissioner or Ohio Department of Insurance, as applicable, is given 30 days’ prior notification and does not disapprove the transaction during that 30-day period.

Pennsylvania and Ohio regulations also require that we identify the material risks within the insurance holding company system that could pose enterprise risk to the insurer. Among other things, Pennsylvania and Ohio require that insurers domiciled in their states maintain a risk management framework and conduct an Own Risk and Solvency Assessment ("ORSA") annually in accordance with applicable NAIC requirements.

All of our mortgage insurance subsidiaries are domiciled in Pennsylvania. Listed below are our principal insurance companies as of December 31, 2018:

- *Radian Guaranty*. Radian Guaranty is our primary mortgage insurance company. Radian Guaranty is a direct subsidiary of Radian Group. Radian Guaranty is our only mortgage insurance company that is eligible to provide mortgage insurance on GSE loans. It is a monoline insurer, restricted to writing first-lien residential mortgage guaranty insurance. In addition to Pennsylvania, Radian Guaranty is authorized to write mortgage guaranty insurance (or in states where there is no specific authorization for mortgage guaranty insurance, the applicable line of insurance under which mortgage guaranty insurance is regulated) in each of the other 49 states, the District of Columbia and Guam.
- *Radian Reinsurance.* Radian Reinsurance is a licensed affiliated reinsurer that primarily provides reinsurance to Radian Guaranty. Radian Reinsurance is a direct subsidiary of Radian Group. We also use Radian Reinsurance to participate in the Front-end and Back-end credit risk transfer programs developed by Fannie Mae and Freddie Mac. See "Mortgage Insurance—Mortgage Insurance Business Overview—*Mortgage Insurance Products—Other Mortgage Insurance Products—GSE Credit Risk Transfer*" for more information about these programs.
- *Radian Insurance*. Radian Insurance is our insurance subsidiary that insures our remaining second-lien mortgage loan risk. Radian Insurance is a direct subsidiary of Radian Group. Previously, Radian Insurance also insured our Hong Kong insurance portfolio. As of December 31, 2018, we had no remaining RIF in Hong Kong.

In addition, we have the following mortgage insurance subsidiaries, each of which had no RIF as of December 31, 2018: Radian Investor Surety Inc., Radian Mortgage Guaranty Inc., Radian Guaranty Reinsurance and Radian Mortgage Assurance.

As part of our title services we offer title insurance through EnTitle Insurance, an Ohio domiciled title insurance underwriter and settlement services company that is licensed to issue title insurance policies in 39 states and the District of Columbia. EnTitle Insurance is a wholly owned subsidiary of EnTitle Direct, which we acquired on March 27, 2018. As an insurance company, EnTitle Insurance is subject to comprehensive regulation by the insurance departments in the various states where it is licensed to transact business and subject to examination by the insurance regulatory authority of its state of domicile, the Ohio Department of Insurance.

Mortgage Insurance Capital Requirements and Dividends

Under state insurance regulations, Radian Guaranty is required to maintain minimum surplus levels and, in certain states, a minimum ratio of statutory capital relative to the level of net RIF, or Risk-to-capital. Sixteen states currently impose a Statutory RBC Requirement. The most common Statutory RBC Requirement is that a mortgage insurer's Risk-to-capital may not exceed 25 to 1. In certain of the RBC States, Radian Guaranty must satisfy a MPP Requirement. The statutory capital requirements for the non-RBC States are de minimis (ranging from $1 million to $5 million); however, the insurance laws of these states generally grant broad supervisory powers to state agencies or officials to enforce rules or exercise discretion affecting almost every significant aspect of the insurance business, including the power to revoke or restrict an insurance company's ability to write new business. Unless an RBC State grants a waiver or other form of relief, if a mortgage insurer, such as Radian Guaranty, is not in compliance with the Statutory RBC Requirement of that state, it may be prohibited from writing new mortgage insurance business in that state. Radian Guaranty's domiciliary state, Pennsylvania, is not one of the RBC States. In 2018 and 2017, the RBC States accounted for approximately 55.0% and 55.1%, respectively, of Radian Guaranty's total primary NIW. As of December 31, 2018, Radian Guaranty's Risk-to-capital was 13.9 to 1, and Radian Guaranty was in compliance with all applicable Statutory RBC Requirements.

The NAIC is in the process of reviewing the minimum capital and surplus requirements for mortgage insurers and considering changes to the Model Act. In May 2016, a working group of state regulators released an exposure draft of

a risk-based capital framework to establish capital requirements for mortgage insurers. The process for developing this framework is ongoing. While the timing and outcome of this process remains uncertain, in the event the NAIC adopts changes to the Model Act, we expect that the capital requirements in states that adopt the new Model Act may increase as a result of the changes. While we cannot provide any assurance, based on the current exposure draft, we do not believe that the capital requirements that may be adopted under the new Model Act are likely to exceed those of the PMIERs financial requirements. See "Item 1A. Risk Factors—*Our insurance subsidiaries are subject to comprehensive state insurance regulations and other requirements, which we may fail to satisfy.*"

Under Pennsylvania's insurance laws, dividends and other distributions may only be paid out of an insurer's positive unassigned surplus, measured as of the end of the prior fiscal year, unless the Pennsylvania Insurance Commissioner approves the payment of dividends or other distributions from another source. While all proposed dividends and distributions to stockholders must be filed with the Pennsylvania Insurance Department prior to payment, if a Pennsylvania domiciled insurer had positive unassigned surplus as of the end of the prior fiscal year, then unless the prior approval of the Pennsylvania Insurance Commissioner is obtained, such insurer could only pay dividends or other distributions during any 12-month period in an aggregate amount less than or equal to the greater of: (i) 10% of the preceding year-end statutory policyholders' surplus; or (ii) the preceding year's statutory net income.

At December 31, 2018, although Radian Guaranty and Radian Reinsurance had statutory policyholders' surplus of $814.1 million and $356.2 million, respectively, both companies had negative unassigned surplus balances, primarily due to the need for mortgage guaranty insurers to establish and maintain contingency reserves. Radian Guaranty and Radian Reinsurance had negative unassigned surplus at December 31, 2018 of $701.9 million and $84.8 million, respectively, therefore no ordinary dividends or other distributions can be paid by these subsidiaries in 2019 without approval from the Pennsylvania Insurance Commissioner. Because they also had negative unassigned surplus positions at December 31, 2017 and December 31, 2016, neither Radian Guaranty nor Radian Reinsurance was able to pay any ordinary dividends in 2018 or 2017. Due in part to the need to set aside contingency reserves, which are not included in an insurer's statutory surplus as discussed below, we do not expect that Radian Guaranty or Radian Reinsurance will have positive unassigned surplus, and therefore we expect that they will not have the ability to pay ordinary dividends, for the foreseeable future. During the fourth quarter of 2018, the Pennsylvania Insurance Department approved a $450 million distribution of capital from Radian Guaranty to Radian Group, which was paid on December 21, 2018. See Note 19 of Notes to Consolidated Financial Statements for a discussion of this distribution of capital and another Extraordinary Distribution that was paid from Radian Guaranty to Radian Group in 2017 in connection with the reallocation of capital among our mortgage insurance subsidiaries.

All of our other mortgage insurance subsidiaries also had negative unassigned surplus at December 31, 2018. Therefore, no ordinary dividends or other distributions can be paid by these subsidiaries in 2019 without approval from the Pennsylvania Insurance Commissioner.

For statutory reporting, mortgage insurance companies are required annually to set aside contingency reserves in an amount equal to 50% of earned premiums. Such amounts cannot be released into surplus for a period of 10 years, except when loss ratios exceed 35%, in which case the amount above 35% can be released under certain circumstances. The contingency reserve, which is designed to be a reserve against catastrophic losses, essentially restricts dividends and other distributions by mortgage insurance companies. We classify the contingency reserves of our mortgage insurance subsidiaries as a statutory liability. At December 31, 2018, Radian Guaranty and Radian Reinsurance had contingency reserves of $2.1 billion, and $293.5 million, respectively.

Title Insurance Capital Requirements and Dividends

EnTitle Insurance is required to maintain Statutory Premium Reserves ("SPR"), calculated as a percentage of gross premium collected. The SPR requirements are set by each state, with the most common being 7%. The SPR is then recovered based on a release schedule, amortized over twenty years. In addition to the SPR, EnTitle Insurance is subject to periodic reviews of certain financial performance ratios, and the states in which it is licensed can impose capital requirements on EnTitle Insurance based on the results of those ratios.

Under Ohio's insurance laws, dividends and other distributions may only be paid out of an insurer's positive unassigned surplus, measured as of the end of the prior fiscal year, unless the Ohio Department of Insurance approves the payment of dividends or other distributions from another source. While all proposed dividends and distributions to stockholders must be filed with the Ohio Department of Insurance prior to payment, if an Ohio domiciled insurer had positive unassigned surplus as of the end of the prior fiscal year, then unless the prior approval of the Ohio Department of Insurance is obtained, such insurer could only pay dividends or other distributions during any 12-month period in an aggregate amount less than or equal to the greater of: (i) 10% of the preceding year-end statutory policyholders' surplus; or (ii) the preceding year's statutory net income. EnTitle Insurance had negative

unassigned surplus at December 31, 2018 of $23.9 million, therefore it is unable to pay ordinary dividends or other distributions in 2019 without approval from the Ohio Department of Insurance.

In September of 2017, the New York State Department of Financial Services ("DFS") issued 11 NYCRR 228 ("Regulation 208") which regulates title insurance marketing practices, expenses and transaction related charges in the state of New York. Regulation 208 limits or bans title underwriters and agents from charging consumers certain title and closing related fees, and contains strict rules around marketing expenses aimed at restricting or stopping certain marketing practices in the title industry. Radian Settlement Services and EnTitle Insurance have adjusted their transaction fees and marketing practices and

expenses to comply with Regulation 208. Regulation 208 also requires that title insurance underwriters retroactively affirm that they and their agents have not charged fees over the past six years in excess of those amounts which are now limited or expenses which are now banned. If a title insurance underwriter cannot affirm that it or its agents did not charge fees in excess of those allowed under Regulation 208 over the last six years, it will need to submit a reduced rate filing to come into compliance. On February 13, 2019, EnTitle Insurance submitted its reduced rate filing to comply with Regulation 208. DFS approved EnTitle's reduced rate filing on February 15, 2019.

Mortgage, Real Estate and Title Services

Certain of our Services subsidiaries are subject to regulation and oversight by the states where they conduct their businesses, including requirements to be licensed and/or registered in the states in which they conduct operations.

Our real estate brokerage businesses provide services in all 50 states and the District of Columbia, and they and their designated brokers are required to hold licenses and conduct their brokerage business in conformity with the applicable license laws and administrative regulations of the states in which they are conducting their business. As a licensed real estate brokerage, Red Bell receives residential real estate information from various multiple listing services ("MLS") which it uses to broker real estate transactions and provide valuation products and services, pursuant to the terms of agreements with the MLS providers. If these agreements were to terminate or Red Bell otherwise were to lose access to this information, it could negatively impact Red Bell's ability to conduct its business.

Radian Settlement Services and its affiliates provide title services and these entities are required to hold the applicable required licenses in the jurisdictions where they operate their business. Title insurance agency licensing is primarily regulated by states in which the services are being offered, with licensing and registration typically within the jurisdiction of each state's department of insurance. Radian Settlement Services is domiciled and licensed in Pennsylvania as a resident title insurance agency and, together with its affiliates, is licensed in 32 additional states.

Radian Settlement Services and its affiliates also serve as an appraisal management company. In 2018, Radian acquired Independent Settlement Services, a national appraisal and title management services company. Radian Settlement Services and its affiliates are licensed to provide appraisal management services in 42 states and Independent Settlement Services is licensed as an appraisal management company in 45 states. Real estate appraisal management statutes and regulations vary from state to state, but generally grant broad supervisory powers to agencies or officials to examine companies and enforce rules. While these businesses are generally state regulated, the Dodd-Frank Act established minimum requirements to be implemented by states regarding the registration and supervision of appraisal management companies. Most states have based their legislation on model legislation developed by the Appraisal Institute for the registration and oversight of appraisal management companies. Radian Settlement Services' affiliate, ValuEscrow, Inc., is a California licensed escrow company, and is required to maintain all applicable licenses and fidelity certifications to operate in California.

Radian Clayton Services LLC provides third party underwriting services to lenders, including services that may be deemed loan origination activities as defined by the SAFE Act (discussed below) and state law equivalents. This entity and its employees that provide our contract underwriting services are compliant with the SAFE Act in all 50 states and the District of Columbia. See "—Federal Regulation—*The SAFE Act.*"

Cybersecurity

The DFS issued cybersecurity regulations that became effective March 1, 2017 and apply to all financial institutions and insurance companies licensed under the New York Banking, Insurance, and Financial Services Laws, including Radian Guaranty and certain of our other subsidiaries. The regulations require covered entities to, among other things: establish a cybersecurity program; adopt a written cybersecurity policy; designate a Chief Information Security Officer responsible for implementing, overseeing and enforcing the cybersecurity program and policy; and have policies and procedures designed to ensure the security of information systems and nonpublic information accessible to, or held by, third-parties, along with a variety of other requirements to protect the confidentiality, integrity and availability of information systems.

Privacy

In June of 2018, the State of California enacted the California Consumer Privacy Act ("CCPA") which applies to any company that does business in California and meets certain threshold requirements. The CCPA will become effective January 1, 2020, and the legislation requires the California Attorney General to adopt implementing regulations by July 1, 2020. While we are continuing to evaluate the applicability of the CCPA to our businesses, we believe Radian Group and certain of its affiliates may meet the CCPA threshold requirements, and therefore, may be deemed covered businesses under the CCPA. The CCPA creates a new privacy framework for covered businesses that collect, sell or disclose personal information of California consumers. The definition of protected "personal information" under the CCPA is broad, and the CCPA creates five new

categories of data privacy rights for California consumers: the right to (1) know what personal information is being collected about them, whether their personal information is sold or disclosed and to whom; (2) access a copy of their personal information; (3) delete their personal information from business servers and service providers, unless it is necessary to maintain the information under enumerated exceptions; (4) opt out of the sale of their personal information to third parties; and (5) have equal access and service if they exercise their rights. The CCPA provides a private right of action for data breaches, including statutory or actual damages, and public enforcement by the California Attorney General for other violations. Compliance with the CCPA will require the development of new policies, procedures and operational changes. It is reasonably possible that the CCPA will prompt other state and federal regulators to move forward with new privacy regulations that could impact our businesses or those of our customers.

GSE Requirements

PMIERs - Private Mortgage Insurer Eligibility Requirements. As the largest purchasers of conventional mortgage loans, and therefore, the main beneficiaries of private mortgage insurance, the GSEs impose eligibility requirements that private mortgage insurers must satisfy in order to be approved to insure loans purchased by the GSEs. The PMIERs initially became effective December 31, 2015, and aim to ensure that approved insurers will possess the financial and operational capacity to serve as strong counterparties to the GSEs throughout various market conditions. The PMIERs are comprehensive, covering virtually all aspects of the business and operations of a private mortgage insurer of GSE loans, including internal risk management and quality controls, the relationship between the GSEs and the approved insurer and the approved insurer's financial condition. The PMIERs contain extensive requirements related to the conduct and operations of our mortgage insurance business, including operational requirements in areas such as claim processing, loss mitigation, document retention, underwriting, quality control, reporting and monitoring, among others. In addition, the PMIERs prohibit private mortgage insurers from engaging in certain activities such as insuring loans originated or serviced by an affiliate (except under certain circumstances) and require private mortgage insurers to obtain the prior consent of the GSEs before taking certain actions, which may include entering into various intercompany agreements and commuting or reinsuring risk, among others. Radian Guaranty currently is an approved mortgage insurer under the PMIERs and is in compliance with the PMIERs financial requirements.

The PMIERs financial requirements require that a mortgage insurer's Available Assets meet or exceed its Minimum Required Assets. The PMIERs financial requirements include increased financial requirements for defaulted loans, as well as loans with a higher likelihood of default and/or certain credit characteristics, such as higher LTVs and lower FICO scores, and for loans originated after January 1, 2016 that are insured under lender-paid mortgage insurance policies not subject to automatic termination under the HPA. Therefore, if our mix of business includes a higher percentage of loans that are subject to these increased financial requirements, it increases the Minimum Required Assets and/or the amount of Available Assets that Radian Guaranty is required to hold. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Overview—*Operating Environment.*"

The GSEs have significant discretion under the PMIERs and may amend the PMIERs at any time, although the GSEs have communicated that for material changes, including material changes affecting Minimum Required Assets, they will generally provide written notice 180 days prior to the effective date and engage in a discussion and comment process with the private mortgage insurers regarding the proposed changes prior to finalizing them. On September 27, 2018, the GSEs issued PMIERs 2.0, which will become effective on March 31, 2019. PMIERs 2.0 eliminates any credit for future premiums for insurance policies written prior to and including 2008, which is permitted under the current PMIERs. In addition, among other changes, defaulted loans in FEMA-declared major disaster areas will require a reduced level of Minimum Required Assets under PMIERs 2.0, subject to certain requirements. Radian Guaranty expects to comply with PMIERs 2.0 as of the effective date.

We have entered into reinsurance transactions as part of our capital and risk management activities, including to manage Radian Guaranty's capital position under the PMIERs financial requirements. The initial and ongoing credit that we receive under the PMIERs financial requirements for these transactions is subject to the periodic review of the GSEs.

Although we expect Radian Guaranty to retain its eligibility status with the GSEs and to continue to comply with the PMIERs financial requirements, including as they may be updated, we cannot provide assurance that this will occur. See "Item 1A. Risk Factors—*Radian Guaranty may fail to maintain its eligibility status with the GSEs.*"

Other GSE Business Practices and Requirements. The GSEs, acting independently or through their conservator, the FHFA, have the ability to change their business practices and requirements in ways that impact our business. Examples of more recent changes or proposed changes in the GSEs' business practices and requirements are:

- the GSEs' proposal of new minimum requirements for master insurance policies to revise the GSE Rescission Relief Principles to, among other things, further limit the circumstances under which mortgage insurers may rescind insurance coverage;
- the changes to the PMIERs under PMIERs 2.0 that become effective on March 31, 2019; and
- changes to underwriting standards on mortgages they purchase, including for example, the GSEs' decision to expand credit in 2017 by purchasing a larger portion of loans with debt-to-income ratios greater than 45%.

For information on additional potential changes in GSE business practices and requirements that could impact our business, see "Item 1A. Risk Factors—*Changes in the charters, business practices, or role of the GSEs in the U.S. housing market generally, could significantly impact our mortgage insurance business.*"

Federal Regulation

Housing Finance Reform

The federal government plays a significant role in the U.S. housing finance system through, among other things, the involvement of the FHFA and GSEs, the FHA and the VA. The GSEs' charters generally prohibit them from buying low down payment mortgage loans without certain forms of credit enhancement, the primary form of which has been private mortgage insurance. There has been ongoing debate about the roles that the federal government and private capital should play in the housing finance system, and in recent years, there generally has been broad policy consensus that there is a need to increase the role of private capital. As a significant source of private capital in the existing housing finance system, private mortgage insurance is well-positioned in recent legislative proposals to continue to be able to provide the type of coverage that has become the predominant form of credit enhancement for satisfying the requirements currently memorialized in rules implementing the GSE charters, sometimes referred to as "standard coverage." However, to the extent new legislative action alters the existing GSE charters without explicit preservation of the role of private mortgage insurance for high-LTV loans, our business could be adversely affected. Furthermore, should legislative or administrative action, such as the imposition of higher guarantee fees or loan level price adjustments, changes to loan limits, or significantly tightening the credit underwriting standards for the GSEs, it is possible that non-GSE executions, including the "private label" secondary market or loans insured by the FHA, VA, or U.S. Department of Agriculture ("USDA") would result in better execution or price to consumers. In such a scenario, our business could be adversely impacted.

Since FHFA was appointed as conservator of the GSEs in September 2008, there has been a wide range of legislative proposals to reform the U.S. housing finance market, including proposals for GSE reform ranging from some that advocate nearly complete privatization and elimination of the role of the GSEs to others that support a system that combines a federal role with private capital. Recent proposals have focused on making the federal guaranty of mortgage backed securities explicit, with some models proposing the repurposing of the GSEs to have them compete with other secondary market guarantors and other models proposing a broad implementation of the multiple issuer structure that exists with Ginnie Mae backed loans. In addition, the Trump administration and U.S. Treasury have stated that they are seeking to advance housing finance reform, particularly if the U.S. Congress does not take action to end the current conservatorship of the GSEs. Under current law, the FHFA has significant discretion with respect to the future state of the GSEs, including the ability to place the GSEs into receivership without further legislative action. The term of the most recent director of the FHFA ended in January 2019 and an acting director was appointed, pending the U.S. Senate's confirmation of the Administration's nominee to lead the FHFA. With new leadership at FHFA, we believe there may be an increased likelihood that the Administration could take action to reform the GSEs through current authorities of the director under The Housing and Economic Recovery Act of 2008 and through Executive Order.

The U.S. Treasury currently owns the preferred stock of the GSEs pursuant to the terms of a senior preferred stock purchase agreement and was prohibited from selling its stake in the GSEs until January 1, 2018. On December 21,

2017, the FHFA and the Treasury Department reached an agreement to reinstate a $3 billion capital reserve for the GSEs under the senior preferred stock purchase agreement, allowing the GSEs to build a limited amount of reserves to allow for income fluctuations. Beyond this $3 billion capital buffer, the GSEs are required under the senior preferred stock purchase agreements to sweep all profits to the U.S. Treasury. It is possible that the U.S. Treasury could further amend the terms of the senior preferred stock purchase agreement to permit the GSEs to further retain profits and recapitalize which could, in turn, affect the prospects for comprehensive housing finance reform legislation. In June 2018, FHFA released a proposed rule to establish a CCF that would

apply minimum capital requirements for the GSEs, if the CCF is finalized. This rule proposes both risked-based capital requirements and would revise the minimum leverage capital requirement for the GSEs. Under this proposed rule, these requirements would only take affect once the GSEs exit conservatorship, although in the absence of greater transparency we believe the CCF provides a reasonable basis for understanding how the GSEs are currently conducting their operations, including their decisions with respect to capital allocation and pricing. If the CCF is finalized, it is reasonably possible that the GSEs will seek to more closely align the capital requirements of the PMIERs with the CCF, which could result in further changes to the PMIERs.

In the absence of comprehensive housing finance reform legislation, the FHFA has made changes to the business and operations of the GSEs. As a mechanism for implementing changes, the FHFA uses the annual process of releasing a strategic plan for conservatorship and setting goals for the GSEs (the "Scorecard") to meet as part of its ongoing regulation. Among other things, the 2019 Scorecard includes goals to increase access to single-family mortgage credit for creditworthy borrowers and to finalize post-financial crisis loss mitigation activities. In addition, the 2019 Scorecard calls for the GSEs to transfer a meaningful portion of credit risk, also known as "credit risk transfer," to the private sector. The mandate for meaningful credit risk transfer builds upon the goals set in each of the last three years for the GSEs to transfer portions of their mortgage credit risk to the private sector by experimenting with different forms of transactions and structures. In response to this mandate, the GSEs have engaged in Front-end, Back-end and other credit risk transfer transactions to transfer a portion of credit risk. From 2013 through June 2018 the GSEs transferred risk on over $2.5 trillion of unpaid principal balance, and we expect these credit risk transfer transactions to continue. We have participated in both the Front-end and Back-end credit risk transfer programs developed by Fannie Mae and Freddie Mac. For more information about these programs, see "Mortgage Insurance—Mortgage Insurance Business Overview—*Mortgage Insurance Products—Non-Traditional Risk*."

In addition, alternatives to traditional mortgage insurance may be introduced that compete with private mortgage insurance. In 2018, Freddie Mac and Fannie Mae announced the launch of limited pilot programs, Integrated Mortgage Insurance ("IMAGIN") and Enterprise-Paid Mortgage Insurance ("EPMI"), respectively, as alternative ways for lenders to sell to the GSEs loans with LTVs greater than 80%. These investor-paid mortgage insurance programs, in which insurance is acquired directly by each GSE, have many of the same features as and represent an alternative to traditional private mortgage insurance products that are provided to individual lenders. Participants in IMAGIN and EPMI are not subject to compliance with the PMIERs, which may create a competitive disadvantage for private mortgage insurers if these pilot programs are expanded.

It is difficult to predict what other types of credit risk transfer transactions and other structures might be used by the GSEs in the future. If any of the credit risk transfer transactions and structures that are being developed were to displace primary loan level, standard levels of mortgage insurance, the amount of insurance we write may be reduced. However, the GSEs also have solicited comments regarding the possibility of including additional mortgage insurance in excess of standard coverage amounts through a concept known as "deeper cover mortgage insurance," which could increase the amount of insurance we write. As a result, it is difficult to predict the impact of any credit risk transfer products and transactions implemented by the GSEs.

In Item 1A. Risk Factors, see "—*Changes in the charters, business practices, or role of the GSEs in the U.S. housing market generally, could significantly impact our mortgage insurance business.*" and "—*Our mortgage insurance business faces intense competition.*"

FHA

Private mortgage insurance competes with the single-family mortgage insurance programs of the FHA. As such, the FHA is one of our biggest competitors. We compete with the FHA on the basis of loan limits, pricing, credit guidelines, terms of our insurance policies and loss mitigation practices. Since 2013, the loan limits for FHA-insured loans and the loan limits for GSE conforming loans have been substantially the same. It is possible that, in the future, Congress could impose different loan limits for FHA loans than for GSE conforming loans as it has done in the past, which could impact the competitiveness of private mortgage insurance in relation to FHA programs.

Beginning in 2008, the FHA, which historically had not been a significant competitor, substantially increased its market share of the insured mortgage market. Since then, the private mortgage insurance industry generally had been recapturing market share from the FHA, primarily due to: (i) improvements in the financial strength of private mortgage insurers; (ii) the development of new products and marketing efforts directed at competing with the FHA; (iii) increases in the FHA’s pricing; (iv) the U.S. government’s pursuit of legal remedies against FHA-approved lenders related to loans insured by the FHA; and (v) various policy changes at the FHA, including the general elimination of the premium cancellation provision that exists for borrower-paid private mortgage insurance. In January 2015, the FHA reduced its annual mortgage insurance premium by 50 basis points to approximately 85 basis points for loans entering the origination process on or after January 26, 2015, including

refinancings. The FHA's upfront mortgage insurance premium was not changed. Reductions in the FHA's annual premiums or changes to its policies may impact our competitiveness with the FHA.

Given that FHA and GSE reform have significant impacts on each other, as well as on borrower access to credit and the housing market more broadly, policymakers may consider both GSE reform and FHA reform together. It is unclear whether FHA reform legislation will be adopted and, if so, what provisions it might ultimately contain. If legislative changes to the FHA and GSEs are not made contemporaneously, there is a possibility that the relative competitiveness of private mortgage insurance could be disadvantaged.

The Dodd-Frank Act

The Dodd-Frank Act mandates significant rulemaking by several regulatory agencies to implement its provisions. The Dodd-Frank Act established the CFPB to regulate the offering and provision of consumer financial products and services under federal law, including residential mortgages, and transferred authority to the CFPB to enforce many existing consumer related federal laws, including the Truth in Lending Act ("TILA") and RESPA.

Among the most significant provisions for private mortgage insurers under the Dodd-Frank Act are the ability to repay mortgage provisions ("Ability to Repay Rule"), including a related safe harbor set forth in the QM Rule (defined below), the securitization risk retention provisions and the expanded mortgage servicing requirements under TILA and RESPA.

Qualified Mortgage Requirements - Ability to Repay Requirements. The Ability to Repay Rule requires mortgage lenders to make a reasonable and good faith determination that, at the time the loan is consummated, the consumer has a reasonable ability to repay the loan. The Dodd-Frank Act provides that a creditor may presume that a borrower will be able to repay a loan if the loan has certain low-risk characteristics that meet the definition of a qualified mortgage ("QM Rule").

In adopting the QM Rule, the CFPB established rigorous underwriting and product feature requirements for the loans to be deemed qualified mortgages. Within those regulations, the CFPB created a special exemption for Fannie Mae and Freddie Mac for a period ending upon the earlier of the end of conservatorship or January 10, 2021, which allows any loan that meets the GSE underwriting and product guidelines to be a qualified mortgage. In January 2019, the CFPB released a five year review of the Qualified Mortgage and Ability to Repay rule, as required by the Dodd-Frank Act. While this report provided observations on the impact of the QM rule on the market based on CFPB research, it did not include any policy recommendations or propose amending the current rules.

The QM Rule requires that points and fees paid at or prior to closing cannot exceed 3% of the total loan amount, with higher points and fees thresholds provided for loan amounts below $100,000. Any mortgage insurance paid by the borrower at the time of loan closing that is not refundable on a pro-rata basis must be applied toward the 3% points and fee calculation. Additionally, any refundable borrower-paid insurance premiums paid at closing in excess of 175 basis points must be included in a lender's QM 3% points and fees calculation. There are no similar restrictions on the points and fees associated with FHA premiums, and thus FHA has a market advantage for smaller balance loans where the 3% cap is more easily reached.

The Dodd-Frank Act also granted the FHA, VA and the U.S. Department of Agriculture flexibility to establish their own definitions of qualified mortgages for their insurance guaranty programs. Both the FHA and VA have created their own definition of qualified mortgages that differ from both the CFPB's definition and the current underwriting and product guidelines at the GSEs that are subject to the special exemption. These alternate definitions of qualified mortgages are more favorable to lenders and mortgage holders than the CFPB QM Rule that applies to the GSEs and the markets in which we operate, which could drive business to these agencies and have a negative impact on our mortgage insurance business.

Qualified Residential Mortgage Regulations - Securitization Risk Retention Requirements. The Dodd-Frank Act requires securitizers to retain at least 5% of the credit risk associated with mortgage loans that they transfer, sell or convey, unless the mortgage loans are qualified residential mortgages ("QRMs") or are insured by the FHA or another federal agency. Under applicable federal regulations, a QRM is generally defined as a mortgage meeting the requirements of a qualified mortgage under the CFPB's QM Rule described above. Because of the capital support

provided by the U.S. government to the GSEs, the GSEs satisfy the proposed risk retention requirements of the Dodd-Frank Act while they are in conservatorship, so sellers of loans to the GSEs currently are not subject to the risk retention requirements referenced above. This means that securitizers would not be required to retain risk under the final QRM rule on loans that are guaranteed by the GSEs while in conservatorship. The final rule requires the agencies that implemented the rule to review the QRM definition no later than four years after its effective date (*i.e.*, December 2018) and every five years thereafter, and allows each agency to request a review of the definition at any time.

Mortgage Servicing Rules. Among its products and services, our Services business provides services to financial institutions that are focused on evaluating compliance with and establishing processes and procedures to implement national

and state servicing standards, including the CFPB's mortgage servicing regulations. The Dodd-Frank Act amended and expanded upon mortgage servicing requirements under TILA and RESPA. The CFPB amended Regulation Z (promulgated under TILA) and Regulation X (promulgated under RESPA) to conform these regulations to the new statutory requirements. Among other things, the rules include new or enhanced requirements for handling loans that are in default. Complying with the mortgage servicing rules has been challenging and costly for many loan servicers. Since the final rules were adopted in 2014, the CFPB has clarified those rules through subsequent rulemakings and provided guidance on how servicers must apply them in certain circumstances. In October 2017 the CFPB issued an interim final rule that amended provisions of the Regulation X mortgage servicing rules that it had previously issued in 2016. Along with its review of the Qualified Mortgage and Ability to Repay Rule in January of 2019, the CFPB also provided an assessment of the mortgage servicing rules. The CFPB offered observations regarding the impact of the rules on foreclosure avoidance and servicing costs, but again offered no specific proposed action regarding the rules going forward.

Other. In addition to the foregoing, the Dodd-Frank Act establishes a Federal Insurance Office within the U.S. Treasury (the "FIO"). While the FIO does not have a general supervisory or regulatory authority over the business of insurance, the director of this office performs various functions with respect to insurance, such as serving as a non-voting member of the Financial Stability Oversight Council. It is difficult to predict whether legislators or other executive agencies will pursue the development and implementation of federal standards for the mortgage insurance industry. However, to the extent these recommendations are acted upon by legislators or other executive action, a divergence from the current system of state regulation could significantly change compliance burdens and possibly impact our financial condition.

RESPA

Settlement service providers in connection with the origination or refinance of a federally regulated mortgage loan are subject to RESPA and Regulation X. Under the Dodd-Frank Act, the authority to implement and enforce RESPA was transferred to the CFPB. RESPA authorizes the CFPB, the U.S. Department of Justice, state attorneys general and state insurance commissioners to bring civil enforcement actions, and also provides for criminal penalties and private rights of action.

Mortgage insurance and other products and services provided by Radian's affiliates are considered settlement services for purposes of RESPA. The anti-referral fee and anti-kickback provisions of Section 8 of RESPA generally provide, among other things, that settlement service providers are prohibited from paying or accepting anything of value in connection with the referral of a settlement service or sharing in fees for those services. RESPA also prohibits requiring the use of an affiliate for settlement services and requires certain information to be disclosed if an affiliate is used to provide the settlement services. In addition to mortgage insurance, through our Services business we offer a broad array of both settlement and non-settlement services to our customers, including real estate, valuation, appraisal, title and closing services. To the extent products and services provided by our Services business are settlement services for purposes of RESPA, the anti-referral fee, anti-kickback, and required use provisions of RESPA may apply which could impact how these products and services are marketed and sold.

In the past, we and other mortgage insurers have faced lawsuits alleging, among other things, that our captive reinsurance arrangements constituted unlawful payments to mortgage lenders under RESPA. We also have been subject to lawsuits alleging that our Pool Insurance and contract underwriting services violated RESPA. In addition, we and other mortgage insurers have been subject to inquiries and investigative demands from state and federal governmental agencies, including the CFPB, requesting information relating to captive reinsurance. In April 2013, we reached a settlement with the CFPB that concluded its investigation with respect to Radian Guaranty without any findings of wrongdoing. As part of the settlement, Radian Guaranty paid a civil penalty and agreed that it would not enter into any new captive reinsurance agreement or reinsure any new loans under any existing captive reinsurance agreement for a period of 10 years ending in 2023. In June 2015, Radian Guaranty executed a Consent Order with the Minnesota Department of Commerce that resolved the Minnesota Department of Commerce's outstanding inquiries related to captive reinsurance arrangements involving mortgage insurance in Minnesota without any findings of

wrongdoing. As part of the Consent Order, Radian Guaranty paid a civil penalty and agreed not to enter into new captive reinsurance arrangements until June 2025. We have not entered into any new captive reinsurance arrangements since 2007. In addition, under the PMIERs, the GSEs prohibit private mortgage insurers from entering into captive insurance arrangements.

The CFPB amended Regulations X and Z to establish significant new disclosure requirements and forms in Regulation Z for most closed-end consumer credit transactions secured by real property through a regulation known as the "TRID rule." The TRID rule became effective October 3, 2015, and mandates that a series of enhanced disclosures be provided to consumers in connection with the origination of most types of residential mortgage loans. Implementation of the TRID rule resulted in an increased burden on loan originators to comply. In addition, difficulties implementing the new disclosure rules and uncertainty with respect to certain aspects of the TRID rule, including uncertainty as to whether a closed loan fully complies with the TRID

rule requirements, negatively impacted the purchase of loans in the secondary market by private investors. In July 2016, the CFPB issued proposed amendments to the TRID rule to formalize CFPB guidance and provide greater clarity and certainty for market participants, and finalized these amendments in the form of new TRID rules in July of 2017, known as "TRID 2.0." Mandatory compliance with TRID 2.0 became effective in October 2018. We believe that the guidance that has been provided by the CFPB, together with TRID 2.0, will reduce the uncertainty and remove certain impediments to originating new loans that followed the implementation of the original TRID rule.

Homeowner Assistance Programs

The Emergency Economic Stimulus Act of 2008 ("EESA") included a requirement to "maximize assistance to homeowners and encourage mortgage servicers to take advantage of available programs (including the Hope for Homeowners program) to minimize foreclosures." In 2008, the U.S. Treasury announced the Homeowner Affordability and Stability Plan to restructure or refinance mortgages to avoid foreclosures through: (i) refinancing mortgage loans through HARP; (ii) modifying first- and second-lien mortgage loans through HAMP and the Second Lien Modification Program; and (iii) offering other alternatives to foreclosure through the Home Affordable Foreclosure Alternatives Program. HAMP expired in December 2016 and was replaced with the "Flex Modification" program that will offer payment relief similar to HAMP. Refinancing under the HARP program expired on December 31, 2018. The GSEs have since established high LTV streamlined refinance programs in coordination with FHFA to continue providing refinancing options to avoid foreclosure. These programs began enrolling participants in November 2018.
In response to the extensive damage caused by hurricanes during 2017 and 2018, we are supporting the disaster relief policies issued by the GSEs that provide various forms of assistance to accommodate the financial needs of homeowners in the affected areas, including temporary suspension of foreclosures, penalty waivers, and forbearance or modification plans that provide more flexible mortgage payment terms.

The SAFE Act

The SAFE Act and its state law equivalents require mortgage loan originators to be licensed with state agencies in the states in which they operate and/or registered with the Nationwide Mortgage Licensing System and Registry (the "Registry"). The Registry is a database established by the Conference of State Bank Supervisors and the American Association of Residential Mortgage Regulators that tracks the licensing and eligibility requirements of loan originators. Among other things, the database was established to support the licensing of mortgage loan originators by each state. As part of this licensing and registration process, loan originators who are employees of institutions other than depository institutions or certain of their subsidiaries that, in each case, are regulated by a federal banking agency, must generally be licensed under the SAFE Act guidelines enacted by each state in which they engage in loan origination activities and registered with the Registry. The entity and its employees that provide our contract underwriting services are compliant with the SAFE Act in all 50 states and the District of Columbia.

Mortgage Insurance Cancellation

The HPA imposes certain cancellation and termination requirements for borrower-paid private mortgage insurance and requires certain disclosures to borrowers regarding their rights under the law. The HPA also requires certain disclosures for loans covered by lender-paid private mortgage insurance. Specifically, the HPA provides that private mortgage insurance on most loans originated on or after July 29, 1999 may be cancelled at the request of the borrower once the LTV reaches 80% of the original value, provided that certain conditions are satisfied. Under HPA, private mortgage insurance on borrower-paid mortgage insurance must be canceled automatically on the date the LTV is scheduled to reach 78% of the original value (or, if the loan is not current on that date, on the date that the loan becomes current).
The HPA establishes special rules for the termination of private mortgage insurance in connection with loans that are "high risk." The HPA does not define "high risk" loans, but leaves that determination to the GSEs for loans up to the GSE conforming loan limits and to lenders for any other loan. For "high risk" loans, private mortgage insurance must be terminated on the date that the LTV is first scheduled to reach 77% of the unpaid principal balance. In no case, however, may private mortgage insurance be required beyond the midpoint of the amortization period of the loan if the borrower is current on the payments required by the terms of the mortgage.

The Fair Credit Reporting Act (the "FCRA")

The FCRA imposes restrictions on the permissible use of credit report information and disclosures that must be made to consumers when information from their credit reports is used. The FCRA has been interpreted by some Federal Trade Commission staff to require mortgage insurance companies to provide "adverse action" notices to consumers in the event an

application for mortgage insurance is declined or a higher premium is charged based on the use, wholly or partly, of information contained in the consumer's credit report.

Privacy and Information Security - Gramm-Leach-Bliley Act of 1999 (the "GLBA") and Other Regulatory Requirements

As part of our business, we, and certain of our subsidiaries, maintain large amounts of confidential information, including non-public personal information on consumers and our employees. We and our customers are subject to a variety of privacy and information security laws and regulations. The GLBA imposes privacy requirements on financial institutions, including obligations to protect and safeguard consumers' nonpublic personal information and records, and limitations on the re-use of such information. The GLBA is enforced by state insurance regulators and by federal regulatory agencies. In addition, many states have enacted privacy and data security laws that impose compliance obligations beyond GLBA, including obligations to provide notification in the event that a security breach results in a reasonable belief that unauthorized persons may have obtained access to consumer nonpublic personal information.

Federal and state agencies have increased their focus on compliance obligations related to privacy, data security and cybersecurity. The CFPB, Office of the Comptroller of the Currency and non-governmental regulatory agencies, such as the Financial Industry Regulatory Authority (FINRA), have announced new compliance measures and enforcement efforts designed to monitor and regulate the protection of personal consumer data, including with respect to: the development and delivery of financial products and services; underwriting; mortgage servicing; credit reporting; digital payment systems; and vendor management. For information regarding the New York Department of Financial Services cybersecurity regulations and the California Consumer Privacy Act see "—State Regulation—*Cybersecurity."*

Asset Backed Securitizations

Our Services business provides services to issuers of and investors in asset backed securitizations and similar transactions. As a result, regulations impacting the asset backed securitization market may impact our Services business directly, or indirectly through the regulation of our Services customers.

In August 2014, the SEC adopted final rules under Regulation AB that substantially revised the offering process, disclosure and reporting requirements for offerings of ABS. The Regulation AB II rules implement several key areas of reform. Specifically, Regulation AB II introduces several new requirements related to public offerings of ABS, including the following that are significant for our Services business:

- Asset-level disclosure requirements for ABS backed by residential mortgage loans, commercial mortgage loans, automobile loans or leases, re-securitizations of ABS backed by any of those asset types, and debt securities; and
- A requirement that the transaction documents provide for the appointment of an "asset representations manager" to review the pool assets when certain trigger events occur.

In June 2015 the final credit rating agency reform rules issued by the SEC became effective. These rules for nationally recognized statistical ratings organizations ("NRSRO") include requirements that are applicable to providers of third-party due diligence services (such as our Services business) for both publicly and privately issued Exchange Act ABS. Among other things, the NRSRO rules require that any issuer or underwriter of registered or unregistered ABS that are to be rated by a NRSRO furnish a form filed on the SEC's EDGAR system that describes the findings and conclusions of any third-party due diligence report obtained by the issuer or underwriter. In addition, the rule requires that a due diligence firm (such as our Services business) that is engaged to perform services in connection with any rated ABS issuance furnish a form that describes the scope of due diligence services performed and a summary of their findings and conclusions; this form is required to be posted on the ABS issuer's password-protected website.

Mortgage Insurance Tax Deduction

In 2006, Congress enacted the private mortgage insurance tax deduction in order to foster homeownership. The deduction was enacted on a temporary basis and it expired at the end of 2011. Since 2011, the private mortgage insurance tax deduction has been extended four times, most recently for insurance premiums paid through December 31, 2017. It has not yet been extended for the 2018 tax year, and it is unclear if and when it may be extended. There continue to be legislative efforts to make this tax deduction permanent, but to date this has not been enacted. It is

difficult to predict whether the deduction will be extended in the future.

Basel III

Over the past few decades, the Basel Committee on Banking Supervision (the “Basel Committee”) has established international benchmarks for assessing banks’ capital adequacy requirements (“Basel III”). Included within those benchmarks

are capital standards related to residential lending and securitization activity and importantly for private mortgage insurers, the capital treatment of mortgage insurance on those loans. These benchmarks are then interpreted and implemented via rulemaking by U.S. banking regulators. In July 2013, the U.S. banking regulators promulgated regulations, referred to as the "U.S. Basel III Rules," to implement significant elements of the Basel framework. The U.S. Basel III Rules, among other things, revise and enhance the U.S. banking agencies' general risk-based capital rules. Today, the U.S. Basel III Rules assign a 20%, 50% or 100% risk weight to loans secured by one-to-four-family residential properties. Generally, under the U.S. Basel III Rules in place today, the explicit government guarantees (FHA/VA/USDA) receive a 0% risk weight, and Fannie Mae and Freddie Mac related loans receive a 20% risk weight. Non-government related mortgage exposures secured by a first lien on a one-to-four family residential property that are prudently underwritten and that are performing according to their original terms receive a 50% risk weighting. All other one-to-four family residential mortgage loans are assigned a 100% risk weight.

In December 2014, the Basel Committee issued a proposal for further revisions to Basel III. It proposed adjustments to the risk weights for residential mortgage exposures that take into account LTV ratio and the borrower's ability to service a mortgage, which were not previously addressed by Basel III. The proposed LTV ratio did not take into consideration any credit enhancement, including private mortgage insurance, but in March 2015, the U.S. banking regulators clarified that for purposes of the U.S. Basel III Rules, calculation of LTV ratios can account for credit enhancement such as private mortgage insurance in determining whether a loan is made in accordance with prudent underwriting standards for purposes of receiving the preferred 50% risk weight. The comment period for this proposal closed in March 2015, and in December 2015, the Basel Committee released a second proposal which retained the LTV provisions of the initial draft, but not the provisions pertaining to a borrower's ability to service a mortgage (the "2015 Basel Committee Proposal"). The comment period for the 2015 Basel Committee Proposal closed in March 2016. To date, federal regulators have not adopted or implemented any new regulations, including based on these proposals, that update or modify the U.S. Basel III Rules.

The revised and final recommendations from the Basel Committee with respect to Basel III were published in December 2017 (the "2017 Basel Committee III Recommendations"), and finalized risk weighting guidelines for residential mortgage exposures. These rules recognize guarantees provided by sovereign governments (such as FHA, VA, USDA and Ginnie Mae) as off-setting the capital requirements, resulting in a 0% risk weight. While the 2017 Basel Committee III Recommendations include consideration of LTV ratios, including the impact of credit enhancement provided by third-party private mortgage insurance and the GSEs on LTV ratios, the credit enhancement provided by third-party private mortgage insurance and the GSEs would have higher risk weightings than the explicitly government guaranteed products, putting loans insured by private mortgage insurance at a disadvantage. It remains unclear whether new guidelines will be proposed or finalized in the U.S. in response to the most recent 2017 Basel III Committee Recommendations.

See "Item 1A. Risk Factors—*The implementation of the Basel III guidelines may discourage the use of mortgage insurance.*"

Employees

At December 31, 2018, we had 1,942 employees employed by Radian Group and its subsidiaries. Management considers employee relations to be good.

Item 1A. Risk Factors.

Radian Guaranty may fail to maintain its eligibility status with the GSEs.

In order to be eligible to insure loans purchased by the GSEs, mortgage insurers such as Radian Guaranty must meet the GSEs' eligibility requirements, or PMIERs. The PMIERs are comprehensive, covering virtually all aspects of the business of a private mortgage insurer, including internal risk management and quality controls, the relationship between the GSEs and the approved insurer and the approved insurer's financial condition, as well as extensive requirements related to the conduct and operations of a mortgage insurer's business. If Radian Guaranty is unable to satisfy the requirements set forth in the PMIERs, Freddie Mac and/or Fannie Mae could restrict it from conducting certain types of business with them or take actions that may include not purchasing loans insured by Radian Guaranty.

The PMIERs financial requirements currently require that a mortgage insurer's Available Assets meet or exceed its Minimum Required Assets. At December 31, 2018, Radian Guaranty was in compliance with the PMIERs financial requirements and had Available Assets under the PMIERs of $3.5 billion, which resulted in an excess or "cushion" of $567 million over its Minimum Required Assets of $2.9 billion. Radian Guaranty's ability to continue to comply with the PMIERs financial requirements could be impacted by: (i) the product mix of our NIW and factors affecting the performance of our mortgage insurance portfolio, including our level of defaults, prepayments, the losses we incur on new or existing defaults and

the credit characteristics of our mortgage insurance; (ii) the amount of credit that we receive under the PMIERs financial requirements for our third-party reinsurance transactions (which is subject to initial and ongoing review by the GSEs), including the credit received for our quota share and excess-of-loss reinsurance programs; and (iii) potential updates to the PMIERs, including an increase in the capital requirements under the PMIERs financial requirements.

Under the PMIERs financial requirements there are increased financial requirements for loans with a higher likelihood of default and/or certain credit characteristics, such as higher LTVs and lower FICO scores, as well as for loans originated after January 1, 2016 that are insured under lender-paid mortgage insurance policies not subject to automatic termination under the HPA. Therefore, if our mix of business includes more loans that are subject to these increased financial requirements, it increases the amount of Available Assets that Radian Guaranty is required to hold. Depending on the circumstances, we may limit the type and volume of business we are willing to write for certain of our products based on the increased financial requirements associated with certain loans. This could reduce the amount of NIW we write, which could reduce our revenues. Additionally, as we have experienced in the past, our insured loans may experience increased delinquencies in the future. Increases in delinquencies, including as a result of natural disasters, would subject Radian Guaranty to an increase in Minimum Required Assets under the PMIERs, and therefore, could impact our compliance with the PMIERs or negatively impact our results of operations.

The GSEs may amend the PMIERs at any time, although the GSEs have communicated that for material changes, including material changes affecting Minimum Required Assets, they will generally provide written notice 180 days prior to the effective date. The GSEs also have broad discretion to interpret the PMIERs, which could impact the calculation of Radian Guaranty’s Available Assets and/or Minimum Required Assets. On September 27, 2018, the GSEs issued PMIERs 2.0, which will become effective on March 31, 2019. Radian expects to comply with PMIERs 2.0 and to continue to maintain a significant excess of Available Assets over Minimum Required Assets as of the effective date. If applied as of December 31, 2018, the changes under PMIERs 2.0 would not have resulted in a material change in Radian’s Minimum Required Assets, but would have reduced Radian’s PMIERs cushion. The reduction in Radian Guaranty’s PMIERs cushion is primarily due to a reduction in Available Assets of approximately $215 million as a result of the elimination in PMIERS 2.0 of any credit for future premiums for insurance policies written prior to and including 2008, which is permitted under the current PMIERs. If Radian Guaranty’s Available Assets and Minimum Required Assets were calculated as if the PMIERs 2.0 requirements were in effect, Radian Guaranty’s Available Assets at December 31, 2018 would have resulted in an excess or “cushion” of approximately $340 million, or 12%, over its Minimum Required Assets. We expect the GSEs to continue to update the PMIERs periodically in the future, including if and when the CCF is finalized.

Compliance with the PMIERs financial requirements could impact our holding company liquidity. If additional cash from Radian Group is required to support Radian Guaranty’s compliance with the PMIERs financial requirements, it will leave less liquidity to satisfy Radian Group’s other obligations. Depending on the amount of liquidity that is utilized from Radian Group, we may be required (or may decide) to seek additional capital by incurring additional debt, issuing additional equity, or selling assets, which we may not be able to do on favorable terms, if at all.

In addition to the PMIERs financial requirements, the PMIERs contain requirements related to the operations of our mortgage insurance business, including extensive operational requirements in areas such as claim processing, loss mitigation, document retention, underwriting, quality control, reporting and monitoring, among others. These increased operational requirements have resulted in additional expenses and have required substantial time and effort from management and our employees, which we expect will continue.

The PMIERs prohibit Radian Guaranty from engaging in certain activities such as insuring loans originated or serviced by an affiliate (except under certain circumstances) and require Radian Guaranty to obtain the prior consent of the GSEs before taking many actions, which may include entering into various intercompany agreements and commuting or reinsuring risk, among others. These restrictions could prohibit or delay Radian Guaranty from taking certain actions that would be advantageous to it or its affiliates.

Although we expect Radian Guaranty to retain its eligibility status with the GSEs and to continue to comply with the PMIERs financial requirements, including as updated by PMIERs 2.0 or in the future, we cannot provide assurance that this will occur. Loss of Radian Guaranty's eligibility status with the GSEs would have an immediate and material adverse impact on the franchise value of our mortgage insurance business and our future prospects, as well as a material negative impact on our future results of operations and financial condition.

Our insurance subsidiaries are subject to comprehensive state insurance regulations and other requirements, which we may fail to satisfy.

We and our insurance subsidiaries are subject to comprehensive, detailed regulation by the insurance regulators in the states where they are licensed to transact business. These regulations are principally designed for the protection of our insurance policyholders rather than for the benefit of our investors. Insurance laws vary from state to state, but generally grant broad supervisory powers to examine insurance companies and enforce rules or exercise discretion affecting almost every significant aspect of the insurance business, including the power to revoke or restrict an insurance company's ability to write new business. Among other matters, the state insurance regulators impose various capital requirements on our insurance subsidiaries.

State insurance capital requirements for our mortgage insurance subsidiaries include Risk-to-capital ratios, other risk-based capital measures and surplus requirements that may limit the amount of insurance that our mortgage insurance subsidiaries write. Similarly, our title insurance subsidiary is required to maintain statutory premium reserves that vary by state and is subject to periodic reviews of certain financial performance ratios, and the states in which it is licensed can impose additional capital requirements based on the results of those ratios. Our failure to maintain adequate levels of capital, among other things, could lead to intervention by the various insurance regulatory authorities, which could materially and adversely affect our business, business prospects and financial condition.

If Radian Guaranty is not in compliance with a state's applicable Statutory RBC Requirement, it may be prohibited from writing new business in that state until it is back in compliance or it receives a waiver of, or similar relief from, the requirement. As of December 31, 2018, Radian Guaranty was in compliance with all applicable Statutory RBC Requirements. In states that do not have a Statutory RBC Requirement, it is not clear what actions the applicable state regulators would take if a mortgage insurer fails to meet the Statutory RBC Requirement established by another state. If Radian Guaranty were to fail to meet the Statutory RBC Requirement in one or more states, it could be required to suspend writing business in some or all of the states in which it does business. In addition, the GSEs and our mortgage lending customers may decide not to conduct new business with Radian Guaranty (or may reduce current business levels) or impose restrictions on Radian Guaranty while it was not in compliance. The franchise value of our mortgage insurance business likely would be significantly diminished if we were prohibited from writing new business or restricted in the amount of new business we could write in one or more states.

Radian Group also may be required to provide capital support for Radian Guaranty and its affiliated insurers if additional capital is required by those subsidiaries pursuant to future changes to insurance laws and regulations. The NAIC is in the process of reviewing the minimum capital and surplus requirements for mortgage insurers and considering changes to the Model Act. In the event the NAIC adopts changes to the Model Act, we expect that the capital requirements in states that adopt the new Model Act may increase as a result of the changes. Although the outcome of this process remains uncertain, we believe that if changes are made to the Model Act it will not result in financial requirements that require greater capital than the level currently required under the PMIERs financial requirements.

The mortgage insurance industry has always been highly competitive with respect to pricing. Our mortgage insurance subsidiaries' premium rates and policy forms are generally subject to regulation in every state in which they are licensed to transact business. These regulations are intended to protect policyholders against the adverse effects of excessive, inadequate or unfairly discriminatory rates and to encourage competition in the insurance marketplace. In most states where our insurance subsidiaries are licensed, premium rates and policy forms must be filed with the state insurance regulatory authority and, in some states, must be approved, before their use. We may be subject to regulatory inquiries or examinations with respect to our mortgage insurance premium rates and policy forms.

Our title insurance business is subject to extensive rate regulation by the applicable state agencies in the states in which it operates. Title insurance rates are regulated differently in various states, with some states requiring the subsidiaries to file and receive approval of rates before such rates become effective and some states promulgating the rates that can be charged. In general, premium rates are determined on the basis of historical data for claim frequency and severity as well as related production costs and other expenses.

Given that the premium rates for our insurance subsidiaries are highly regulated, we could lose business opportunities and fail to successfully implement our business strategies if we are unable to respond to competitor pricing actions and our customers' demands in a timely and compliant manner.

The credit performance of our mortgage insurance portfolio is impacted by macroeconomic conditions and specific events that affect the ability of borrowers to pay their mortgages.

As a seller of mortgage credit protection, our results are subject to macroeconomic conditions and specific events that impact the housing finance and real estate markets, including events that impact mortgage originations and the credit

performance of our mortgage insurance portfolio. Many of these conditions are beyond our control, including , housing prices, unemployment levels, interest rate changes, the availability of credit and other factors that may be derived from national and regional economic conditions. In general, a deterioration in economic conditions increases the likelihood that borrowers will be unable to satisfy their mortgage obligations. A deteriorating economy can adversely affect housing values, which in turn can influence the willingness of borrowers to continue to make mortgage payments despite having the financial resources to do so.

Mortgage defaults also can occur due to a variety of specific events affecting borrowers, including death or illness, divorce or other family problems, unemployment, or other events. In addition, factors impacting regional economic conditions, acts of terrorism, war or other severe conflicts, event-specific economic depressions or other catastrophic events such as natural disasters could result in increased defaults due to the impact of such events on the ability of borrowers to satisfy their mortgage obligations and the value of affected homes.

Unfavorable macroeconomic developments and the other factors cited above could have a material negative impact on our results of operations and financial condition.

The length of time that our mortgage insurance policies remain in force could decline and result in a decrease in our future revenues.

As of December 31, 2018, 70% of our total primary IIF consists of policies for which we expect to receive premiums in the future, typically through Monthly Premium Policies. As a result, most of our earned premiums are derived from insurance that was written in prior years. The length of time that this insurance remains in force, which we refer to as the Persistency Rate, is a significant driver of our future revenues, with a lower overall Persistency Rate generally reducing our future revenues. The factors affecting the length of time that our insurance remains in force include:

- prevailing mortgage interest rates compared to the mortgage rates on our IIF, which affects the incentive for borrowers to refinance (i.e., lower current interest rates make it more attractive for borrowers to refinance and receive a lower interest rate);
- applicable policies for mortgage insurance cancellation, along with the current value of the homes underlying the mortgages in our IIF;
- the credit policies of lenders, which may make it more difficult for homeowners to refinance loans; and
- economic conditions that can affect a borrower’s decision to pay off a mortgage earlier than required.

If these or other factors cause a decrease in the length of time that our Monthly Premium Policies (or other policies for which we expect to receive premiums in the future) remain in force, our future revenues could be negatively impacted, which could negatively impact our results of operations and financial condition.

Our Loss Mitigation Activity is not expected to mitigate mortgage insurance losses to the same extent as in prior years; Loss Mitigation Activity could continue to negatively impact our customer relationships.

As part of our claims management process we pursue opportunities to mitigate losses both before and after we receive claims, including processes to ensure claims are valid. Following the financial crisis, our Loss Mitigation Activities, such as Rescissions, Claim Denials and Claim Curtailments, increased significantly in response to the poor underwriting, servicer negligence and general non-compliance with our insurance policies that was prevalent in the period leading up to the financial crisis. These Loss Mitigation Activities materially mitigated our paid losses during this period and resulted in a significant reduction in our loss reserves. Following the financial crisis, mortgage underwriting and servicing have generally improved, and the amount of Loss Mitigation Activity required with respect to the claims we have received in more recent periods has significantly decreased. As a result, our future Loss Mitigation Activity is not expected to mitigate our paid losses to the same extent as it did in the years following the financial crisis.

In addition, under our 2014 Master Policy, for NIW after October 1, 2014, our rights to conduct Loss Mitigation Activity generally are more limited than under our prior master insurance policies. Radian Guaranty offers 12-month and 36-month rescission relief programs in accordance with the specified terms and conditions set forth in our 2014 Master Policy. Further, the FHFA and the GSEs have proposed revised GSE Rescission Relief Principles to, among other things, further limit the circumstances under which mortgage insurers may rescind coverage. We are in the

process of incorporating these principles into a new master policy, which we expect will be effective during the second half of 2019. We currently are in discussions with the GSEs regarding the form of this new master policy, including as it relates to these proposed principles, which if adopted, are likely to further reduce our ability to rescind insurance coverage in the future. A reduction in the Loss Mitigation rights available under our master policy could result in higher losses than would have been the case under our existing Master Policies.

Our Loss Mitigation Activities and claims paying practices have resulted in disputes with certain of our customers and in some cases, damaged our relationships with customers, resulting in a loss of business. While we have resolved many of these disputes, a risk remains that our Loss Mitigation Activities or claims paying practices could continue to have a negative impact on our relationships with customers or potential customers. Further, disputes with our customers that are not resolved could result in additional arbitration or judicial proceedings beyond those we are currently facing. See "Item 3. Legal Proceedings." To the extent that past or future Loss Mitigation Activities or claims paying practices impact our customer relationships, our competitive position could be adversely affected, resulting in the potential loss of business and impacting our results of operations.

Changes in the charters, business practices, or role of the GSEs in the U.S. housing market generally, could significantly impact our mortgage insurance business.

Our current business model is highly dependent on the GSEs as the GSEs are the primary beneficiaries of most of our mortgage insurance policies. The GSEs' federal charters generally require credit enhancement for low down payment mortgage loans (i.e., a loan amount that exceeds 80% of a home's value) in order for such loans to be eligible for purchase by them. Lenders generally have used private mortgage insurance to satisfy this credit enhancement requirement. As a result, low down payment mortgages purchased by the GSEs generally are insured with private mortgage insurance. In order to be eligible to insure loans purchased by the GSEs, mortgage insurers such as Radian Guaranty must meet the GSEs' eligibility requirements, or PMIERs.

The GSEs' business practices may be impacted by their results of operations, by administrative policy decisions (such as a desire to increase the competitiveness of private capital executions in the secondary mortgage market) as well as by legislative or regulatory changes. Since September 2008, the GSEs have been operating under the conservatorship of the FHFA. With respect to loans purchased by the GSEs, changes in the business practices of the GSEs, which can be implemented by the GSEs acting independently or through their conservator, the FHFA, could negatively impact our mortgage insurance business and financial performance, including changes to:

- eligibility requirements for a mortgage insurer to become and remain an approved eligible insurer for the GSEs;
- underwriting standards on mortgages they purchase;
- policies or requirements that may result in a reduction in the number of mortgages they acquire;
- the national conforming loan limit for mortgages they acquire;
- the level of mortgage insurance required, including expanding the loans that are eligible for reduced insurance coverage;
- the terms on which mortgage insurance coverage may be canceled before reaching the cancellation thresholds established by law;
- the terms required to be included in master policies for the mortgage insurance policies they acquire, including limitations on our ability to mitigate losses on insured mortgages that are in default;
- the amount of loan level price adjustments (based on risk) or guarantee fees (which may result in a higher cost to borrowers) that the GSEs charge on loans that require mortgage insurance; and
- the degree of influence that the GSEs have over a mortgage lender's selection of the mortgage insurer providing coverage.

The FHFA has called for the GSEs to transfer a meaningful portion of credit risk, known as a "credit risk transfer," to the private sector. This mandate builds upon the goals set in each of the last three years for the GSEs to increase the role of private capital by experimenting with different forms of transactions and structures. From 2013 through June 2018 the GSEs transferred risk on over $2.5 trillion of unpaid principal balance, and we expect these credit risk transfer transactions to continue. We have been participating in these credit risk transfer programs developed by Fannie Mae and Freddie Mac. Additional information about these programs may be found in Item 1. Business, see "Regulation—Federal Regulation—*Housing Finance Reform*" and "Mortgage Insurance—Mortgage Insurance Business Overview—*Mortgage Insurance Products—Other Mortgage Insurance Products—GSE Credit Risk Transfer*."

It is difficult to predict what other types of credit risk transfer transactions and structures may be used in the future . If any of the credit risk transfer transactions and structures were to displace primary loan level or standard levels of

mortgage insurance, the amount of insurance we write may be reduced, which could negatively impact our franchise value, results of operations and financial condition. As a result, the impact of any credit risk transfer products and transactions or other

structures implemented by the GSEs is uncertain and hard to predict. For example, in 2018, Freddie Mac and Fannie Mae announced the launch of limited pilot programs, IMAGIN and EPMI, respectively, as alternative ways for lenders to sell to the GSEs loans with LTVs greater than 80%. These investor-paid mortgage insurance programs, in which insurance is acquired directly by each GSE, have many of the same features and represent an alternative to traditional private mortgage insurance products that are provided to individual lenders. Participants in IMAGIN and EPMI are not subject to compliance with the PMIERs, which may create a competitive disadvantage for private mortgage insurers if these pilot programs are expanded. See "Item 1. Business—Regulation—Federal Regulation—*Housing Finance Reform*"

Since the FHFA was appointed as conservator of the GSEs, there has been a wide range of legislative proposals to reform the U.S. housing finance market, including proposals for GSE reform ranging from some that advocate nearly complete privatization and elimination of the role of the GSEs to others that support a system that combines a federal role with private capital. In addition, the Trump administration and U.S. Treasury have stated that they are seeking to advance housing finance reform, particularly if the U.S. Congress does not take action to end the current conservatorship of the GSEs. Under current law, the FHFA has significant discretion with respect to the future state of the GSEs, including the ability to place the GSEs into receivership without further legislative action. The term of the most recent director of the FHFA ended in January 2019 and an acting director was appointed, pending the U.S. Senate's confirmation of the Administration's nominee to lead the FHFA. With new leadership at FHFA, we believe there may be an increased likelihood that the Administration could take action to reform the GSEs through current authorities of the director under The Housing and Economic Recovery Act of 2008 and through Executive Order.

The future structure of the residential housing finance system remains uncertain, including whether comprehensive housing reform legislation will be adopted and, if so, what form it may ultimately take. It is difficult to predict the impact of any changes on our business. See "Item 1. Business—Regulation—Federal Regulation—*Housing Finance Reform*."

Although we believe that traditional private mortgage insurance will continue to play an important role in any future housing finance structure, developments in the practices of the GSEs, including potentially new federal legislation that reduces the level of private mortgage insurance coverage used by the GSEs as credit enhancement, or even eliminates the requirement, may diminish the franchise value of our mortgage insurance business and materially and adversely affect our business prospects, results of operations and financial condition.

A decrease in the volume of mortgage originations could result in fewer opportunities for us to write new mortgage insurance business.

The amount of new business we write depends, among other things, on a steady flow of low down payment mortgages that benefit from our mortgage insurance. The volume of low down payment mortgage originations is impacted by a number of factors, including:

- restrictions on mortgage credit due to changes in lender underwriting standards, capital requirements affecting lenders, regulatory requirements, and the health of the private securitization market;
- mortgage interest rates;
- the health of the domestic economy generally, as well as specific conditions in regional and local economies;
- housing affordability;
- tax laws and policies and their impact on, among other things, deductions for mortgage insurance premiums, mortgage interest payments and real estate taxes;
- demographic trends, including the rate of household formation;
- the rate of home price appreciation;
- government housing policy encouraging loans to first-time homebuyers; and
- the practices of the GSEs, including the extent to which the guaranty fees, loan level price adjustments (based on risk), credit underwriting guidelines and other business terms provided by the GSEs affect the cost of mortgages and lenders' willingness to extend credit for low down payment mortgages.

If the overall volume of new mortgage originations declines, we could experience a reduced opportunity to write new insurance business and likely will be subject to increased competition, which could negatively affect our business

prospects, results of operations and our financial condition.

Our NIW and franchise value could decline if we lose business from significant customers.
Our mortgage insurance business depends on our relationships with our customers. Our customers place insurance with us directly on loans that they originate and they also do business with us indirectly through purchases of loans that already have our mortgage insurance coverage. Our relationships with our customers may influence both the amount of business they do with us directly and also their willingness to continue to approve us as a mortgage insurance provider for loans that they purchase. The loss of business from significant customers could have an adverse effect on the amount of new business we are able to write, and consequently, our franchise value.
During 2018, our top 10 mortgage insurance customers (measured by NIW) were responsible for 29.1% of our primary NIW, as compared to 32.4% in 2017. If we were to lose a significant customer, it is unlikely that the loss could be completely offset by other customers in the near-term, if at all. Some of our lending customers may decide to write business only with a limited number of mortgage insurers or only with certain mortgage insurers, based on their views with respect to an insurer's pricing, service levels, underwriting guidelines, loss mitigation practices, financial strength or other factors. Alternatively, certain other lending customers have chosen for risk management purposes to diversify the mortgage insurers with which they do business, which has negatively affected our level of NIW and market share with those customers. Given that many of our customers currently give us a significant portion of their total mortgage insurance business, it is possible that if there is further diversification it could have a negative impact on our NIW if we are unable to mitigate the market share loss through new customers or increases in business with other customers. Further, we actively engage with our customers to ensure that we are receiving an appropriate mix of business from such customers at acceptable projected returns, and depending on the circumstances, we could take action with respect to customers (e.g., limiting the type of business we accept from them or instituting pricing changes that impact them) that could result in customers reducing the amount of business they do with us or deciding not to do business with us altogether. Any significant loss in our market share could negatively impact our mortgage insurance franchise, results of operations and financial condition.
Our mortgage insurance business faces intense competition.
The U.S. mortgage insurance industry is highly competitive. Our competitors primarily include other private mortgage insurers and governmental agencies, principally the FHA and VA.
We currently compete with other private mortgage insurers that are eligible to write business for the GSEs on the basis of price, underwriting guidelines, customer relationships, reputation, perceived financial strength (including based on comparative financial strength credit ratings) and overall service. Overall service competition is based on, among other things, effective and timely delivery of products, timeliness of claims payments, customer service, timely and accurate servicing of policies, training, loss mitigation efforts and management and field service expertise. We also believe that service includes our ability to offer services to customers through our Services business that complement our mortgage insurance products. For more information about our competitive environment, including pricing competition, see "Item 1. Business—Mortgage Insurance—Competition."
In developing our pricing and origination strategies, we monitor various competitive and economic factors while seeking to increase the long-term value of our portfolio by balancing both profitability and volume considerations. Pricing strategies continue to evolve in the mortgage insurance industry and mortgage insurers are migrating toward offering various pricing methodologies with increasing degrees of risk-based granularity. Our strategy is to consistently apply an approach to pricing that is customer-centric based on a lender's loan origination process, flexible and customizable, as well as balanced with our objectives for managing the risk and return profile of our insured portfolio. Although we believe we are well-positioned to compete effectively, our pricing strategy may not be successful. Despite our pricing actions, we may experience returns below our targeted returns and we may lose business to other competitors. There can be no assurance that pricing competition will not intensify further, which could result in a decrease in our projected returns.
Certain of our private mortgage insurance competitors are subsidiaries of larger corporations, may have access to greater amounts of capital and financial resources than we do at a lower cost of capital (including off-shore reinsurance vehicles) and currently have better financial strength ratings than we have. As a result, they may be better

positioned to compete outside of traditional mortgage insurance, including in the private label securitization market or if the GSEs expand their use of, or pursue alternative forms of, credit enhancement outside of private mortgage insurance in its traditional form. In addition, because of tax advantages associated with being off-shore, certain of our competitors have been able to reinsure to their offshore affiliates and achieve higher after-tax rates of return on the NIW they write compared to on-shore mortgage insurers such as Radian Guaranty, which could allow these off-shore competitors to leverage reduced pricing to gain market share, while continuing to achieve acceptable returns on NIW. We also compete with governmental entities, such as the FHA and VA, primarily on the basis of loan limits, pricing, credit guidelines, terms of our insurance policies and loss mitigation practices. These governmental entities typically do not have the

same capital requirements or business objectives that we and other private mortgage insurance companies have, and therefore, may have greater financial flexibility in their pricing guidelines and capacity that could put us at a competitive disadvantage. If these entities lower their pricing or alter the terms and conditions of their mortgage insurance or other credit enhancement products in furtherance of political, social or other goals rather than a profit motive, we may be unable to compete in that market effectively, which could have an adverse effect on our business, financial condition and operating results.

Beginning in 2008, the FHA, which historically had not been a significant competitor, substantially increased its share of the mortgage insurance market, including by insuring a number of loans that would meet our current underwriting guidelines, sometimes at a lower monthly cost to the borrower than a loan that carries our mortgage insurance. The FHA may continue to maintain a strong market position and could increase its market position. Factors that could cause the FHA to remain a significant competitor include:

- governmental policy, including decreases in the pricing of FHA insurance or changes in the terms of FHA insurance such as the current life-of-loan coverage requirement;
- capital constraints of the private mortgage insurance industry;
- the tightening by private mortgage insurers of underwriting guidelines based on credit risk concerns;
- business changes by the GSEs, including underwriting changes, a reduction in loan limits or increases in the loan level price adjustments (based on risk) charged by the GSEs on loans that require mortgage insurance and changes in the amount of guarantee fees for the loans that they acquire (which may result in higher cost to borrowers); and
- the perceived operational ease of using FHA insurance compared to the products of private mortgage insurers.

Other private mortgage insurers may seek to compete for market share from the FHA or other mortgage insurers by reducing pricing, which could, in turn, improve their competitive position in the industry and negatively impact our level of NIW.

We have faced increasing competition from the VA. Based on publicly available information, the VA accounted for 25% of the insurable mortgage market in 2018. We believe that the VA's market share has generally been increasing because the VA offers 100% LTV loans and charges a one-time funding fee that can be included in the loan amount with no additional monthly expense, and because of an increase in the number of borrowers that are eligible for the VA's program.

In addition, as market conditions change, alternatives to traditional private mortgage insurance may become more prevalent, which could reduce the demand for private mortgage insurance in its traditional form, including:

- structures, such as the limited pilot programs IMAGIN and EPMI launched in 2018 by Freddie Mac and Fannie Mae, respectively, that are commonly referred to as "investor paid mortgage insurance" in which affiliates of traditional mortgage insurers directly insure the GSEs against loss;
- lenders and other investors holding mortgages in their portfolio and self-insuring;
- lenders using pass-through vehicles that take on the risk of loss for loans ultimately sold to the GSEs;
- structured risk transfer transactions in the capital markets;
- risk sharing, risk transfer or using other risk mitigation techniques in conjunction with reduced levels of private mortgage insurance coverage;
- lenders originating mortgages using "piggyback" structures to avoid private mortgage insurance, such as a first-lien mortgage with an 80% LTV and a second mortgage with a 10%, 15% or 20% LTV, which could become more attractive given that interest on piggyback loans remains tax deductible while the tax deduction for mortgage insurance premiums has not been extended beyond the 2017 tax year; and
- other potential forms of credit enhancement that do not involve private mortgage insurance.

See "*—Changes in the charters, business practices, or role of the GSEs in the U.S. housing market generally, could significantly impact our mortgage insurance business.*"

Managing the competitive environment is extremely challenging given the multitude of factors discussed above. If we do not appropriately manage the strategic decisions required in this environment, our franchise value, business

prospects, results of operations and financial condition could be negatively impacted.

Our business depends, in part, on effective and reliable loan servicing.
We depend on third-party servicing of the loans that we insure. Dependable servicing is necessary for timely billing and effective loss mitigation opportunities for delinquent or near-delinquent loans. Changes in the servicing industry, challenging economic and market conditions or periods of economic stress and high mortgage defaults could negatively affect the ability of servicers to effectively service the loans that we insure. Further, servicers are required to comply with more burdensome requirements, procedures and standards for servicing residential mortgages than in the past, such as the CFPB's mortgage servicing rules. While these requirements are intended to improve servicing performance, they also impose a high cost of compliance on servicers that may impact their financial condition and their operating effectiveness. If we experience a disruption in the servicing of mortgage loans covered by our insurance policies, this, in turn, could contribute to a rise in defaults and/or claims among those loans, which could have a material adverse effect on our business, financial condition and operating results.
An extension in the period of time that a loan remains in our delinquent loan inventory may increase the severity of claims that we ultimately are required to pay.
High levels of defaults and corresponding delays in foreclosures could delay our receipt of claims, resulting in an increase in the period of time that a loan remains in our delinquent loan inventory, and as a result, the Claim Severity. Following the financial crisis, the average time that it took for us to receive a claim increased. This was, in part, due to loss mitigation protocols that were established by servicers and also to a significant backlog of foreclosure proceedings in many states, and especially in those states that impose a judicial process for foreclosures. Generally, foreclosure delays do not stop the accrual of interest or affect other expenses on a loan, and unless a loan is cured during such delay, once title to the property ultimately is obtained and a claim is filed, our paid claim amount may include additional interest and expenses, increasing the Claim Severity. While foreclosure timelines have improved in recent years, a portion of our portfolio originated in the years prior to and including 2008 consists of severely delinquent loans. Further, another period of significant economic stress and a high level of defaults could once again delay claims and result in higher levels of Claim Severity. Higher levels of Claim Severity would increase our incurred losses and could negatively impact our results of operations and financial condition.
Our success depends on our ability to assess and manage our underwriting risks; the premiums we charge may not be adequate to compensate us for our liability for losses and the amount of capital we are required to hold against our insured risks. We expect to incur future provisions for losses beyond what we have reserved for in our financial statements.
The estimates and expectations we use to establish premium rates are based on assumptions made at the time our insurance is written. Our mortgage insurance premiums are based on, among other items, the amount of capital we are required to hold against our insured risks and our estimates of the long-term risk of claims on insured loans. Our premium rates are established based on performance models that consider a broad range of borrower, loan and property characteristics, as well as market and economic conditions. Our assumptions may ultimately prove to be inaccurate.
If the risk underlying a mortgage loan we have insured develops more adversely than we anticipated, we generally cannot increase the premium rates on this in-force business, or cancel coverage or elect not to renew coverage, to mitigate the effects of such adverse developments. Similarly, we cannot adjust our premiums if the amount of capital we are required to hold against our insured risks increases from the amount we were required to hold at the time a policy was written. As a result, if we are unable to compensate for or offset the increased capital requirements in other ways, the returns on our business may be lower than we assumed or expected. Our premiums earned and the associated investment income on those premiums may ultimately prove to be inadequate to compensate for the losses that we may incur and may not provide an adequate return on increased capital that may be required. As a result, our results of operations and financial condition could be negatively impacted.
Additionally, in accordance with industry practice, we do not establish reserves in our mortgage insurance business until we are notified that a borrower has failed to make at least two monthly payments when due. Because our mortgage insurance reserving does not account for the impact of future losses that we expect to incur with respect to

performing (non-defaulted) loans, our obligation for ultimate losses that we expect to incur at any period end is not reflected in our financial statements, except to the extent that a premium deficiency exists. As a result, our losses can be more severe in periods of high defaults given that we generally are not permitted to establish reserves in anticipation of such defaults.

If the estimates we use in establishing loss reserves are incorrect, we may be required to take unexpected charges to income, which could adversely affect our results of operations.

We establish loss reserves in our mortgage insurance business to provide for the estimated cost of future claims on defaulted loans. Setting our loss reserves requires significant judgment by management with respect to the likelihood,

magnitude and timing of each potential loss, including an estimate of the impact of our Loss Mitigation Activities with respect to defaulted loans. The models, assumptions and estimates we use to establish loss reserves may not prove to be accurate, especially in the event of an extended economic downturn or a period of extreme market volatility and uncertainty. Because of this, claims paid may be substantially different than our loss reserves and these reserves may be insufficient to satisfy the full amount of claims that we ultimately have to pay. Changes to our estimates could adversely impact our results of operations and financial condition.

A portion of the defaulted loans in our portfolio originated in the years prior to and including 2008 have been in default for an extended period of time. While these loans are generally assigned a higher loss reserve based on our belief that they are more likely to result in a claim, we also assume, based on historical trends, that a significant portion of these loans will cure or otherwise not result in a claim. Given the significant period of time that these loans have been in default, it is possible that the ultimate cure rate for these defaulted loans will be less than our current estimates of Cures for this inventory of defaults.

If our estimates are inadequate, we may be required to increase our reserves, which could have a material adverse effect on our results of operations and financial condition.

Our delegated underwriting program may subject our mortgage insurance business to unanticipated claims.

In our mortgage insurance business, we permit lenders to obtain mortgage insurance for residential mortgage loans originated and underwritten by them using Radian’s pre-established underwriting guidelines. Once we accept a lender into our delegated underwriting program, we generally insure a mortgage loan originated by that lender based on our expectation that the lender has followed our specified underwriting guidelines in accordance with the endorsement. Under this program, a lender could commit us to insure a material number of loans with unacceptable risk profiles before we discover the problem and terminate that lender’s delegated underwriting authority or pursue other rights that may be available to us, such as our rights to rescind coverage or deny claims.

We face risks associated with our contract underwriting business.

We provide third-party contract underwriting services for both our mortgage insurance and Services customers. We provide these customers with limited indemnification rights with respect to those loans that we simultaneously underwrite for both secondary market compliance and for potential mortgage insurance eligibility. In addition, in certain circumstances, we may also offer limited indemnification when we underwrite a loan only for secondary market compliance. In addition to indemnification, we typically have limited loss mitigation defenses available to us for loans that we have underwritten through our contract underwriting services. As a consequence, our results of operations could be negatively impacted if we are required to indemnify our customers for material underwriting errors in our contract underwriting services.

The current financial strength ratings assigned to our mortgage insurance subsidiaries could weaken our competitive position.

Radian Guaranty has been assigned a rating of Baa2 by Moody’s and a rating of BBB+ by S&P. While Radian Guaranty’s financial strength ratings currently are investment grade, these ratings are below the ratings assigned to certain other private mortgage insurers. We do not believe our ratings have had a material adverse effect on our relationships with existing customers. However, if financial strength ratings become a more prominent consideration for lenders, we may be competitively disadvantaged by customers choosing to do business with private mortgage insurers that have higher financial strength ratings. In addition, the current PMIERs and PMIERs 2.0 will not include a specific ratings requirement with respect to eligibility, but if this were to change in the future, we may become subject to a ratings requirement in order to retain our eligibility status under the PMIERs.

The GSEs currently consider financial strength ratings, among other items, to determine the amount of collateral that an insurer must post when participating in the credit risk transfer transactions currently being conducted by the GSEs. As a result, the returns that we are able to achieve when participating in these transactions are dependent, in part, on our financial strength ratings. We currently use Radian Reinsurance to participate in the GSEs’ credit risk transfer transactions. Radian Reinsurance has been assigned a rating of BBB+ by S&P. Market participants with higher ratings than us generally have the ability to price more aggressively, and therefore, are better positioned than us to compete in

these transactions.

We believe that financial strength ratings remain a significant consideration for participants seeking to secure credit enhancement in the non-GSE mortgage market, which includes most non-qualified mortgage loans. While this market has remained limited since the financial crisis, we view this market as an area of potential future growth and our ability to participate in this market could depend on our ability to secure higher ratings for our mortgage insurance subsidiaries. In addition, if legislative or regulatory changes were to alter the current state of the housing finance industry such that the GSEs

no longer operate in their current capacity or loans purchased by the GSEs were no longer automatically deemed qualified mortgages under the QM Rule, we may be forced to compete in a new marketplace in which financial strength ratings may play a greater role. If we are unable to compete effectively in the current or any future markets as a result of the financial strength ratings assigned to our mortgage insurance subsidiaries, the franchise value and future prospects for our mortgage insurance business could be negatively affected.

Our success depends, in part, on our ability to manage risks in our investment portfolio.

Our investment portfolio is an important source of revenue and is our primary source of claims paying resources. Although our investment portfolio consists mostly of highly-rated fixed income investments, our investment strategy is affected by general economic conditions, which may adversely affect the markets for credit and interest-rate-sensitive securities, including the extent and timing of investor participation in these markets, the level and volatility of interest rates and credit spreads and, consequently, the value of our fixed income securities, and as such, we may not achieve our investment objectives. Volatility or lack of liquidity in the markets in which we hold positions has at times reduced the market value of some of our investments, and if this worsens substantially it could have a material adverse effect on our liquidity, financial condition and results of operations.

Although in recent years our portfolio yield has been increasing, interest rates and investment yields on our investments continue to be below historical averages, which has reduced the investment income we generate. For the significant portion of our investment portfolio held by our insurance subsidiaries, to receive full capital credit under insurance regulatory requirements and under the PMIERs, we generally are limited to investing in highly-rated investments that are unlikely to increase our investment returns. Because we depend on our investments as a source of revenue, a prolonged period of lower than expected investment yields would have an adverse impact on our revenues and could potentially adversely affect our results of operations. Further, future updates to the NAIC Model Act or PMIERs could impact our investment choices, which could negatively impact our investment strategy.

In addition, we structure our investment portfolio to satisfy our expected liabilities, including claim payments in our mortgage insurance business. If we underestimate our liabilities or improperly structure our investments to meet these liabilities, we could have unexpected losses resulting from the forced liquidation of investments before their maturity, which could adversely affect our results of operations.

Radian Group's sources of liquidity may be insufficient to fund its obligations.

Radian Group serves as the holding company for our operating subsidiaries and does not have any operations of its own. As of December 31, 2018, Radian Group had available, either directly or through unregulated subsidiaries, unrestricted cash and liquid investments of $714.1 million. This amount certain additional cash and liquid investments that have been advanced to Radian Group from our subsidiaries for corporate expenses and interest payments. Total liquidity, which includes our undrawn $267.5 million unsecured revolving credit facility entered into in October 2017, was $981.6 million as of December 31, 2018.

Radian Group's principal liquidity demands for the next 12 months are expected to include: (i) the payment of corporate expenses, including taxes; (ii) the payment of $159 million principal amount of our outstanding Senior Notes due 2019; (iii) interest payments on our outstanding debt obligations; and (iv) the payment of dividends on our common stock. Radian Group's liquidity demands for the next 12 months or in future periods could also include: (i) the potential use of up to $100 million to repurchase Radian Group common stock pursuant to the existing share repurchase authorization; (ii) capital support for Radian Guaranty and our other insurance subsidiaries; (iii) repayments, repurchases or early redemptions of portions of our debt obligations; and (iv) potential investments to support our business strategy.

In addition to existing available cash and marketable securities, Radian Group's principal sources of cash to fund future short-term liquidity needs include payments made to Radian Group under tax- and expense-sharing arrangements with our subsidiaries. Radian Group has expense-sharing arrangements in place with its principal operating subsidiaries that require those subsidiaries to pay their allocated share of certain holding-company-level expenses, including interest payments on most of our outstanding senior notes. The expense-sharing arrangements between Radian Group and our insurance subsidiaries, as amended, have been approved by the Pennsylvania

Insurance Department, but such approval may be modified or revoked at any time.

The Services segment has not generated sufficient cash flows to pay dividends to Radian Group. Additionally, while cash flow is expected to be sufficient to pay the Services segment's direct operating expenses, it has not been sufficient to satisfy its obligations to reimburse Radian Group for its allocated operating expense and interest expense under tax- and expense-sharing arrangements. We do not expect the Services segment will be able to bring its reimbursement obligations current for the

foreseeable future. In the event the cash flow from operations of the Services segment is not adequate to fund all of its needs, Radian Group may provide additional funds to the Services segment in the form of a capital contribution or an intercompany note. Further, in light of Radian Guaranty's negative unassigned surplus related to operating losses in prior periods, we do not anticipate that Radian Guaranty will be permitted under applicable insurance laws to pay ordinary dividends to Radian Group for the foreseeable future.

In addition to our short-term liquidity needs discussed above, Radian Group's liquidity demands beyond the next 12 months are expected to include: (i) the repayment of our outstanding debt obligations; and (ii) potential additional capital contributions to our subsidiaries. We expect to meet the long-term liquidity needs of Radian Group with a combination of: (i) available cash and marketable securities; (ii) private or public issuances of debt or equity securities, which we may not be able to do on favorable terms, if at all; (iii) cash received under tax- and expense-sharing arrangements with our subsidiaries; (iv) to the extent available, dividends from our subsidiaries; and (v) any amounts that Radian Guaranty is able to successfully redeem under the Surplus Note.

As of December 31, 2018, certain of our subsidiaries have incurred federal NOLs that could not be carried-back and utilized on a separate company tax return basis. As a result, we are not currently obligated under our tax-sharing agreement to reimburse these subsidiaries for their separate company federal NOL carryforward. However, if in a future period, one of these subsidiaries utilizes its share of federal NOL carryforwards on a separate entity basis, then Radian Group may be obligated to fund such subsidiary's share of our consolidated tax liability to the IRS. Certain subsidiaries, including Clayton, currently have federal NOLs on a separate entity basis that are available for future utilization. However, we do not expect to fund material obligations related to these subsidiary NOLs.

In light of Radian Group's short- and long-term needs, it is possible that our sources of liquidity could be insufficient to fund our obligations and could exceed available holding company funds. If this were to occur, we may need or otherwise may decide to increase our available liquidity by incurring additional debt, by issuing additional equity or by selling assets, any of which we may be unable to do on favorable terms, if at all.

Our revolving credit facility contains restrictive covenants that could limit our operating flexibility. A default under our credit facility could trigger an event of default under the terms of our senior notes. We may not have access to funding under our credit facility when we require it.

Radian Group is a party to a $267.5 million unsecured revolving credit facility with a syndicate of bank lenders. Radian Group's obligations under the credit facility are guaranteed by Clayton and may in the future be guaranteed by other subsidiaries of Radian Group. As of December 31, 2018, no borrowings were outstanding under the credit facility.

The credit facility contains certain restrictive covenants that, among other things, provide certain limitations on our ability to incur additional indebtedness, make investments, create liens, transfer or dispose of assets, merge with or acquire other companies and pay dividends. The credit facility also requires us to comply with certain financial covenants and further provides that (i) Radian Group must be rated by S&P or Moody's and (ii) Radian Guaranty must remain eligible under the PMIERs to insure loans purchased by the GSEs. A failure to comply with these covenants or the other terms of the credit facility could result in an event of default, which could (i) result in the termination of the commitments by the lenders to make loans to Radian Group under the credit facility and (ii) enable the lenders to declare, subject to the terms and conditions of the credit facility, any outstanding obligations under the credit facility to be immediately due and payable.

Further, the occurrence of an event of default under the terms of our credit facility may trigger an event of default under the terms of our senior notes. An event of default occurs under the terms of our senior notes if a default (i) in any scheduled payment of principal of other indebtedness by Radian Group or its subsidiaries of more than $100 million principal amount occurs, after giving effect to any applicable grace period or (ii) in the performance of any term or provision of any indebtedness of Radian Group or its subsidiaries in excess of $100 million principal amount that results in the acceleration of the date such indebtedness is due and payable, subject to certain limited exceptions. See Note 12 of Notes to Consolidated Financial Statements for more information on the carrying value of our senior notes.

If the commitments of the lenders are terminated or we are unable to satisfy certain covenants or representations, we may not have access to funding in a timely manner, or at all, when we require it. If funding is not available under the credit facility when we require it, our ability to continue our business practices or pursue our current strategy could be limited. If the indebtedness under the credit facility or our senior notes is accelerated, we may not be able to repay our debt or borrow sufficient funds to refinance it. Even if we are able to obtain new financing, it may not be on commercially reasonable terms or on terms that are acceptable to us. If there were to be an event of default under our credit facility or senior notes for any reason, our cash flows, financial results or financial condition could be materially and adversely affected.

Our reported earnings are subject to fluctuations based on changes in our trading securities and short-term investments that require us to adjust their fair market value.

We have significant holdings of trading securities, equity securities and short-term investments that we carry at fair value. Because the changes in fair value of these financial instruments are reflected on our statements of operations each period, they affect our reported earnings and can create earnings volatility. Among other factors, interest rate changes, market volatility and declines in the value of underlying collateral will impact the value of our investments, potentially resulting in unrealized losses that could negatively impact our results of operations.

Our information technology systems may fail or become outmoded, be temporarily interrupted or otherwise cause us to be unable to meet our customers' demands.

Our business is highly dependent on the effective operation of our information technology systems, which are vulnerable to damage or interruption from power outages, computer and telecommunications failures, computer viruses, cyber-attacks, security breaches, catastrophic events and errors in usage. Although we have disaster recovery and business continuity plans in place, we may not be able to adequately execute these plans in a timely fashion. Additionally, our ability to meet the needs of our customers depends on our ability to keep pace with technological advances and to invest in new technology as it becomes available or otherwise upgrade our technological capabilities. We rely on e-commerce and other technologies to provide our products and services to our customers, and they generally require that we provide an increasing number of our products and services electronically. Accordingly, we may not satisfy our customers' requirements if we fail to invest sufficient resources or are otherwise unable to maintain and upgrade our technological capabilities. Further, customers may choose to do business only with business partners with which they are technologically compatible and may choose to retain existing relationships with mortgage insurance or mortgage and real estate services providers rather than invest the time and resources to on-board new providers. As a result, technology can represent a potential barrier to signing new customers.

Because we rely on our information technology systems for many critical functions, including connecting with our customers, if such systems were to fail, experience a prolonged interruption, or become outmoded, we may experience a significant disruption in our operations and in the business we receive, which could have a material adverse effect on our business, financial condition and operating results.

In addition, we are in the process of implementing a major technology project to improve our operating systems, including a new platform for our mortgage insurance underwriting, policy administration, claims management and billing processes. The implementation of these technological improvements is complex, expensive, time consuming and, in certain respects, depends on the ability of third parties to perform their obligations in a timely manner. If we fail to timely and successfully implement the new technology systems and business processes, or if the systems do not operate as expected, it could have an adverse impact on our business, business prospects and results of operations.

The security of our information technology systems may be compromised and confidential information, including non-public personal information that we maintain, could be improperly disclosed.

Our information technology systems may be vulnerable to physical or electronic intrusions, computer viruses or other attacks, including cyberattacks. As part of our business, we, and certain of our subsidiaries and affiliates, maintain large amounts of confidential information, including non-public personal information on borrowers, consumers and our employees. Breaches in security could result in the loss or misuse of this information, which could, in turn, result in potential regulatory actions or litigation, including material claims for damages, as well as interruption to our operations and damage to our customer relationships and reputation. While we have information security policies, controls and systems in place in order to attempt to prevent, detect and respond to unauthorized use or disclosure of confidential information, including non-public personal information, there can be no assurance that such use or disclosure will not occur. Any cybersecurity or other compromise of the security of our information technology systems, or unauthorized use or disclosure of confidential information, could subject us to liability, regulatory scrutiny and action, damage to our reputation and customer relationships and could have a material adverse effect on our business prospects, financial condition and results of operations.

We are subject to litigation and regulatory proceedings.

We operate in highly regulated industries that are subject to a heightened risk of litigation and regulatory proceedings. We often are a party to material litigation and also are subject to legal and regulatory claims, assertions, actions, reviews, audits, inquiries and investigations. Increased scrutiny in the current regulatory environment could lead to new regulations and practices, new interpretations of existing regulations, as well as additional regulatory proceedings. Additional lawsuits, legal

and regulatory proceedings and other matters may arise in the future. The outcome of existing and future legal and regulatory proceedings and other matters could result in adverse judgments, settlements, fines, injunctions, restitutions or other relief which could require significant expenditures or have a material adverse effect on our business prospects, results of operations and financial condition. See "Item 3. Legal Proceedings."

Legislation and administrative and regulatory changes and interpretations could impact our businesses.

Our businesses are subject to and may be impacted by many federal and state lending, insurance and consumer laws and regulations and may be affected by changes in these laws and regulations or the way they are interpreted or applied. In particular, our businesses may be significantly impacted by the following:

- legislation, administrative or regulatory action impacting the charters or business practices of the GSEs;
- reform of the U.S. housing finance system;
- legislation and regulation impacting the FHA and its competitive position versus private mortgage insurers;
- state insurance laws and regulations that address, among other items, licensing of companies to transact business, claims handling, reinsurance requirements, premium rates, policy forms offered to customers and requirements for Risk-to-capital, minimum policyholder positions, reserves (including contingency reserves), surplus, reinsurance and payment of dividends;
- the application of state, federal or private sector programs aimed at supporting borrowers and the housing market;
- the application of RESPA, the FCRA and other laws to our businesses;
- the interpretation and application of the TRID rules requiring enhanced disclosures to consumers in connection with the origination of residential mortgage loans;
- new federal standards and oversight for mortgage insurers, including as a result of the recommendation of the Federal Insurance Office of the U.S. Treasury that federal standards and oversight for mortgage insurers be developed and implemented;
- the implementation of new regulations under, or the potential repeal or amendment of provisions of, the Dodd-Frank Act, including changes in the QM Rule; and
- the implementation in the U.S. of the Basel III capital adequacy guidelines.

See "Item 1. Business—Regulation."

Any of the items discussed above could adversely affect our results of operations, financial condition and business prospects. In addition, our businesses could be impacted by new legislation or regulations, as well as changes to existing legislation or regulations or the way they are interpreted or applied, that are not currently contemplated and which could occur at any time.

The implementation of the Basel III guidelines may discourage the use of mortgage insurance.

Over the past few decades, the Basel Committee has established international benchmarks for assessing banks' capital adequacy requirements ("Basel III"). Included within those benchmarks are capital standards related to residential lending and securitization activity and importantly for private mortgage insurers, the capital treatment of mortgage insurance on those loans. These benchmarks are then interpreted and implemented via rulemaking by U.S. banking regulators. In July 2013, the U.S. banking regulators promulgated regulations, referred to as the "U.S. Basel III Rules," to implement significant elements of the Basel framework. The U.S. Basel III Rules, among other things, revise and enhance the U.S. banking agencies' general risk-based capital rules. Today, the U.S. Basel III Rules assign a 20%, 50% or 100% risk weight to loans secured by one-to-four-family residential properties. Generally, under the U.S. Basel III Rules in place today, the explicit government guarantees (FHA/VA/USDA) receive a 0% risk weight, and Fannie Mae and Freddie Mac related loans receive a 20% risk weight. Non-government related mortgage exposures secured by a first lien on a one-to-four family residential property that are prudently underwritten and that are performing according to their original terms receive a 50% risk weighting. All other one-to-four family residential mortgage loans are assigned a 100% risk weight.

In December 2014, the Basel Committee issued a proposal for further revisions to Basel III. It proposed adjustments to the risk weights for residential mortgage exposures that take into account LTV ratio and the borrower's ability to

service a mortgage, which were not previously addressed by Basel III. The proposed LTV ratio did not take into consideration any credit enhancement, including private mortgage insurance, but in March 2015, the U.S. banking regulators clarified that for purposes of the U.S. Basel III Rules, calculation of LTV ratios can account for credit enhancement such as private mortgage insurance in

determining whether a loan is made in accordance with prudent underwriting standards for purposes of receiving the preferred 50% risk weight. The comment period for this proposal closed in March 2015, and in December 2015, the Basel Committee released a second proposal, referred to as the 2015 Basel Committee Proposal, which retained the LTV provisions of the initial draft, but not the provisions pertaining to a borrower's ability to service a mortgage. The comment period for the 2015 Basel Committee Proposal closed in March 2016. To date, federal regulators have not adopted or implemented any new regulations, including based on these proposals, that update or modify the U.S. Basel III Rules.

The revised and final recommendations from the Basel Committee with respect to Basel III, referred to as the 2017 Basel Committee III Recommendations, were published in December 2017, and finalized risk weighting guidelines for residential mortgage exposures. These rules recognize guarantees provided by sovereign governments (such as FHA, VA, USDA and Ginnie Mae) as off-setting the capital requirements, resulting in a 0% risk weight. While the 2017 Basel Committee III Recommendations include consideration of LTV ratios, including the impact of credit enhancement provided by third-party private mortgage insurance and the GSEs on LTV ratios, the credit enhancement provided by third-party private mortgage insurance and the GSEs would have higher risk weightings than the explicitly government guaranteed products, putting loans insured by private mortgage insurance at a disadvantage. It remains unclear whether new guidelines will be proposed or finalized in the U.S. in response to the most recent 2017 Basel III Committee Recommendations.

If the federal regulators decide to change the current U.S. Basel III Rules in response to the final 2017 Basel III Committee Recommendations in ways that increase the capital requirements of banking organizations with respect to the residential mortgages we insure or that are guaranteed by the GSEs, demand for our mortgage insurance could be negatively impacted, which could adversely affect our business and business prospects.

We rely on our management team and our business could be harmed if we are unable to retain qualified personnel or successfully develop and/or recruit their replacements.

Our success depends, in part, on the skills, working relationships and continued services of our management team and other key personnel, any of whom could terminate his or her relationship with us at any time. The unexpected departure of key personnel could adversely affect the conduct of our business. In such event, we would be required to obtain other personnel to manage and operate our business. In addition, we will be required to replace the knowledge and expertise of our workforce as our workers retire. In either case, there can be no assurance that we would be able to develop or recruit suitable replacements for the departing individuals, that replacements could be hired, if necessary, on terms that are favorable to us, or that we can successfully transition such replacements in a timely manner. Failure to effectively implement our succession planning efforts and to ensure effective transfers of knowledge and smooth transitions involving members of our management team and other key personnel could adversely affect our business and results of operations. Without a properly skilled and experienced workforce, our costs, including costs associated with a loss of productivity and costs to replace employees may increase, and this could negatively impact our earnings.

We may make investments to grow our existing businesses, pursue new lines of business or new business initiatives, acquire other companies or engage in other strategic initiatives, each of which may result in additional risks and uncertainties.

In support of our growth strategy, we may make strategic investments, acquisitions or pursue other strategic initiatives that expose us to additional risks and uncertainties that include, without limitation:

- the use of capital and potential diversion of other resources, such as the diversion of management's attention from our core businesses and potential disruption of those businesses;
- the assumption of liabilities in connection with any strategic investment, including any acquired business;
- our ability to comply with additional regulatory requirements associated with new products, services, lines of business, or other business or strategic initiatives;
- our ability to successfully integrate or develop the operations of any new business initiative or acquisition;
-

- the possibility that we may fail to realize the anticipated benefits of an acquisition or other strategic investment or initiative, including expected synergies, cost savings, or sales or growth opportunities, within the anticipated timeframe or at all; and
- the possibility that we may fail to achieve forecasted results for a strategic investment, acquisition or other initiative that could result in lower or negative earnings contribution and/or impairment charges associated with intangible assets acquired.

We face risks associated with our Services business.

We expanded our business to include our Services segment through our 2014 acquisition of Clayton and our subsequent acquisitions of Red Bell, ValuAmerica, EnTitle Direct, Independent Settlement Services and the assets of Five Bridges. Our Services business exposes us to certain risks that may negatively affect our results of operations and financial condition, including, among others, the following:

- Our Services revenue is dependent on a limited number of large customers that represent a significant proportion of our Services total revenues. The loss or reduction of business from one or more of these significant customers could adversely affect our revenues and results of operations. In addition, Radian Guaranty does business with many of these significant customers. In the event of a dispute between a significant customer and either of our business segments, the overall customer relationship for Radian could be negatively impacted.
- While Clayton is not a defendant in litigation arising out of the financial crisis involving the issuance of RMBS in connection with which it has provided services, it has in the past, and may again in the future, receive subpoenas from various parties to provide documents and information related to such litigation, and there can be no assurance that Clayton will not be subject to future claims against it, whether in connection with such litigation or otherwise. It is possible that our exposure to potential liabilities resulting from our Services business, some of which may be material or unknown, could exceed amounts we can recover through indemnification claims.
- A significant portion of our Services engagements are transactional in nature and may be performed in connection with securitizations, loan sales, loan purchases or other transactions. Due to the transactional nature of our business, our Services segment revenues are subject to fluctuation from period to period and are difficult to predict.
- Sales of our mortgage, real estate and title services are influenced by the level of overall activity in the mortgage, real estate and mortgage finance markets generally, and are specifically dependent on the mortgage loan origination volumes of our customers which may fluctuate from period to period. If mortgage origination volumes decline we could experience less demand for our mortgage, real estate and title services.
- Red Bell is a licensed real estate brokerage and provides real estate brokerage services in all 50 states and the District of Columbia. As a licensed real estate brokerage, Red Bell receives residential real estate information from various multiple listing services (“MLS”). Red Bell receives this information, which it uses in its business to broker real estate transactions and provide valuation products and services, pursuant to the terms of agreements with the MLS providers. If these agreements were to terminate or Red Bell otherwise were to lose access to this information, it could negatively impact Red Bell’s ability to conduct its business.
- By their nature, title claims are often complex, vary greatly in dollar amounts and are affected by economic and market conditions and the legal environment existing at the time of settlement of the claims. Estimating future title loss payments is difficult because of the complex nature of title claims, the long periods of time over which claims are paid, significantly varying dollar amounts of individual claims and other factors. From time to time, we could experience large losses or an overall worsening of our loss payment experience in regard to the frequency or severity of claims that require us to record additional charges to our claims loss reserve. These loss events are unpredictable and could adversely affect the financial performance of our Services business.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

At our corporate headquarters, located at 1500 Market Street, West Tower, in Philadelphia, Pennsylvania we currently lease approximately 174,000 square feet of office and storage space.

In connection with our mortgage insurance operations, we lease office space in: Worthington, Ohio; Dayton, Ohio; Plano, Texas; St. Louis, Missouri; and New York. In addition, we lease office space for our Services operations in various cities in California, Connecticut, Colorado, Florida, Maryland, Ohio, Pennsylvania, Texas and Utah.

We currently have two co-location agreements with TierPoint that support data center space and services at their Norristown, Pennsylvania and Philadelphia, Pennsylvania locations. These agreements expire in March 2020. TierPoint serves as a production and disaster recovery location.

We believe our existing properties are well utilized, suitable and adequate for our present circumstances.

Item 3. Legal Proceedings.

We are routinely involved in a number of legal and regulatory claims, assertions, actions, reviews, audits, inquiries and investigations by various regulatory entities involving compliance with laws or other regulations, the outcome of which are uncertain. These legal proceedings could result in adverse judgments, settlements, fines, injunctions, restitutions or other relief that could require significant expenditures or have other effects on our business. In accordance with applicable accounting standards and guidance, we establish accruals only when we determine both that it is probable that a loss has been incurred and the amount of the loss is reasonably estimable. We accrue the amount that represents our best estimate of the probable loss; however, if we can only determine a range of estimated losses, we accrue an amount within the range that, in our judgment, reflects the most likely outcome, and if none of the estimates within the range is more likely, we accrue the minimum amount of the range.

In the course of our regular review of pending legal and regulatory matters, we determine whether it is reasonably possible that a potential loss may have a material impact on our liquidity, results of operations or financial condition. If we determine such a loss is reasonably possible, we disclose information relating to such potential loss, including an estimate or range of loss or a statement that such an estimate cannot be made. On a quarterly basis, we review relevant information with respect to loss contingencies and update our accruals, disclosures and estimates of reasonably possible losses or range of losses based on such reviews. We are often unable to estimate the possible loss or range of loss until developments in such matters have provided sufficient information to support an assessment of the range of possible loss, such as quantification of a damage demand from plaintiffs, discovery from other parties and investigation of factual allegations, rulings by the court on motions or appeals, analysis by experts, and the progress of settlement negotiations. In addition, we generally make no disclosures for loss contingencies that are determined to be remote. For matters for which we disclose an estimated loss, the disclosed estimate reflects the reasonably possible loss or range of loss in excess of the amount accrued, if any.

Loss estimates are inherently subjective, based on currently available information, and are subject to management’s judgment and various assumptions. Due to the inherently subjective nature of these estimates and the uncertainty and unpredictability surrounding the outcome of legal and other proceedings, actual results may differ materially from any amounts that have been accrued.

As previously disclosed, we contested adjustments resulting from the examination by the IRS of our 2000 through 2007 consolidated federal income tax returns. The IRS opposed the recognition of certain tax losses and deductions that were generated through our investment in a portfolio of non-economic REMIC residual interests and proposed denying the associated tax benefits of these items. In July 2018, we finalized a settlement with the IRS related to the adjustments we had been contesting. This settlement with the IRS resolved the issues and concluded all disputes related to the IRS Matter. In 2018, under the terms of the settlement, Radian utilized its “qualified deposits” with the U.S. Treasury to settle its $31 million obligation to the IRS, and in 2019, the Company expects the IRS to refund to Radian the remaining $58 million that was previously on deposit.

On December 22, 2016, Ocwen Loan Servicing, LLC and Homeward Residential, Inc. (collectively, “Ocwen”) filed a complaint in the U.S. District Court for the Eastern District of Pennsylvania against Radian Guaranty (the “Complaint”) alleging breach of contract and bad faith claims and seeking monetary damages and declaratory relief. Ocwen has also initiated similar legal proceedings against several other mortgage insurers. On December 17, 2016, Ocwen separately filed a parallel arbitration petition against Radian Guaranty before the American Arbitration Association (“AAA”) asserting substantially the same allegations (the “Arbitration”). Ocwen’s filings together listed 9,420 mortgage insurance certificates issued under multiple insurance policies, including Pool Insurance policies, as subject to the dispute. On June 5, 2017, Ocwen filed an amended complaint and an amended petition (collectively, the “Amended Filings”) with both the court and the AAA, respectively, together listing 8,870 certificates as subject to the dispute. On April 11,

2018, the parties entered into a confidential agreement with respect to all certificates subject to the dispute. The confidential agreement resolved certain categories of claims involved in the dispute and, on April 12, 2018, the parties filed a stipulation of voluntary dismissal of the federal court proceeding and the trial judge issued an Order dismissing all claims and counterclaims subject to the parties' agreement. Radian Guaranty was not required to make any payment in connection with this confidential agreement. Pursuant to the confidential agreement, the parties: (1) dismissed the federal court proceeding; (2) narrowed the scope of the dispute to Ocwen's breach of contract claims seeking payment of insurance benefits on approximately 2,500 certificates that Ocwen was previously pursuing through the

Amended Filings; and (3) agreed to resolve the remaining dispute through the Arbitration. Radian Guaranty believes that Ocwen's allegations and claims in the legal proceedings described above are without merit and legally deficient, and plans to defend these claims vigorously. We are not able to estimate a reasonably possible loss, if any, or range of loss in this matter because of the current preliminary stage of the Arbitration.

On August 31, 2018, Nationstar Mortgage LLC d/b/a Mr. Cooper ("Nationstar") filed a complaint in the U.S. District Court for the Eastern District of Pennsylvania against Radian Guaranty (the "Complaint") alleging breach of contract, bad faith, and unjust enrichment claims and seeking monetary damages and declaratory relief. The Complaint lists 3,014 mortgage insurance certificates issued under multiple insurance policies as subject to disputes involving insurance coverage decisions. The Complaint further lists 2,231 mortgage insurance certificates issued under multiple insurance policies as subject to disputes involving premium refund requests. Radian Guaranty believes that Nationstar's allegations and claims in the legal proceedings described above are without merit and legally deficient, and plans to defend these claims vigorously. We are not able to estimate a reasonably possible loss, if any, or range of loss in this matter because of the preliminary stage of the litigation.

We also are periodically subject to reviews and audits, as well as inquiries, information-gathering requests and investigations. In connection with these matters, from time to time we receive requests and subpoenas seeking information and documents related to aspects of our business. In March 2017, Green River Capital received a letter from the staff of the SEC stating that it is conducting an investigation captioned, "In the Matter of Certain Single Family Rental Securitizations," and that it is requesting information from market participants. The letter requested that Green River Capital provide information regarding broker price opinions that Green River Capital provided on properties included in single family rental securitization transactions. In February 2019, we were advised by the SEC staff that the investigation has been closed.

The legal and regulatory matters discussed above could result in adverse judgments, settlements, fines, injunctions, restitutions or other relief that could require significant expenditures or have other effects on our business. Management believes, based on current knowledge and after consultation with counsel, that the outcome of such actions will not have a material adverse effect on our consolidated financial condition. However, the outcome of litigation and other legal and regulatory matters and proceedings is inherently uncertain, and it is possible that one or more of the matters currently pending or threatened could have an unanticipated adverse effect on our liquidity, financial condition or results of operations for any particular period.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Our common stock is listed on the New York Stock Exchange (“NYSE”) under the symbol “RDN.” At February 25, 2019, there were 213,657,506 shares of our common stock outstanding and 49 holders of record.

In 2018 and 2017, we declared quarterly cash dividends on our common stock equal to $0.0025 per share. We presently expect to continue to declare a regular quarterly dividend on our common stock. For information on Radian Group’s ability to pay dividends, see “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources.”

Reference is made to the information in Item 12 of this report under the caption “Equity Compensation Plans,” which is incorporated herein by this reference.

Issuance of Unregistered Securities

On March 21, 2016, March 22, 2016 and March 24, 2016, we issued 11,914,620; 4,673,478 and 393,690 shares of Radian Group common stock, respectively, in separately negotiated transactions with certain holders of the Convertible Senior Notes due 2017 and 2019. These issuances were made in connection with, and as partial consideration for, the purchases of aggregate principal amounts of $30.1 million and $288.4 million of our Convertible Senior Notes due 2017 and 2019, respectively, for cash or a combination of cash and shares of Radian Group common stock.

In all cases, the shares were issued to “qualified institutional buyers” within the meaning of Rule 144A promulgated under the Securities Act and were offered and sold in reliance on the exemption from registration afforded by Section 4(a)(2) of the Securities Act and corresponding provisions of state securities laws. See Notes 12 and 15 of Notes to Consolidated Financial Statements for additional information on the individual transactions.

Issuer Purchases of Equity Securities

The following table provides information about purchases of Radian Group common stock by us (and our affiliated purchasers) during the three months ended December 31, 2018.

Issuer Purchases of Equity Securities
($ in thousands, except per-share amounts)

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs (2)
Share repurchase program				
10/1/2018 to 10/31/2018	—	$—	—	$100,000
11/1/2018 to 11/30/2018	2,329	$19.30	—	$100,000
12/1/2018 to 12/31/2018	11,792	$15.19	—	$100,000
Total	14,121		—	

(1) Represents shares tendered by employees as payment of taxes withheld on the vesting of certain restricted stock awards granted under the Company’s equity compensation plans.

(2) On August 16, 2018, Radian Group’s board of directors approved a new share repurchase program that authorizes the Company to repurchase up to $100 million of its common stock. As of December 31, 2018, the full purchase authority of up to $100 million remained available under this program, which expires on July 31, 2019. See Note 15 of Notes to Consolidated Financial Statements for additional information.

Item 6. Selected Financial Data.

The information in the following table should be read in conjunction with our Consolidated Financial Statements and Notes thereto included in Item 8 and the information included in Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations."

(In millions, except per-share amounts and ratios)	2018	2017	2016	2015	2014
Consolidated Statements of Operations					
Net premiums earned—insurance	$1,014.0	$932.8	$921.8	$915.9	$844.5
Services revenue (1)	145.0	155.1	168.9	157.2	78.0
Net investment income	152.5	127.2	113.5	81.5	65.7
Net gains (losses) on investments and other financial instruments	(42.5)	3.6	30.8	35.7	80.0
Total revenues	1,273.0	1,221.6	1,238.5	1,193.3	1,072.7
Provision for losses	104.6	135.2	202.8	198.6	246.1
Cost of services (1)	98.1	104.6	114.2	93.7	44.7
Other operating expenses	280.8	267.3	244.9	242.4	251.2
Restructuring and other exit costs	6.1	17.3	—	—	—
Interest expense	61.5	62.8	81.1	91.1	90.5
Impairment of goodwill	—	184.4	—	—	—
Amortization and impairment of acquired intangible assets	12.4	27.7	13.2	13.0	8.6
Pretax income from continuing operations	684.2	346.7	483.7	437.8	407.2
Income tax provision (benefit)	78.2	225.6	175.4	156.3	(852.4)
Net income from continuing operations	606.0	121.1	308.3	281.5	1,259.6
Income (loss) from discontinued operations, net of tax (2)	—	—	—	5.4	(300.1)
Net income	606.0	121.1	308.3	286.9	959.5
Diluted net income per share from continuing operations (3)	$2.77	$0.55	$1.37	$1.20	$5.44
Diluted net income per share (3)	$2.77	$0.55	$1.37	$1.22	$4.16
Cash dividends declared per share	$0.01	$0.01	$0.01	$0.01	$0.01
Weighted average shares outstanding-diluted (3)	218.6	220.4	229.3	246.3	233.9

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(In millions, except per-share amounts and ratios)	2018	2017	2016	2015	2014
Consolidated Balance Sheets					
Total investments	$5,153.0	$4,643.9	$4,462.4	$4,298.7	$3,629.3
Assets held for sale (2)	—	—	—	—	1,736.4
Total assets	6,314.7	5,900.9	5,863.2	5,642.1	6,842.3
Unearned premiums	739.4	723.9	681.2	680.3	644.5
Reserve for losses and LAE	401.4	507.6	760.3	976.4	1,560.0
Senior notes (4)	1,030.3	1,027.1	1,069.5	1,219.5	1,192.3
Liabilities held for sale (2)	—	—	—	—	947.0
Stockholders' equity	3,488.7	3,000.0	2,872.3	2,496.9	2,097.1
Book value per share	$16.34	$13.90	$13.39	$12.07	$10.98
Selected Ratios—Mortgage Insurance					
Loss ratio (5)	10.4 %	14.6 %	22.2 %	21.7 %	29.1 %
Expense ratio—net premiums earned basis (5)	23.9 %	24.7 %	22.7 %	23.7 %	28.2 %
Risk-to-capital-Radian Guaranty only	13.9 :1	12.8 :1	13.5 :1	14.3:1	17.9:1
Risk-to-capital-Mortgage Insurance combined	12.8 :1	12.1 :1	13.6 :1	14.6:1	20.3:1
Other Data—Mortgage Insurance					
Primary NIW	$56,547	$53,905	$50,530	$41,411	$37,349
Direct primary IIF	221,443	200,724	183,450	175,584	171,810
Direct primary RIF	56,728	51,288	46,741	44,627	43,239
Persistency Rate (12 months ended) (6)	83.1 %	81.1 %	76.7 %	78.8 %	84.2 %
Persistency (quarterly, annualized) (6)	85.5 %	79.4 %	76.8 %	81.8 %	83.3 %

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(1) Primarily represents the activity of Clayton, acquired June 30, 2014.

(2) Radian completed the sale of its former financial guaranty subsidiary, Radian Asset Assurance, to Assured on April 1, 2015, pursuant to the Radian Asset Assurance Stock Purchase Agreement. Until the April 1, 2015 sale date, the operating results of Radian Asset Assurance were classified as discontinued operations for all periods presented in our consolidated statements of operations.

(3) Diluted net income per share and average share information calculated in accordance with the accounting standard regarding earnings per share. See Note 3 of Notes to Consolidated Financial Statements.

(4) Includes Senior Notes and Convertible Senior Notes.

(5) Calculated using amounts determined under GAAP, using provision for losses to calculate the loss ratio and policy acquisition costs and other operating expenses to calculate the expense ratio, as percentages of net premiums earned—insurance.

(6) Based on loan level detail for the fourth quarter of each year shown. The Persistency Rate on a quarterly, annualized basis may be impacted by seasonality or other factors, and may not be indicative of full-year trends. In Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, see "Key Factors Affecting Our Results—*Mortgage Insurance—IIF; Persistency Rate; Mix of Business*" and "Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*" for additional information about the Persistency Rate.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.
The following analysis of our financial condition and results of operations should be read in conjunction with our Consolidated Financial Statements and Notes thereto included in Item 8. Certain terms and acronyms used throughout this report are defined in the Glossary of Abbreviations and Acronyms included as part of this report. Some of the information included in this discussion and analysis or included elsewhere in this report, including with respect to our projections, plans and our strategy for our business, includes forward-looking statements that involve risks, uncertainties and assumptions. Our actual results and the timing of events could differ materially from those anticipated by these forward-looking statements as a result of many factors, including those discussed under "Cautionary Note Regarding Forward-Looking Statements—Safe Harbor Provisions" and in the Risk Factors detailed in Item 1A of this Annual Report on Form 10-K.

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Overview
We are a diversified mortgage and real estate services business with two business segments—Mortgage Insurance and Services. Our Mortgage Insurance segment provides credit-related insurance coverage, principally through private mortgage insurance, as well as other credit risk management solutions, to mortgage lending institutions and mortgage credit investors. We provide our mortgage insurance products and services mainly through our wholly-owned subsidiary, Radian Guaranty. Our Services segment is primarily a fee-for-service business that offers a broad array of mortgage, real estate and title services to market participants across the mortgage and real estate value chain, as further detailed in "Results of Operations—Services." These services, comprising mortgage services, real estate services and title services, are provided primarily through our subsidiaries, including Clayton, Green River Capital, Radian Settlement Services and Red Bell. In 2018, we also acquired the businesses of Entitle Direct and Independent Settlement Services, as well as the assets of Five Bridges, to enhance our Services offerings. Of the combined total of our net premiums earned and services revenue for the years ended December 31, 2018, 2017 and 2016, our Services segment provided 13%, 15% and 16%, respectively.

(1) Includes net premiums earned and services revenue on a segment basis, and excludes net investment income, net gain on investments and other financial instruments and other income.

Operating Environment

As a seller of mortgage credit protection and mortgage and other credit risk management solutions, as well as a provider of mortgage, real estate and title services, our results are subject to macroeconomic conditions and other events that impact the housing finance and real estate markets, including events that specifically impact the mortgage origination environment, the credit performance of our underlying insured assets and our future business opportunities.

Recently, mortgage originations for home purchases have increased and become a larger proportion of total mortgage originations, as refinancing activity has declined due to rising interest rates. During 2017 and 2018, we have benefited from this trend because mortgage insurance penetration in the insurable mortgage market is generally three to five times higher for purchase originations than for refinancings. Additionally, mortgage insurance penetration on purchase transactions has gradually increased over the past few years. The increase in home purchase transactions and the higher mortgage insurance penetration for purchase originations resulted in a larger mortgage insurance market in 2018 as compared to 2017.

Mortgage Market Credit Characteristics. Loans originated for the private mortgage insurance market since 2008 consist primarily of high credit quality loans with significantly better credit performance than the loans originated during 2008 and prior periods. Significant contributors to the improved loan quality include the greater risk discipline of loan originators and the private mortgage insurance providers, the Qualified Mortgage (QM) loan requirements under the Dodd Frank Act, including the GSE safe harbor, and the loan-level criteria of the PMIERs financial requirements.

(1) For the PMIERs, in circumstances where there is more than one borrower, the lowest of the borrowers’ FICO scores is used.
(2) Seasoning factors are designed to adjust claim rate estimates for an expected loss pattern based on origination vintage.

Following the 2007-2008 financial crisis, the more restrictive credit environment resulted in an overall improvement in credit quality. More recently, with access to credit expanding and purchase volume becoming a larger proportion of total originations compared to refinancings, Radian Guaranty and the rest of the private mortgage insurance industry have been experiencing a shift in the mix of mortgage lending products toward higher LTVs and higher debt-to-income ratios. In part, this is because in general, borrowers who purchase a home with mortgage insurance tend to have higher LTVs than borrowers who refinance with mortgage insurance. Additional factors contributing to the increase in the industry’s NIW on mortgage loans with LTVs greater than 95% include: (i) GSE program enhancements and guideline changes, including Fannie Mae’s HomeReady program and Freddie Mac’s Home Possible and Home Possible Advantage programs, which are designed to make home ownership more affordable for low- to moderate-income borrowers and (ii) recent lender response to market demands, particularly in light of increasing demand from first-time home buyers. As a result of these factors, home purchases by first-time home buyers, who traditionally require mortgage loans with higher LTVs and may have higher debt-to-income ratios, continue to be an increasingly significant portion of the total market. Further, due in part to changes in GSE guidelines that increased acceptable debt-to-income limits, beginning in late 2017, the private mortgage industry observed a material increase in the volume of loans to borrowers with debt-to-income ratios greater than 45%, and Radian Guaranty imposed certain credit overlays and pricing changes to address this trend. These higher levels have continued during 2018. We believe that these trends toward higher LTVs and debt-to-income ratios have not materially impacted the overall credit quality of our portfolio. See “Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*” for additional information regarding our portfolio mix and the mortgage industry.

Hurricanes. We insure mortgages for homes in areas that have been or in the future may be impacted by natural disasters such as hurricanes, floods and wildfires, including Hurricanes Harvey and Irma in 2017 and Hurricanes Florence and Michael in 2018. Although the number of incremental defaults associated with areas that have been impacted by recent natural disasters, including the hurricanes in 2017 and 2018, became somewhat elevated, consistent with our past experience, these incremental defaults did not result in a material increase in our incurred losses or paid claims, given the limitations on our coverage related

to property damage. However, the future reserve impact of incremental defaults from these or other natural disasters may differ from our previous experience due to overall economic conditions, the pace of economic recovery in the affected areas or other factors. See Note 11 of Notes to Consolidated Financial Statements. See "Results of Operations—Mortgage Insurance—*NIW, IIF, RIF—Provision for Losses*" for more information on defaults. See "Liquidity and Capital Resources—*Radian Group—Short-Term Liquidity Needs—Capital Support for Subsidiaries*" for additional information on the impact of increased defaults on our PMIERs Minimum Required Assets.

PMIERs. In order to be eligible to insure loans purchased by the GSEs, mortgage insurers such as Radian Guaranty must meet the GSEs' eligibility requirements, or PMIERs. Radian Guaranty currently is an approved mortgage insurer under the PMIERs and is in compliance with the PMIERs financial requirements. The GSEs have significant discretion under the PMIERs and may amend the PMIERs at any time. On September 27, 2018, the GSEs issued PMIERs 2.0, which will become effective on March 31, 2019. Based on Radian's financial position at December 31, 2018, Radian expects to comply with PMIERs 2.0 and maintain a significant excess of Available Assets over Minimum Required Assets as of the effective date. See "Item 1. Business—Regulation—GSE Requirements," "Liquidity and Capital Resources—*Radian Group—Short-Term Liquidity Needs*" and Note 1 of Notes to Consolidated Financial Statements for additional information.

Tax Cuts and Jobs Act. On December 22, 2017, the TCJA was signed into law, significantly changing the U.S. tax system. It included, among other items, the following provisions that impacted Radian:

- Reduction of net deferred tax assets of $102.6 million at December 31, 2017, due to the lower statutory tax rate resulting in an increased tax provision;
- Significant reduction in our annualized effective tax rate and future cash tax payments due to the reduction in the statutory federal tax rate from 35% to 21% (excluding the impact of Discrete Items), effective January 1, 2018;
- A material reduction in cash tax payments in 2018 due to the repeal of the corporate alternative minimum tax;
- Reduced deductibility of certain executive compensation; and
- Potential impacts of state tax changes that could be prompted in response to the TCJA.

For periods beginning January 1, 2018, the TCJA had a significant favorable impact on our net income, diluted earnings per share and cash flows, primarily due to the reduction in the federal corporate tax rate. The TCJA also significantly increased the economic value of our existing mortgage insurance portfolio as of December 31, 2017, due to the increase in expected future net cash flows from our IIF.

Services. The macroeconomic conditions and other events that impact the housing, mortgage finance and related real estate markets also affect the demand for our mortgage, real estate and title services offered through our Services business segment. As described in "—Key Factors Affecting our Results—*Services*," revenues for our Services segment are subject to fluctuations from period to period, in part due to the combination of the transactional nature of our business and the overall activity in the housing and mortgage finance markets.

Our mortgage services business is dependent on customer activity and general secondary market dynamics including volume, types of transactions, and scopes of review. For example, while non-GSE or "private label" securitization activity remains limited compared to the pre-financial crisis market, this market continued to expand in 2018 due to larger institutions re-entering the market, suggesting increased potential growth in 2019. Similarly, the single family rental market continued to experience strong demand in 2018, driven in part by early refinance activity in the rising interest rate environment, as well as a GSE program that drove volume, but was later suspended at the end of 2018. While regulatory demands on mortgage market participants continue to be significant following the financial crisis, regulatory enforcement actions on mortgage industry participants have been less frequent, reducing the demand for our servicing quality control services as target customers form alternative strategies on how best to manage risk in the current and projected environment.

Radian's real estate services consist primarily of home property valuation services, which include appraisals, broker price opinions and automated valuations, and REO services that include property preservation and software as a service ("SaaS") technology products. These products and services are fundamentally volume driven and therefore

sensitive to variances in macro level home sales, home price appreciation, interest rates, home default rates and GSE guidelines. Since the financial crisis, REO inventory levels continue to decline due to lower delinquencies and foreclosure activity, reducing demand for our REO asset management services. Further, as alternatives for managing costs have become more critical to the overall value proposition for market participants, we have observed increasing market trends toward the use of non-appraisal valuation alternatives, which we expect will continue to grow.

Radian’s title services comprise a suite of title, closing and settlement services for residential mortgage loans, including our recent entry into the title insurance business with the acquisition of Entitle Insurance in 2018. General marketplace competition in the real estate title industry, coupled with housing and mortgage banking related conditions such as new home sales, the sizes of the real estate purchase and refinance markets and interest rate fluctuations, could limit or create volatility in the timing and amount of potential revenue growth of this business.
See Notes 4 and 7 of Notes to Consolidated Financial Statements and “Item 1. Business—Services—Services Business Overview” for additional information regarding the Services segment.

Competition and Pricing

Competitive Environment. In our mortgage insurance business, our primary competitors include other private mortgage insurers and governmental agencies, principally the FHA and the VA. We currently compete with other private mortgage insurers on the basis of price, underwriting guidelines, overall service, customer relationships, perceived financial strength (including based on comparative financial strength credit ratings) and reputation, as well as the breadth and quality of the services offered through our Services business that complement our mortgage insurance products. We compete with the FHA and VA, primarily on the basis of loan limits, pricing, credit guidelines, terms of our insurance policies and loss mitigation practices. For additional information, see “Item 1. Business—Mortgage Insurance—Competition.”

Pricing is highly competitive in the mortgage insurance industry, with industry participants competing for market share and customer relationships. As a result of this competitive environment, recent industry pricing trends have included: (i) increases in the use of a spectrum of filed rates to allow for pricing based on more granular loan, borrower and property attributes, including granular pricing through the use of a “Black Box” framework, as further discussed below; (ii) the use of customized rates (often discounted from our published rate cards), including in response to requests for pricing bids by certain lenders; and (iii) other pricing changes that include, among other things, reductions in published rates.

The mortgage insurance industry is migrating away from a predominantly rate-card-based pricing model, to one where a variety of pricing methodologies are being deployed with differing degrees of risk-based granularity, which may also lead to an increase in the frequency of pricing changes. By the end of 2018 all private mortgage insurers, including Radian, were either piloting or had broadly launched a “Black Box” framework. Currently, these frameworks continue to leverage the same general risk attributes as mortgage insurance pricing historically, and incorporate more granular risk-based pricing factors. Radian’s proprietary “Black Box” framework, RADAR Rates, became broadly available to customers in January 2019. See “Item 1. Business—Mortgage Insurance—Mortgage Insurance Business Overview—*Premium Rates*” above and “*—Radian’s Pricing,*” below.

As market conditions change, alternatives to traditional mortgage insurance may be introduced that compete with private mortgage insurance. In 2018, Freddie Mac and Fannie Mae announced the launch of limited pilot programs, Integrated Mortgage Insurance (“IMAGIN”) and Enterprise-Paid Mortgage Insurance (“EPMI”), respectively, as alternative ways for lenders to sell loans with LTVs greater than 80% to the GSEs. These investor-paid mortgage insurance programs, in which insurance is acquired directly by each GSE, have many of the same features and represent an alternative to traditional private mortgage insurance products that are provided to individual lenders. Under the IMAGIN and EPMI programs, which are forward insurance arrangements (forward commitments to insure future loan originations), insurance is provided by a third party which, in turn, cedes the risk to a panel of reinsurers. The reinsurers participating in IMAGIN and EPMI are not subject to compliance with the PMIERs, which may create a competitive disadvantage for private mortgage insurers if these pilot programs are expanded.

In their current forms, these programs have not had a material impact on our financial performance or business prospects, in part due to the limited nature of the pilots and their current focus on lender-paid Single Premium Policies as well as the operational changes required for lenders to switch from traditional mortgage insurance execution to this new form of execution. The financial impact of these programs has been further mitigated as a result of the shift away from lender-paid singles and the increasing use of our borrower-paid Single Premium Policies. We believe there are

significant challenges to the long-term sustainability of the IMAGIN and EPMI programs, including for example that the IMAGIN structure relies on a reinsurance market that, in contrast to traditional mortgage insurance, may not be committed to serving the first-loss mortgage insurance market through various economic and credit cycles. However, if these pilot programs or other alternatives to traditional private mortgage insurance were to expand and become broadly accepted alternatives to traditional private mortgage insurance, they could reduce the demand for private mortgage insurance in its traditional form. See “Item 1A. Risk Factors—*Our mortgage insurance business faces intense competition*.”

Radian's Pricing. As we continually evaluate our pricing based on many factors, we design our pricing strategies to grow the long-term economic value of our mortgage insurance portfolio and to align with our overall strategic objectives. During 2018, we made a number of pricing changes consistent with these objectives, including:

- implementing rate reductions on our borrower-paid Single Premium Policies in order to shift our NIW toward more profitable borrower-paid Single Premium Policies;
- increasing risk-based granularity of our pricing across most products, including the use of rate adjustors related to multi-borrower loans and loans with a debt-to-income ratio greater than 45%; and
- introducing our proprietary RADAR Rates, which became available to customers beginning in January 2019, subject to regulatory approval.

Our borrower-paid Single Premium Policies provide us with an increased return on required capital compared to lender-paid Single Premium Policies. Under the Homeowners Protection Act, most borrower-paid Single Premium Policies must be cancelled once the mortgage's scheduled LTV has declined to 78%. As a result of this automatic cancellation feature and other factors, over the life of the loans, the Minimum Required Assets under the PMIERs are lower than for lender-paid Single Premium Policies. In the nine months since we implemented our pricing strategy for borrower-paid Single Premium Policies, we successfully increased our NIW for borrower-paid Single Premium Policies from 5% of total NIW for the three-month period ended March 31, 2018 to 12% of total NIW for the three-month period ended December 31, 2018, and our NIW for lender-paid Single Premium Policies decreased from 16% to 5% for the same periods.

We currently employ proprietary risk and customer analytics, as well as a digital pricing delivery platform, to deliver loan level pricing electronically to our customers. In January 2019, we broadly introduced RADAR Rates as our newest pricing option that is powered by Radian's proprietary RADAR risk model and analyzes credit risk inputs to customize a rate quote to a borrower's individual risk profile, loan attributes and property characteristics. The granularity of our pricing is tailored to the business needs of our customers and their risk profiles. This framework represents a continuation of our strategy to consistently apply an approach to pricing that is customer-centric, flexible and customizable based on a lender's loan origination process, as well as balanced with our own objectives for managing the risk and return profile of our mortgage insurance portfolio. We expect that RADAR Rates, which leverages our proprietary risk model, will enhance our ability to continue to build a high quality mortgage insurance portfolio.

We target a blended return on required capital on new business on an unlevered basis (i.e., after-tax underwriting returns plus projected investment income) within the mid-teens range. This projected return incorporates the impact of our Single Premium QSR Program, as well as PMIERs 2.0, which will become effective on March 31, 2019, but does not include the impact of other factors, such as our Excess-of-Loss Program and leverage. See "*—Operating Environment—PMIERs*," above. Our pricing actions are expected to gradually affect our results over time, as existing IIF cancels and is replaced with NIW at current pricing. As an example, assuming our current NIW levels, mix and persistency levels remain constant, we estimate that it would take approximately three years for approximately one-half of our IIF to reflect our current pricing structure. See "Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*" for additional information.

Business Strategy

Radian is focused on a number of strategic objectives, as described in "Radian's Long-Term Strategic Objectives" in "Item 1. Business—General." In developing our strategies for our mortgage insurance business, we monitor various competitive and economic factors while seeking to increase the long-term value of our portfolio by balancing both profitability and volume considerations in developing our pricing and origination strategies. We take a strategic, risk-based approach to establishing our premium rates and writing a mix of business that we expect to grow the economic value of our mortgage insurance portfolio and produce our targeted level of returns on a blended basis, while providing an acceptable level of NIW. See "*—Competition and Pricing—Radian's Pricing*," and "Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*."

Our growth strategy includes leveraging our core expertise in mortgage credit risk management and expanding our presence in the mortgage finance industry, including by participating in certain credit risk transfer programs developed by the GSEs. As part of their initiative to distribute mortgage risk and increase the role of private capital in the mortgage market, Fannie Mae and Freddie Mac have established Front-end credit risk transfer programs that provide the GSEs with credit risk coverage on a Flow Basis that is incremental to primary mortgage insurance, as well as Back-end programs that provide the GSEs with credit risk coverage on existing pools of loans. Since 2016, we have participated in the Front-end programs and Back-end programs through Radian Reinsurance. Our participation in these programs is subject to pre-established credit parameters. Our total RIF under the Front-end and Back-end credit risk transfer programs was $196.8 million at December 31, 2018 and $100.4 million at December 31, 2017. We expect to continue to participate in these and other similar programs in the

future, subject to availability and our evaluation of risk-adjusted returns. We will only experience claims under these Front-end and Back-end credit risk transfer transactions if the borrower’s equity, any existing primary mortgage insurance (if applicable) and the GSEs’ retained risk are depleted. The GSEs retain the first losses on these credit risk transfer transactions, ranging from 35 to 60 basis points. Generally, Radian would then be responsible to cover the next layer of losses, which ranges in size from approximately 225 to 325 basis points. In participating in these GSE transactions, we assume incremental risk (beyond that which we typically cover in our traditional mortgage insurance business) associated with the risk of defaults caused by physical damage, including natural disasters such as hurricanes and wildfires, which is not covered by the underlying primary mortgage insurance. We regularly evaluate this risk, including the geographic diversity of the loans included in these transactions and our remote risk position, in assessing our participation in these transactions.

We have been focused on repositioning our Services business by implementing our restructuring plan and using the mortgage, real estate and title services offered through our Services segment to complement our Mortgage Insurance business, as well as by investing in new products and services to innovate and provide integrated solutions for our clients. Our strategy is designed to satisfy demand in the market, grow our fee-based revenues, strengthen our existing customer relationships, attract new customers and differentiate us from other mortgage insurance companies.

Other 2018 Developments

Capital and Liquidity Actions. On August 9, 2017, Radian Group’s board of directors authorized the Company to repurchase up to $50 million of its common stock through July 31, 2018. We completed this program during the first half of 2018 by purchasing 3.0 million shares at an average price of $16.56 per share, including commissions.

On August 16, 2018, Radian Group’s board of directors approved a new share repurchase program that authorizes the Company to repurchase up to $100 million of its common stock. As of December 31, 2018, the full purchase authority of up to $100 million remained available under this program, which expires on July 31, 2019. See Note 15 of Notes to Consolidated Financial Statements for additional details on our share repurchase program.

Radian Group’s liquidity increased as a result of Radian Guaranty’s return of $450 million in capital to Radian Group in December 2018, as approved by the Pennsylvania Insurance Department. This distribution of capital is part of our long-term capital plan, which is designed to improve our financial flexibility and capital position. A portion of the proceeds is expected to be used for the payment of $159 million principal amount of our outstanding Senior Notes due 2019. See Note 12 of Notes to Consolidated Financial Statements.

Reinsurance. Radian’s reinsurance programs represent a component of our long-term risk distribution strategy. From time to time, we have entered into reinsurance transactions as part of our strategy to manage our capital position and risk profile, which includes managing Radian Guaranty’s capital position under the PMIERs financial requirements. We have recently expanded our risk distribution strategy in an effort to optimize the amounts and types of capital and risk distribution deployed against insured risk, including by accessing both the capital and the reinsurance markets to distribute risk. We expect the expansion of our risk distribution strategy to: (i) support our overall capital plans; (ii) lower our cost of capital; and (iii) reduce portfolio risk and financial volatility through economic cycles.

As part of our risk distribution strategy, in November 2018, Radian Guaranty entered into a fully collateralized reinsurance agreement with Eagle Re, an unaffiliated special purpose reinsurer domiciled in Bermuda. This reinsurance agreement provides for up to $434.0 million of aggregate excess-of-loss reinsurance coverage for the applicable percentage of mortgage insurance losses on new defaults on an existing portfolio of eligible Monthly Premium Policies issued between January 1, 2017 and January 1, 2018, with an initial RIF of $9.1 billion. Eagle Re financed its coverage by issuing mortgage insurance-linked notes. In addition, Radian Guaranty entered into a separate excess-of-loss reinsurance agreement for up to $21.4 million of coverage, representing a pro rata share of the credit risk alongside the risk assumed by Eagle Re on those Monthly Premium Policies. These two reinsurance agreements reduced net RIF and PMIERs Minimum Required Assets by a total of $455.4 million, thus reducing the capital required to be held at Radian Guaranty and supporting Radian Guaranty’s $450 million return of capital to Radian Group in December 2018. For additional information about our reinsurance see Note 8 in Notes to Consolidated

Financial Statements and "Results of Operations—Mortgage Insurance—*Net Premiums Written and Earned.*" See "Liquidity and Capital Resources—*Radian Group—Short-Term Liquidity Needs*" for additional information on the PMIERs.

IRS Matter. Radian finalized a settlement with the IRS which resolved the issues and concluded all disputes related to the IRS Matter. During the second quarter of 2018, we recorded tax benefits of $73.6 million, which includes both the impact of the settlement with the IRS as well as the reversal of certain previously accrued state and local tax liabilities. In 2018, under the terms of the settlement, Radian utilized its "qualified deposits" with the U.S. Treasury to settle its $31 million obligation to the IRS, and in 2019, the Company expects the IRS to refund to Radian the remaining $58 million that was previously on

deposit. During the year ended December 31, 2018, the settlement and related tax benefits resulted in an increase to Radian's net income per share of $0.34 and an increase in book value per share of $0.34. See Note 10 of Notes to Consolidated Financial Statements for additional information.

Services Acquisitions. During 2018, Radian made three acquisitions that, although the purchase prices were not material to Radian, were consistent with our strategic direction, including growth, diversification and enhancing the core product offerings of our Services business.

During the first quarter of 2018, Radian acquired EnTitle Direct, the owner of EnTitle Insurance, a national title insurance and settlement services company. EnTitle Insurance is qualified to write title insurance business in 39 states and the District of Columbia. By adding the capabilities of EnTitle Insurance to the title and settlement services that we already were offering through our existing title agency, Radian Settlement Services, we have expanded the geographic reach of our title services and are positioned to provide title insurance and settlement services to our customers across the country.

In November 2018, Radian acquired Independent Settlement Services. Independent Settlement Services is a technology-driven national appraisal and title management services company that provides real estate information and valuation solutions in all 50 states, as well as proprietary technology that provides lenders, appraisers, servicing firms, due diligence firms and appraisal-management companies with a fully-automated platform to manage the ordering and delivery of products and services.

In December 2018, Radian acquired the assets of Five Bridges, a developer of proprietary software, data analytics and predictive models leveraging artificial intelligence, machine learning and traditional econometric techniques. With the assets acquired from Five Bridges, we expect to provide consumer and real estate analytics to customers, with a primary focus on valuation and risk management tools that span the entire loan life cycle, from underwriting and origination to servicing, secondary market purchase, and securitization.

Restructuring and Other Exit Costs. As a result of the Company's continued implementation of its 2017 plan to restructure the Services business, restructuring charges were recognized in 2018. In the third quarter of 2018, as a result of our periodic review of long-lived assets for impairment, we also incurred other exit costs associated with impairment of internal-use software. See Notes 1 and 7 of Notes to Consolidated Financial Statements for additional details.

Key Factors Affecting Our Results

Mortgage Insurance

Our Mortgage Insurance segment provides credit-related insurance coverage, principally through private mortgage insurance, as well as other credit risk management solutions, to mortgage lending institutions and investors nationwide. The chart below highlights certain key drivers affecting our Mortgage Insurance revenue. The following sections discuss these revenue drivers, as well as other key factors affecting our results.

- IIF
- Persistency Rate
- Premium rates and mix of business
- Size of mortgage origination market and market demand for low down payment loans
- Level of mortgage originations for purchase transactions
- Penetration percentage of private mortgage insurance in overall mortgage market and legislative, regulatory and administrative changes impacting the demand for private mortgage insurance
- Radian's market share of the private mortgage insurance market
- The level of reinsurance we cede to third parties
- Levels of GSE credit risk transfer

IIF; Persistency Rate; Mix of Business. Our IIF is one of the primary drivers of our future premiums that we expect to earn over time. Although not reflected in the current period financial statements, nor in our reported

book value, we expect our IIF to generate substantial earnings in future periods, due to the high credit quality of our current mortgage insurance portfolio and expected persistency over multiple years. Additionally, as a result of the TCJA, the economic value of our existing IIF increased significantly as of December 31, 2017, due to the increase in expected future net cash flows associated with the reduction in expected tax payments.

Based on the composition of our mortgage insurance portfolio, with Monthly Premium Policies comprising a larger proportion of our total portfolio than Single Premium Policies, an increase or decrease in IIF generally has a corresponding impact on premiums earned. Cancellations of our insurance policies as a result of prepayments and other reductions of IIF, such as Rescissions of coverage and claims paid, generally have a negative effect on premiums earned. See "Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*" for more information about the levels and characteristics of our NIW, IIF and RIF.

The ultimate profitability of our Mortgage Insurance business is affected by the impact of mortgage prepayment speeds on the mix of business we write. The measure for assessing the impact of policy cancellations on our IIF is our Persistency Rate, defined as the percentage of IIF that remains in force over a period of time. Assuming all other factors remain constant, over the life of the policies, prepayment speeds have an inverse impact on IIF and the expected revenue from our Monthly Premium Policies. Slower loan prepayment speeds, demonstrated by a higher Persistency Rate, result in IIF remaining in place, providing increased revenue from Monthly Premium Policies over time as premium payments continue and we recover more of our policy acquisition costs. Earlier than anticipated loan prepayments, demonstrated by a lower Persistency Rate, reduce IIF and the revenue from our Monthly Premium Policies. Prepayment speeds may be affected by changes in interest rates, among other factors. An increasing interest rate environment generally will reduce refinancing activity and result in lower prepayments, whereas a declining interest rate environment generally will increase the level of refinancing activity and therefore increase prepayments.

In contrast to Monthly Premium Policies, when Single Premium Policies are cancelled by the insured because the loan has been paid off or otherwise, after consideration of any refunds owed to the borrower, we accelerate the recognition of any remaining unearned premiums. Although these cancellations reduce IIF, assuming all other factors remain constant, the profitability of our Single Premium business increases when Persistency Rates are lower. As a result, we believe that writing a mix of Single Premium Policies and Monthly Premium Policies has the potential to moderate the overall impact on our results if actual prepayment speeds are significantly different from expectations. However, this moderating effect may depend on the amount of reinsurance we obtain on portions of our portfolio, with the Single Premium QSR Program currently reducing the proportion of retained Single Premium Policies in our portfolio. The impact of all of our third-party quota share reinsurance programs reduced our retained RIF on Single Premium Policies as a percentage of total RIF from 29.7% to 17.2% at December 31, 2018. See "Overview—*Business Strategy*" for more information.

- *NIW; Origination Market; Penetration Rate.* NIW increases our IIF and our premiums written and earned. NIW is affected by the overall size of the mortgage origination market, the penetration percentage of private mortgage insurance into the overall mortgage origination market and our market share of the private mortgage insurance market. The overall mortgage origination market is influenced by macroeconomic factors such as household formation, household composition, home affordability, interest rates, housing markets in general, credit availability and the impact of various legislative and regulatory actions that may influence the housing and mortgage finance industries. The penetration percentage of private mortgage insurance is mainly influenced by: (i) the competitiveness of private mortgage insurance for GSE conforming loans compared to FHA and VA insured loans and (ii) the relative percentage of mortgage originations that are for purchased homes versus refinances. We believe, for example, that better execution for borrowers with higher FICO scores, lender preference and the inability to cancel FHA insurance for certain loans are factors that continue to provide a competitive advantage for private mortgage insurers. See "Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*."

Private mortgage insurance penetration in the insurable market tends to be significantly higher on new mortgages for purchased homes than on the refinance of existing mortgages, because average LTVs are typically higher on home

purchases and therefore are more likely to require mortgage insurance. Radian Guaranty's share of the private mortgage insurance market is influenced by competition in that market. See "Item 1. Business—Mortgage Insurance—Competition" and "Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*."

The following charts provide a historical perspective on certain key market drivers, including:

- the mortgage origination volume from home purchases and refinancings;
- private mortgage insurance penetration as a percentage of the mortgage origination market; and
- the composition of the insured mortgage market between private mortgage insurance and FHA insurance.

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(1) Based on actual dollars generated in the credit enhanced market, as reported by the U.S. Department of Housing and Urban Development and industry publicly reported information. Mortgage originations are based upon the average of Mortgage Bankers Association, Freddie Mac and Fannie Mae January 2019 Financial Forecasts.

(2) Excluding HARP originations.

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(1) Based on actual dollars generated in the market based on industry publicly reported information and the most recent available reporting by the U.S. Department of Housing and Urban Development.

- *Premiums.* The premium rates we charge for our insurance are based on a number of borrower, loan and property characteristics. The mortgage insurance industry is highly competitive and private mortgage insurers compete with each other and with the FHA and VA with respect to price and other factors. We expect price competition to continue throughout the mortgage insurance industry and future price changes from private mortgage insurers or the FHA could impact our future premium rates or our ability to compete.

Our pricing is risk-based and is intended to generally align with the capital requirements under the PMIERs, while considering pricing trends within the private mortgage insurance industry. As a result, our pricing is expected to generate relatively consistent returns across the credit spectrum and to provide relatively stable expected loss ratios regardless of further credit expansion or contraction. In developing our strategies, we monitor various competitive and economic factors while seeking to increase the long-term value of our portfolio by balancing both profitability and volume considerations in developing our pricing and origination strategies. We continued to generate strong NIW in 2018, and believe we remain well positioned to compete for the high-quality business being originated today, while at the same time maintaining projected returns on NIW within our targeted ranges.

Our pricing actions gradually affect our results over time, as existing IIF cancels and is replaced with NIW at current pricing. See “Liquidity and Capital Resources—*Radian Group—Short-Term Liquidity Needs—Capital Support for Subsidiaries*” and “Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*” for additional information.

Premiums on our mortgage insurance products are generally paid either on a monthly installment basis (“Monthly Premiums”) or in a single payment (“Single Premiums”) at the time of loan origination. See “Item 1. Business—Mortgage Insurance—Mortgage Insurance Business Overview—*Premium Rates—Primary Mortgage Insurance.*” Our expected premium yield on our Single Premium Policies is lower than on our Monthly Premium Policies because our premium rates are generally lower for our Single Premium Policies. However, as discussed above, the ultimate profitability of Single Premium Policies may be higher or lower than expected due to prepayments. See “*—IIF; Persistency Rate; Mix of Business.*”

Our actual portfolio returns will depend on a number of factors, including economic conditions, the mix of NIW that we are able to write, our pricing, the amount of reinsurance we use and the level of capital required under the PMIERs financial requirements.

Rescissions, which are discussed in further detail below, result in a full refund of the inception-to-date premiums received, and therefore, premiums earned are negatively affected by any increases in our accrual for estimated Rescission refunds. Additionally, premiums ceded to third-party reinsurance counterparties decrease premiums written and earned.

Approximately 66% of the loans in our total primary mortgage insurance portfolio at December 31, 2018 have Monthly Premium Policies that provide a level monthly premium for the first 10 years of the policy, followed by a reduced level monthly premium thereafter. If a loan is refinanced under HARP, the initial 10-year period is reset. Due to the borrower’s ability to cancel the policy generally when the LTV reaches 80% of the original value, and the automatic cancellation of the policy on the date the LTV is scheduled to reach 78% of the original value, the volume of loans that remain insured after 10 years and would be subject to the premium reset is generally not material in relation to the total loans originated. However, to the extent the volume of loans resetting from year to year varies significantly, the trend in earned premiums may also vary.

Losses. Incurred losses represent the estimated future claim payments on newly defaulted insured loans as well as any change in our claim estimates for existing defaults, including changes in the estimates we use to determine our expected losses, and estimates with respect to the frequency, magnitude and timing of anticipated losses on defaulted loans. Other factors influencing incurred losses include:

- The mix of credit characteristics in our total direct RIF (e.g., loans with higher risk characteristics, or loans with layered risk that combine multiple higher-risk attributes within the same loan, generally result in more delinquencies and claims). See “Results of Operations—Mortgage Insurance—*NIW, IIF, RIF*.
- The average loan size (relatively higher priced properties with larger average loan amounts may result in higher incurred losses).
- The percentage of coverage on insured loans (higher percentages of insurance coverage generally correlate with higher incurred losses) and the presence of structural mitigants such as deductibles or stop losses.
- Changes in housing values (declines in housing values generally make it more difficult for borrowers to sell a home to avoid default or for the property to be sold to mitigate any claim, and also may negatively affect a borrower’s willingness to continue to make mortgage payments when the home value is less than the mortgage balance; conversely, increases in housing values tend to reduce the level of defaults as well as make it more likely that foreclosures will result in the loan being satisfied).
- The distribution of claims over the life cycle of a portfolio (historically, claims are relatively low during the first two years after a loan is originated and then increase over a period of several years before declining; however, several factors can impact and change this cycle, including the economic environment, the quality of the underwriting of the loan, characteristics of the mortgage loan, the credit profile of the borrower, housing prices and unemployment rates).
- Our ability to mitigate potential losses through Rescissions, Claim Denials, cancellations and Claim Curtailments on claims submitted to us. These actions all reduce our incurred losses. However, if these Loss Mitigation Activities are successfully challenged at rates that are higher than expected or we agree to settle disputes related to our Loss Mitigation Activities, our incurred losses will increase. We may enter into specific agreements that govern activities such as claims decisions, claim payments, Loss Mitigation Activities and insurance coverage. As our portfolio originated prior to and including 2008 has become a smaller percentage of our overall insured portfolio, there has been a decrease in the amount of Loss Mitigation Activity with respect to the claims we receive, and we expect this trend to continue, particularly given the limitations on our Loss Mitigation Activities imposed in the 2014 Master Policy. See Note 11 of Notes to Consolidated Financial Statements for additional information on Loss Mitigation Activities and “Item 1A. Risk Factors—*Our Loss Mitigation Activity is not expected to mitigate mortgage insurance losses to the same extent as in prior years; Loss Mitigation Activity could continue to negatively impact our customer*

relationships.”

- *Other Operating Expenses*. Our other operating expenses are affected by the amount of our NIW, as well as the amount of RIF. Our other operating expenses may also be affected by the impact of performance on our incentive

compensation programs, as a result of our pay-for-performance and risk-based approach to compensation that is based on the level of achievement of both short-term and long-term goals.

- *Third-Party Reinsurance.* We use third-party reinsurance in our mortgage insurance business to manage capital and risk in an effort to optimize the amounts and types of capital and risk distribution deployed against insured risk. See "Overview—*Other 2018 Developments—Reinsurance*" and "—*IIF; Persistency Rate; Mix of Business*." Currently Radian participates in quota share and excess-of-loss reinsurance programs. When we enter into a quota share reinsurance agreement, the reinsurer receives a premium and, in exchange, agrees to insure an agreed upon portion of incurred losses. These arrangements have the impact of reducing our earned premiums but also reduce our net RIF, which provides capital relief, including under the PMIERs financial requirements. Our incurred losses are reduced by any incurred losses ceded in accordance with the reinsurance agreement, and we often receive ceding commissions from the reinsurer as part of the transaction, which reduces our operating expenses and policy acquisition costs. Our Excess-of-Loss Program accesses both the capital and the reinsurance markets to distribute risk, and includes reinsurance through a variable interest entity funded by mortgage insurance-linked notes, as well as separate excess-of-loss reinsurance with a third-party reinsurer. Our Excess-of-Loss Program reduces our net RIF and our incurred losses are reduced by any incurred losses allocated in accordance with the structure of the transaction. While these arrangements have the impact of reducing our earned premiums, they also provide capital relief, including under the PMIERs financial requirements. See Note 8 of Notes to Consolidated Financial Statements for more information about our reinsurance arrangements.

Services

Our Services segment offers a broad array of services to market participants across the mortgage and real estate value chain. These services comprise mortgage services, real estate services and title services, including technology and turn-key solutions, that provide information and other resources used to originate, evaluate, acquire, securitize, service and monitor residential real estate and loans secured by residential real estate. These services primarily are provided to mortgage lenders, financial institutions, investors and government entities. In addition, we provide title insurance to mortgage lenders as well as directly to borrowers.

Our mortgage services help loan originators and investors evaluate, acquire, surveil and securitize mortgages. These services include loan review, RMBS securitization and distressed asset reviews, review and valuation services related to single family rental properties, servicer and loan surveillance and underwriting. Our real estate services help lenders, investors and real estate agents evaluate, manage, monitor and sell properties. These real estate services include software as a service solutions and platforms, as well as managed services, such as REO asset management, real estate valuation services and real estate brokerage services. Our title services provide a comprehensive suite of title insurance products, title settlement services and both traditional and digital closing services. See "Item 1. Business—Services—Customers," "Item 1. Business—Services—Services Business Overview," and Note 1 of Notes to Consolidated Financial Statements for additional information regarding the Services segment.

In contrast to our Mortgage Insurance business, the Services segment is primarily a fee-for-service business without significant balance sheet risk. Key factors impacting results for our Services business include:

- *Services Revenue*. Our Services segment is dependent upon overall activity in the mortgage, real estate and mortgage finance markets, as well as the overall health of the related industries. Due, in part, to the transactional nature of its business, revenues for our Services segment are subject to fluctuations from period to period, including seasonal fluctuations that reflect the activities in these markets. Sales volume is also affected by the number of competing companies and alternative products offered in the market. We believe the diversity of services we offer has the potential to produce fee income from the Services segment throughout various mortgage finance environments, although market conditions can significantly impact the mix and amount of fee income we generate in any particular period. In addition, see Note 2 of Notes to Consolidated Financial Statements for information on revenue recognition policies for our Services segment.

The Services segment is dependent on a limited number of large customers that represent a significant portion of its

revenues. An unexpected loss of a major customer could significantly impact the level of Services revenue. Access to Radian Guaranty's mortgage insurance customer base provides additional opportunities to expand the Services segment's existing customers. Generally, our contracts do not contain volume commitments and may be terminated by clients at any time.

Revenue for the Services segment also includes inter-segment revenues from services performed for our Mortgage Insurance segment. See Note 4 of Notes to Consolidated Financial Statements for additional information.

Our Services revenue is generated under three basic types of contracts:

- *Fixed-Price Contracts.* Under fixed-price contracts, we agree to perform the specified services and deliverables for a pre-determined per-unit or per-file price or day rate. To the extent our actual direct and allocated indirect costs decrease or increase from the estimates upon which the price was negotiated, we will generate more or less profit, respectively, or could incur a loss.
- *Time-and-Expense Contracts.* Under a time-and-expense contract, we are paid a fixed hourly rate, and we are reimbursed for billable out-of-pocket expenses as work is performed. To the extent our actual direct labor costs decrease or increase in relation to the fixed hourly billing rates provided in the contract, we may generate more or less profit, respectively. However, because these contracts are generally short-term in nature, the risk is limited to the periods covered by the contracts. These contracts are used for our loan review, underwriting and due diligence services.
- *Percentage-of-Sale Contracts.* Under percentage-of-sale contracts, we are paid a contractual percentage of the sale proceeds upon the sale of each property. To the extent the sale of a property is delayed or not consummated, or the sales proceeds are significantly less than originally estimated, we may generate less profit than anticipated, or could incur a loss. See "Item 1. Business—Services—Services Business Overview" for more information on our Services revenue.

- *Cost of Services.* Our cost of services is primarily affected by our level of services revenue. Our cost of services primarily consists of employee compensation and related payroll benefits, including the cost of billable labor assigned to revenue-generating activities and, to a lesser extent, other costs of providing services such as travel and related expenses incurred in providing client services, costs paid to outside vendors, data acquisition costs and other compensation-related expenses to maintain software application platforms that directly support our businesses. The level of these costs may fluctuate if market rates of compensation change, or if there is decreased availability or a loss of qualified employees.
- *Gross Profit on Services.* In addition to the key factors affecting Services revenue and cost of services described above, our gross profit on services may fluctuate from period to period due to a shifting mix of services we provide resulting from changes in the relative demand for those services in the marketplace. Shifts in the business mix of our Services business can impact our gross profit because each product and service generally produces a different level of gross margin. These individual gross margins in turn can be impacted in any given period by factors such as the implementation of new regulatory requirements, our operating capacity, competition or other environmental factors.
- *Premiums.* We earn net premiums on title insurance, effective with our acquisition of EnTitle Direct in the first quarter of 2018. By adding the capabilities of its subsidiary, EnTitle Insurance, to the title and settlement services that we already were offering through our existing title agency, Radian Settlement Services, we have expanded the geographic reach of our title services and are positioned to provide title insurance and settlement services to our customers across the country.
- *Operating Expenses.* Our operating expenses primarily consist of salaries and benefits not classified as cost of services because they are related to employees, such as sales and corporate employees, who are not directly involved in providing client services. Operating expenses also include other selling, general and administrative expenses, depreciation, and allocations of corporate general and administrative expenses.

Other Factors Affecting Consolidated Results

The following items also may impact our consolidated results in the ordinary course. The items listed are not representative of all potential items impacting our consolidated results. See "Item 1A. Risk Factors" for additional information on the risks affecting our business.

- *Investment Income.* Investment income is determined primarily by the investment balances held and the average yield on our overall investment portfolio.
- *Net Gains (Losses) on Investments.* The recognition of realized investment gains or losses can vary significantly across periods as the activity is highly discretionary based on such factors as market opportunities, our tax and capital profile and overall market cycles that impact the timing of the sales of securities. Unrealized investment gains and

losses arise primarily from changes in the market value of our investments that are classified as trading securities or, effective with our implementation of the update to the standard for the accounting of financial

instruments effective January 1, 2018, equity securities. These unrealized gains and losses are generally the result of changes in interest rates or credit spreads and may not necessarily result in economic gains or losses.

- *Impairment of Goodwill or Other Acquired Intangible Assets.* The periodic review of goodwill and other acquired intangible assets for potential impairment may impact consolidated results. Our goodwill and other acquired intangible assets primarily relate to the acquisition of Clayton, and their valuation is based on management's assumptions, which are inherently subject to risks and uncertainties. In 2017, we recorded total impairment charges of $200.2 million related to the goodwill and other acquired intangible assets of the Services segment. See Note 7 of Notes to Consolidated Financial Statements for additional information.
- *Tax Cuts and Jobs Act.* The enactment of the TCJA resulted in a material reduction of our net deferred tax assets at December 31, 2017, because deferred tax assets and liabilities are measured using the enacted tax rates that are expected to apply to taxable income in the periods in which the deferred tax assets or liabilities are expected to be realized or settled. See Note 10 of Notes to Consolidated Financial Statements for additional information on the TCJA.

The TCJA, excluding the impact of Discrete Items, has had a significant favorable impact on the Company's net income, diluted earnings per share and cash flows for 2018, as compared to the tax laws in effect in 2017, primarily due to the reduction in the federal corporate tax rate from 35% to 21%, which was effective on January 1, 2018. See "Results of Operations—Consolidated—*Income Tax Provision*" and Note 10 of Notes to Consolidated Financial Statements for additional information on the TCJA.

Future policy changes or interpretations could have a positive or negative impact on our financial performance depending on how the changes would influence the economy, including business and consumer sentiment and the key factors influencing our performance.

Key Metrics—Consolidated

The following key metrics are used by management in evaluating our performance and measuring the overall growth in value generated for our stockholders. See "Results of Operations—Consolidated," for additional information on our operating results.

	Year Ended December 31,		
	2018	2017	2016
Diluted net income per share	$2.77	$0.55	$1.37
Adjusted diluted net operating income per share (1)	2.69	1.82	1.56
Book value per share at December 31	16.34	13.90	13.39
Return on equity	18.7 %	4.1 %	11.5 %
Adjusted net operating return on equity (1)	18.2 %	13.7 %	13.1 %

(1) See "Results of Operations—Consolidated—*Use of Non-GAAP Financial Measures*".

Diluted Net Income Per Share. The changes in diluted net income per share across all periods presented are primarily due to the changes in net income. The change in net income from 2016 to 2017 was partially offset by the decrease in average diluted shares from 229.3 million shares in 2016 to 220.4 million shares for 2017. See "Results of Operations—Consolidated—*Net Income*" for more information on the changes in net income.

The decrease in average diluted shares for 2017 compared to 2016 is primarily due to the full-year impact of the series of capital and liquidity actions completed in 2016, which included: (i) the purchases of portions of our Convertible Senior Notes due 2017 and 2019, and (ii) the purchase of 9.4 million shares of Radian Group common stock. In addition, in January 2017, we settled our obligations with respect to the remaining $68.0 million aggregate principal amount of our Convertible Senior Notes due 2019 which, as of the settlement date, resulted in a decrease of an additional 6.4 million diluted shares for purposes of determining diluted net income per share.

Adjusted diluted net operating income per share. The increase in adjusted diluted net operating income per share for 2018, compared to 2017, is primarily due to the increase in our Mortgage Insurance segment's adjusted pretax

operating income, which increased to $772.6 million in 2018, from $651.0 million in 2017. The increase in adjusted diluted net operating income

per share for 2018 as compared to 2017 was also impacted by the reduction in the company’s federal statutory tax rate from 35% to 21%, which was effective on January 1, 2018.

The increase in adjusted diluted net income per share for 2017, compared to 2016, is primarily due to the increase in our Mortgage Insurance segment’s adjusted pretax operating income, which increased to $651.0 million in 2017, from $561.9 million in 2016. The increase in adjusted diluted net operating income per share for 2017 as compared to 2016 was also impacted by the decrease in average diluted shares, as discussed above.

See “Results of Operations—Mortgage Insurance—*Adjusted Pretax Operating Income*” for more information on our Mortgage Insurance segment’s results.

Book Value Per Share. The increase in book value per share, from $13.90 at December 31, 2017 to $16.34 at December 31, 2018, is primarily due to net income, partially offset by a decrease of $0.41 per share due to unrealized losses in our available for sale securities, recorded in accumulated other comprehensive income.

The increase in book value per share, from $13.39 at December 31, 2016 to $13.90 at December 31, 2017, is primarily due to our net income and an increase in unrealized gains in other comprehensive income, partially offset by the equity impact of the series of capital and liquidity actions completed in 2017, as discussed above.

The amount of goodwill and other acquired intangible assets included in book value per share decreased significantly, from $1.29 per share at December 31, 2016 to $0.30 per share at December 31, 2017 and $0.28 per share at December 30, 2018, primarily due to the impairment of goodwill and other acquired intangible assets, in each case related to the Services segment, as shown in the chart below.

Return on equity. The changes in return on equity across all periods presented are primarily due to the changes in net income and, to a lesser extent, increases in stockholders’ equity. See “Results of Operations—Consolidated—*Net Income*” for more information on the changes in net income.

Adjusted net operating return on equity. The increases in adjusted net operating return on equity across all periods presented are primarily due to the increases in our adjusted pretax operating income, partially offset by increases in stockholders’ equity. The increases in our adjusted pretax operating income primarily reflect the increases in our Mortgage Insurance segment’s adjusted pretax operating income. See “Results of Operations—Mortgage Insurance—*Adjusted Pretax Operating Income*” for more information on our Mortgage Insurance segment’s results. The increase in adjusted net operating return on equity for 2018 as compared to 2017 was also impacted by the reduction in the company’s federal statutory tax rate from 35% to 21%, which was effective on January 1, 2018.

Results of Operations—Consolidated

Radian Group serves as the holding company for our operating subsidiaries and does not have any operations of its own. Our consolidated operating results for 2018 primarily reflect the financial results and performance of our two business segments—Mortgage Insurance and Services. See Note 4 of Notes to Consolidated Financial Statements for information regarding the basis of our segment reporting, including the related allocations. See “Results of Operations—Mortgage Insurance,” and “Results of Operations—Services” for the operating results of these business segments.

In addition to the results of our operating segments, pretax income (loss) is also affected by other factors. See “Key Factors Affecting Our Results—*Other Factors Affecting Consolidated Results*.” See “—*Use of Non-GAAP Financial Measures*” below for more information regarding items that are excluded from the operating results of our operating segments.

The following table highlights selected information related to our consolidated results of operations for the years ended December 31, 2018, 2017 and 2016:

($ in millions, except per-share amounts)	Year Ended December 31, 2018	2017	2016	$ Change Favorable (Unfavorable) 2018 vs. 2017	2017 vs. 2016
Pretax income	$684.2	$346.7	$483.7	$337.5	$(137.0)
Net income	606.0	121.1	308.3	484.9	(187.2)
Net premiums earned—insurance	$1,014.0	$932.8	$921.8	$81.2	$11.0
Services revenue	145.0	155.1	168.9	(10.1)	(13.8)
Net investment income	152.5	127.2	113.5	25.3	13.7
Net gains (losses) on investments and other financial instruments	(42.5)	3.6	30.8	(46.1)	(27.2)
Provision for losses	104.6	135.2	202.8	30.6	67.6
Cost of services	98.1	104.6	114.2	6.5	9.6
Other operating expenses	280.8	267.3	244.9	(13.5)	(22.4)
Restructuring and other exit costs	6.1	17.3	—	11.2	(17.3)
Interest expense	61.5	62.8	81.1	1.3	18.3
Loss on induced conversion and debt extinguishment	—	51.5	75.1	51.5	23.6
Impairment of goodwill	—	184.4	—	184.4	(184.4)
Amortization and impairment of other acquired intangible assets	12.4	27.7	13.2	15.3	(14.5)
Income tax provision	78.2	225.6	175.4	147.4	(50.2)
Adjusted pretax operating income (1)	$745.5	$617.2	$541.8	$128.3	$75.4

(1) See “—*Use of Non-GAAP Financial Measures*” below.

Net Income. As discussed in more detail below, our net income increased for 2018, compared to 2017, primarily reflect: (i) the impairment of goodwill and other acquired intangible assets related to our Services segment recognized in the three months ended June 30, 2017; (ii) a lower effective income tax rate in 2018 (see “—*Income Tax Provision*” below); (iii) an increase in net premiums earned; (iv) a decrease in loss on induced conversion and debt extinguishment; (v) a decrease in provision for losses and (vi) an increase in net investment income. Partially offsetting these items is an increase in net losses on investments and other financial instruments. See “Results of Operations—Mortgage Insurance” and “Results of Operations—Services” for more information on our segment results.

For 2018, revenue increased compared to 2017, primarily driven by increases of 8% in mortgage insurance net premiums earned. Other operating expenses increased by 5% in 2018 compared to 2017. See “—*Other Operating Expenses,”* below.

As discussed in more detail below, our results for 2017 compared to 2016 primarily reflect: (i) the impairment of goodwill and other acquired intangible assets related to the Services segment; (ii) additional tax expense related to the remeasurement of our net deferred tax assets as a result of the TCJA; (iii) a decrease in net gains on investments and other financial instruments;

(iv) an increase in other operating expenses; and (v) restructuring and other exit costs associated with our plan to restructure the Services business. These items were partially offset by, among other things: (i) a decrease in provision for losses; (ii) a decrease in loss on induced conversion and debt extinguishment; and (iii) lower interest expense.
Services Revenue and Cost of Services. Services revenue and cost of services all relate to our Services segment. See "Results of Operations—Services" for more information.
Net Gains (Losses) on Investments and Other Financial Instruments. The increase in net losses on investments and other financial instruments for 2018, as compared to 2017, is primarily due to the increase in unrealized losses in our trading portfolio related to changes in fair value resulting from increased interest rates.
The decrease in net gains on investments and other financial instruments in 2017 as compared to 2016 is primarily due to: (i) the decrease in net realized gains attributable to sales and redemptions of fixed-maturities available for sale and trading securities and (ii) the decrease in unrealized gains on investments and other financial instruments in 2017, as compared to 2016, primarily related to the change in fair value of trading securities and other investments.
The components of the net gains (losses) on investments and other financial instruments for the periods indicated are as follows:

	Year Ended December 31,		
(In millions)	2018	2017	2016
Net unrealized gains (losses) related to change in fair value of trading securities and other investments (1)	$(27.3)	$13.2	$27.2
Net realized gains (losses) on investments	(12.1)	(8.6)	4.3
Other-than-temporary impairment losses	(1.7)	(1.4)	(0.5)
Net gains (losses) on other financial instruments	(1.4)	0.4	(0.2)
Net gains (losses) on investments and other financial instruments	$(42.5)	$3.6	$30.8

(1) These amounts include unrealized gains (losses) on investment securities other than securities available for sale. For 2017 and 2016, the unrealized gains (losses) on investments exclude the net change in unrealized gains and losses on equity securities. Prior to the implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized gains (losses) associated with equity securities were classified in accumulated other comprehensive income.

Other Operating Expenses. Other operating expenses for 2018 increased as compared to 2017, primarily as a result of: (i) higher compensation expense in 2018, including variable and incentive-based compensation and (ii) an increase due to the acquisition of EnTitle Direct on March 27, 2018, and the resulting inclusion of its operating expenses. These effects were partially offset by an increase in ceding commissions in 2018, primarily due to the 2018 Single Premium QSR Agreement and the increased cession percentage on the 2016 Single Premium QSR Agreement. In addition to these items, 2018, as compared to 2017, also included: (i) lower expenses associated with retirement and consulting agreements entered into in February 2017 with our former Chief Executive Officer and (ii) lower accrued legal expenses related to defending and resolving certain outstanding legal matters.
Other operating expenses for 2017 increased as compared to 2016, primarily due to: (i) $6.6 million of expenses associated with retirement and consulting agreements entered into in February 2017 with our former Chief Executive Officer; (ii) increases in technology expenses associated with a significant investment in upgrading our systems; (iii) expenses accrued to defend and resolve certain outstanding legal matters; and (iv) a decrease in ceding commissions. The increase in other operating expenses for 2017 was partially offset by lower compensation expense in 2017, including variable incentive-based compensation.
Restructuring and other exit costs. For 2018, we recognized $3.6 million of other exit costs associated with impairment of internal-use software. Restructuring and other exit costs for 2018 also include the remaining charges associated with our plan to restructure the Services business. See Note 1 of Notes to Consolidated Financial

Statements for more information.

For 2017, restructuring and other exit costs represent charges associated with our plan to restructure the Services business. Charges are primarily due to severance and related benefit costs and impairment of long-lived assets and loss from the sale of a business line. See Note 7 of Notes to Consolidated Financial Statements for more information on our review of the strategic

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direction of the Services segment, which resulted in these charges, as well as charges for impairment of goodwill and other intangible assets.

Interest Expense. Interest expense for 2018 and 2017 decreased, as compared to 2016. This decrease was primarily due to reductions in interest expense from our: (i) August 2016 redemption of the remaining $195.5 million outstanding principal amount of our Senior Notes due 2017; (ii) January 2017 settlement of the remaining $68.0 million outstanding principal amount of our Convertible Senior Notes due 2019; and (iii) purchases during 2016 of $322.0 million aggregate principal amount of Convertible Senior Notes due 2019.

Loss on induced conversion and debt extinguishment. During 2018, we had no induced conversion or debt extinguishment activities.

During 2017, pursuant to cash tender offers, we purchased aggregate principal amounts of $141.4 million, $115.9 million and $152.3 million of our Senior Notes due 2019, 2020 and 2021, respectively, resulting in a loss on induced conversion and debt extinguishment of $45.8 million. During 2017, we also purchased an aggregate principal amount of $21.6 million of our outstanding Convertible Senior Notes due 2017 and settled our obligations on the remaining Convertible Senior Notes due 2019, resulting in losses on debt extinguishment of $1.2 million and $4.5 million, respectively.

During 2016, our purchases of Convertible Senior Notes due 2017 and 2019 and redemption of Senior Notes due 2017 resulted in a loss on induced conversion and debt extinguishment of $75.1 million consisting of: (i) a market premium of $41.8 million, representing the excess of the fair value of the total consideration delivered to the sellers of the Convertible Senior Notes due 2017 and 2019 over the fair value of the common stock issuable pursuant to the original conversion terms of the purchased notes; (ii) a loss on debt extinguishment of $17.2 million, representing the difference between the fair value and the carrying value, net of unamortized issuance costs, of the liability component of the purchased Convertible Senior Notes due 2017 and 2019; (iii) a loss on debt extinguishment of $15.0 million on the redemption of the Senior Notes due 2017; and (iv) expenses totaling $1.1 million for transaction costs.

Amortization and Impairment of Other Acquired Intangible Assets and Impairment of Goodwill. In 2018, there was no impairment of goodwill or other acquired intangible assets.

The amortization of intangible assets primarily reflects the amortization of intangible assets acquired as part of the Clayton acquisition. During the second quarter of 2017, we recorded a goodwill impairment charge of $184.4 million, as well as an impairment charge for other acquired intangible assets of $15.8 million, in each case related to our Services segment. These charges were primarily due to changes in expectations regarding the future growth of certain Services business lines, resulting from changes in our business strategy, combined with market trends observed during the second quarter of 2017 that we expected would persist. As a result, as of December 31, 2017, the remaining balances of goodwill and other acquired intangible assets reported in our consolidated balance sheet were $10.9 million and $53.3 million, respectively. See Note 7 of Notes to Consolidated Financial Statements for additional information.

Income Tax Provision. The TCJA significantly changed the U.S. tax system and, among other things, reduced the federal corporate tax rate from 35% to 21%, effective January 1, 2018. Our effective tax rate was 11.4% for 2018, compared to 65.1% for 2017 and 36.3% for 2016. The difference in our effective tax rates in comparison to the federal statutory rates were primarily the result of Discrete Items. Our 2018 effective tax rate was lower than the federal statutory tax rate of 21% primarily as a result of the tax benefit recorded related to the settlement of our IRS Matter. The increase in our effective tax rate for 2017 above the 35% federal statutory tax rate was primarily due to the impact of the TCJA, which resulted in a $102.6 million reduction of our net deferred tax assets, recorded as additional income tax provision. See "Overview—*Operating Environment—Tax Cuts and Jobs Act*" and Note 10 of Notes to Consolidated Financial Statements for additional information on the TCJA.

Our 2016 effective tax rate was slightly higher than the federal statutory rate of 35%, primarily as a result of the non-deductible portion of the purchase premium relating to our Convertible Senior Notes due 2017 and 2019. The increase was partially offset by the income tax benefit resulting from our return-to-provision adjustment.

Use of Non-GAAP Financial Measures. In addition to the traditional GAAP financial measures, we have presented "adjusted pretax operating income," "adjusted diluted net operating income per share" and "adjusted net operating return on equity," which are non-GAAP financial measures for the consolidated company and are among our key performance indicators used in evaluating our fundamental financial performance. These non-GAAP financial measures align with the way our business performance is evaluated by both management and by our board of directors. These measures have been established in order to increase transparency for the purposes of evaluating our operating trends and enabling more meaningful comparisons with our peers. Although on a consolidated basis "adjusted pretax operating income," "adjusted diluted net operating income per share" and "adjusted net operating return on equity" are non-GAAP financial measures, for the reasons discussed above we

believe these measures aid in understanding the underlying performance of our operations. Our senior management, including our Chief Executive Officer (Radian’s chief operating decision maker), uses adjusted pretax operating income (loss) as our primary measure to evaluate the fundamental financial performance of the Company’s business segments and to allocate resources to the segments.

Adjusted pretax operating income is defined as GAAP consolidated pretax income from continuing operations, excluding the effects of: (i) net gains (losses) on investments and other financial instruments; (ii) loss on induced conversion and debt extinguishment; (iii) acquisition-related expenses; (iv) amortization or impairment of goodwill and other acquired intangible assets; and (v) net impairment losses recognized in earnings and losses from the sale of lines of business. Adjusted diluted net operating income per share is calculated by dividing (i) adjusted pretax operating income attributable to common stockholders, net of taxes computed using the company’s statutory tax rate, by (ii) the sum of the weighted average number of common shares outstanding and all dilutive potential common shares outstanding. Interest expense on convertible debt, share dilution from convertible debt and the impact of share-based compensation arrangements have been reflected in the per share calculations consistent with the accounting standard regarding earnings per share, whenever the impact is dilutive. Adjusted net operating return on equity is calculated by dividing annualized adjusted pretax operating income, net of taxes computed using the company’s statutory tax rate, by average stockholders’ equity, based on the average of the beginning and ending balances for each period presented.

Although adjusted pretax operating income excludes certain items that have occurred in the past and are expected to occur in the future, the excluded items represent those that are: (i) not viewed as part of the operating performance of our primary activities or (ii) not expected to result in an economic impact equal to the amount reflected in pretax income. These adjustments, along with the reasons for their treatment, are described below.

(1) *Net gains (losses) on investments and other financial instruments.* The recognition of realized investment gains or losses can vary significantly across periods as the activity is highly discretionary based on the timing of individual securities sales due to such factors as market opportunities, our tax and capital profile and overall market cycles. Unrealized gains and losses arise primarily from changes in the market value of our investments that are classified as trading or equity securities. These valuation adjustments may not necessarily result in realized economic gains or losses.

Trends in the profitability of our fundamental operating activities can be more clearly identified without the fluctuations of these realized and unrealized gains or losses and changes in fair value of other financial instruments. We do not view them to be indicative of our fundamental operating activities. Therefore, these items are excluded from our calculation of adjusted pretax operating income (loss).

(2) *Loss on induced conversion and debt extinguishment.* Gains or losses on early extinguishment of debt and losses incurred to purchase our convertible debt prior to maturity are discretionary activities that are undertaken in order to take advantage of market opportunities to strengthen our financial and capital positions; therefore, we do not view these activities as part of our operating performance. Such transactions do not reflect expected future operations and do not provide meaningful insight regarding our current or past operating trends. Therefore, these items are excluded from our calculation of adjusted pretax operating income (loss).

(3) *Acquisition-related expenses.* Acquisition-related expenses represent the costs incurred to effect an acquisition of a business (i.e., a business combination). Because we pursue acquisitions on a strategic and selective basis and not in the ordinary course of our business, we do not view acquisition-related expenses as a consequence of a primary business activity. Therefore, we do not consider these expenses to be part of our operating performance and they are excluded from our calculation of adjusted pretax operating income (loss).

(4) *Amortization or impairment of goodwill and other acquired intangible assets.* Amortization of acquired intangible assets represents the periodic expense required to amortize the cost of acquired intangible assets over their estimated useful lives. Acquired intangible assets with an indefinite useful life are also periodically reviewed for potential impairment, and impairment adjustments are made whenever appropriate. These charges are not viewed

as part of the operating performance of our primary activities and therefore are excluded from our calculation of adjusted pretax operating income (loss).

(5) *Net impairment losses recognized in earnings and losses from the sale of lines of business* . The recognition of net impairment losses on investments and the impairment of other long-lived assets does not result in a cash payment and can vary significantly in both amount and frequency, depending on market credit cycles and other factors. Losses from the sale of lines of business are highly discretionary as a result of strategic restructuring decisions, and generally do not occur in the normal course of our business. We do not view these losses to be indicative of our fundamental operating activities. Therefore, whenever these losses occur, we exclude t

hem from our calculation of adjusted pretax operating income (loss).
Total adjusted pretax operating income, adjusted diluted net operating income per share, and adjusted net operating return on equity are not measures of total profitability, and therefore should not be considered in isolation or viewed as substitutes for GAAP pretax income, diluted net income per share, or return on equity. Our definitions of adjusted pretax operating income, adjusted diluted net operating income per share, and adjusted net operating return on equity may not be comparable to similarly-named measures reported by other companies.
The following tables provide reconciliations of the most comparable GAAP measures of consolidated pretax income, diluted net income per share and return on equity, to our non-GAAP financial measures for the consolidated company of adjusted pretax operating income, adjusted diluted net income per share and adjusted net operating return on equity, respectively:

	Year Ended December 31,		
(In thousands)	2018	2017	2016
Consolidated pretax income	$684,186	$346,737	$483,686
Less income (expense) items:			
Net gains (losses) on investments and other financial instruments	(42,476)	3,621	30,751
Loss on induced conversion and debt extinguishment	—	(51,469)	(75,075)
Acquisition-related expenses (1)	(881)	(105)	(519)
Impairment of goodwill	—	(184,374)	—
Amortization and impairment of other acquired intangible assets	(12,429)	(27,671)	(13,221)
Impairment of other long-lived assets and loss from the sale of a business line (2)	(5,523)	(10,440)	—
Total adjusted pretax operating income (3)	$745,495	$617,175	$541,750

(1) Acquisition-related expenses represent expenses incurred to effect the acquisition of a business, net of adjustments to accruals previously recorded for acquisition expenses.
(2) All amounts are included within restructuring and other exit costs on the consolidated statements of operations, except for $1.6 million in 2018 related to the impairment of other long-lived assets, included in other operating expenses.
(3) Total adjusted pretax operating income on a consolidated basis consists of adjusted pretax operating income (loss) for our
Mortgage Insurance segment and our Services segment, as further detailed in Note 4 of Notes to Consolidated Financial Statements.

(In thousands)	Year Ended December 31, 2018	2017	2016
Diluted net income per share	$2.77	$0.55	$1.37
Less per-share impact of debt items:			
Loss on induced conversion and debt extinguishment	—	(0.23)	(0.33)
Income tax provision (benefit) (1)	—	(0.08)	(0.07)
Per-share impact of debt items	—	(0.15)	(0.26)
Less per-share impact of reconciling income (expense) items:			
Net gains (losses) on investments and other financial instruments	(0.19)	0.02	0.14
Impairment of goodwill	—	(0.84)	—
Amortization and impairment of other acquired intangible assets	(0.06)	(0.13)	(0.06)
Impairment of other long-lived assets and loss from the sale of a business line	(0.03)	(0.05)	—
Income tax provision (benefit) on other income (expense) items (1)	(0.06)	(0.35)	0.03
Difference between statutory and effective tax rate (2)	0.30	(0.47)	0.02
Per-share impact of other income (expense) items	0.08	(1.12)	0.07
Adjusted diluted net operating income per share (1)	$2.69	$1.82	$1.56

(1) Calculated using the company's federal statutory tax rates of 21% for 2018 and 35% for 2017 and 2016. Any permanent tax adjustments and state income taxes on these items have been deemed immaterial and are not included.

(2) For 2018, includes $0.34 of tax benefit related to the settlement of the IRS Matter, which includes both the impact of the settlement with the IRS as well as the reversal of certain related previously accrued state and local tax liabilities. All of the 2017 amount represents additional tax expense related to the remeasurement of our net deferred tax assets as a result of the TCJA enacted in December 2017.

(In thousands)	Year Ended December 31, 2018	2017	2016
Return on Equity (1)	18.7 %	4.1 %	11.5 %
Less impact of reconciling income (expense) items: (2)			
Net gains (losses) on investments and other financial instruments	(1.3)	0.1	1.1
Loss on induced conversion and debt extinguishment	—	(1.8)	(2.8)
Impairment of goodwill	—	(6.3)	—
Amortization and impairment of other acquired intangible assets	(0.4)	(0.9)	(0.5)
Impairment of other long-lived assets and loss from the sale of a business line	(0.2)	(0.4)	—
Income tax provision (benefit) on reconciling income (expense) items (3)	(0.4)	(3.2)	(0.8)
Difference between statutory and effective tax rate (3) (4)	2.0	(3.5)	(0.2)
Impact of reconciling income (expense) items	0.5	(9.6)	(1.6)
Adjusted net operating return on equity	18.2 %	13.7 %	13.1 %

(1) Calculated by dividing net income by average stockholders’ equity.
(2) As a percentage of average stockholders’ equity.

(3) Calculated using the company's federal statutory tax rates of 21% for 2018 and 35% for 2017 and 2016. Any permanent tax adjustments and state income taxes on these items have been deemed immaterial and are not included.

(4) The difference in 2018 includes the tax benefit related to the settlement of the IRS Matter, which includes both the impact of the settlement with the IRS as well as the reversal of certain related previously accrued state and local tax liabilities. All of the 2017 amount represents additional tax expense related to the remeasurement of our net deferred tax assets as a result of the TCJA enacted in December 2017.

Results of Operations—Mortgage Insurance

During 2018, we continued our strategy of growing our mortgage insurance portfolio by writing insurance on mortgages with high credit quality. At December 31, 2018, we had $221.4 billion in IIF compared to $200.7 billion in IIF at December 31, 2017. We also expanded our risk distribution strategy and continued to focus on effectively managing our capital and liquidity positions. See "Liquidity and Capital Resources—*Radian Group—Short-Term Liquidity Needs—Capital Support for Subsidiaries"* and Note 1 of Notes to Consolidated Financial Statements for additional information.

The following table summarizes our Mortgage Insurance segment's results of operations for the years ended December 31, 2018, 2017 and 2016:

(In millions)	Year Ended December 31, 2018	2017	2016	$ Change Favorable (Unfavorable) 2018 vs. 2017	2017 vs. 2016
Adjusted pretax operating income (1)	$772.6	$651.0	$561.9	$121.6	$89.1
Net premiums written—insurance (2)	991.0	818.4	733.8	172.6	84.6
(Increase) decrease in unearned premiums	15.7	114.4	187.9	(98.7)	(73.5)
Net premiums earned—insurance	1,006.7	932.8	921.8	73.9	11.0
Net investment income	152.1	127.2	113.5	24.9	13.7
Provision for losses	104.5	136.2	204.2	31.7	68.0
Other operating expenses (3)	215.5	206.4	185.8	(9.1)	(20.6)
Interest expense	43.7	45.0	63.4	1.3	18.4

(1) Our senior management uses adjusted pretax operating income as our primary measure to evaluate the fundamental financial performance of our business segments. See Note 4 of Notes to Consolidated Financial Statements for more information.

(2) Net of ceded premiums written under the QSR Program, the Single Premium QSR Program and the Excess-of-Loss Program. See Note 8 of Notes to Consolidated Financial Statements for more information.

(3) Includes allocation of corporate operating expenses of $80.1 million, $55.4 million and $45.2 million for 2018, 2017 and 2016, respectively.

Adjusted Pretax Operating Income. Our Mortgage Insurance segment's adjusted pretax operating income for 2018 was $772.6 million, compared to $651.0 million for 2017 and $561.9 million for 2016. The increase in our adjusted pretax operating income for 2018, compared to 2017, primarily reflects: (i) an increase in net premiums earned; (ii) a decrease in provision for losses; and (iii) an increase in net investment income. Our results for 2017 compared to 2016 primarily reflect a decrease in the provision for losses and to a lesser extent, a decrease in interest expense. These increases in adjusted pretax operating income were partially offset by higher other operating expenses.

NIW, IIF, RIF

A key component of our current business strategy is to write profitable mortgage insurance on high credit quality mortgages in the U.S. Consistent with this objective, we wrote $56.5 billion of primary new mortgage insurance in 2018, compared to $53.9 billion of NIW in 2017. The NIW written on a Flow Basis in 2018 was Radian’s highest volume in its history. The combination of our NIW and a higher Persistency Rate resulted in an increase in IIF, from $200.7 billion at December 31, 2017 to $221.4 billion at December 31, 2018, as shown in the chart below.

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(1) Policy years represent the original policy years, and have not been adjusted to reflect subsequent HARP refinancing activity.

(2) If adjusted to reflect subsequent HARP refinancing activity, this percentage would decrease to 6.0%, 8.4%, and 12.1% as of December 31, 2018, December 31, 2017 and December 31, 2016, respectively.

Our IIF is one of the primary drivers of future premiums that we expect to earn over time. Although not reflected in the current period financial statements, nor in our reported book value, we expect our IIF to generate substantial earnings in future periods, due to the high credit quality of our current mortgage insurance portfolio and expected persistency over multiple years. Additionally, as a result of the TCJA, the economic value of our existing IIF increased significantly as of December 31, 2017, due to the increase in expected future net cash flows associated with the reduction in expected tax payments. See “Key Factors Affecting Our Results—*Mortgage Insurance—IIF; Persistency Rate; Mix of Business*” for more information.

We implemented pricing changes during the first half of 2018 that we estimate will result in an overall relative premium rate decrease on NIW. The changes are expected to gradually affect our results over time, as existing IIF is replaced with NIW at current pricing. These changes, however, do not affect the value or future returns on our IIF written prior to 2018; therefore, the impact of these pricing actions on near-term revenue is expected to be limited. As an example, assuming our current NIW levels, mix and persistency levels remain constant, we estimate that it would take approximately three years for approximately one-half of our IIF to reflect our current pricing structure. However, the ultimate results of the changes will be influenced by many other factors, including the amount of NIW, changes in the product and credit profile mix of both NIW and policy cancellations, the impact of interest rates and product mix on persistency, and the amount of reinsurance we use. See “Overview—*Competition and Pricing—Radian’s Pricing*” for additional information.

The 4.9% increase in NIW for 2018 compared to 2017 is primarily attributable to increases in mortgage insurance penetration and overall purchase mortgage originations, partially offset by decreases in refinance originations and our share of the mortgage insurance market.

We believe total mortgage origination volume was lower for 2018, as compared to 2017, primarily due to a decrease in refinance mortgage originations resulting from the slightly higher interest rate environment, partially offset by a modest increase in purchase originations. Mortgage insurance penetration in the purchase origination market has gradually increased over the past few years, and because the penetration rate for mortgage insurance is generally three to five times higher on purchase originations than on refinancing transactions, we believe that even though the total mortgage origination volume was lower, the private mortgage insurance market was larger in 2018, compared to 2017. Although it is difficult to project future volumes, industry sources expect the total mortgage origination market in 2019 to be comparable to the market in 2018, driven by a decline in refinance originations of approximately 11% as a result of higher anticipated interest rates, partially offset by an expected increase in purchase originations of approximately 4%. Given our expected penetration rates, we expect the private mortgage insurance market in 2019 to be comparable to 2018. Based on industry forecasts and our projections, we expect our NIW in 2019 to be in the range of $50 billion.

Consistent with the market trends described above, during 2018 the level of our purchase origination volume increased and our refinance origination volume decreased (each as a percentage of our total NIW), as compared to 2017. As a percentage of our total NIW, the volume of our NIW on mortgage loans with LTVs greater than 95% also increased during 2018, compared to 2017. During 2018, in comparison to 2017, we also continued to experience an increased percentage of our total NIW on mortgage loans to borrowers with higher debt-to-income ratios, including debt-to-income ratios greater than 45%. See "Overview—*Operating Environment*" for additional information.

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Notwithstanding this recent shift toward loans with higher LTVs and borrowers with higher debt-to-income ratios, the mortgage loans underlying our RIF originated after 2008 possess significantly improved credit characteristics compared to our portfolio originated prior to and including 2008. For example, FICO scores for the borrowers of our current portfolio of insured mortgages are higher, and notwithstanding the recent increase in loans with higher LTVs, there are fewer loans with LTVs greater than 95%. In addition, we have limited loans subject to layered risk that combines multiple higher-risk attributes within the same loan, specifically low FICO scores combined with other higher risk characteristics. For example, a de minimis amount of our primary RIF originated after 2008 relates to mortgages with (i) FICO scores less than 680 combined with cash-out refinancings or original LTVs greater than 95% or (ii) FICO scores less than or equal to 720 on an investment property or second home. The table below illustrates the composition of our direct primary mortgage insurance RIF at December 31, 2018 compared to selected prior years, based on FICO score and LTV.
Historical loan data indicates that credit scores and underwriting quality are key drivers of credit performance. As illustrated by the preceding chart, the FICO scores of our primary RIF has significantly improved in business written after 2008. As of December 31, 2018, our portfolio of business written subsequent to 2008, including HARP refinancings, represented approximately 94% of our total primary RIF. The high volume of insurance that we have written on high credit quality loans has led to an improved portfolio mix and, together with favorable credit trends, has had a significant positive impact on our results of operations. For additional information, see the tables that follow, including the table, “Total Primary RIF by Policy Year.”

Our expected future losses on our portfolios written after 2008, together with HARP refinancings, are significantly lower than those experienced on our NIW prior to and including 2008. The following charts illustrate the trends of our cumulative incurred loss ratios by year of origination and development year.

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(1) Represents inception-to-date losses incurred as a percentage of net premiums earned on mortgage insurance.
(2) Incurred losses in 2017 were slightly elevated due to the impact of Hurricanes Harvey and Irma. See "Overview—*Operating Environment—Hurricanes*" for additional information.
(3) Radian's stochastic modeling, used for pricing, indicates an approximate 20% through-the-cycle loss ratio on newly originated mortgage insurance business.

The following tables provide selected information as of and for the periods indicated related to mortgage insurance NIW, RIF and IIF. Policy years represent the original policy years, and have not been adjusted to reflect subsequent HARP refinancing activity. Throughout this report, unless otherwise noted, RIF is presented on a gross basis before consideration of the amount ceded under reinsurance. NIW, RIF and IIF for direct Single Premiums include policies written on an individual basis (as each loan is originated) and on an aggregated basis (in which each individual loan in a group of loans is insured in a single transaction, typically after the loans have been originated).

	Year Ended December 31,					
($ in millions)	2018		2017		2016	
Total Primary NIW by FICO Score						
>=740	$34,209	60.5 %	$32,928	61.1 %	$31,426	62.2 %
680-739	18,250	32.3	17,641	32.7	16,001	31.7
620-679	4,088	7.2	3,336	6.2	3,103	6.1
Total Primary NIW	$56,547	100.0%	$53,905	100.0%	$50,530	100.0%

($ in millions)	Year Ended December 31, 2018		2017		2016	
Percentage of Primary NIW						
Borrower-paid	90	%	78	%	75	%
Premium Type						
Direct Monthly and Other Premiums	79	%	77	%	73	%
Direct Single Premiums						
Lender-paid	9	%	21	%	25	%
Borrower-paid (1)	12	%	2	%	2	%
Total Primary NIW	100.0	%	100.0	%	100.0	%
Net Single Premiums (2)	8	%	15	%	18	%
NIW for Purchases	94	%	89	%	78	%
NIW for Refinances	6	%	11	%	22	%
LTV						
95.01% and above	16.7	%	13.2	%	5.7	%
90.01% to 95.00%	44.4	%	46.0	%	47.5	%
85.01% to 90.00%	27.6	%	28.5	%	32.0	%
85.00% and below	11.3	%	12.3	%	14.8	%
Primary risk written	$14,264		$13,569		$12,538	

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(1) Borrower-paid Single Premium Policies have lower Minimum Required Assets under PMIERs as compared to lender-paid Single Premium Policies. See "Overview—*Competition and Pricing—Radian's Pricing"* for additional information.

(2) Represents the percentage of direct Single Premium Policies written, after giving effect to the Single Premium NIW ceded under the Single Premium QSR Program (for NIW after the effective dates of the respective agreements). See Note 8 of Notes to Consolidated Financial Statements for additional information about these arrangements.

($ in millions)	December 31, 2018		2017		2016	
Primary IIF						
Direct Monthly and Other Premiums	70	%	69	%	68	%
Direct Single Premiums	30	%	31	%	32	%
Net Single Premiums (1)	17	%	20	%	25	%
Total Primary IIF	$221,443		$200,724		$183,450	
Persistency Rate (12 months ended)	83.1	%	81.1	% (2)	76.7	% (3)
Persistency Rate (quarterly, annualized) (4)	85.5	%	79.4	% (2)	76.8	%

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(1) Represents the percentage of Single Premium IIF, after giving effect to all quota-share reinsurance ceded. See Note

8 of Notes to Consolidated Financial Statements for additional information about reinsurance transactions.

(2) The Persistency Rate in the fourth quarter of 2017 was reduced by an increase in cancellations of Single Premium Policies due to increased cancellations identified through our ongoing servicer monitoring process for Single Premium Policies.

(3) The Persistency Rate for the 12 months ended December 31, 2016 was less than in subsequent years, primarily due to increased refinancing activity and the cancellations of Single Premium Policies in 2016. See "—*Net Premiums Written and Earned*" below.

(4) The Persistency Rate on a quarterly, annualized basis is calculated based on loan level detail for the fourth quarter of each year shown. It may be affected by seasonality or other factors, and may not be indicative of full-year trends.

($ in millions)	December 31, 2018		2017		2016	
Primary RIF by Premium Type						
Direct Monthly and Other Premiums	$39,894	70.3 %	$35,452	69.1 %	$32,136	68.8 %
Direct Single Premiums	16,834	29.7	15,836	30.9	14,605	31.2
Total primary RIF	$56,728	100.0%	$51,288	100.0%	$46,741	100.0%
Net Single Premiums (1)	$8,182	17.2 %	$8,320	19.3 %	$10,161	24.5 %
Primary RIF by Internal Risk Grade						
Prime	$55,374	97.6 %	$49,674	96.9 %	$44,708	95.6 %
Alt-A and A minus and below	1,354	2.4	1,614	3.1	2,033	4.4
Total primary RIF	$56,728	100.0%	$51,288	100.0%	$46,741	100.0%

(1) Represents the dollar amount and percentage, respectively, of RIF on Single Premium Policies, after giving effect to all quota-share reinsurance ceded.

($ in millions)	December 31, 2018		2017		2016	
Total primary RIF by FICO score						
>=740	$33,703	59.4 %	$30,225	58.9 %	$26,939	57.6 %
680-739	17,941	31.6	16,097	31.4	14,497	31.0
620-679	4,626	8.2	4,425	8.6	4,620	9.9
<=619	458	0.8	541	1.1	685	1.5
Total primary RIF	$56,728	100.0%	$51,288	100.0%	$46,741	100.0%
Primary RIF on defaulted loans	$1,032		$1,389		$1,363	

($ in millions)	December 31, 2018		2017		2016	
Total primary RIF by LTV						
95.01% and above	$6,591	11.6 %	$4,704	9.2 %	$3,447	7.4 %
90.01% to 95.00%	30,132	53.1	27,276	53.2	24,439	52.3
85.01% to 90.00%	16,464	29.0	15,719	30.6	15,208	32.5
85.00% and below	3,541	6.3	3,589	7.0	3,647	7.8
Total primary RIF	$56,728	100.0%	$51,288	100.0%	$46,741	100.0%
Total primary RIF by policy year						
2008 and prior	$5,749	10.1 %	$7,159	14.0 %	$9,143	19.5 %
2009	199	0.4	298	0.6	468	1.0
2010	170	0.3	264	0.5	417	0.9
2011	465	0.8	682	1.3	917	2.0
2012	2,094	3.7	2,830	5.5	3,734	8.0
2013	3,504	6.2	4,557	8.9	5,902	12.6
2014	3,464	6.1	4,356	8.5	5,607	12.0
2015	5,806	10.2	7,096	13.8	8,469	18.1
2016	9,544	16.8	10,992	21.4	12,084	25.9
2017	11,958	21.1	13,054	25.5	—	—
2018	13,775	24.3	—	—	—	—
Total primary RIF (1)	$56,728	100.0%	$51,288	100.0%	$46,741	100.0%

(1) At December 31, 2018, 2017 and 2016, consists of 97.7%, 97.3% and 97.0%, respectively, of RIF related to fixed-rate mortgages.

Net Premiums Written and Earned. Net premiums written and earned for 2018 increased compared to 2017, primarily due to an increase in our IIF related to an increase in our Monthly Premium Policies. This increase was partially offset by the increased cession percentage on the Single Premium QSR Program. Net premiums written in 2017 increased compared to 2016, primarily due to a decrease in ceded premiums written, combined with the increase in our IIF.
Net premiums earned increased in 2017, compared to 2016, primarily as a result of increased IIF and decreased ceded premiums, net of profit commissions, partially offset by less accelerated revenue recognition due to fewer Single Premium Policy cancellations during 2017.

(in thousands)	2018	2017	2016
Net premiums earned—insurance:			
Direct			
Premiums earned, excluding revenue from cancellations	$1,018,874	$929,668	$902,269
Single Premium Policy cancellations	47,990	60,348	96,824
Direct premiums earned	1,066,864	990,016	999,093
Ceded			
Premiums earned, excluding revenue from cancellations	(85,357)	(63,406)	(70,714)
Single Premium Policy cancellations (1)	(13,726)	(11,734)	(21,886)
Profit commission—other (2)	32,036	17,869	15,241
Ceded premiums, net of profit commission	(67,047)	(57,271)	(77,359)
Assumed premiums earned	6,904 (3)	28	35
Total net premiums earned—insurance	$1,006,721	$932,773	$921,769

(1) Includes the impact of related profit commissions.
(2) The amounts represent the profit commission on the Single Premium QSR Program, excluding impact of Single Premium Policy cancellations.
(3) Includes premiums earned from our participation in certain Front-end and Back-end credit risk transfer programs.

The impact of the level of mortgage prepayments on the mix of business we write affects the revenue ultimately produced by our mortgage insurance business. We believe that writing a mix of Single Premium Policies and Monthly Premium Policies has the potential to moderate the overall impact on our results if actual prepayments are significantly different from expectations. However, this moderating effect may depend on the amount of reinsurance we obtain on portions of our portfolio, with the Single Premium QSR Program currently reducing the proportion of retained Single Premium Policies in our portfolio. As of December 31, 2018, the impact of all of our third-party quota share reinsurance programs reduced our RIF on Single Premium Policies as a percentage of total RIF from 29.7% to 17.2%. See "Overview—*Operating Environment"* as well as "Key Factors Affecting Our Results—*Mortgage Insurance—IIF; Persistency Rate; Mix of Business*" above for more information.

We experienced a decrease in our total mix of Single Premium Policies to 21% of our NIW for 2018, compared to 23% for 2017 and 27% for 2016. We expect our production level for Single Premium Policies to fluctuate over time based on various factors, which include risk/return considerations and market conditions.

Net Premiums Written and Earned—Ceded. We use third-party reinsurance in our mortgage insurance business to manage capital and risk in an effort to optimize the amounts and types of capital and risk distribution deployed against insured risk. When we enter into a reinsurance agreement, the reinsurer receives a premium and, in exchange, agrees to insure an agreed upon portion of incurred losses. While these arrangements have the impact of reducing our earned premiums, they are expected to increase Radian Guaranty's return on required capital for the related policies. The impact of these programs on our financial results will vary depending on the level of ceded RIF, as well as the levels of prepayments and incurred losses on the reinsured portfolios, among other factors. See "Key Factors Affecting Our Results—*Mortgage Insurance—Third-Party Reinsurance*" and Note 8 of Notes to Consolidated Financial Statements for more information about our reinsurance transactions.

The following table provides information related to the premium impact of our reinsurance transactions.

	At or For the Year Ended December 31,		
	2018	2017	2016
QSR Program			
% of direct and assumed premiums written	1.2 %	1.9 %	2.8 %
% of total direct and assumed premiums earned	1.8 %	2.9 %	4.3 %
Single Premium QSR Program			
% of direct and assumed premiums written	6.8 %	18.8 %	23.4 %
% of total direct and assumed premiums earned	4.1 %	2.8 %	3.0 %
Excess-of-Loss Program			
% of direct and assumed premiums written	0.8 %	— %	— %
% of total direct and assumed premiums earned	0.2 %	— %	— %

Net Investment Income. Increasing yields from higher interest rates, combined with higher average investment balances, resulted in increases in investment income for 2018, compared to 2017. Our higher investment balances were primarily a result of investing our positive cash flow from operations. For 2017, net investment income increased compared to 2016, as we refined our investment liquidity targets and cash management strategies, consistent with rising short-term rates and an increased book yield in our portfolio. All periods include an allocation to the Mortgage Insurance segment of net investment income from investments held at Radian Group.

Provision for Losses. The following table details the financial impact of the significant components of our provision for losses for the periods indicated:

	Year Ended December 31,		
(In millions)	2018	2017	2016
Current year defaults (1)	$135.3	$185.5	$206.4
Prior year defaults (2)	(31.7)	(49.3)	(3.5)
Second-lien mortgage loan PDR and other	0.9	0.0	1.3
Provision for losses	$104.5	$136.2	$204.2
Loss ratio (3)	10.4 %	14.6 %	22.2 %

(1) Related to defaulted loans with a most recent default notice dated in the year indicated. For example, if a loan had defaulted in a prior year, but then subsequently cured and later re-defaulted in the current year, that default would be considered a current year default.
(2) Related to defaulted loans with a default notice dated in a year earlier than the year indicated, which have been continuously in default since that time.
(3) Provision for losses as a percentage of net premiums earned.

Our mortgage insurance provision for losses for 2018 decreased by $31.7 million as compared to 2017. Reserves established for new default notices were the primary driver of our total incurred losses for 2018 and 2017. Current period new primary defaults decreased by 12.9% in 2018, compared to 2017. Our gross Default to Claim Rate assumption for new primary defaults, was 8% at December 31, 2018, compared to 10% as of December 31, 2017. This reduction in the estimated gross Default to Claim Rate assumption, which was based on observed trends, contributed to the reduction in the portion of our provision for losses related to new defaults in 2018, compared to 2017.

In addition to the positive trends in our provision for losses for current year defaults for 2018 and 2017, we

experienced positive reserve development on prior year defaults, primarily due to reductions in certain Default to Claim Rate assumptions based on observed trends of higher Cures than were previously estimated on those prior year defaults.

As expected, Radian Guaranty experienced an increase in reported delinquencies in FEMA Designated Areas associated with Hurricanes Harvey and Irma during the third and fourth quarters of 2017, followed by cure rates for these delinquencies

that are higher than the rates for the rest of our portfolio. These incremental hurricane-related defaults did not result in a material increase in our incurred losses or paid claims.

Although the number of incremental defaults associated with areas impacted by recent or future natural disasters may become somewhat elevated, consistent with our past experience, we do not expect these incremental defaults to result in a material increase in our incurred losses or paid claims, given the limitations on our coverage related to property damage. However, the future reserve impact of incremental defaults from these or other natural disasters may differ from our previous experience due to overall economic conditions, the pace of economic recovery in the affected areas or other factors. See Note 11 of Notes to Consolidated Financial Statements.

Our mortgage insurance provision for losses for 2017 decreased by $68.0 million as compared to 2016. Reserves established for new default notices were the primary driver of our total incurred losses for 2017 and 2016. Current year primary defaults increased by 5.9% for 2017, compared to 2016, due to elevated new default notices in 2017 in the FEMA Designated Areas associated with Hurricanes Harvey and Irma received subsequent to those two natural disasters, which occurred during the third quarter of 2017. Due to exclusions in our Master Policies for physical damage, including damage caused by floods or other natural disasters, and based on our past experience with similar natural disasters, we assumed a 3% gross Default to Claim Rate for new primary defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma received subsequent to those two natural disasters. See "Overview—*Operating Environment—Hurricanes*" for additional information.

For all areas other than FEMA Designated Areas associated with Hurricanes Harvey and Irma, the number of total new primary mortgage insurance defaults in our insured portfolio decreased by 7.2%, as compared to 2016. Our gross Default to Claim Rate assumption for new primary defaults, excluding the new primary defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma received subsequent to those two natural disasters, was 10% as of December 31, 2017, compared to 12% as of December 31, 2016. This reduction in estimated gross Default to Claim Rate assumptions, which was based on observed trends, contributed to the reduction in the portion of our provision for losses related to new defaults in 2017, compared to 2016. In addition, the 2017 provision on current year defaults includes $14 million related to pool commutations.

In addition to the positive trends in our provision for losses for current year defaults for 2017 and 2016, we experienced positive reserve development on prior year defaults, primarily due to reductions in certain Default to Claim Rate assumptions based on observed trends of higher Cures than were previously estimated on those prior year defaults.

Our primary default rate at December 31, 2018 was 2.1% compared to 2.9% at December 31, 2017. Our primary defaulted inventory comprised 21,093 loans at December 31, 2018, compared to 27,922 loans at December 31, 2017, representing a decrease of 24.5%. The reduction in our primary defaulted inventory is the result of the total number of defaulted loans: (i) that have cured or (ii) for which claim payments have been made, collectively, exceeding the total number of new defaults on insured loans. Consistent with typical default seasoning patterns, the shift in our portfolio composition toward more recent vintages is expected to result in slightly increased levels of new defaults in our total portfolio for 2019 as compared to 2018, because we do not expect that the reductions in new defaults from our portfolio of insurance written prior to and including 2008 will continue to outpace the anticipated increases from more recent vintages.

The following table shows the number of primary loans that we have insured, the number of primary and pool loans in default and the percentage of primary loans in default as of the dates indicated:

	December 31,		
	2018	2017	2016
Default Statistics—Primary Insurance:			
Total primary insurance			
Prime			
Number of insured loans	986,704	913,408	849,227
Number of loans in default	15,402	20,269	19,101
Percentage of loans in default	1.56 %	2.22 %	2.25 %
Alt-A and A minus and below			
Number of insured loans	35,906	42,318	53,651
Number of loans in default	5,691	7,653	10,004
Percentage of loans in default	15.85 %	18.08 %	18.65 %
Total primary insurance			
Number of insured loans	1,022,610	955,726	902,878
Number of loans in default (1)	21,093	27,922	29,105
Percentage of loans in default	2.06 %	2.92 %	3.22 %
Default Statistics—Pool Insurance:			
Number of loans in default	1,713	2,117 (2)	4,286

(1) Included in this amount at December 31, 2018 and December 31, 2017 are the defaults in the FEMA Designated Areas associated with Hurricanes Harvey and Irma, which occurred during the third quarter of 2017. At December 31, 2018, 2017 and 2016, defaults in these areas were 2,627; 7,051; and 3,321, respectively.

(2) Decrease primarily due to pool commutations that took place during the year.

The following table shows a rollforward of the number of our primary loans in default, including new defaults from our insurance written in years: (i) prior to and including 2008 and (ii) after 2008:

	Year Ended December 31,		
	2018	2017	2016
Beginning default inventory	27,922	29,105	35,303
Plus: New defaults on insurance written in years: (1)			
Prior to and including 2008	19,629	25,300	29,772
After 2008	17,740	17,588	10,731
Total new defaults	37,369	42,888	40,503
Less: Cures (1)	39,799	37,464	38,589
Less: Claims paid (2)	4,322	6,477	8,223
Less: Rescissions and Claim Denials, net of (Reinstatements) (3)	77	130	(111)
Ending default inventory	21,093	27,922	29,105

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(1) Included in this amount for the years ended December 31, 2018 and 2017 are the new defaults and Cures in the FEMA Designated Areas associated with Hurricanes Harvey and Irma, which occurred during the third quarter of 2017. For the years ended December 31, 2018, 2017 and 2016, new defaults and Cures in these areas were as follows:

	Year Ended December 31,		
	2018	2017	2016
New defaults	3,776	8,862	3,852
Cures	7,723	4,366	3,727

(2) Includes those charged to a deductible or captive reinsurance transactions, as well as commutations.

(3) Net of any previous Rescission and Claim Denials that were reinstated during the period. Such reinstated Rescissions and Claim Denials may ultimately result in a paid claim.

We develop our Default to Claim Rate estimates on defaulted loans based on models that use a variety of loan characteristics to determine the likelihood that a default will reach claim status. Our gross Default to Claim Rate estimates on defaulted loans are mainly developed based on the Stage of Default and Time in Default of the underlying defaulted loans, as measured by the progress toward foreclosure sale and the number of months in default. Our gross Default to Claim Rate assumption for new primary defaults was reduced from 10% at December 31, 2017, to 8% at December 31, 2018. As of December 31, 2018, our gross Default to Claim Rate assumptions on our primary portfolio ranged from 8% for new defaults, up to 68% for defaults not in foreclosure stage, and 75% for Foreclosure Stage Defaults. As of December 31, 2017, these gross Default to Claim Rate assumptions for our primary portfolio, other than for new primary defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma received subsequent to those two natural disasters, ranged from 10% for new defaults, up to 62% for other defaults not in foreclosure stage, and 81% for Foreclosure Stage Defaults.

The following tables show additional information about our primary loans in default as of the dates indicated:

	December 31, 2018					
	Total		Foreclosure Stage Defaulted Loans	Cure % During the 4th Quarter	Reserve for Losses	% of Reserve
($ in thousands)	#	%	#	%	$	%
Missed payments:						
Three payments or less	10,038	47.6 %	148	33.2 %	$83,540	23.1 %
Four to 11 payments	5,905	28.0	422	24.7	87,210	24.1
12 payments or more	4,468	21.2	1,365	6.5	156,808	43.4
Pending claims	682	3.2	N/A	4.3	34,130	9.4
Total	21,093	100.0 %	1,935		361,688	100.0 %
IBNR and other					13,864	
LAE					10,271	
Total primary reserves					$385,823	

December 31, 2018		
Key Reserve Assumptions		
Gross Default to Claim Rate %	Net Default to Claim Rate %	Claim Severity %
35%	33%	96%

	December 31, 2017					
	Total		Foreclosure Stage Defaulted Loans	Cure % During the 4th Quarter	Reserve for Losses	% of Reserve
($ in thousands)	#	%	#	%	$	%
Missed payments:						
Three payments or less	13,004	46.6 %	172	31.7 %	$89,412	19.3 %
Four to 11 payments	7,528	27.0	426	20.9	99,759	21.5
12 payments or more	6,651	23.8	1,933	6.3	234,895	50.6
Pending claims	739	2.6	N/A	3.1	40,144	8.6
Total	27,922	100.0 %	2,531		464,210	100.0 %
IBNR and other					16,021	
LAE					13,349	
Total primary reserves					$493,580	

December 31, 2017		
Key Reserve Assumptions		
Gross Default to Claim Rate %	Net Default to Claim Rate %	Claim Severity %
33%	31%	98%

N/A – Not applicable

Our aggregate weighted-average net Default to Claim Rate assumption for our primary loans used in estimating our reserve for losses, which is net of estimated Claim Denials and Rescissions, was approximately 33%, 31% and 42%, at December 31, 2018, 2017 and 2016, respectively. The change in our Default to Claim Rate in 2017 resulted primarily from the lower Default to Claim Rate of 3% on new primary defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma subsequent to those two natural disasters and through February 2018. Our net Default to Claim Rate and loss reserve estimate incorporates our expectations with respect to future Rescissions, Claim Denials and Claim Curtailments. Our estimate

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of such net future Loss Mitigation Activities, inclusive of claim withdrawals, reduced our loss reserve as of December 31, 2018 and 2017 by $32 million and $31 million, respectively. These expectations are based primarily on recent claim withdrawal activity and our recent experience with respect to the number of claims that have been denied due to the policyholder's failure to submit sufficient documentation to perfect a claim within the time period permitted under our Master Policies and also our recent experience with respect to the number of insurance certificates that have been rescinded due to fraud, underwriter negligence or other factors. See Note 11 of Notes to Consolidated Financial Statements.

Our reported Rescission, Claim Denial and Claim Curtailments activity in any given period is subject to challenge by our lender and servicer customers through our claims rebuttal process. In addition, we are at times engaged in discussions with our lender and servicer customers regarding our Loss Mitigation Activities. Unless a liability associated with such activities or discussions becomes probable and can be reasonably estimated, we consider our claim payments and our Rescissions, Claim Denials and Claim Curtailments to be resolved for financial reporting purposes. In accordance with the accounting standard regarding contingencies, we accrue for an estimated loss when we determine that the loss is probable and can be reasonably estimated.

We expect that a portion of previously rescinded policies will be reinstated and previously denied claims will be resubmitted with the required documentation and ultimately paid; therefore, we have incorporated this expectation into our IBNR reserve estimate. Our IBNR reserve estimate was $11.3 million, $10.4 million and $14.3 million at December 31, 2018, 2017 and 2016, respectively.

Factors that impact the severity of a claim include, but are not limited to: (i) the size of the loan; (ii) the amount of mortgage insurance coverage placed on the loan; (iii) the amount of time between default and claim during which we are expected to cover interest (capped at two years under our Prior Master Policy and capped at three years under our 2014 Master Policy) and certain expenses; and (iv) the impact of certain loss management activities with respect to the loan. The average Claim Severity experienced for loans covered by our primary insurance was 104.9% for 2018, compared to 104.7% in 2017 and 104.1% in 2016.

Our mortgage insurance total loss reserve as a percentage of our mortgage insurance total RIF was 0.7% at December 31, 2018, compared to 1.0% at December 31, 2017 and 1.6% at December 31, 2016. See Note 11 of Notes to Consolidated Financial Statements for information regarding our reserves for losses by category and a reconciliation of our Mortgage Insurance segment's beginning and ending reserves for losses and LAE.

Our primary reserve per default (calculated as primary reserve excluding IBNR and other reserves divided by the number of primary defaults) was $17,634, $17,103 and $22,503 at December 31, 2018, 2017 and 2016, respectively. The $17,103 primary reserve per default at December 31, 2017, includes the impact of reserves and defaults related to the FEMA Designated Areas associated with Hurricanes Harvey and Irma. Excluding the impact from new defaults received subsequent to Hurricanes Harvey and Irma in these FEMA Designated Areas, this amount would be approximately $20,500 at December 31, 2017.

We considered the sensitivity of our loss reserve estimates at December 31, 2018 by assessing the potential changes resulting from a parallel shift in Claim Severity and Default to Claim Rate for primary loans. For example, assuming all other factors remain constant, for every one percentage point absolute change in primary Claim Severity (which we estimated to be 96% of our risk exposure at December 31, 2018), we estimated that our total loss reserve at December 31, 2018 would change by approximately $4 million. Assuming the portfolio mix and all other factors remain constant, for every one percentage point absolute change in our primary net Default to Claim Rate, we estimated a $10 million change in our primary loss reserve at December 31, 2018.

In addition, as part of our claims review process, we assess whether defaulted loans were serviced appropriately in accordance with our insurance policies and servicing guidelines. To the extent a servicer has failed to satisfy its servicing obligations, our policies provide that we may curtail the claim payment for such default, and in some circumstances, cancel coverage or deny the claim. Before consideration of any subsequent challenges by our lender and servicer customers, Claim Curtailments due to servicer noncompliance with our insurance policies and servicing

guidelines, which impact the severity of our claim payments, were $4.7 million for the year ended December 31, 2018, respectively, compared to $7.2 million for the same period in 2017.

Total mortgage insurance claims paid in 2018 of $215.9 million have decreased from claims paid of $390.4 million in 2017. The decrease in claims paid is consistent with the ongoing decline in the outstanding default inventory. In addition, claims paid for the year ended December 31, 2017 included the payment of $54.8 million made in connection with the scheduled final settlement of the Freddie Mac Agreement in the third quarter of 2017. Claims paid in both periods also include the impact of commutations. Although expected claims are included in our reserve for losses, the timing of claims paid is

subject to fluctuation from quarter to quarter, based on the rate that defaults cure and other factors (as described in "Item 1. Business—Mortgage Insurance—Defaults and Claims") that make the timing of paid claims difficult to predict. The following table shows net claims paid by product and the average claim paid by product for the periods indicated:

	Year Ended December 31,		
(In thousands)	2018	2017	2016
Net claims paid: (1)			
Prime	$120,503	$182,338	$252,583
Alt-A and A minus and below	67,136	96,102	140,056
Total primary claims paid	187,639	278,440	392,639
Pool	3,520	10,687	22,120
Other (2)	322	(1,937)	(384)
Subtotal	191,481	287,190	414,375
Impact of captive terminations	(793)	645	(2,418)
Impact of commutations (3)	25,260	102,545	5,605
Total net claims paid	$215,948	$390,380	$417,562
Average net claim paid: (1) (4)			
Prime	$49.9	$49.2	$47.5
Alt-A and A minus and below	62.4	54.1	52.3
Total average net primary claim paid	53.7	50.8	49.1
Average direct primary claim paid (4) (5)	$54.4	$51.1	$49.5

(1) Net of reinsurance recoveries and other recoveries.
(2) Net of recoveries collected on claims paid in prior years on second-lien mortgage loans.
(3) Includes payments to commute mortgage insurance coverage on certain performing and non-performing loans. For 2017, includes payments that, as expected, were made in connection with the final settlement of the Freddie Mac Agreement, as well as payments to commute mortgage insurance coverage on certain performing and non-performing loans on which we had Pool Insurance risk.
(4) Calculated without giving effect to the impact of the termination of captive transactions and commutations.
(5) Before reinsurance recoveries.

Notwithstanding historical trends, our portfolio originated prior to and including 2008 experienced default and claim activity sooner and to a significantly greater extent than had been the case historically for our books of business prior to the financial crisis. For the periods indicated, the following tables show: (i) cumulative direct claims paid by us on our primary insured book of business at the end of each successive year after origination, expressed as a percentage of the cumulative premiums written by us in each year of origination and (ii) direct claims paid by policy origination year. Direct claims paid represent first-lien claims paid prior to reinsurance recoveries and captive termination payments, and exclude LAE.

Direct Claims Paid vs. Premiums Written—Primary Insurance

Year of Origination	End of 1st year	End of 2nd year	End of 3rd year	End of 4th year	End of 5th year	End of 6th year	End of 7th year	End of 8th year	End of 9th year	End of 10th year
2009	0.0%	1.3 %	3.9 %	7.6%	11.7%	14.2%	15.3%	15.9%	16.4%	16.4 %
2010	0.0%	0.4 %	1.3 %	3.1%	4.9 %	5.5 %	6.0 %	6.3 %	6.4 %	—
2011	0.0%	0.2 %	1.1 %	2.0%	2.7 %	3.2 %	3.6 %	3.8 %	—	—
2012	0.0%	0.1 %	0.5 %	0.8%	1.2 %	1.5 %	1.7 %	—	—	—
2013	0.0%	0.1 %	0.4 %	0.9%	1.3 %	1.6 %	—	—	—	—
2014	0.0%	0.0 %	0.6 %	1.4%	2.0 %	—	—	—	—	—
2015	0.0%	0.1 %	0.6 %	1.2%	—	—	—	—	—	—
2016	0.0%	0.1 %	0.4 %	—	—	—	—	—	—	—
2017	0.0%	0.0 %	—	—	—	—	—	—	—	—
2018	0.0%	—	—	—	—	—	—	—	—	—

	December 31,					
($ in thousands)	**2018**		**2017**		**2016**	
Direct claims paid by origination year (first-lien):						
2008 and prior	$183,310	89.5 %	$358,067	94.0 %	$393,063	95.5 %
2009	1,623	0.8	3,970	1.0	4,156	1.0
2010	587	0.3	1,332	0.3	1,644	0.4
2011	1,020	0.5	1,484	0.4	1,835	0.5
2012	2,100	1.0	2,943	0.8	3,380	0.8
2013	3,126	1.5	4,638	1.2	4,561	1.1
2014	5,490	2.7	5,271	1.4	2,961	0.7
2015	4,856	2.4	3,143	0.8	—	—
2016	2,416	1.2	254	0.1	—	—
2017	253	0.1	—	—	—	—
2018	—	—	—	—	—	—
Total direct claims paid (1)	$204,781	100.0%	$381,102	100.0%	$411,600	100.0%

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(1) Represents total first-lien direct claims paid, excluding impact of reinsurance and LAE.

Other Operating Expenses. The increase in other operating expenses for 2018, as compared to 2017, primarily reflects an increase in the proportion of corporate expenses allocated to the Mortgage Insurance segment, combined with higher total corporate expense. The increase in allocated expenses was partially offset by lower segment expenses in 2018 as compared to 2017, primarily as a result of increases in (i) ceding commissions, due to the 2018 Single Premium QSR Agreement and (ii) the cession percentage on the 2016 Single Premium QSR Agreement. See "Results of Operations—Consolidated—*Other Operating Expenses.*"

Other operating expenses for 2017, as compared to 2016, reflect an increase primarily due to: (i) increases in technology expenses associated with a significant investment in upgrading our systems; (ii) higher allocated corporate operating expenses, primarily due to expenses associated with the retirement and consulting agreements entered into

with our former Chief Executive Officer; (iii) expenses accrued to defend and resolve certain outstanding legal matters; and (iv) a decrease in ceding

commissions. These increases were partially offset by lower compensation expense in 2017, including variable incentive-based compensation.

Our expense ratio on a net premiums earned basis represents our Mortgage Insurance segment's operating expenses (which include policy acquisition costs and other operating expenses, as well as allocated corporate operating expenses), expressed as a percentage of net premiums earned. Our expense ratio was 23.9% for 2018, compared to 24.7% for 2017 and 22.7% for 2016. The increase in net premiums earned during 2018 was the primary driver of the change in the expense ratios between these periods.

Interest Expense. These amounts reflect the portion of interest on Radian Group's debt obligations allocated to our Mortgage Insurance segment, excluding the Senior Notes due 2019. The allocated interest decreased in 2018 and 2017 compared to 2016. These decreases were primarily due to the capital and liquidity actions taken in 2017 and 2016. See "Results of Operations—Consolidated—*Interest Expense*."

Results of Operations—Services

The following table summarizes our Services segment's results of operations for the years ended December 31, 2018, 2017 and 2016:

(In millions)	Year Ended December 31, 2018	2017	2016	$ Change Favorable (Unfavorable) 2018 vs. 2017	2017 vs. 2016
Adjusted pretax operating income (loss) (1)	$(27.1)	$(33.8)	$(20.2)	$6.7	$(13.6)
Net premiums earned—insurance	7.3	—	—	7.3	—
Services revenue	148.2	161.8	177.2	(13.6)	(15.4)
Cost of services	98.7	105.8	115.4	7.1	9.6
Gross profit on services	49.5	56.0	61.8	(6.5)	(5.8)
Other operating expenses (2)	65.2	65.3	64.3	0.1	(1.0)
Restructuring and other exit costs (3)	2.1	6.8	—	4.7	(6.8)

(1) Our senior management uses adjusted pretax operating income (loss) as our primary measure to evaluate the fundamental financial performance of each of our business segments. See Note 4 of Notes to Consolidated Financial Statements.

(2) Includes allocation of corporate operating expenses of $12.0 million, $14.3 million and $8.5 million for 2018, 2017 and 2016, respectively.

(3) Does not include impairment of long-lived assets and loss from the sale of a business line, which are not components of adjusted pretax operating income.

Our Services segment offers a broad array of mortgage, real estate and title services to market participants across the mortgage and real estate value chain, primarily through our subsidiaries, including Clayton, Green River Capital, Radian Settlement Services and Red Bell. In 2018, we also acquired the businesses of EnTitle Direct (in March 2018) and Independent Settlement Services (in November 2018), as well as the assets of Five Bridges (in December 2018), to enhance our Services offerings. In connection with the restructuring of our Services business, we have refined our Services business strategy going forward to focus on our core mortgage, real estate and title services. These services provide mortgage lenders, financial institutions, mortgage and real estate investors and government entities, among others, with information and other resources that are used to originate, evaluate, acquire, securitize, service and monitor residential real estate and loans secured by residential real estate. Effective with our acquisition of EnTitle Direct in March 2018, we provide title insurance to mortgage lenders as well as directly to borrowers.

The services that we no longer offer as a result of restructuring our Services business have not had a material impact on our consolidated cash flows or results of operations in recent periods. There was no material impact on our consolidated cash flows or results of operations from discontinuing these services. See Notes 1 and 7 of Notes to

Consolidated Financial Statements and "Item 1. Business—Services—Services Business Overview" for additional information regarding the Services segment.

Adjusted pretax operating income (loss). Our Services segment's adjusted pretax operating loss for 2018 was $27.1 million, compared to an adjusted pretax operating loss of $33.8 million in 2017. The decrease in our adjusted pretax operating

loss for 2018, as compared to 2017, was driven by: (i) a decrease in compensation-related costs (exclusive of costs related to EnTitle Direct), primarily as a result of our restructuring activities in 2017 and (ii) a decrease in restructuring and other exit costs. These lower expenses were partially offset by the inclusion of the operating results of EnTitle Direct (acquired in March 2018).

Our Services segment’s adjusted pretax operating loss was $33.8 million in 2017 compared to an adjusted pretax operating loss of $20.2 million in 2016. The increase in our adjusted pretax operating loss in 2017, as compared to 2016, was primarily driven by: (i) restructuring and other exit costs and (ii) decreased gross profit, primarily attributable to a shift in mix of services.

Net premiums earned-insurance. Net premiums earned for 2018 increased compared to 2017, as a result of the March 2018 acquisition of EnTitle Direct and the inclusion of its operations.

Services Revenue. Services revenue decreased for 2018, as compared to 2017, primarily due to a decline in mortgage and title services transaction volumes related primarily to lower volume from a large contract, which was substantially completed during the first half of 2018, partially offset by an increase in real estate services. This decrease in services revenue is generally in line with our expectations following our announced restructuring of our Services segment in late 2017, through which we are repositioning the segment to drive future profitability by focusing on the core products and services that we believe have higher growth potential, produce more predictable and recurring fee-based revenues, and better align with our customer needs.

Revenue decreased in 2017, as compared to 2016, primarily due to the decline in volume in: (i) mortgage services related primarily to our transaction management business and our surveillance business and (ii) real estate services primarily driven by our REO business. The decrease in transaction management was primarily due to a decline in loan review volume driven by a decline in demand for outsourcing. Our surveillance business is transactional and the decrease in surveillance services volume was primarily due to fewer transactions and pricing changes with one of our top 10 Services customers. The decline in REO asset management volume was primarily driven by a decline in REO asset inflow reflecting market conditions. These decreases were partially offset by an increase in title services transaction volumes related to a large contract.

For the year ended December 31, 2018, the top 10 Services customers (which may include our affiliates) generated approximately 42% of the Services segment’s services revenue, as compared to 49% for 2017 and 52% for 2016. Approximately 2%, 4% and 5% of services revenue on a segment basis for the years ended December 31, 2018, 2017 and 2016, respectively, related to sales to our affiliates, and has been eliminated in our consolidated results. The largest single customer generated approximately 15% of the services revenue for the year ended December 31, 2018 as compared to 11% for the years ended December 31, 2017 and December 31, 2016.

Cost of Services. Our cost of services is primarily affected by our level of services revenue and the mix of services provided. Our cost of services primarily consists of employee compensation and related payroll benefits, including the cost of billable labor assigned to revenue-generating activities and, to a lesser extent, other costs of providing services such as travel and related expenses incurred in providing client services and costs paid to outside vendors, data acquisition costs and other compensation-related expenses to maintain software application platforms that directly support our businesses. The level of these costs may fluctuate if market rates of compensation change, or if there is decreased availability or a loss of qualified employees.

Other Operating Expenses. Other operating expenses primarily consist of compensation costs not classified as cost of services because they are related to employees, such as sales and corporate employees, who are not directly involved in providing client services. Compensation-related costs for 2018 represented 50% of the segment’s other operating expenses, compared to 50% and 55% for 2017 and 2016, respectively. Other operating expenses for 2018 were impacted by the acquisition of EnTitle Direct in March 2018 and the resulting inclusion of its other operating expenses from the date of acquisition. The inclusion of EnTitle Direct is the primary driver of the increase in compensation-related costs for 2018, compared to the same period in 2017, partially offset by decreases resulting from our restructuring actions taken in 2017.

Compensation-related costs for 2017 compared to 2016 decreased as a percentage of other operating expenses, primarily because of a reduction in force in 2016, combined with the restructuring actions taken in 2017.
Other operating expenses also include other selling, general and administrative expenses, depreciation, and allocations of corporate general and administrative expenses. Other operating expenses for 2018 include allocations of corporate operating expenses of $12.0 million, compared to $14.3 million and $8.5 million for 2017 and 2016, respectively. This decrease in 2018, as compared to 2017, is primarily due to a decrease in the proportion of corporate expenses allocated to the Services segment, partially offset by higher total corporate expenses. The increase in 2017, as compared to 2016, is primarily due to an increase in

the proportion of corporate expenses allocated to the Services segment combined with an increase in total corporate expenses. See "Results of Operations—*Consolidated—Other Operating Expenses*."

Restructuring and other exit costs. Restructuring and other exit costs were incurred in 2018 and 2017 and include charges associated with our plan to restructure the Services business. The portion of these charges that are included in adjusted pretax operating income are primarily due to severance and related benefit costs. See Notes 1 and 7 of Notes to Consolidated Financial Statements for additional details.

Contractual Obligations and Commitments

We have various contractual obligations that are recorded as liabilities in our consolidated financial statements. Other items, including payments under operating lease agreements, are not recorded in our consolidated balance sheets as liabilities but represent a contractual commitment to pay.

The following table summarizes certain of our contractual obligations and commitments, including our expected claim payments on insurance policies and interest payments on debt obligations, as of December 31, 2018, and the future periods in which such obligations are expected to be settled in cash. Additional details regarding these obligations are provided in the narrative following the table and in the Notes to Consolidated Financial Statements that are referenced in the table.

		Payments Due by Period			
(In thousands)	Total	2019	2020-2021	2022-2023	Thereafter
Senior notes (principal and interest) (Note 12)	$1,219,300	$209,363 (1)	$499,187 (2)	$40,500	$470,250 (3)
Lease obligations (Note 14) (4)	108,990	11,310	21,013	20,350	56,317
Reserve for losses and LAE (Note 11) (5)(6)	398,057	154,521	217,939	25,597	—
Purchase obligations	4,361	1,735	2,328	298	—
Unrecognized tax benefits (Note 10) (7)	—	—	—	—	—
Total	$1,730,708	$376,929	$740,467	$86,745	$526,567

(1) Includes $158.6 million of Senior Notes due 2019 that may be redeemed, in whole or in part at any time prior to maturity.

(2) Includes $234.1 million and $197.7 million of Senior Notes due 2020 and 2021 that may be redeemed, in whole or in part at any time prior to maturity.

(3) Includes $450 million of Senior Notes due 2024 that may be redeemed, in whole or in part at any time prior to maturity.

(4) Represents contractual payments for operating leases, with the exception of $0.2 million included for capital lease payment obligations through 2020.

(5) Our reserve for losses and LAE reflects the application of accounting policies described below in "Critical Accounting Policies—*Reserve for Losses and LAE*." The payments due by period are based on management's estimates and assume that all of the loss reserves included in the table will result in claim payments, net of expected recoveries.

(6) Excludes IBNR reserves of $3.3 million relating to the Services business, as the timing or magnitude of any potential payments is unknown.

(7) We have approximately $33.6 million in potential additional liabilities associated with uncertain tax positions as of December 31, 2018. The timing or magnitude of any potential payments is unknown.

Other Contractual Obligations and Commitments

In addition to the contractual obligations set forth in the table above, we have the following material contractual obligations and commitments.

Affiliate Guaranty/Indemnification Agreements. We and certain of our subsidiaries have entered into the following intercompany guarantees:

Radian Guaranty and Radian Mortgage Assurance were parties to a cross-guaranty agreement that was terminated effective July 1, 2016. However, it remains in effect for insurance written prior to the termination date. This agreement provides that if either party fails to make a payment to a policyholder, then the other party will step in and make the payment. The obligations of both parties are unconditional and irrevocable; however, no payments may be made without prior approval by the Pennsylvania Insurance Department.

- Radian Group and Radian Mortgage Assurance are parties to a guaranty agreement, which provides that Radian Group will make sufficient funds available to Radian Mortgage Assurance to ensure that Radian Mortgage Assurance has a minimum of $5 million of statutory policyholders' surplus every calendar quarter. Radian Mortgage Assurance had $8.7 million of statutory policyholders' surplus and no RIF exposure as of December 31, 2018.
- To allow our mortgage insurance customers to comply with applicable securities regulations for issuers of ABS (including mortgage-backed securities), we have been required, depending on the amount of credit enhancement we were providing, to provide: (i) audited financial statements for the insurance subsidiary participating in these transactions or (ii) a full and unconditional holding-company level guarantee for our insurance subsidiaries' obligations in such transactions. Radian Group has guaranteed two structured transactions for Radian Guaranty with approximately $87.8 million of aggregate remaining credit exposure as of December 31, 2018.
- Radian Group and Radian Guaranty Reinsurance are parties to an Assumption and Indemnification Agreement with regard to obligations under our tax-sharing arrangements. Pursuant to this agreement, Radian Group is required to assume certain obligations that arise as a result of our tax-sharing arrangements.

In the ordinary course of business, Radian enters into agreements pursuant to which we may be obligated under specified circumstances or upon the occurrence of certain events to indemnify the counterparties with respect to certain matters. The terms and amount of indemnification are negotiated on a transaction by transaction basis, but generally the circumstances of the transaction and/or the contract provisions are such that we believe the exposure to material liability is remote.

Off-Balance Sheet Arrangements

As of December 31, 2018, we had not entered into any material off-balance sheet arrangements as defined in Item 303(a)(4) of Regulation S-K, other than those below:

Securities Lending Agreements

We participate in securities lending agreements for the purpose of increasing the yield on our investment securities portfolio with minimal incremental risk. Pursuant to these agreements, we loan to Borrowers certain securities that are held as part of our investment portfolio. For a complete discussion of our securities lending agreements, including the effect of these agreements on our liquidity and risks related to these agreements, see Note 6 of Notes to Consolidated Financial Statements and "Item 7A. Quantitative and Qualitative Disclosures about Market Risk."

Variable Interest Entity

In November 2018, Radian Guaranty entered into a fully collateralized reinsurance agreement with Eagle Re, an unaffiliated special purpose reinsurer domiciled in Bermuda. This reinsurance agreement provides for up to $434.0 million of aggregate excess-of-loss reinsurance coverage for the applicable percentage of mortgage insurance losses on new defaults on an existing portfolio of eligible Monthly Premium Policies issued between January 1, 2017 and January 1, 2018, with an initial RIF of $9.1 billion. Radian Guaranty and its affiliates have retained the first-loss layer of $204.9 million of aggregate losses, as well as any losses in excess of the outstanding reinsurance coverage amount. Eagle Re is a special purpose variable interest entity that is not consolidated in our consolidated financial statements because we do not have the unilateral power to direct those activities that are significant to its economic performance. See Note 8 of Notes to Consolidated Financial Statements for further information.

Segregated Funds Held for Others

Through EnTitle Insurance, we maintain escrow deposits as a service to our customers. Amounts held in escrow and excluded from assets and liabilities in our consolidated balance sheets totaled $4.7 million as of December 31, 2018. These amounts were held at third-party financial institutions and not considered assets of the Company. Should one or more of the financial institutions at which escrow deposits are maintained fail, there is no guarantee that we would recover the funds deposited, whether through Federal Deposit Insurance Corporation coverage or otherwise. In the event of any such failure, we could be held liable for the disposition of these funds owned by third parties.

Liquidity and Capital Resources

Radian Group—Short-Term Liquidity Needs

Radian Group serves as the holding company for our insurance and other subsidiaries and does not have any operations of its own. At December 31, 2018, Radian Group had available, either directly or through an unregulated subsidiary, unrestricted

cash and liquid investments of $714.1 million. This amount excludes certain additional cash and liquid investments that have been advanced to Radian Group from our subsidiaries for corporate expenses and interest payments. Total liquidity as of December 31, 2018 was $981.6 million, and includes our undrawn $267.5 million unsecured revolving credit facility as of that time. See “—*Sources of Liquidity*” below. Subject to certain limitations, borrowings under the credit facility may be used for working capital and general corporate purposes, including, without limitation, capital contributions to Radian Group’s insurance and reinsurance subsidiaries as well as growth initiatives. See Note 13 of Notes to Consolidated Financial Statements for additional details.

Radian Group’s liquidity increased as a result of Radian Guaranty’s return of $450 million in capital to Radian Group in December 2018, as approved by the Pennsylvania Insurance Department. This distribution of capital is part of our long-term capital plan, which is designed to improve our financial flexibility. A portion of the proceeds is expected to be used for the payment of $159 million principal amount of our outstanding Senior Notes due 2019.

During 2018, available holding company liquidity also increased by $169 million as a result of payments made to Radian Group under tax-sharing arrangements with its subsidiaries, in excess of Radian Group’s consolidated federal tax payment obligation. During the same period, available holding company liquidity was reduced by: (i) the completion of the Company’s previous share repurchase program described below; (ii) the impact of finalizing the settlement of the IRS Matter; (iii) the acquisitions of EnTitle Direct, Independent Settlement Services and the assets of Five Bridges; and (iv) subsequent capital contributions of $24.0 million to the acquired companies. See “Overview—*Other 2018 Developments* ” for additional information on our 2018 acquisitions.

On August 9, 2017, Radian Group’s board of directors authorized the Company to repurchase up to $50 million of its common stock. The Company completed this program during the first half of 2018 by purchasing 3.0 million shares, at an average price of $16.56 per share, including commissions.

On August 16, 2018, Radian Group’s board of directors approved a new share repurchase program that authorizes the Company to repurchase up to $100 million of its common stock in the open market or in privately negotiated transactions, based on market and business conditions, stock price and other factors. Radian plans to utilize a Rule 10b5-1 plan, which would permit the Company to purchase shares, at pre-determined price targets, when it may otherwise be precluded from doing so. As of December 31, 2018, the full purchase authority of up to $100 million remained available under this program, which expires on July 31, 2019. See Note 15 of Notes to Consolidated Financial Statements for additional details on our share repurchase programs.

The chart below shows our debt maturity profile at December 31, 2018 and the improvement in Radian’s debt-to-capital ratio from 27.1% at December 31, 2016 to 25.5% at December 31, 2017 and 22.8% at December 31, 2018.

Radian Group’s principal liquidity demands for the next 12 months are: (i) the payment of corporate expenses, including taxes; (ii) the payment of $159 million principal amount of our outstanding Senior Notes due 2019; (iii) interest payments on our outstanding debt obligations; and (iv) the payment of dividends on our common stock. Radian Group’s liquidity demands for the next 12 months or in future periods could also include: (i) the potential use of up to $100 million to repurchase Radian Group common stock pursuant to the existing share repurchase authorization; (ii) capital support for Radian Guaranty and our other insurance subsidiaries (if needed); (iii) repayments, repurchases or early redemptions of portions of our debt obligations; and (iv) potential investments to support our business strategy.

Corporate Expenses and Interest Expense. Radian Group has expense-sharing arrangements in place with its principal operating subsidiaries that require those subsidiaries to pay their allocated share of certain holding-company expenses, including interest payments on most of Radian Group’s outstanding debt obligations. Payments of these corporate expenses for the next 12 months, excluding interest payments on Radian Group’s debt, are expected to be approximately $85 million to $100 million. For the same period, payments of interest on Radian Group’s debt obligations are expected to be approximately $51 million. We expect most of these holding company expenses to be reimbursed by our subsidiaries under our expense-sharing arrangements. See “*—Radian Group—Long-Term Liquidity Needs—Services.*” The expense-sharing arrangements between Radian Group and our insurance subsidiaries, as amended, have been approved by the applicable insurance departments, but such approval may be modified or revoked at any time.

Capital Support for Subsidiaries. Private mortgage insurers, including Radian Guaranty, are required to comply with the PMIERs to remain approved insurers of loans purchased by the GSEs. Radian Guaranty currently is an approved mortgage insurer under the PMIERs, and is in compliance with the PMIERs financial requirements. At December 31, 2018, Radian Guaranty’s Available Assets under the PMIERs totaled $3.5 billion, resulting in excess available resources or a “cushion” of $567 million, or 19%, over its Minimum Required Assets of $2.9 billion. See Note 19 of Notes to Consolidated Financial Statements for additional details regarding the capital requirements of our subsidiaries.

The chart below summarizes our “cushion” under the PMIERs as of December 31, 2016, 2017 and 2018, as well as Radian’s excess available resources as of December 31, 2018, calculated as if the PMIERs 2.0 requirements were in effect. Our excess available resources include our unsecured revolving credit facility and holding company liquidity, which may be utilized to enhance Radian Guaranty’s PMIERs cushion.

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(1) Represents Radian Group’s Liquidity, net of the $35 million minimum liquidity requirement under the unsecured revolving credit facility. Radian Group’s Liquidity as of December 31, 2018 includes $450 million from the December 2018 distribution of capital to our holding company from its mortgage insurance subsidiary, as approved by the Pennsylvania Insurance Department. See Note 19 of Notes to Consolidated Financial Statements.

(2) Represents Radian Guaranty’s excess of Available Assets over its Minimum Required Assets, calculated in accordance with the PMIERs financial requirements.

(3) Represents Radian’s PMIERs excess available resources as of December 31, 2018, calculated as if the PMIERs 2.0 requirements were in effect.

(4) Percentages represent the values shown as a percentage of Minimum Required Assets under the PMIERs.

The amendment to the 2016 Single Premium QSR Agreement which became effective as of December 31, 2017, and the $100 million of cash and marketable securities that Radian Group transferred to Radian Guaranty in December 2017 in exchange for a Surplus Note both had the effect of increasing the amount of Radian Guaranty’s cushion under the PMIERs financial requirements from December 31, 2016 to December 31, 2017. These increases were partially offset by the temporarily elevated level of Minimum Required Assets at December 31, 2017, due to the increase in reported delinquencies from hurricane-affected areas, as discussed below. See Note 19 of Notes to Consolidated Financial Statements for additional details. Available Assets also increased due to net cash provided by operating activities.

The PMIERs require Radian to maintain significantly more Minimum Required Assets for delinquent loans than for performing loans. Therefore, the increase in new primary defaults received during 2017 from areas affected by Hurricanes Harvey and Irma required us to maintain an elevated level of Minimum Required Assets at December 31, 2017, compared to levels prior to these hurricanes. As of December 31, 2018, the impact of these hurricanes on our level of our Minimum Required Assets has substantially decreased, consistent with our expectation that most of the hurricane-related defaults would cure during 2018, and these incremental defaults did not result in a material increase in our incurred losses or paid claims. See Note 11 of Notes to Consolidated Financial Statements. After the March 31, 2019 effective date of PMIERs 2.0, subject to certain requirements, defaulted loans in FEMA-declared major disaster areas will require a reduced level of Minimum Required

Assets, which we expect to help reduce the future volatility of our Minimum Required Asset levels upon the occurrence of a similar event.

The two reinsurance agreements we entered into in November 2018 as part of our Excess-of-Loss Program reduced our level of Minimum Required Assets by $455.4 million. This benefit was approximately offset by the distribution of capital from Radian Guaranty to Radian Group in December 2018, which reduced Radian Guaranty's Available Assets by $450 million. Net cash provided by operating activities also increased Available Assets during 2017 and 2018. See Notes 8 and 19 of Notes to Consolidated Financial Statements and "Overview—*Other 2018 Developments"* for additional information.

The GSEs may amend the PMIERs at any time, although the GSEs have communicated that for material changes, including material changes affecting Minimum Required Assets, they will generally provide written notice 180 days prior to the effective date. The GSEs also have broad discretion to interpret the PMIERs, which could impact the calculation of Radian Guaranty's Available Assets and/or Minimum Required Assets. On September 27, 2018, the GSEs issued PMIERs 2.0, which will become effective on March 31, 2019. Radian expects to comply with PMIERs 2.0 and maintain a significant excess of Available Assets over Minimum Required Assets as of the effective date.

If applied as of December 31, 2018, these changes would not have resulted in a material change in Radian's Minimum Required Assets, but, as shown in the chart above, would have reduced Radian's PMIERs cushion. The reduction in Radian Guaranty's PMIERs cushion is primarily due to a reduction in Available Assets of approximately $215 million as a result of the elimination in PMIERS 2.0 of any credit for future premiums for insurance policies written prior to and including 2008, which is permitted under the current PMIERs. If Radian Guaranty's Available Assets and Minimum Required Assets were calculated as if the PMIERs 2.0 requirements were in effect, Radian Guaranty's Available Assets at December 31, 2018 would have resulted in an excess or "cushion" of approximately $340 million, or 12%, over its Minimum Required Assets. While the amount of this cushion could fluctuate on a quarterly basis, we expect it to increase over time based, in part on our expectations regarding the future financial performance of Radian Guaranty, including our projected NIW, expected decrease in defaults and risk distribution strategy. See Notes 1 and 8 of Notes to Consolidated Financial Statements for additional information about the PMIERs and our reinsurance programs, respectively. Additionally, notwithstanding our cushions under both the current PMIERs and PMIERs 2.0, our holding company liquidity of $714.1 million and our $267.5 million unsecured revolving credit facility (both as of December 31, 2018) may be utilized to enhance Radian Guaranty's PMIERs cushion, as necessary, subject to a $35 million minimum liquidity requirement under our unsecured revolving credit facility. See Note 13 of Notes to Consolidated Financial Statements for additional information on the unsecured revolving credit facility.

Radian Guaranty's Risk-to-capital as of December 31, 2018 was 13.9 to 1. See Note 19 of Notes to Consolidated Financial Statements for more information. Our combined Risk-to-capital, which represents the consolidated Risk-to-capital measure for all of our mortgage insurance subsidiaries, was 12.8 to 1 as of December 31, 2018. Radian Guaranty is not expected to need additional capital to satisfy state insurance regulatory requirements in their current form.

The NAIC is in the process of reviewing the minimum capital and surplus requirements for mortgage insurers and has been considering changes to the Model Act. In May 2016, a working group of state regulators released an exposure draft of a risk-based capital framework to establish capital requirements for mortgage insurers. The process for developing this framework is ongoing. While the timing and outcome of this process is not known, in the event the NAIC adopts changes to the Model Act, we expect that the capital requirements in states that adopt the new Model Act may increase as a result of the changes. However, we continue to believe the changes to the Model Act will not result in financial requirements that require greater capital than the level currently required under the PMIERs financial requirements.

Title insurance companies, including EnTitle Insurance, are subject to comprehensive state regulations, including minimum net worth requirements. EnTitle Insurance was in compliance with its respective minimum net worth requirements at December 31, 2018. In the event the cash flow from operations of the Services segment is not

adequate to fund all of its needs, including the regulatory capital needs of EnTitle Insurance, Radian Group may provide additional funds to the Services segment in the form of an intercompany note or other capital contribution, subject to the approval of the Ohio Department of Insurance, if needed. See also "—*Services.*" Additional capital support may also be required for potential investments in new business initiatives to support our strategy of growing our businesses.

Dividends. Our quarterly common stock dividend currently is $0.0025 per share and, based on our current outstanding shares of common stock, we would require approximately $2.1 million in the aggregate to pay our quarterly dividends for the next 12 months. Radian Group is not subject to any limitations on its ability to pay dividends except those generally applicable to corporations that are incorporated in Delaware. Delaware corporation law provides that dividends are only payable out of a corporation's capital surplus or (subject to certain limitations) recent net profits. As of December 31, 2018, our capital surplus was $3.5 billion, representing our dividend limitation under Delaware law.

IRS Matter. In July 2018, Radian finalized a settlement with the IRS which resolved the issues and concluded all disputes related to the IRS Matter. In 2018, under the terms of the settlement, Radian utilized its "qualified deposits" with the U.S. Treasury to settle its $31 million obligation to the IRS, and in 2019, the Company expects the IRS to refund to Radian the remaining $58 million that was previously on deposit. Radian Group will not be reimbursed for any portion of this potential settlement under the tax-sharing arrangements with its subsidiaries. See Note 10 of Notes to Consolidated Financial Statements for additional information regarding the IRS Matter.

Sources of Liquidity. In addition to available cash and marketable securities, Radian Group's principal sources of cash to fund future short-term liquidity needs include payments made to Radian Group under expense- and tax-sharing arrangements with its subsidiaries. See also "*—Radian Group—Long-Term Liquidity Needs"* and *"—Services*." Pursuant to our tax-sharing agreements, our operating subsidiaries pay Radian Group an amount equal to any federal income tax the subsidiary would have paid on a standalone basis if they were not part of our consolidated tax return. As a result, from time to time, under the provisions of our tax-sharing agreements, Radian Group may receive cash from its operating subsidiaries that is in excess of Radian Group's consolidated federal tax payment obligation. In 2018, we made no estimated consolidated federal tax payments to the IRS relating to our 2018 tax year, due to the utilization of certain tax attributes, which included NOLs, AMT credits and research and development tax credits. In 2018, under the provisions of our tax-sharing agreements, Radian Group received cash payments from certain of its subsidiaries that were $222 million in excess of Radian Group's 2018 consolidated federal tax payment obligations. This amount includes $53 million of taxes receivable from subsidiaries that had been included in our liquidity as of December 31, 2017. For 2019, these excess tax payments from our subsidiaries are not expected to exceed Radian Group's federal tax payment obligation to the same extent as in 2018. See "*—IRS Matter*," above.

In addition to the primary sources of liquidity listed above, on October 16, 2017, Radian Group entered into a three-year, $225.0 million unsecured revolving credit facility with a syndicate of bank lenders. Effective October 26, 2018, Radian increased the amount of total commitments under the credit facility by $42.5 million, bringing the aggregate unsecured revolving credit facility from $225.0 million to $267.5 million. At December 31, 2018, the full $267.5 million remains undrawn and available under the facility. See Note 13 of Notes to Consolidated Financial Statements for additional information.

If Radian Group's current sources of liquidity are insufficient for Radian Group to fund its obligations during the next 12 months, or if we otherwise decide to increase our liquidity position, Radian Group may seek additional capital, including by incurring additional debt, issuing additional equity, or selling assets, which we may not be able to do on favorable terms, if at all.

We regularly evaluate opportunities, based on market conditions, to finance our operations by accessing the capital markets or entering into other types of financing arrangements with institutional and other lenders and financing sources, and consider various measures to improve our capital and liquidity positions, as well as to strengthen our balance sheet and improve Radian Group's debt maturity profile. In the past, we have repurchased and exchanged, prior to maturity, some of our outstanding debt, and in the future, we may, from time to time, seek to redeem, repurchase or exchange for other securities, or otherwise restructure or refinance some or all of our outstanding debt, prior to maturity, in the open market, through other public or private transactions, including pursuant to one or more tender offers, or through any combination of the foregoing, as circumstances may allow. The timing or amount of any potential transactions will depend on a number of factors, including market opportunities and our views regarding our capital and liquidity positions and potential future needs. There can be no assurance that any such transactions will be completed on favorable terms, or at all.

Radian Group—Long-Term Liquidity Needs

In addition to our short-term liquidity needs discussed above, our most significant needs for liquidity beyond the next 12 months are:

(1) the repayment of our outstanding senior notes, consisting of:

- $234.1 million principal amount of outstanding debt due in June 2020;

- $197.7 million principal amount of outstanding debt due in March 2021;
- $450.0 million principal amount of outstanding debt due in October 2024; and

(2) potential additional capital contributions to our subsidiaries.

As of December 31, 2018, certain of our subsidiaries have incurred federal NOLs that could not be carried-back and utilized on a separate company tax return basis. As a result, we are not currently obligated under our tax-sharing agreement to reimburse these subsidiaries for their separate company federal NOL carryforward. However, if in a future period, one of these subsidiaries utilizes its share of federal NOL carryforwards on a separate entity basis, then Radian Group may be obligated to

fund such subsidiary’s share of our consolidated tax liability to the IRS. Certain subsidiaries, including Clayton, currently have federal NOLs on a separate entity basis that are available for future utilization. However, we do not expect to fund material obligations related to these subsidiary NOLs. See also “*—Radian Group—Short-Term Liquidity Needs—Sources of Liquidity*.”

We expect to meet the long-term liquidity needs of Radian Group with a combination of: (i) available cash and marketable securities; (ii) private or public issuances of debt or equity securities, which we may not be able to do on favorable terms, if at all; (iii) cash received under tax- and expense-sharing arrangements with our subsidiaries; (iv) to the extent available, dividends or returns of capital from our subsidiaries; and (v) any amounts that Radian Guaranty is able to successfully repay under the Surplus Note.

Under Pennsylvania’s insurance laws, ordinary dividends and other distributions may only be paid out of an insurer’s positive unassigned surplus, measured as of the end of the prior fiscal year. Despite the fact that Radian Guaranty and Radian Reinsurance maintained significant positive statutory policyholders’ surplus balances, Radian Guaranty and Radian Reinsurance had negative unassigned surplus at December 31, 2018 of $701.9 million and $84.8 million, respectively. Therefore, no ordinary dividends or other distributions can be paid by these subsidiaries in 2019. Due in part to the need to set aside contingency reserves, we do not expect that Radian Guaranty or Radian Reinsurance will have positive unassigned surplus, and therefore we expect that they will not have the ability to pay ordinary dividends, for the foreseeable future. Under Pennsylvania’s insurance laws, an insurer may request an extraordinary dividend or distribution, but payment is subject to the approval of the Pennsylvania Insurance Commissioner. Radian Guaranty received such approval to return capital by paying an Extraordinary Distribution to Radian Group in 2018. See Note 19 of Notes to Consolidated Financial Statements for additional information.

There can also be no assurance that our Services segment will generate sufficient cash flow to pay dividends. See “*—Services*” below.

Mortgage Insurance

As of December 31, 2018, our Mortgage Insurance segment maintained claims paying resources of $4.3 billion on a statutory basis, which consists of contingency reserves, statutory policyholders’ surplus, premiums received but not yet earned and loss reserves.

The principal demands for liquidity in our mortgage insurance business include: (i) the payment of claims and potential claim settlement transactions, net of reinsurance; (ii) operating expenses (including those allocated from Radian Group) and (iii) taxes. In addition, Radian Guaranty’s Surplus Note to Radian Group has a due date of December 31, 2027. The Surplus Note may be redeemed at any time upon 30 days prior notice, subject to the approval of the Pennsylvania Insurance Department.

In August 2016, Radian Guaranty and Radian Reinsurance became members of the FHLB. As members, they may borrow from the FHLB, subject to certain conditions, which include the need to post collateral and the requirement to maintain a minimum investment in FHLB stock. Advances from the FHLB may be used to provide low-cost, supplemental liquidity for various purposes, including to fund incremental investments. Radian’s current strategy includes using FHLB advances as financing to purchase additional investment securities that have similar durations, for the purpose of generating additional earnings from our investment securities portfolio with minimal incremental risk. As of December 31, 2018, there were $82.5 million of FHLB advances outstanding.

The principal sources of liquidity in our mortgage insurance business currently include insurance premiums, net investment income and cash flows from (i) investment sales and maturities; (ii) FHLB advances; or (iii) capital contributions from Radian Group. We believe that the operating cash flows generated by each of our mortgage insurance subsidiaries will provide these subsidiaries with a substantial portion of the funds necessary to satisfy their claim payments, operating expenses and taxes for the foreseeable future.

Private mortgage insurers, including Radian Guaranty, are required to comply with the PMIERs to remain approved insurers of loans purchased by the GSEs. Radian Guaranty currently is an approved mortgage insurer under the PMIERs and is in compliance with the PMIERs financial requirements. See “*—Radian Group—Short-Term Liquidity*

Needs—Capital Support for Subsidiaries" and Note 1 of Notes to Consolidated Financial Statements for additional information.

Securities Lending Agreements. Radian Guaranty and Radian Reinsurance from time to time enter into certain short-term securities lending agreements with third-party Borrowers for the purpose of increasing the yield on our investment securities portfolio with minimal incremental risk. Under our securities lending program, Radian Guaranty and Radian Reinsurance loan certain securities in their investment portfolios to these Borrowers for short periods of time in exchange for collateral consisting of cash and other securities. We have the right to request the return of the loaned securities at any time.

Under our securities lending agreements, the Borrower generally may return the loaned securities to us at any time, which would require us to return the cash and other collateral within the standard settlement period for the loaned securities on the principal exchange or market in which the securities are traded. We manage this liquidity risk associated with the cash collateral by maintaining the cash collateral in a short-term money-market fund with daily availability.

The counterparty risk under these programs is reduced by the amounts of collateral received. On a daily basis, the value of the underlying securities that we have loaned to the Borrowers is compared to the value of cash and securities collateral we received from the Borrowers, and additional cash or securities are requested or returned, as applicable. In addition, we are indemnified against counterparty credit risk by the intermediary. For additional information on our securities lending agreements, see Note 6 of Notes to Consolidated Financial Statements.

Services

As of December 31, 2018, our Services segment maintained cash and cash equivalents totaling $8.6 million, which included restricted cash of $2.0 million.

The principal demands for liquidity in our Services segment include: (i) the payment of employee compensation and other operating expenses, including those allocated from Radian Group; (ii) reimbursements to Radian Group for its portion of allocated expense; and (iii) dividends to Radian Group, if any.

The principal sources of liquidity in our Services segment are cash generated by operations and, to the extent necessary, capital contributions from Radian Group.

Liquidity levels may fluctuate depending on the levels and contractual timing of our invoicing and the payment practices of the Services clients, in combination with the timing of Services' payments for employee compensation and to external vendors. The amount, if any, and timing of the Services segment's dividend paying capacity will depend primarily on the amount of excess cash flow generated by the segment.

The Services segment has not generated sufficient cash flows to pay dividends to Radian Group. Additionally, while cash flow has been sufficient to pay the Services segment's direct operating expenses, it has not been sufficient to reimburse Radian Group for $97.3 million of its accumulated allocated operating expense and interest expense. We do not expect that the Services segment will be able to bring its reimbursement obligations current in the foreseeable future. In the event the cash flow from operations of the Services segment is not adequate to fund all of its needs, Radian Group may provide additional funds to the Services segment in the form of a capital contribution or an intercompany note.

Cash Flows

The following table summarizes our consolidated cash flows from operating, investing and financing activities:

(In thousands)	Year Ended December 31,		
	2018	2017	2016
Net cash provided by (used in):			
Operating activities	$677,786	$360,575	$381,724
Investing activities	(689,414)	(201,492)	(176,058)
Financing activities	22,386	(125,084)	(203,269)
Effect of exchange rate changes on cash and restricted cash	—	431	(481)
Increase (decrease) in cash and restricted cash	$10,758	$34,430	$1,916

Operating Activities

Our most significant source of operating cash flows is from premiums received from our insurance policies, while our most significant uses of operating cash flows are generally for claims paid on our insured policies and our operating expenses. Net cash provided by operating activities totaled $677.8 million for 2018, compared to $360.6 million in 2017. This increase in net cash provided by operating activities in 2018, compared to 2017, was principally the result of: (i) an increase in net premiums written in 2018 and (ii) a reduction in claims paid in 2018. Claims paid for 2017 included payments that were made in connection with the scheduled final settlement of the Freddie Mac Agreement in

the third quarter of 2017.

Net cash provided by operating activities totaled $360.6 million in 2017, compared to $381.7 million in 2016. This decrease in net cash provided by operating activities in 2017, compared to 2016, was principally the result of estimated payments made for income taxes, partially offset by an increase in net premiums received and a reduction in net claims paid.

Investing Activities

Net cash used in investing activities increased in 2018, compared to 2017, primarily as a result of: (i) an increase in purchases of short-term investments; (ii) a decrease in proceeds from trading securities; and (iii) a decrease in proceeds, net of purchases of fixed-maturity investments. These changes were partially offset by an increase in proceeds, net of purchases, from equity securities. Net cash used in investing activities increased in 2017, compared to 2016, primarily as a result of (i) an increase in purchases, net of proceeds, from sales of equity securities and (ii) a decrease in proceeds from sales of trading securities. These increases were partially offset by a decrease in purchases, net of proceeds from sales, of fixed-maturity investments available for sale.

Financing Activities

Net cash provided by financing activities increased for 2018, as compared to net cash used in financing activities during 2017. For 2018 our primary financing activities included an increase in secured borrowings from the FHLB, partially offset by an increase in the purchases of our common shares. For 2017 our primary financing activities included the issuance of $450 million aggregate principal amount of Senior Notes due 2024 as well as: (i) the purchases of aggregate principal amounts of $141.4 million, $115.9 million and $152.3 million of our Senior Notes due 2019, 2020 and 2021, respectively; (ii) the settlement of our obligations on the remaining $68.0 million aggregate principal amount of our Convertible Senior Notes due 2019; and (iii) the purchase of $21.6 million aggregate principal amount of our Convertible Senior Notes due 2017, all of which were settled in cash for an aggregate amount of $592.5 million during 2017.

Net cash used in financing activities decreased for 2017, compared to 2016, primarily as a result of reduced repurchases of our common stock, partially offset by purchases and redemptions of debt exceeding debt issuances. During 2016, cash used in financing activities primarily related to purchases of our Convertible Senior Notes due 2017 and 2019 as well as repurchases of our common stock, partially offset by the issuance of $350 million aggregate principal amount of Senior Notes due 2021.

See “Item 8. Financial Statements and Supplementary Data—Consolidated Statements of Cash Flows” for additional information.

Stockholders’ Equity

Stockholders’ equity increased to $3.5 billion at December 31, 2018, from $3.0 billion at December 31, 2017. The net increase in stockholders’ equity resulted primarily from our net income of $606.0 million for 2018, partially offset by: (i) net unrealized losses on investments of $87.1 million and (ii) shares repurchased under our share repurchase program of $50.1 million. See Note 15 of Notes to Consolidated Financial Statements for additional information.

During 2018, Radian’s holding company debt-to-capital ratio decreased to 22.8% at December 31, 2018 from 25.5% at December 31, 2017.

Ratings

Radian Group, Radian Guaranty and Radian Reinsurance have been assigned the ratings set forth in the chart below. We believe that ratings often are considered by others in assessing our credit strength and the financial strength of our primary mortgage insurance subsidiaries. The following ratings have been independently assigned by third-party statistical rating organizations, are for informational purposes only and are subject to change. See “Item 1A. Risk Factors—*Radian Guaranty may fail to maintain its eligibility status with the GSEs.”*

	Moody’s (1)	S&P (2)
Radian Group	Ba2	BB+
Radian Guaranty	Baa2	BBB+
Radian Reinsurance	N/A	BBB+

(1) Based on the October 1, 2018 update, Moody's outlook for Radian Group and Radian Guaranty currently is Stable.
(2) Based on the October 11, 2018 update, S&P's outlook for Radian Group, Radian Guaranty and Radian Reinsurance is currently Stable.

Critical Accounting Policies

SEC guidance defines Critical Accounting Policies as those that require the application of management's most difficult, subjective or complex judgments, often because of the need to make estimates about the effect of matters that are inherently uncertain and that may change in subsequent periods. In preparing our consolidated financial statements in accordance with GAAP, management has made estimates, assumptions and judgments that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods. In preparing these financial statements, management has utilized available information, including our past history, industry standards and the current and projected economic and housing environments, among other factors, in forming its estimates, assumptions and judgments, giving due consideration to materiality. Because the use of estimates is inherent in GAAP, actual results could differ from those estimates. In addition, other companies may utilize different estimates, which may impact comparability of our results of operations to those of companies in similar businesses. A summary of the accounting policies that management believes are critical to the preparation of our consolidated financial statements is set forth below.

Reserve for Losses and LAE

We establish reserves to provide for losses and LAE, which include the estimated costs of settling claims in our Mortgage Insurance segment, in accordance with the accounting standard regarding accounting and reporting by insurance enterprises. Although this standard specifically excludes mortgage insurance from its guidance relating to the reserve for losses, because there is no specific guidance for mortgage insurance, we establish reserves for mortgage insurance as described below, using the guidance contained in this standard supplemented with other accounting guidance.

Estimating our loss reserves involves significant reliance upon assumptions and estimates with regard to the likelihood, magnitude and timing of each potential loss, including an estimate of the impact of our Loss Mitigation Activities. The models, assumptions and estimates we use to establish loss reserves may prove to be inaccurate, especially during an extended economic downturn or a period of extreme market volatility and uncertainty. As such, we cannot be certain that our reserve estimate will be adequate to cover ultimate losses on incurred defaults. For example, our mortgage insurance loss reserves generally increase as defaulted loans age, because historically, as defaulted loans age, they have been more likely to result in foreclosure, and therefore, have been more likely to result in a claim payment. While we believe this remains accurate, following the financial crisis, there are a significant number of loans in our defaulted portfolio that have been in default for an extended period of time, but which have not been subject to foreclosure, and therefore, have not resulted in claims. As a result, significant uncertainty remains with respect to the ultimate resolution of these aged defaults. This uncertainty requires management to use considerable judgment in estimating the rate at which these loans will result in claims.

Commutations and other negotiated terminations of our insured risks in our Mortgage Insurance segment provide us with an opportunity to exit exposures for an agreed upon payment, or payments, sometimes at an amount less than the previously estimated ultimate liability. Once all exposures relating to such policies are extinguished, all reserves for losses and LAE and other balances relating to the insured policies are generally reversed, with any remaining net gain or loss recorded through provision for losses. We take into consideration the specific contractual and economic terms for each individual agreement when accounting for our commutations or other negotiated terminations, which may result in differences in the accounting for these transactions.

In our Mortgage Insurance business, the default and claim cycle begins with the receipt of a default notice from the loan servicer. Reserves for losses are established upon receipt of notification from servicers that a borrower has missed two monthly payments, which is when we consider a loan to be in default for financial statement and internal tracking purposes. We also establish reserves for associated LAE, consisting of the estimated cost of the claims administration process, including legal and other fees and expenses associated with administering the claims process. We maintain an extensive database of claim payment history, and use models based on a variety of loan characteristics to determine the likelihood that a default will reach claim status.

With respect to loans that are in default, considerable judgment is exercised as to the adequacy of reserve levels. For purposes of reserve modeling, loans are aggregated into groups using a variety of factors. The attributes currently used to define the groups for purposes of developing various assumptions include, but are not limited to, the Stage of Default, the Time in Default and type of insurance (i.e., primary or pool). We use an actuarial projection methodology referred to as a “roll rate” analysis that uses historical claim frequency information to determine the projected ultimate Default to Claim Rates based on the Stage of Default and Time in Default as well as the date that a loan goes into default. With respect to new defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma received from September 2017 through February 2018, we assume a lower gross Default to Claim Rate than for new defaults with similar characteristics from other areas, due to our

expectations based on past experience with other natural disasters, that a significant portion of these defaults will not result in claims. The Default to Claim Rate also includes our estimates with respect to expected Rescissions and Claim Denials, which have the effect of reducing our Default to Claim Rates. We forecast the impact of our Loss Mitigation Activity in protecting us against fraud, underwriting negligence, breach of representation and warranties, inadequate documentation of submitted claims and other items that may give rise to Rescissions or cancellations and Claim Denials, to help determine the Default to Claim Rate. Our Loss Mitigation Activities have resulted in challenges from certain lender and servicer customers, which have resulted in some reversals of our decisions regarding Rescissions, Claim Denials and Claim Curtailments in the ordinary course. Although we believe that our Loss Mitigation Activities are justified under our policies, certain challenges have resulted in disputes and litigation, which if resolved unfavorably to us, could require us to reassume the risk on, and increase loss reserves for, those policies or pay additional claims. See Note 11 of Notes to Consolidated Financial Statements for additional information. Our Master Policies specify the time period during which a suit or action arising from any right of the insured under the policy must be commenced. The assumptions embedded in our estimated Default to Claim Rate on our in-force default inventory include an adjustment to our estimated Rescissions and Claim Denials to account for the fact that we expect a certain number of policies to be reinstated and ultimately to be paid, as a result of valid challenges by such policy holders.

Our aggregate weighted-average Default to Claim Rate assumption (net of Claim Denials and Rescissions) used in estimating our primary reserve for losses was 33% (31% excluding pending claims) at December 31, 2018 and 31% (29% excluding pending claims) at December 31, 2017. Our Default to Claim Rate estimates on defaulted loans are mainly developed based on the Stage of Default and Time in Default of the underlying defaulted loans grouped according to the period in which the default occurred, as measured by the progress toward foreclosure sale and the number of months in default. Our gross Default to Claim Rate assumption for new primary defaults was reduced from 10% at December 31, 2017, to 8% at December 31, 2018. Our estimates of gross Default to Claim Rates on our primary portfolio as of December 31, 2018 generally ranged from 8% for new defaults to 75% for Foreclosure Stage Defaults. As discussed above, based on our past experience, we assumed an average gross Default to Claim Rate of 3% for new defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma received subsequent to those two hurricanes and through February 2018, which contributed to the decrease in the overall weighted-average Default to Claim Rate assumption at December 31, 2018 as compared to December 31, 2017. Our estimate of expected Rescissions and Claim Denials (net of expected Reinstatements) embedded in our estimated Default to Claim Rate is generally based on our recent experience. Consideration is also given to differences in characteristics between those rescinded policies and denied claims and the loans remaining in our defaulted inventory.

After estimating the Default to Claim Rate, we estimate Claim Severity based on the average of recently observed severity rates within product type, type of insurance, and Time in Default cohorts. These average severity estimates are then applied to individual loan coverage amounts to determine reserves. Similar to the Default to Claim Rate, Claim Severity also is impacted by the length of time that loans are in default and by our Loss Mitigation Activity. For claims under our primary mortgage insurance, the coverage percentage is applied to the claim amount, which consists of the unpaid loan principal, plus past due interest (for which our liability is contractually capped in accordance with the terms of our Master Policies) and certain expenses associated with the default, to determine our maximum liability. Therefore, Claim Severity generally increases the longer that a loan is in default. In addition, we estimate the impact that the amount that Claim Curtailments due to servicer noncompliance with our insurance policies and servicing guidelines have on the amount that we ultimately will have to pay with respect to claims. As part of our claims review process, we assess whether defaulted loans were serviced appropriately in accordance with our insurance policies and servicing guidelines. If a servicer failed to satisfy its servicing obligations, our insurance policies provide that we may curtail the claim payment for such default, and in some circumstances, cancel coverage or deny the claim.

We do not establish reserves for loans that are in default if we believe that we will not be liable for the payment of a

claim with respect to that default unless a reserve for premium deficiency is required. We generally do not establish loss reserves for expected future claims on insured mortgages that are not in default. See "—*Reserve for Premium Deficiency*" below for an exception to this general principle.

IBNR and Other Reserves

We also establish reserves for defaults that we estimate have been incurred but have not been reported to us on a timely basis by the servicer, as well as for previous Rescissions, Claim Denials and Claim Curtailments that we estimate will be reinstated and subsequently paid. We generally give the policyholder up to 30 days to challenge our decision to rescind coverage before we consider a policy to be rescinded and remove it from our defaulted inventory; therefore, we currently expect only a limited percentage of policies that were rescinded to be reinstated. We currently expect a significant percentage of claims that were denied to be resubmitted as a perfected claim and ultimately paid. Most often, a Claim Denial is the result of a servicer's inability to provide the loan origination file or other servicing documents for review. Under the terms of our Master

Policies with our lending customers, our policyholders have up to one year after the acquisition of borrower’s title to provide to us the necessary documents to perfect a claim. All estimates are periodically reviewed and adjustments are made as they become necessary.

The impact to our reserve due to estimated future Loss Mitigation Activities incorporates our expectations regarding the number of policies that we expect to be reinstated as a result of our claims rebuttal process. Rescissions, Claim Denials and Claim Curtailments may occur for various reasons, including, without limitation, underwriting negligence, fraudulent applications and appraisals, breach of representations and warranties and inadequate documentation, primarily related to our insurance written in years prior to and including 2008. The level of Rescissions, Claim Denials and Claim Curtailments has been declining in recent periods as our defaults related to insurance written in years prior to and including 2008 continue to decline, and we expect this trend to continue.

Unless a liability associated with such activities or discussions becomes probable and can be reasonably estimated, we consider our claim payments and our Rescissions, Claim Denials and Claim Curtailments to be resolved for financial reporting purposes. Under the accounting standard regarding contingencies, an estimated loss is accrued only if we determine that the loss is probable and can be reasonably estimated. For populations of disputed Rescissions, Claim Denials and Claim Curtailments where we determine that a settlement is probable and that a loss can be reasonably estimated, we reflect our best estimate of the expected loss related to the populations under discussion in our financial statements, primarily as a component of our IBNR reserve. While our reserves include our best estimate of such losses, the outcome of the discussions or potential legal proceedings that could ensue is uncertain, and it is reasonably possible that a loss exists in excess of the amount accrued.

Sensitivity Analysis

We considered the sensitivity of first-lien loss reserve estimates at December 31, 2018 by assessing the potential changes resulting from a parallel shift in Claim Severity and Default to Claim Rate estimates for primary loans. For example, assuming all other factors remain constant, for every one percentage point change in primary Claim Severity (which we estimate to be 96.0% of risk exposure at December 31, 2018), we estimated that our loss reserves would change by approximately $3.8 million at December 31, 2018. Assuming all other factors remain constant, for every one percentage point change in our overall primary net Default to Claim Rate (which we estimate to be 33% at December 31, 2018, including our assumptions related to Rescissions and Claim Denials), we estimated a $10.4 million change in our loss reserves at December 31, 2018.

Senior management regularly reviews the modeled frequency, Rescission, Claim Denial, Claim Curtailments and Claim Severity estimates, which are based on historical trends, as described above. If recent emerging or projected trends differ significantly from the historical trends used to develop the modeled estimates, management evaluates these trends and determines how they should be considered in its reserve estimates.

Reserve for Premium Deficiency

Insurance enterprises are required to establish a PDR if the net present value of the expected future losses and expenses for a particular product line exceeds the net present value of expected future premiums and existing reserves for that product line. We reassess our expectations for premiums, losses and expenses for our mortgage insurance business at least quarterly and update our premium deficiency analyses accordingly. For our mortgage insurance business, we group our mortgage insurance products into two categories: first-lien and second-lien mortgage loans. For our first-lien insurance business, because the combination of the net present value of our expected future premiums and existing reserves (net of reinsurance recoverables) significantly exceeded the net present value of our future expected losses and expenses, a first-lien PDR was not required as of December 31, 2018 or December 31, 2017. Our second-lien PDR is recorded as a component of other liabilities.

Evaluating the expected profitability of our existing mortgage insurance business and the need for a PDR for our first-lien business involves significant reliance upon assumptions and estimates with regard to the likelihood, magnitude and timing of potential losses and premium revenues. The models, assumptions and estimates we use to evaluate the need for a PDR may not accurately forecast future performance, especially during any extended economic

downturn or period of extreme market volatility and uncertainty.

Fair Value of Financial Instruments

Our estimated fair value measurements are intended to reflect the assumptions market participants would use in pricing an asset or liability based on the best information available. Assumptions include the risks inherent in a particular valuation technique (such as a pricing model) and the risks inherent in the inputs to the model. Changes in economic conditions and capital market conditions, including but not limited to, credit spread changes, benchmark interest rate changes, market volatility

and changes in the value of underlying collateral, could cause actual results to differ materially from our estimated fair value measurements. We define fair value as the current amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

In accordance with GAAP, we established a three-level valuation hierarchy for disclosure of fair value measurements based on the transparency of inputs to the valuation of an asset or liability as of the measurement date. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level I measurements) and the lowest priority to unobservable inputs (Level III measurements). The level in the fair value hierarchy within which the fair value measurement falls is determined based on the lowest level input that is significant to the measurement in its entirety. The three levels of the fair value hierarchy are defined below:

Level I — Unadjusted quoted prices for identical assets or liabilities in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

Level II — Prices or valuations based on observable inputs other than quoted prices in active markets for identical assets and liabilities; and

Level III — Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable. Level III inputs are used to measure fair value only to the extent that observable inputs are not available.

For markets in which inputs are not observable or are limited, we use significant judgment and assumptions that a typical market participant would use to evaluate the market price of an asset or liability. Given the level of judgment necessary, another market participant may derive a materially different estimate of fair value. These assets and liabilities are classified in Level III of our fair value hierarchy.

There were no material Level III assets or liabilities at December 31, 2018. Available for sale securities, trading securities, equity securities and certain other assets are recorded at fair value as described in Note 5 of Notes to Consolidated Financial Statements. All changes in fair value of trading securities, equity securities (effective January 1, 2018) and certain other assets are included in our consolidated statements of operations. Prior to the implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized gains (losses) associated with equity securities were classified in accumulated other comprehensive income. All changes in the fair value of available for sale securities are recorded in accumulated other comprehensive income (loss).

The following are descriptions of our valuation methodologies for financial assets and liabilities measured at fair value.

Investments

U.S. government and agency securities—The fair value of U.S. government and agency securities is estimated using observed market transactions, including broker-dealer quotes and actual trade activity as a basis for valuation. U.S. government and agency securities are categorized in either Level I or Level II of the fair value hierarchy.

State and municipal obligations—The fair value of state and municipal obligations is estimated using recent transaction activity, including market observations. Valuation models are used, which incorporate bond structure, yield curve, credit spreads and other factors. These securities are generally categorized in Level II of the fair value hierarchy or in Level III when market-based transaction activity is unavailable.

Money market instruments—The fair value of money market instruments is based on daily prices, which are published and available to all potential investors and market participants. As such, these securities are categorized in Level I of the fair value hierarchy.

Corporate bonds and notes—The fair value of corporate bonds and notes is estimated using recent transaction activity, including market observations. Spread models are used that incorporate issuer and structure characteristics, such as credit risk and early redemption features, where applicable. These securities are generally categorized in Level II of the fair value hierarchy or in Level III when market-based transaction activity is unavailable.

RMBS, CMBS and Other ABS—The fair value of these instruments is estimated based on prices of comparable securities and spreads and observable prepayment speeds. These securities are generally categorized in Level II of the fair value

hierarchy or in Level III when market-based transaction activity is unavailable. The fair value of any Level III securities is generally estimated by discounting estimated future cash flows.

Foreign government and agency securities—The fair value of foreign government and agency securities is estimated using observed market yields used to create a maturity curve and observed credit spreads from market makers and broker-dealers. These securities are categorized in Level II of the fair value hierarchy.

Equity securities—The fair value of these securities is generally estimated using observable market data in active markets or bid prices from market makers and broker-dealers. Generally, these securities are categorized in Level I or II of the fair value hierarchy, as observable market data are readily available. From time to time, certain equity securities may be categorized in Level III of the fair value hierarchy due to a lack of market-based transaction data or the use of model-based valuations.

Other investments— These securities primarily consist of commercial paper and short-term certificates of deposit, which are categorized in Level II of the fair value hierarchy. The fair value of these investments is estimated using market data for comparable instruments of similar maturity and average yield.

We are responsible for the determination of the value of all investments carried at fair value and the supporting methodologies and assumptions. To assist us in this responsibility, we utilize independent third-party valuation service providers to gather, analyze and interpret market information and estimate fair values based upon relevant methodologies and assumptions for various asset classes and individual securities. We perform monthly quantitative and qualitative analyses on the prices received from third parties to determine whether the prices are reasonable estimates of fair value. Our analysis includes: (i) a review of the methodology used by third-party pricing services; (ii) a comparison of pricing services' valuations to other independent sources; (iii) a review of month-to-month price fluctuations; and (iv) a comparison of actual purchase and sale transactions with valuations received from third parties. These processes are designed to ensure that our investment values are accurately recorded, that the data inputs and valuation techniques utilized are appropriate and consistently applied and that the assumptions are reasonable and consistent with the objective of determining fair value.

Investments

We group fixed-maturity securities in our investment portfolio into one of three main categories: held to maturity, available for sale or trading securities. Fixed-maturity securities for which we have the positive intent and ability to hold to maturity, if any, are classified as held to maturity and are reported at amortized cost. Trading securities are securities that are purchased and held primarily for the purpose of selling them in the near term, and are reported at fair value, with unrealized gains and losses reported as a separate component of income. Investments in fixed-maturity securities not classified as held to maturity or trading securities are classified as available for sale and are reported at fair value, with unrealized gains and losses (net of tax) reported as a separate component of stockholders' equity as accumulated other comprehensive income (loss). Equity securities consist of holdings in common stock, preferred stock and exchange traded funds, which, effective January 1, 2018, are all recorded at fair value with unrealized gains and losses reported in income. Prior to the implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized gains (losses) associated with equity securities that were available for sale were classified in accumulated other comprehensive income. Short-term investments consist of money market instruments, certificates of deposit and highly liquid, interest-bearing instruments with an original maturity of 12 months or less at the time of purchase. Amortization of premium and accretion of discount are calculated principally using the interest method over the term of the investment. Realized gains and losses on investments are recognized using the specific identification method.

We record an other-than-temporary impairment adjustment on a security with an unrealized loss if we intend to sell the impaired security, if it is more likely than not that we will be required to sell the impaired security prior to recovery of its amortized cost basis, or if the present value of cash flows we expect to collect is less than the amortized cost basis of the security. If a sale is likely, the security is classified as other-than-temporarily impaired and the full amount of the impairment is recognized as a loss in the statement of operations. Otherwise, losses on securities that are other-than-temporarily impaired are separated into: (i) the portion of loss that represents the credit loss and (ii) the portion that is due to other factors. The credit loss portion is recognized as a loss in the statement of operations, while

the loss due to other factors is recognized in accumulated other comprehensive income (loss), net of taxes. A credit loss is determined to exist if the present value of discounted cash flows expected to be collected from the security is less than the amortized cost basis of the security. The present value of discounted cash flows is determined using the original yield of the security. In evaluating whether a decline in value is other-than-temporary, we consider several factors in addition to the above, including, but not limited to, the following:

- the extent and the duration of the decline in value;
- the reasons for the decline in value (e.g., credit event, interest related or market fluctuations); and
- the financial position, access to capital and near term prospects of the issuer, including the current and future impact of any specific events.

Income Taxes

We provide for income taxes in accordance with the provisions of the accounting standard regarding accounting for income taxes. As required under this standard, our deferred tax assets and deferred tax liabilities are recognized under the balance sheet method, which recognizes the future tax effect of temporary differences between the amounts recorded in our consolidated financial statements and the tax bases of these amounts. Deferred tax assets and deferred tax liabilities are measured using the enacted tax rates that are expected to apply to taxable income in the periods in which the deferred tax asset or deferred tax liability is expected to be realized or settled. In regards to accumulated other comprehensive income, the Company’s policy for releasing disproportionate income tax effects is to release the effects as individual items are sold.

We are required to establish a valuation allowance against our deferred tax assets when it is more likely than not that all or some portion of our deferred tax assets will not be realized. At each balance sheet date, we assess our need for a valuation allowance. Our assessment is based on all available evidence, both positive and negative. This requires management to exercise judgment and make assumptions regarding whether our deferred tax assets will be realized in future periods.

Our provision for income taxes for interim financial periods is based on an estimate of our annual effective tax rate for the full year of 2018 and 2017. When estimating our full year 2018 and 2017 effective tax rates, we adjust our forecasted pre-tax income for gains and losses on our investments, changes in the accounting for uncertainty in income taxes, changes in our beginning of year valuation allowance, and other adjustments. The impact of these items is accounted for as Discrete Items at the applicable federal tax rate.

Goodwill and Other Acquired Intangible Assets, Net

Goodwill and other acquired intangible assets were established primarily in connection with our acquisition of Clayton. Goodwill is an asset representing the estimated future economic benefits arising from the assets we have acquired that were not individually identified and separately recognized, and includes the value of discounted expected future cash flows of Clayton, Clayton’s workforce, expected synergies with our other affiliates and other unidentifiable intangible assets. Goodwill is deemed to have an indefinite useful life and is subject to review for impairment annually, or more frequently, whenever circumstances indicate potential impairment at the reporting unit level. A reporting unit represents a business for which discrete financial information is available; more than one reporting unit may be aggregated into a single reporting unit if they have similar economic characteristics. Events that could result in an interim assessment of goodwill impairment and/or a potential impairment charge include, but are not limited to: (i) significant under-performance relative to historical or projected future operating results; (ii) significant changes in the strategy for the Services segment; (iii) significant negative industry or economic trends; and (iv) a decline in Radian’s market capitalization below book value if such decline is attributable to the Services segment. Management regularly updates certain assumptions related to our projections, including the likelihood of achieving the assumed potential revenues from new initiatives and business strategies, and if these or other items have a significant negative impact on the reporting unit’s projections we may perform additional analysis to determine whether an impairment charge is needed. Lower earnings over sustained periods also can lead to impairment of goodwill, which could result in a charge to earnings. The value of goodwill is primarily supported by revenue projections, which are mostly driven by projected transaction volume and margins.

In performing the interim quantitative analysis for our goodwill impairment test as of June 30, 2017, we elected to early adopt the update to the accounting standard regarding goodwill and other intangibles, which simplified the subsequent measurement of goodwill by eliminating step two of the goodwill impairment test. Under this guidance, if indicators for impairment are present, we perform a quantitative analysis to evaluate our long-lived assets for potential impairment, and then determine the amount of the goodwill impairment by comparing a reporting unit’s fair value to its carrying amount. After adjusting the carrying value for any impairment of other intangibles or long-lived assets, an impairment charge is recognized for any excess of the reporting unit’s carrying amount over the reporting unit’s estimated fair value, up to the full amount of the goodwill allocated to the reporting unit.

Intangible assets, other than goodwill, primarily consist of customer relationships, technology, trade name and trademarks, client backlog and non-competition agreements. Customer relationships represent the value of the specifically acquired customer relationships and are valued using the excess earnings approach using estimated client revenues, attrition rates, implied royalty rates and discount rates. The excess earnings approach estimates the present value of expected earnings in excess of a traditional return on business assets. Technology represents proprietary software used for loan review, underwriting and due diligence, managing the REO disposition process, performing surveillance of mortgage loan servicers, real estate valuations and client workflow solutions. Trade name and trademarks primarily reflect the value inherent in the recognition of the "Clayton" name and its reputation. For purposes of our intangible assets, we use the term client backlog to refer to the estimated present value of fees to be earned for services performed on loans currently under surveillance or REO assets under

management. The value of a non-competition agreement is an appraisal of potential lost revenues that would arise from an individual leaving to work for a competitor or initiating a competing enterprise. For financial reporting purposes, intangible assets with finite lives are amortized over their applicable estimated useful lives in a manner that approximates the pattern of expected economic benefit from each intangible asset.

The calculation of the estimated fair value of goodwill and other acquired intangibles is performed primarily using an income approach and requires the use of significant estimates and assumptions that are highly subjective in nature, such as attrition rates, discount rates, future expected cash flows and market conditions. The most significant assumptions relate to the valuation of customer relationships. Our estimates are based upon assumptions believed to be reasonable, but which are inherently uncertain and unpredictable. During the fourth quarter 2018, we performed our annual quantitative assessment of goodwill and concluded there was no impairment of goodwill as of December 31, 2018. See Note 7 of Notes to Consolidated Financial Statements for additional information.

Recent Accounting Pronouncements

Accounting Standards Adopted During 2018. In May 2014, the FASB issued an update to the accounting standard regarding revenue recognition. In July 2015, the FASB delayed the effective date for this updated standard for public companies to interim and annual periods beginning after December 15, 2017, and subsequently issued various clarifying updates. Our adoption of this standard, effective January 1, 2018, had no impact on our financial statements. See Note 2 of Notes to Consolidated Financial Statements for the disclosures required by this update.

In January 2016, the FASB issued an update that makes certain changes to the standard for the accounting of financial instruments. Among other things, the update requires: (i) equity investments to be measured at fair value with changes in fair value recognized in net income; (ii) the use of the exit price notion when measuring the fair value of financial instruments for disclosure purposes; (iii) separate presentation of financial assets and financial liabilities by measurement category and form of financial asset; and (iv) separate presentation in other comprehensive income of the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk (also referred to as “own credit”) when the organization has elected to measure the liability at fair value in accordance with the fair value option for financial instruments. The update also eliminates the requirement to disclose the methods and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost on the balance sheet. This update is effective for public companies for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. In February 2018, the FASB issued technical corrections related to this update, which addresses common questions regarding the application and adoption of the new guidance and the subsequent amendments. As a result of adopting these updates, equity securities are no longer classified as available for sale securities and changes in fair value are recognized through earnings. Consequently, we recorded a cumulative effect adjustment to retained earnings from accumulated other comprehensive income representing unrealized losses related to equity securities in the amount of $0.2 million, net of tax. In addition, we elected to utilize net asset value as a practical expedient to measure certain other investments, which resulted in an increase to other invested assets with an offset to retained earnings in the amount of $2.3 million, net of tax. Our adoption of both of these updates, effective January 1, 2018, resulted in a net increase to retained earnings of $2.1 million. See Notes 5 and 6 of Notes to Consolidated Financial Statements for additional information.

In January 2017, the FASB issued an update to the accounting standard regarding business combinations. This update clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The guidance requires an entity to evaluate if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or a group of similar identifiable assets; if so, the set of transferred assets and activities is not a business. The guidance also requires a business to include at least one substantive process and narrows the definition of outputs. The guidance is effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years and should be applied prospectively as of the beginning of the period of adoption. We adopted this update effective January 1, 2018 and it did not have a material impact on our financial

statements.

In February 2018, the FASB issued an update to the accounting standard regarding income statement reporting of comprehensive income and reclassification of certain tax effects from accumulated other comprehensive income. The amendments in this update allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the TCJA. The provisions of this update are effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period, for reporting periods for which financial statements have not been available for issuance. We elected to early adopt this update effective January 1, 2018. As a result we recorded a reclassification adjustment from accumulated other

comprehensive income to retained earnings in the amount of $2.7 million. See Note 10 of Notes to Consolidated Financial Statements for additional information regarding the TCJA.

In August 2018, the FASB issued an update to the accounting standard regarding the disclosure requirements for fair value measurements. The amendments in this update remove certain disclosure requirements regarding transfers between Level I and Level II assets as well as the requirement to disclose the valuation process for Level III assets. This update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. We elected to early adopt the full update as of December 31, 2018 and it did not have a material impact on our financial statements or disclosures.

Accounting Standards Not Yet Adopted. In February 2016, the FASB issued an update that replaces the existing accounting and disclosure requirements for leases of property, plant and equipment. The update requires lessees to recognize, as of the lease commencement date, assets and liabilities for all leases with lease terms of more than 12 months, which is a change from the current GAAP requirement to recognize only capital leases on the balance sheet. Leases are required to be classified as either operating or finance, with expense on operating leases recorded as a single lease cost on a straight-line basis. For finance leases, interest expense on the lease liability is required to be recognized separately from the straight-line amortization of the right-of-use asset. Quantitative disclosures are required for certain items, including the cost of leases, the weighted-average remaining lease term, the weighted-average discount rate and a maturity analysis of lease liabilities. Additional qualitative disclosures are also required regarding the nature of the leases, such as basis, terms and conditions of: (i) variable interest payments; (ii) extension and termination options; and (iii) residual value guarantees. In July 2018 the FASB issued a further update containing certain targeted improvements to the accounting and disclosure requirements for leases, including an additional (and optional) transition method to recognize the cumulative-effect adjustment as of the beginning of the period of adoption, rather than recognizing the cumulative-effect adjustment as of the beginning of the earliest comparative period presented. We expect to elect the optional transition method to recognize the cumulative-effect adjustment as of the beginning of the period of adoption. However, we do not expect the adoption of this standard to impact our stockholders' equity, results of operations or liquidity. In addition, we expect to elect the practical expedients for transitioning existing leases to the new standard as of the effective date. As a result of applying the practical expedients: (i) we are not required to reassess expired or existing contracts to determine if they contain additional leases; (ii) we are not required to reassess the lease classification for expired and existing leases; and (iii) we are not required to reassess initial direct costs for existing leases. The update is effective for us on January 1, 2019 and upon our adoption, we expect to record an increase in other assets of approximately $50 million, which represents a right of use asset, and a corresponding net increase in other liabilities for the same amount. The net increase of approximately $50 million in other liabilities represents a discounted lease liability of approximately $74 million from operating leases, primarily for our various facilities, which represents the present value of these future lease payments discounted at our incremental borrowing rate, partially offset by an adjustment for unamortized allowances and incentives. Additionally, upon adoption we expect to expand our financial statement disclosures as required by the amendments, as well as implement any necessary changes to our control environment and reporting processes to reflect the requirements of the amendments. See Note 14 of Notes to Consolidated Financial Statements for additional information about our leases.

In June 2016, the FASB issued an update to the accounting standard regarding the measurement of credit losses on financial instruments and certain other assets. This update requires that financial assets measured at their amortized cost basis be presented at the net amount expected to be collected. Credit losses relating to available-for-sale debt securities are to be recorded through an allowance for credit losses, rather than a write-down of the asset, with the amount of the allowance limited to the amount by which fair value is less than amortized cost. This update is effective for public companies for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted for the fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. This update is not applicable to credit losses associated with our mortgage insurance

policies. We are currently evaluating the impact on our financial statements and future disclosures as a result of this update.
In March 2017, the FASB issued an update to the accounting standard regarding receivables. The new standard requires certain premiums on purchased callable debt securities to be amortized to the earliest call date. The amortization period for callable debt securities purchased at a discount will not be impacted. The provisions of this update are effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. We do not expect the adoption of this update to have a material effect on our financial statements and disclosures.
In August 2018, the FASB issued an update to the accounting standard regarding the accounting for long-duration insurance contracts. The new standard: (i) requires that assumptions used to measure the liability for future policy benefits be

reviewed at least annually; (ii) defines and simplifies the measurement of market risk benefits; (iii) simplifies the amortization of deferred acquisition costs; and (iv) enhances the required disclosures about long-duration contracts. This update is effective for fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. Early adoption is permitted. We are currently evaluating the potential impact of the adoption of this update.

In August 2018, the FASB issued an update to the accounting standard regarding the capitalization of implementation costs for activities performed in a cloud computing arrangement that is a service contract. The new standard aligns the accounting for implementation costs of hosting arrangements that are service contracts with the accounting for capitalizing internal-use software. This update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. We are currently evaluating the potential impact of the adoption of this update and do not expect it to have a material effect on our financial statements and disclosures.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Market risk represents the potential for loss due to adverse changes in the value of financial instruments as a result of changes in market conditions. Examples of market risk include changes in interest rates, credit spreads, foreign currency exchange rates and equity prices. We perform sensitivity analyses to determine the effects of market risk exposures on our investment securities by determining the potential loss in future earnings, fair values or cash flows of market-risk-sensitive instruments resulting from one or more selected hypothetical changes in the above mentioned market risks.

Interest-Rate Risk and Credit-Spread Risk

The primary market risks in our investment portfolio are interest-rate risk and credit-spread risk, namely the fair value sensitivity of our fixed income securities to changes in interest rates and credit spreads, respectively. We regularly analyze our exposure to interest-rate risk and credit-spread risk and have determined that the fair value of our investments is materially exposed to changes in both interest rates and credit spreads.

Our sensitivity analysis for interest rates is based on the change in fair value of our fixed income securities, assuming a hypothetical instantaneous and parallel 100-basis point increase or decrease in the U.S. Treasury yield curve, with all other factors remaining constant. We calculate the duration of our fixed income securities, expressed in years, in order to estimate the interest-rate sensitivity of these securities, as shown in the table below.

Credit spread represents the additional yield on a fixed income security, above the risk-free rate, that is paid by an issuer to compensate investors for assuming the credit risk of the issuer and market liquidity of the fixed income security. We manage credit-spread risk on both an entity and group level, across issuer, maturity, sector and asset class. Our sensitivity analysis for credit-spread risk is based on the change in fair value of our fixed income securities, assuming a hypothetical 100-basis point increase or decrease in all credit spreads, with the exception of U.S. Treasury and agency obligations for which we have assumed no change in credit spreads, and assuming all other factors remain constant. Actual shifts in credit spreads generally vary by issuer and security, based on issuer-specific and security-specific factors such as credit quality, maturity, sector and asset class. Within a given asset class, investment grade securities generally exhibit less credit-spread volatility than securities with lower credit ratings. Our investment securities portfolio primarily consists of investment grade securities.

Our sensitivity analyses for interest-rate risk and credit-spread risk provide an indication of our investment portfolio’s sensitivity to shifts in interest rates and credit spreads. However, the timing and magnitude of actual market changes may differ from the hypothetical assumptions used in our sensitivity calculations.

The following table illustrates the sensitivity of our investment portfolio to both interest-rate risk and credit-spread risk.

($ in millions)	Short-term and Available for Sale		Trading	
	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017
Carrying value of fixed income investment portfolio (1) (2)	$4,556.1	$4,009.8	$566.2	$606.4
Percentage of fixed income investment portfolio compared to total investment portfolio (3)	87.9 %	85.8 %	10.9 %	13.0 %
Average duration of fixed income portfolio	4.0 years	4.4 years	4.3 years	5.1 years
Interest-rate risk increase/(decrease) in market value				
+100 basis points - $	$(175.0)	$(169.8)	$(23.4)	$(29.7)
+100 basis points - % (4)	(3.8)%	(4.2)%	(4.1)%	(4.9)%
- 100 basis points - $	$186.8	$184.7	$25.3	$32.5
- 100 basis points - % (4)	4.1 %	4.6 %	4.5 %	5.4 %
Credit-spread risk increase/(decrease) in market value				
+100 basis points - $	$(185.5)	$(183.8)	$(24.8)	$(30.4)
+100 basis points - % (4)	(4.1)%	(4.6)%	(4.4)%	(5.0)%
- 100 basis points - $	$173.0	$148.6	$22.6	$24.6
- 100 basis points - % (4)	3.8 %	3.7 %	4.0 %	4.1 %

(1) Total fixed income securities include fixed-maturity investments available for sale, trading securities and short-term investments and exclude reinvested cash collateral held under securities lending agreements. At December 31, 2018 and 2017, fixed income securities shown above also include $97.1 million and $134.1 million, respectively, invested in certain fixed income exchange-traded funds that are classified as equity securities in our consolidated balance sheets, as well as $17.8 million and $20.7 million, respectively, in fixed income securities loaned under securities lending agreements that are classified as other assets in our consolidated balance sheets.

(2) At December 31, 2017, equity securities, including our fixed income exchange-traded funds included in this table, were classified as available for sale in our consolidated balance sheet. At December 31, 2018, in accordance with the new accounting guidance adopted for 2018, equity securities are no longer classified as available for sale in our consolidated balance sheet and changes in fair value for equity securities are recognized through earnings. As a result, at December 31, 2018, the fixed income exchange-traded funds that are classified as equity securities in our consolidated balance sheet are included in trading securities in this table. See Note 2 of Notes to Consolidated Financial Statements for additional details on the implementation of this new accounting guidance.

(3) Total investment portfolio comprises total investments per the consolidated balance sheets including securities loaned under securities lending agreements that are classified as other assets in our consolidated balance sheets.

(4) Change in value expressed as a percentage of the market value of the related fixed income portfolio.

The average duration of our total fixed income portfolio was 4.0 years at December 31, 2018 compared to 4.5 years at December 31, 2017. To assist us in setting duration targets for the investment portfolio, we analyze: (i) the interest-rate sensitivities of our liabilities, including prepayment risk associated with premium cash flows and credit losses; (ii) entity specific cash flows under various economic scenarios; (iii) return, volatility and correlation of specific asset classes and the interconnection with our liabilities; and (iv) our current risk appetite.

Securities Lending Agreements. Radian Guaranty and Radian Reinsurance from time to time enter into certain short-term securities lending agreements with third-party Borrowers for the purpose of increasing the yield on our investment securities portfolio with minimal incremental risk. Market factors, including changes in interest rates,

credit spreads and equity prices, may impact the timing or magnitude of cash outflows for the return of cash collateral. For the purpose of illustrating our interest-rate risk and credit-spread risk, we have included our fixed income securities (which include certain exchange-traded funds) loaned in the sensitivity table above. As of December 31, 2018 and December 31, 2017, the carrying value of these securities was $17.8 million and $20.7 million, respectively.

Under our securities lending agreements, the Borrower generally may return the loaned securities to us at any time, which would require us to return the cash and other collateral within the standard settlement period for the loaned securities on the principal exchange or market in which the securities are traded. We manage this liquidity risk associated with the cash collateral by maintaining the cash collateral in a short-term money-market fund with daily availability.

The counterparty risk under these programs is reduced by the amounts of collateral received. On a daily basis, the value of the underlying securities that we have loaned to the Borrowers is compared to the value of cash and securities collateral we received from the Borrowers, and additional cash or securities are requested or returned, as applicable. In addition, we are indemnified against counterparty credit risk by the intermediary. We also have the right to request the return of the loaned securities at any time. For additional information on our securities lending agreements, see Note 6 of Notes to Consolidated Financial Statements.

Foreign Exchange Rate Risk

As of December 31, 2018 and 2017, we did not hold any foreign currency denominated securities in our investment portfolio. Exchange gains and losses on foreign currency transactions from our foreign operations have not been material due to the limited amount of business performed in those locations. Currency risk is further limited because, in general, both the revenues and expenses of our foreign operations are denominated in the same functional currency, based on the country in which the operations occur.

Equity Market Price

Equity Investments at December 31, 2018. At December 31, 2018, the market value and cost of the equity securities in our investment portfolio were $130.6 million and $139.4 million, respectively. These amounts include market value and cost of fixed income exchange-traded funds of $96.9 million and $102.7 million, respectively, which are subject to interest-rate risk and credit-spread risk consistent with our other fixed income securities. Therefore, these fixed income exchange-traded funds have been included in the table above for purposes of illustrating our sensitivity to these risks.

The remaining $33.7 million and $36.7 million of market value and cost, respectively, of equity securities at December 31, 2018, primarily consists of publicly-traded business development company equity securities and equity-related exchange-traded funds. Due to our limited basis in these investments at December 31, 2018, our exposure to changes in equity market prices is not significant.

Equity Investments at December 31, 2017. At December 31, 2017, the market value and cost of the equity securities in our investment portfolio were $162.8 million and $163.1 million, respectively. These amounts include market value and cost of fixed income exchange-traded funds of $134.0 million and $135.0 million, respectively, which are subject to interest-rate risk and credit-spread risk consistent with our other fixed income securities. Therefore, these fixed income exchange-traded funds have been included in the table above for purposes of illustrating our sensitivity to these risks.

The remaining $28.8 million and $28.1 million of market value and cost, respectively, of equity securities at December 31, 2017, consists of publicly-traded business development company equity securities and equity-related exchange-traded funds. Due to our limited basis in these investments at December 31, 2017, our exposure to changes in equity market prices was not significant. See “Item 1. Business—Investment Policy and Portfolio” for additional information on risk management.

Item 8. Financial Statements and Supplementary Data.

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REPORT ON MANAGEMENT'S RESPONSIBILITY

Management is responsible for the preparation, integrity and objectivity of the Consolidated Financial Statements and other financial information presented in this annual report. The accompanying Consolidated Financial Statements were prepared in accordance with accounting principles generally accepted in the United States of America, applying certain estimations and judgments as required.

Our board of directors exercises its responsibility for the financial statements through its Audit Committee, which consists entirely of independent non-management board members. The Audit Committee meets periodically with management and with PricewaterhouseCoopers LLP, the independent registered public accounting firm retained to audit our Consolidated Financial Statements, both privately and with management present, to review accounting, auditing, internal control and financial reporting matters.

The accompanying report of PricewaterhouseCoopers LLP is based on its audit, which it is required to conduct in accordance with the standards of the Public Company Accounting Oversight Board (U.S.), and which includes the consideration of our internal control over financial reporting to establish a basis for reliance thereon in determining the nature, timing and extent of audit tests to be applied.

Richard G. Thornberry
Chief Executive Officer
J. Franklin Hall
Senior Executive Vice President and Chief Financial Officer

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Radian Group Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Radian Group Inc. and its subsidiaries (the "Company") as of December 31, 2018 and 2017, and the related consolidated statements of operations, comprehensive income, changes in common stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2018, including the related notes and financial statement schedules listed in the index appearing under Item 15(a)(3) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP
Philadelphia, PA
February 28, 2019

We have served as the Company's auditor since 2007.

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Radian Group Inc.
CONSOLIDATED BALANCE SHEETS

(In thousands, except per-share amounts)	December 31, 2018	December 31, 2017
Assets		
Investments (Note 6)		
Fixed-maturities available for sale—at fair value (amortized cost $4,098,962 and $3,426,217)	$4,021,575	$3,458,719
Trading securities—at fair value	469,071	606,401
Equity securities—at fair value (cost of $139,377 and $163,106)	130,565	162,830
Short-term investments—at fair value (includes $11,699 and $19,357 of reinvested cash collateral held under securities lending agreements)	528,403	415,658
Other invested assets—at fair value (amortized cost at December 31, 2017)	3,415	334
Total investments	5,153,029	4,643,942
Cash	95,393	80,569
Restricted cash	11,609	15,675
Accounts and notes receivable	78,652	72,558
Deferred income taxes, net (Note 10)	131,643	229,567
Goodwill and other acquired intangible assets, net (Note 7)	58,998	64,212
Prepaid reinsurance premium (Note 2)	417,628	386,509
Other assets (Note 9)	367,700	407,849
Total assets	$6,314,652	$5,900,881
Liabilities and Stockholders' Equity		
Unearned premiums	$739,357	$723,938
Reserve for losses and loss adjustment expenses ("LAE") (Note 11)	401,361	507,588
Senior notes (Note 12)	1,030,348	1,027,074
Reinsurance funds withheld (Note 2)	321,212	288,398
Other liabilities (Note 13)	333,659	353,845
Total liabilities	2,825,937	2,900,843
Commitments and Contingencies (Note 14)		
Stockholders' equity		
Common stock: par value $.001 per share; 485,000 shares authorized at December 31, 2018 and 2017; 231,132 and 233,417 shares issued at December 31, 2018 and 2017, respectively; 213,473 and 215,814 shares outstanding at December 31, 2018 and 2017, respectively	231	233
Treasury stock, at cost: 17,660 and 17,603 shares at December 31, 2018 and 2017, respectively	(894,870)	(893,888)
Additional paid-in capital	2,724,733	2,754,275
Retained earnings	1,719,541	1,116,333
Accumulated other comprehensive income (loss) (Note 18)	(60,920)	23,085
Total stockholders' equity	3,488,715	3,000,038
Total liabilities and stockholders' equity	$6,314,652	$5,900,881

See Notes to Consolidated Financial Statements.

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Radian Group Inc.
CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands, except per-share amounts)	Year Ended December 31, 2018	2017	2016
Revenues:			
Net premiums earned—insurance	$1,014,007	$932,773	$921,769
Services revenue	144,972	155,103	168,894
Net investment income	152,475	127,248	113,466
Net gains (losses) on investments and other financial instruments	(42,476)	3,621	30,751
Other income	4,028	2,886	3,572
Total revenues	1,273,006	1,221,631	1,238,452
Expenses:			
Provision for losses	104,641	135,154	202,788
Policy acquisition costs	25,265	24,277	23,480
Cost of services	98,124	104,599	114,174
Other operating expenses	280,818	267,321	244,896
Restructuring and other exit costs (Note 1)	6,053	17,268	—
Interest expense	61,490	62,761	81,132
Loss on induced conversion and debt extinguishment (Note 12)	—	51,469	75,075
Impairment of goodwill (Note 7)	—	184,374	—
Amortization and impairment of other acquired intangible assets	12,429	27,671	13,221
Total expenses	588,820	874,894	754,766
Pretax income	684,186	346,737	483,686
Income tax provision	78,175	225,649	175,433
Net income	$606,011	$121,088	$308,253
Net income per share:			
Basic	$2.83	$0.56	$1.46
Diluted	$2.77	$0.55	$1.37
Weighted-average number of common shares outstanding—basic	214,267	215,321	211,789
Weighted-average number of common and common equivalent shares outstanding—diluted	218,553	220,406	229,258

See Notes to Consolidated Financial Statements.

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Radian Group Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
(In thousands)	2018	2017	2016
Net income	$606,011	$121,088	$308,253
Other comprehensive income (loss), net of tax (Note 18):			
Unrealized gains (losses) on investments:			
Unrealized holding gains (losses) arising during the period	(97,356)	31,903	8,782
Less: Reclassification adjustment for net gains (losses) included in net income	(10,270)	(2,642)	2,251
Net unrealized gains (losses) on investments	(87,086)	34,545	6,531
Foreign currency translation adjustments:			
Unrealized foreign currency translation adjustments	5	150	(474)
Less: Reclassification adjustment for liquidation of foreign subsidiary and other adjustments included in net income	1	(721)	—
Net foreign currency translation adjustments	4	871	(474)
Net actuarial gains	129	64	25
Other comprehensive income (loss), net of tax	(86,953)	35,480	6,082
Comprehensive income	$519,058	$156,568	$314,335

See Notes to Consolidated Financial Statements.

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Radian Group Inc.
CONSOLIDATED STATEMENTS OF CHANGES IN COMMON STOCKHOLDERS' EQUITY

(In thousands)	Year Ended December 31, 2018	2017	2016
Common Stock			
Balance, beginning of period	$233	$ 232	$ 224
Impact of extinguishment of convertible senior notes (Note 12)	—	—	17
Issuance of common stock under incentive and benefit plans	1	1	—
Shares repurchased under share repurchase program (Note 15)	(3)	—	(9)
Balance, end of period	231	233	232
Treasury Stock			
Balance, beginning of period	(893,888)	(893,332)	(893,176)
Repurchases of common stock under incentive plans	(982)	(556)	(156)
Balance, end of period	(894,870)	(893,888)	(893,332)
Additional Paid-in Capital			
Balance, beginning of period	2,754,275	2,779,891	2,716,618
Issuance of common stock under incentive and benefit plans	2,859	8,635	2,117
Stock-based compensation	17,649	13,491	18,257
Impact of extinguishment of convertible senior notes (Note 12)	—	(52,700)	143,078
Cumulative effect of adoption of the accounting standard update for share-based payment transactions	—	756	—
Termination of capped calls (Note 12)	—	4,208	—
Shares repurchased under share repurchase program (Note 15)	(50,050)	(6)	(100,179)
Balance, end of period	2,724,733	2,754,275	2,779,891
Retained Earnings			
Balance, beginning of period	1,116,333	997,890	691,742
Net income	606,011	121,088	308,253
Dividends declared	(2,140)	(2,154)	(2,105)
Cumulative effect of adopting the accounting standard update for financial instruments	2,061	—	—
Cumulative effect of adopting the accounting standard update for the reclassification of certain tax effects from accumulated other comprehensive income	(2,724)	—	—
Cumulative effect of adoption of the accounting standard update for share-based payment transactions, net of tax	—	(491)	—
Balance, end of period	1,719,541	1,116,333	997,890

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Radian Group Inc.
CONSOLIDATED STATEMENTS OF CHANGES IN COMMON STOCKHOLDERS' EQUITY

(In thousands)	Year Ended December 31, 2018	2017	2016
Accumulated Other Comprehensive Income (Loss)			
Balance, beginning of period	23,085	(12,395)	(18,477)
Cumulative effect of adopting the accounting standard update for financial instruments	224	—	—
Cumulative effect of adopting the accounting standard update for reclassification of certain tax effects from accumulated other comprehensive income	2,724	—	—
Net unrealized gains (losses) on investments, net of tax	(87,086)	34,545	6,531
Net foreign currency translation adjustment, net of tax	4	871	(474)
Net actuarial gains	129	64	25
Balance, end of period	(60,920)	23,085	(12,395)
Total Stockholders' Equity	$3,488,715	$3,000,038	$2,872,286

See Notes to Consolidated Financial Statements.

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Radian Group Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)	Year Ended December 31, 2018	2017	2016
Cash flows from operating activities:			
Net income	$606,011	$121,088	$308,253
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Net (gains) losses on investments and other financial instruments	42,476	(3,621)	(30,751)
Loss on induced conversion and debt extinguishment	—	51,469	75,075
Deferred income tax provision	120,573	166,527	170,887
Impairment of goodwill	—	184,374	—
Amortization and impairment of other acquired intangible assets	12,429	27,797	13,221
Depreciation, other amortization, and other impairments, net	56,661	58,038	57,795
Change in:			
Accounts and notes receivable	(4,599)	3,628	(16,011)
Prepaid reinsurance premiums	(31,119)	(157,071)	(188,947)
Unearned premiums	15,419	42,716	862
Reserve for losses and LAE	(109,642)	(252,681)	(216,135)
Reinsurance funds withheld	32,814	130,397	158,001
Other assets	43,562	(16,491)	(7,662)
Other liabilities	(106,799)	4,405	57,136
Net cash provided by (used in) operating activities	677,786	360,575	381,724
Cash flows from investing activities:			
Proceeds from sales of:			
Fixed-maturity investments available for sale	728,584	888,219	687,173
Trading securities	58,317	194,784	290,855
Equity securities	95,697	38,318	74,868
Proceeds from redemptions of:			
Fixed-maturity investments available for sale	457,595	463,548	337,630
Trading securities	54,329	79,296	123,645
Purchases of:			
Fixed-maturity investments available for sale	(1,875,069)	(1,947,916)	(1,990,652)
Equity securities	(69,160)	(213,469)	(830)
Sales, redemptions and (purchases) of:			
Short-term investments, net	(108,325)	324,258	334,456
Other assets and other invested assets, net	2,590	882	2,489
Net cash received (transferred) in sale of subsidiaries	—	(650)	—
Purchases of property and equipment, net	(26,008)	(28,676)	(35,542)
Acquisitions, net of cash acquired	(7,964)	(86)	(150)
Net cash provided by (used in) investing activities	(689,414)	(201,492)	(176,058)

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Radian Group Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)	Year Ended December 31, 2018	2017	2016
Cash flows from financing activities:			
Dividends paid	(2,140)	(2,154)	(2,105)
Issuance of senior notes, net	—	442,163	343,417
Purchases and redemptions of senior notes	—	(593,527)	(445,072)
Proceeds from termination of capped calls	—	4,208	—
Issuance of common stock	1,385	7,132	717
Purchases of common shares	(50,053)	(6)	(100,188)
Credit facility commitment fees paid	(1,510)	(1,993)	—
Change in secured borrowings (Note 13)	39,342	19,357	—
Proceeds from secured borrowings (with terms greater than 3 months)	56,449	—	—
Payments of secured borrowings (with terms greater than 3 months)	(20,917)	—	—
Excess tax benefits from stock-based awards	—	—	333
Repayments of other borrowings	(170)	(264)	(371)
Net cash provided by (used in) financing activities	22,386	(125,084)	(203,269)
Effect of exchange rate changes on cash and restricted cash	—	431	(481)
Increase (decrease) in cash and restricted cash	10,758	34,430	1,916
Cash and restricted cash, beginning of period	96,244	61,814	59,898
Cash and restricted cash, end of period	$107,002	$96,244	$61,814
Supplemental disclosures of cash flow information:			
Income taxes paid (received) (Note 10)	$8,364	$94,328	$(673)
Interest paid	56,688	57,453	65,531

See Notes to Consolidated Financial Statements.

1. Description of Business and Recent Developments

We are a diversified mortgage and real estate services business, providing both credit-related insurance coverage and other credit risk management solutions, as well as a broad array of mortgage, real estate and title services. We have two reportable business segments—Mortgage Insurance and Services.

Mortgage Insurance

Our Mortgage Insurance segment provides credit-related insurance coverage, principally through private mortgage insurance on residential first-lien mortgage loans, as well as other credit risk management solutions, to mortgage lending institutions and mortgage credit investors. We provide our mortgage insurance products and services mainly through our wholly-owned subsidiary, Radian Guaranty. Private mortgage insurance plays an important role in the U.S. housing finance system because it promotes affordable home ownership and helps protect mortgage lenders, investors and other beneficiaries by mitigating default-related losses on residential mortgage loans. Generally, these loans are made to home buyers who make down payments of less than 20% of the purchase price for their home or, in the case of refinancings, have less than 20% equity in their home. Private mortgage insurance also facilitates the sale of these low down payment loans in the secondary mortgage market, most of which are currently sold to the GSEs. Our total direct primary mortgage insurance RIF was $56.7 billion as of December 31, 2018.

The GSEs and state insurance regulators impose various capital and financial requirements on our insurance subsidiaries. These include Risk-to-capital, other risk-based capital measures and surplus requirements, as well as the PMIERs financial requirements discussed below. Failure to comply with these capital and financial requirements may limit the amount of insurance that our mortgage insurance subsidiaries may write or prohibit our mortgage insurance subsidiaries from writing insurance altogether. The GSEs and state insurance regulators also possess significant discretion with respect to our mortgage insurance subsidiaries and all aspects of their business. See Note 19 for additional regulatory information.

PMIERs. In order to be eligible to insure loans purchased by the GSEs, mortgage insurers such as Radian Guaranty must meet the GSEs' eligibility requirements, or PMIERs. At December 31, 2018, Radian Guaranty is an approved mortgage insurer under the PMIERs and is in compliance with the PMIERs financial requirements. The PMIERs financial requirements require that a mortgage insurer's Available Assets meet or exceed its Minimum Required Assets. The GSEs may amend the PMIERs at any time, and they have broad discretion to interpret the requirements, which could impact the calculation of Radian Guaranty's Available Assets and/or Minimum Required Assets.

The PMIERs are comprehensive, covering virtually all aspects of the business and operations of a private mortgage insurer, including internal risk management and quality controls, the relationship between the GSEs and the approved insurer, as well as the approved insurer's financial condition. In addition, the GSEs have a broad range of consent rights under the PMIERs and require private mortgage insurers to obtain the prior consent of the GSEs before taking certain actions, which may include entering into various intercompany agreements and commuting or reinsuring risk, among others. If Radian Guaranty is unable to satisfy the requirements set forth in the PMIERs, the GSEs could restrict it from conducting certain types of business with them or take actions that may include not purchasing loans insured by Radian Guaranty.

From time to time, we enter into reinsurance transactions as a component of our long-term risk distribution strategy to manage our capital position and risk profile, which includes managing Radian Guaranty's capital position under the PMIERs financial requirements. The credit that we receive under the PMIERs financial requirements for these transactions is subject to initial and ongoing review by the GSEs.

Services

Our Services segment is primarily a fee-for-service business that offers a broad array of services to market participants across the mortgage and real estate value chain. These services comprise mortgage services, real estate services and title services, including technology and turn-key solutions, that provide information and other resources used to

originate, evaluate, acquire, securitize, service and monitor residential real estate and loans secured by residential real estate. These services are primarily provided to mortgage lenders, financial institutions, investors and government entities. In addition, we provide title insurance to mortgage lenders as well as directly to borrowers.
Our mortgage services help loan originators and investors evaluate, acquire, surveil and securitize mortgages. These services include loan review, RMBS securitization and distressed asset reviews, review and valuation services related to single family rental properties, servicer and loan surveillance and underwriting. Our real estate services help lenders, investors and

real estate agents evaluate, manage, monitor and sell properties. These real estate services include software as a service solutions and platforms, as well as managed services, such as REO asset management, real estate valuation services and real estate brokerage services. Our title services provide a comprehensive suite of title insurance products, title settlement services and both traditional and digital closing services.

2018 Developments

Capital and Liquidity Actions. On August 9, 2017, Radian Group's board of directors authorized the Company to repurchase up to $50 million of its common stock. The Company completed this program during the first half of 2018 by purchasing 3.0 million shares at an average price of $16.56 per share, including commissions.

On August 16, 2018, Radian Group's board of directors approved a new share repurchase program that authorizes the Company to repurchase up to $100 million of its common stock in the open market or in privately negotiated transactions until expiration of the program on July 31, 2019. As of December 31, 2018, the full purchase authority of up to $100 million remained available under this program. See Note 15 for additional information.

Reinsurance. As part of Radian's long-term risk distribution strategy, in November 2018, Radian Guaranty entered into a fully collateralized reinsurance agreement with Eagle Re, an unaffiliated special purpose reinsurer domiciled in Bermuda. This reinsurance agreement provides for up to $434.0 million of aggregate excess-of-loss reinsurance coverage for the applicable percentage of mortgage insurance losses on new defaults on an existing portfolio of eligible Monthly Premium Policies issued between January 1, 2017 and January 1, 2018, with an initial RIF of $9.1 billion. In addition, Radian Guaranty entered into a separate excess-of-loss reinsurance agreement for up to $21.4 million of coverage, representing a pro rata share of the credit risk alongside the risk assumed by Eagle Re on those Monthly Premium Policies. See Note 8 for additional information.

IRS Matter. Radian finalized a settlement with the IRS which resolved the issues and concluded all disputes related to the IRS Matter. In the three-month period ended June 30, 2018, we recorded tax benefits of $73.6 million, which includes both the impact of the settlement with the IRS as well as the reversal of certain previously accrued state and local tax liabilities. In 2018, under the terms of the settlement, Radian utilized its "qualified deposits" with the U.S. Treasury to settle its $31 million obligation to the IRS, and in 2019, the Company expects the IRS to refund to Radian the remaining $58 million that was previously on deposit. See Note 10 for additional information.

Restructuring and Other Exit Costs. As a result of the Company's continued implementation of its 2017 plan to restructure the Services business, for the year ended December 31, 2018, pretax restructuring charges of $2.5 million were recognized, which include $2.0 million in cash expenses. For the year ended December 31, 2017, pretax restructuring charges of $17.3 million were recognized, including $6.8 million of cash expenses. This initiative was completed during 2018 and, for the two-year period ending December 31, 2018, we recognized total restructuring charges of $19.8 million, consisting of: (i) asset impairment charges (including the loss recognized on the sale of our EuroRisk business) of $10.8 million; (ii) employee severance and benefit costs of $7.4 million; (iii) facility and lease termination costs of $1.3 million; and (iv) contract termination and other restructuring costs of $0.3 million. See Note 7 for additional information, including the events that led to the restructuring plan.

We review assets for impairment in accordance with the accounting guidance for long-lived assets. As part of this assessment, during 2018, we incurred $3.6 million of other exit costs associated with impairment of internal-use software that was in addition to the asset impairment charges recognized as part of the restructuring charges associated with our Services business.

2. Significant Accounting Policies

Basis of Presentation

Our consolidated financial statements are prepared in accordance with GAAP and include the accounts of Radian Group Inc. and its subsidiaries. All intercompany accounts and transactions, and intercompany profits and losses, have been eliminated. Certain prior period amounts have been reclassified to conform to current period presentation.

We refer to Radian Group Inc. together with its consolidated subsidiaries as “Radian,” the “Company,” “we,” “us” or “our,” unless the context requires otherwise. We generally refer to Radian Group Inc. alone, without its consolidated subsidiaries, as “Radian Group.” Unless otherwise defined in this report, certain terms and acronyms used throughout this report are defined in the Glossary of Abbreviations and Acronyms included as part of this report.

Use of Estimates
The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of our contingent assets and liabilities at the dates of the financial statements, as well as the reported amounts of revenues and expenses during the reporting periods. While the amounts included in our consolidated financial statements include our best estimates and assumptions, actual results may vary materially.

Reserve for Losses and LAE
We establish reserves to provide for losses and LAE, which include the estimated costs of settling claims in our Mortgage Insurance segment, in accordance with the accounting standard regarding accounting and reporting by insurance enterprises. Although this standard specifically excludes mortgage insurance from its guidance relating to the reserve for losses, because there is no specific guidance for mortgage insurance, we establish reserves for mortgage insurance as described below, using the guidance contained in this standard supplemented with other accounting guidance.

Estimating our loss reserves involves significant reliance upon assumptions and estimates with regard to the likelihood, magnitude and timing of each potential loss, including an estimate of the impact of our Loss Mitigation Activities. The models, assumptions and estimates we use to establish loss reserves may prove to be inaccurate, especially during an extended economic downturn or a period of extreme market volatility and uncertainty. As such, we cannot be certain that our reserve estimate will be adequate to cover ultimate losses on incurred defaults. For example, our mortgage insurance loss reserves generally increase as defaulted loans age, because historically, as defaulted loans age, they have been more likely to result in foreclosure, and therefore, have been more likely to result in a claim payment. While we believe this remains accurate, following the financial crisis, there are a significant number of loans in our defaulted portfolio that have been in default for an extended period of time, but which have not been subject to foreclosure, and therefore, have not resulted in claims. As a result, significant uncertainty remains with respect to the ultimate resolution of these aged defaults. This uncertainty requires management to use considerable judgment in estimating the rate at which these loans will result in claims.

Commutations and other negotiated terminations of our insured risks in our Mortgage Insurance segment provide us with an opportunity to exit exposures for an agreed upon payment, or payments, sometimes at an amount less than the previously estimated ultimate liability. Once all exposures relating to such policies are extinguished, all reserves for losses and LAE and other balances relating to the insured policies are generally reversed, with any remaining net gain or loss recorded through provision for losses. We take into consideration the specific contractual and economic terms for each individual agreement when accounting for our commutations or other negotiated terminations, which may result in differences in the accounting for these transactions.

In our Mortgage Insurance business, the default and claim cycle begins with the receipt of a default notice from the loan servicer. Reserves for losses are established upon receipt of notification from servicers that a borrower has missed two monthly payments, which is when we consider a loan to be in default for financial statement and internal tracking purposes. We also establish reserves for associated LAE, consisting of the estimated cost of the claims administration process, including legal and other fees and expenses associated with administering the claims process. We maintain an extensive database of claim payment history, and use models based on a variety of loan characteristics to determine the likelihood that a default will reach claim status.

With respect to loans that are in default, considerable judgment is exercised as to the adequacy of reserve levels. For purposes of reserve modeling, loans are aggregated into groups using a variety of factors. The attributes currently used to define the groups for purposes of developing various assumptions include, but are not limited to, the Stage of Default, the Time in Default and type of insurance (i.e., primary or pool). We use an actuarial projection methodology referred to as a “roll rate” analysis that uses historical claim frequency information to determine the projected ultimate Default to Claim Rates based on the Stage of Default and Time in Default as well as the date that a loan goes into

default. With respect to new defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma received from September 2017 through February 2018, we assume a lower gross Default to Claim Rate than for new defaults with similar characteristics from other areas, due to our expectations based on past experience with other natural disasters, that a significant portion of these defaults will not result in claims. The Default to Claim Rate also includes our estimates with respect to expected Rescissions and Claim Denials, which have the effect of reducing our Default to Claim Rates. We forecast the impact of our Loss Mitigation Activity in protecting us against fraud, underwriting negligence, breach of representation and warranties, inadequate documentation of submitted claims and other items that may give rise to Rescissions or cancellations and Claim Denials, to help determine the Default to Claim

Rate. Our Loss Mitigation Activities have resulted in challenges from certain lender and servicer customers, which have resulted in some reversals of our decisions regarding Rescissions, Claim Denials and Claim Curtailments in the ordinary course. Although we believe that our Loss Mitigation Activities are justified under our policies, certain challenges have resulted in disputes and litigation, which if resolved unfavorably to us, could require us to reassume the risk on, and increase loss reserves for, those policies or pay additional claims. See Note 11 for additional information. Our Master Policies specify the time period during which a suit or action arising from any right of the insured under the policy must be commenced. The assumptions embedded in our estimated Default to Claim Rate on our in-force default inventory include an adjustment to our estimated Rescissions and Claim Denials to account for the fact that we expect a certain number of policies to be reinstated and ultimately to be paid, as a result of valid challenges by such policy holders.

After estimating the Default to Claim Rate, we estimate Claim Severity based on the average of recently observed severity rates within product type, type of insurance, and Time in Default cohorts. These average severity estimates are then applied to individual loan coverage amounts to determine reserves. Similar to the Default to Claim Rate, Claim Severity also is impacted by the length of time that loans are in default and by our Loss Mitigation Activity. For claims under our primary mortgage insurance, the coverage percentage is applied to the claim amount, which consists of the unpaid loan principal, plus past due interest (for which our liability is contractually capped in accordance with the terms of our Master Policies) and certain expenses associated with the default, to determine our maximum liability. Therefore, Claim Severity generally increases the longer that a loan is in default. In addition, we estimate the impact that the amount that Claim Curtailments due to servicer noncompliance with our insurance policies and servicing guidelines have on the amount that we ultimately will have to pay with respect to claims. As part of our claims review process, we assess whether defaulted loans were serviced appropriately in accordance with our insurance policies and servicing guidelines. If a servicer failed to satisfy its servicing obligations, our insurance policies provide that we may curtail the claim payment for such default, and in some circumstances, cancel coverage or deny the claim.

We do not establish reserves for loans that are in default if we believe that we will not be liable for the payment of a claim with respect to that default unless a reserve for premium deficiency is required. We generally do not establish loss reserves for expected future claims on insured mortgages that are not in default. See "*—Reserve for Premium Deficiency"* below for an exception to this general principle.

IBNR and Other Reserves

We also establish reserves for defaults that we estimate have been incurred but have not been reported to us on a timely basis by the servicer, as well as for previous Rescissions, Claim Denials and Claim Curtailments that we estimate will be reinstated and subsequently paid. We generally give the policyholder up to 30 days to challenge our decision to rescind coverage before we consider a policy to be rescinded and remove it from our defaulted inventory; therefore, we currently expect only a limited percentage of policies that were rescinded to be reinstated. We currently expect a significant percentage of claims that were denied to be resubmitted as a perfected claim and ultimately paid. Most often, a Claim Denial is the result of a servicer's inability to provide the loan origination file or other servicing documents for review. Under the terms of our Master Policies with our lending customers, our policyholders have up to one year after the acquisition of borrower's title to provide to us the necessary documents to perfect a claim. All estimates are periodically reviewed and adjustments are made as they become necessary.

The impact to our reserve due to estimated future Loss Mitigation Activities incorporates our expectations regarding the number of policies that we expect to be reinstated as a result of our claims rebuttal process. Rescissions, Claim Denials and Claim Curtailments may occur for various reasons, including, without limitation, underwriting negligence, fraudulent applications and appraisals, breach of representations and warranties and inadequate documentation, primarily related to our insurance written in years prior to and including 2008. The level of Rescissions, Claim Denials and Claim Curtailments has been declining in recent periods as our defaults related to

insurance written in years prior to and including 2008 continue to decline, and we expect this trend to continue. Unless a liability associated with such activities or discussions becomes probable and can be reasonably estimated, we consider our claim payments and our Rescissions, Claim Denials and Claim Curtailments to be resolved for financial reporting purposes. Under the accounting standard regarding contingencies, an estimated loss is accrued only if we determine that the loss is probable and can be reasonably estimated. For populations of disputed Rescissions, Claim Denials and Claim Curtailments where we determine that a settlement is probable and that a loss can be reasonably estimated, we reflect our best estimate of the expected loss related to the populations under discussion in our financial statements, primarily as a component of our IBNR reserve. While our reserves include our best estimate of such losses, the outcome of the discussions or potential legal proceedings that could ensue is uncertain, and it is reasonably possible that a loss exists in excess of the amount accrued.

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Senior management regularly reviews the modeled frequency, Rescission, Claim Denial, Claim Curtailments and Claim Severity estimates, which are based on historical trends, as described above. If recent emerging or projected trends differ significantly from the historical trends used to develop the modeled estimates, management evaluates these trends and determines how they should be considered in its reserve estimates.

Reserve for Premium Deficiency

Insurance enterprises are required to establish a PDR if the net present value of the expected future losses and expenses for a particular product line exceeds the net present value of expected future premiums and existing reserves for that product line. We reassess our expectations for premiums, losses and expenses for our mortgage insurance business at least quarterly and update our premium deficiency analyses accordingly. For our mortgage insurance business, we group our mortgage insurance products into two categories: first-lien and second-lien mortgage loans. As of December 31, 2018 and 2017, the combination of the net present value of our expected future premiums and existing reserves (net of reinsurance recoverables) significantly exceeded the net present value of our future expected losses and expenses associated with our first lien mortgage insurance portfolio. Our second-lien PDR is recorded as a component of other liabilities.

Fair Value of Financial Instruments

Our estimated fair value measurements are intended to reflect the assumptions market participants would use in pricing an asset or liability based on the best information available. Assumptions include the risks inherent in a particular valuation technique (such as a pricing model) and the risks inherent in the inputs to the model. Changes in economic conditions and capital market conditions, including but not limited to, credit spread changes, benchmark interest rate changes, market volatility and changes in the value of underlying collateral, could cause actual results to differ materially from our estimated fair value measurements. We define fair value as the current amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

In accordance with GAAP, we established a three-level valuation hierarchy for disclosure of fair value measurements based on the transparency of inputs to the valuation of an asset or liability as of the measurement date. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level I measurements) and the lowest priority to unobservable inputs (Level III measurements). The level in the fair value hierarchy within which the fair value measurement falls is determined based on the lowest level input that is significant to the measurement in its entirety. The three levels of the fair value hierarchy are defined below:

Level I	— Unadjusted quoted prices for identical assets or liabilities in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;
Level II	— Prices or valuations based on observable inputs other than quoted prices in active markets for identical assets and liabilities; and
Level III	— Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable. Level III inputs are used to measure fair value only to the extent that observable inputs are not available.

For markets in which inputs are not observable or are limited, we use significant judgment and assumptions that a typical market participant would use to evaluate the market price of an asset or liability. Given the level of judgment necessary, another market participant may derive a materially different estimate of fair value. These assets and liabilities are classified in Level III of our fair value hierarchy.

Available for sale securities, trading securities, equity securities and certain other assets are recorded at fair value as described in Note 5. All changes in fair value of trading securities, equity securities (effective January 1, 2018) and certain other assets are included in our consolidated statements of operations. Prior to the implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized gains (losses) associated with equity securities were classified in accumulated other comprehensive income. All changes in

the fair value of available for sale securities are recorded in accumulated other comprehensive income (loss).

Insurance Premiums—Revenue Recognition

Mortgage insurance premiums written on an annual or multi-year basis are initially recorded as unearned premiums and earned over time. Annual premiums are amortized on a monthly, straight-line basis. Multi-year premiums are amortized over the terms of the contracts in relation to the anticipated claim payment pattern based on historical industry experience. Premium

s written on a monthly basis are earned over the period that coverage is provided. When we rescind insurance coverage on a loan, we refund all premiums received in connection with such coverage. Premium revenue is recognized net of our accrual for estimated premium refunds due to Rescissions or other factors. With respect to our reinsurance transactions, ceded premiums written on an annual or multi-year basis are initially set up as prepaid reinsurance and are amortized in a manner consistent with the recognition of income on direct premiums.

Deferred Policy Acquisition Costs

Incremental, direct costs associated with the successful acquisition of mortgage insurance business, consisting of compensation and other policy issuance and underwriting expenses, are initially deferred and reported as deferred policy acquisition costs. Amortization of these costs for each underwriting year book of business is expensed in proportion to estimated gross profits over the estimated life of the policies. Ceding commissions received under our reinsurance arrangements related to these costs are also deferred and accounted for using similar assumptions. See Notes 8 and 9 for additional details.

Estimates of expected gross profit, including the Persistency Rate and loss development assumptions for each underwriting year used as a basis for amortization, are evaluated quarterly and the total amortization recorded to date is adjusted by a charge or credit to our consolidated statements of operations if actual experience or other evidence suggests that previous estimates should be revised. Considerable judgment is used in evaluating these estimates and the assumptions on which they are based. The use of different assumptions may have a significant effect on the amortization of deferred policy acquisition costs.

Revenue Recognition—Services

The FASB has issued an update to the accounting standard regarding revenue recognition, *Revenue from Contracts with Customers*, which establishes principles for reporting information about the nature, amount, timing and uncertainty of revenue and cash flows arising from our contracts with customers to provide services. We adopted this update effective January 1, 2018, using the modified retrospective approach. The principle of this update requires an entity to recognize revenue representing the transfer of services to customers in an amount that reflects the consideration that it expects to be entitled to receive in exchange for those services, recognized as the performance obligations are satisfied.

The majority of our revenue-generating transactions are not subject to the new standard as this update did not change revenue recognition principles related to our investments and insurance products, which together represented the majority of our total revenue for 2018 and are subject to other GAAP guidance discussed elsewhere within our disclosures. This update is primarily applicable to revenues from our Services segment. See Note 1 "—*Services*" for information about the services we offer.

The table below represents the disaggregation of Services revenues by revenue type:

	Year Ended December 31,		
(In thousands)	**2018**	**2017**	**2016**
Services segment revenue			
Mortgage Services	$80,314	$83,405	$102,244
Real Estate Services	58,874	55,095	58,056
Title Services	10,263	23,333	16,949
Total (1)	$149,451	$161,833	$177,249

(1) Includes inter-segment revenues of $3.2 million, $6.7 million, and $8.4 million in 2018, 2017 and 2016, respectively. For 2018, amounts exclude $7.7 million of Services segment net premiums earned—insurance and net investment income, as both are excluded from the scope of the revenue recognition standard. See Note 4 for segment information.

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Our Services segment revenues are recognized over time and measured each period based on the progress to date as services are performed and made available to customers. Our contracts with customers, including payment terms, are generally short-term in nature; therefore, any impact related to timing is immaterial. Revenue recognized related to services made available to customers and billed is reflected in accounts and notes receivable. Revenue recognized related to services performed and not yet billed is recorded in unbilled receivables and reflected in other assets. We have no material bad-debt expense. The following represents balances related to Services contracts as of the dates indicated:

(In thousands)	December 31, 2018	December 31, 2017
Accounts Receivable - Services Contracts	$15,461	$17,391
Unbilled Receivables - Services Contracts	19,917	22,257
Deferred Revenues - Services Contracts	3,204	3,235

Revenue expected to be recognized in any future period related to remaining performance obligations, such as contracts where revenue is recognized as invoiced and contracts with variable consideration related to undelivered performance obligations, is not material.

Fee-for-Service Contracts

Generally, our contracts with our clients do not include minimum volume commitments and can be terminated at any time by our clients. Although some of our contracts and assignments are recurring in nature, and include repetitive monthly assignments, a significant portion of our engagements are transactional in nature and may be performed in connection with securitizations, loan sales, loan purchases or other transactions. Due to the transactional nature of our business, our Services segment revenues may fluctuate from period to period as transactions are commenced or completed. We do not recognize revenue or expense related to amounts advanced by us and subsequently reimbursed by clients for maintenance or repairs, because we do not take control of the service prior to the client taking control. We record an expense if an advance is made by us that is not in accordance with a client contract, and the client is not obligated to reimburse us.

Due to the nature of the services provided, our Services arrangements with customers may include any of the following three basic types of contracts:

Fixed-Price Contracts. We use fixed-price contracts in our real estate valuation and component services, our loan review, underwriting and due diligence services as well as our title and closing services. We also use fixed-price contracts in our surveillance business for our servicer oversight services and RMBS surveillance services, and in our asset management business activities. Under fixed-price contracts we agree to perform the specified services and deliverables for a pre-determined per-unit or per-file price or day rate. Each service qualifies as a separate performance obligation and revenue is recognized as the service performed is made available to the client.

Time-and-Expense Contracts. The Services segment also derives a portion of its revenue from professional service activities under time-and-expense contracts. In these types of contracts, we are paid a fixed hourly rate, and we are reimbursed for billable out-of-pocket expenses as work is performed. These contracts are used in our loan review, underwriting and due diligence services. Services revenue consisting of billed time fees and pass-through expenses is recorded over time and based on the progress to date as services are performed and made available to customers. Services revenue may also include expenses billed to clients, which includes travel and other out-of-pocket expenses, and other reimbursable expenses.

Percentage-of-Sale Contracts. Under percentage-of-sale contracts, we are paid a contractual percentage of the sale proceeds upon the sale of each property. These contracts are only used for a portion of our REO management services and our real estate brokerage services. In addition, through the use of our proprietary technology, property leads are sent to select clients. Revenue attributable to services provided under a percentage-of-sale contract is recognized over time and measured based on the progress to date and typically coincides with the client’s successful closing on the

property. The revenue recognized for these transactions is based on a percentage of the sale.

In certain instances, fees are received at the time that an asset is assigned to Radian for management. These fees are recorded as deferred revenue and are recognized over time based on progress to date and the availability to customers.

Cost of Services

Cost of services consists primarily of employee compensation and related payroll benefits, the cost of billable labor assigned to revenue-generating activities, as well as corresponding travel and related expenses incurred in providing such services to clients in our Services segment. Cost of services also includes costs paid to outside vendors, including real estate

agents that provide valuation and related services, as well as data acquisition costs and other compensation-related expenses to maintain software application platforms that directly support our businesses. Cost of services does not include an allocation of overhead costs.

Title Insurance – Premiums and Reserve for Losses and LAE

Title insurance premiums are typically due and earned in full when the real estate transaction is closed. Premiums generally are calculated with reference to the policy amount. The premium charged by a title insurer or an agent is subject to regulation in most areas. Such regulations vary from state to state.

We provide for losses associated with title insurance policies, closing protection letters and other risk-based products based upon our historical experience and other factors by a charge to expense when the related premium revenue is recognized. The resulting reserve for IBNR claims, together with the reserve for known claims, reflects management's best estimate of the total costs required to settle all incurred claims, and are considered to be adequate for such purpose.

Income Taxes

We provide for income taxes in accordance with the provisions of the accounting standard regarding accounting for income taxes. As required under this standard, our deferred tax assets and deferred tax liabilities are recognized under the balance sheet method, which recognizes the future tax effect of temporary differences between the amounts recorded in our consolidated financial statements and the tax bases of these amounts. Deferred tax assets and deferred tax liabilities are measured using the enacted tax rates that are expected to apply to taxable income in the periods in which the deferred tax asset or deferred tax liability is expected to be realized or settled. In regards to accumulated other comprehensive income, the Company's policy for releasing disproportionate income tax effects is to release the effects as individual items are sold.

We are required to establish a valuation allowance against our deferred tax assets when it is more likely than not that all or some portion of our deferred tax assets will not be realized. At each balance sheet date, we assess our need for a valuation allowance. Our assessment is based on all available evidence, both positive and negative. This requires management to exercise judgment and make assumptions regarding whether our deferred tax assets will be realized in future periods.

Our provision for income taxes for interim financial periods is based on an estimate of our annual effective tax rate for the full year of 2018 and 2017. When estimating our full year 2018 and 2017 effective tax rates, we adjust our forecasted pre-tax income for gains and losses on our investments, changes in the accounting for uncertainty in income taxes, changes in our beginning of year valuation allowance, and other adjustments. The impact of these items is accounted for as Discrete Items at the applicable federal tax rate.

On December 22, 2017, the TCJA was enacted into law. We were required to recognize the accounting effects of the TCJA in the period of enactment, including remeasuring our deferred tax assets and liabilities as well as reassessing the net realizability of our deferred tax assets and liabilities. In December 2017, the SEC staff issued Staff Accounting Bulletin No. 118, "Income Tax Accounting Implications of the Tax Cuts and Jobs Act," which provides guidance on accounting for the tax effects of the TCJA for which the accounting was incomplete. To the extent that a company's accounting for certain income tax effects of the TCJA was incomplete but a reasonable estimate could be made, a company was required to record provisional estimates in the financial statements, during a measurement period not to extend beyond one year of the enactment date. Since the TCJA was passed late in the fourth quarter of 2017, we accounted for the tax effects of the TCJA on a provisional basis and determined reasonable estimates for those effects, which were included in our financial statements as of December 31, 2017. As a result of finalizing our interpretation of related guidance, we completed our accounting in the fourth quarter of 2018 during the one-year measurement period from the enactment date. No material adjustments to our provisional amounts were required.

Risks and Uncertainties

Radian Group and its subsidiaries are subject to risks and uncertainties that could affect amounts reported in our financial statements in future periods. Our future performance and financial condition are subject to significant risks and uncertainties that could cause actual results to be materially different from our estimates and forward-looking statements.

Foreign Currency Revaluation/Translation

Assets and liabilities denominated in foreign currencies are revalued or translated at year-end exchange rates. Operating results are translated at average rates of exchange prevailing during the year. Unrealized gains and losses, net of deferred taxes, resulting from translation are included in accumulated other comprehensive income (loss) in stockholders' equity. Realized gains and losses resulting from transactions in foreign currency are recorded in our statements of operations.

Cash and Restricted Cash

Included in our restricted cash balances as of December 31, 2018 were: (i) funds for a mortgage insurance reserve policy held in escrow for any future duties, rights and liabilities; (ii) funds held in trust for the benefit of certain policyholders; (iii) escrow funds held for servicer liabilities; and (iv) escrow funds held for title services obligations. Total cash and restricted cash shown in the consolidated statement of cash flows as of December 31, 2018 of $107.0 million comprise cash and restricted cash of $95.4 million and $11.6 million, respectively, as shown on the consolidated balance sheet as of December 31, 2018. Total cash and restricted cash shown in the consolidated statement of cash flows as of December 31, 2017 of $96.2 million comprise cash and restricted cash of $80.5 million and $15.7 million, respectively, as shown on the consolidated balance sheet as of December 31, 2017.

Within our consolidated statements of cash flows, we classify cash receipts and cash payments related to items measured at fair value according to their nature and purpose. Because our investment activity for trading securities relates to overall strategic initiatives and is not trading related, it is recorded as cash flows from investing activities.

Investments

We group fixed-maturity securities in our investment portfolio into one of three main categories: held to maturity, available for sale or trading securities. Fixed-maturity securities for which we have the positive intent and ability to hold to maturity, if any, are classified as held to maturity and are reported at amortized cost. Trading securities are securities that are purchased and held primarily for the purpose of selling them in the near term, and are reported at fair value, with unrealized gains and losses reported as a separate component of income. Investments in fixed-maturity securities not classified as held to maturity or trading securities are classified as available for sale and are reported at fair value, with unrealized gains and losses (net of tax) reported as a separate component of stockholders' equity as accumulated other comprehensive income (loss). Equity securities consist of holdings in common stock, preferred stock and exchange traded funds, which, effective January 1, 2018, are all recorded at fair value with unrealized gains and losses reported in income. Prior to the implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized gains (losses) associated with equity securities that were available for sale were classified in accumulated other comprehensive income. Short-term investments consist of money market instruments, certificates of deposit and highly liquid, interest-bearing instruments with an original maturity of 12 months or less at the time of purchase. Amortization of premium and accretion of discount are calculated principally using the interest method over the term of the investment. Realized gains and losses on investments are recognized using the specific identification method. See Notes 5 and 6 for further discussion on the fair value of investments.

We record an other-than-temporary impairment adjustment on a security with an unrealized loss if we intend to sell the impaired security, if it is more likely than not that we will be required to sell the impaired security prior to recovery of its amortized cost basis, or if the present value of cash flows we expect to collect is less than the amortized cost basis of the security. If a sale is likely, the security is classified as other-than-temporarily impaired and the full amount of the impairment is recognized as a loss in the statement of operations. Otherwise, losses on securities that are other-than-temporarily impaired are separated into: (i) the portion of loss that represents the credit loss and (ii) the portion that is due to other factors. The credit loss portion is recognized as a loss in the statement of operations, while the loss due to other factors is recognized in accumulated other comprehensive income (loss), net of taxes. A credit loss is determined to exist if the present value of discounted cash flows expected to be collected from the security is less than the amortized cost basis of the security. The present value of discounted cash flows is determined using the original yield of the security. In evaluating whether a decline in value is other-than-temporary, we consider several factors in addition to the above, including, but not limited to, the following:

- the extent and the duration of the decline in value;
- the reasons for the decline in value (e.g., credit event, interest related or market fluctuations); and
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the financial position, access to capital and near term prospects of the issuer, including the current and future impact of any specific events.

Securities Lending Agreements

Securities lending agreements, in which we loan certain securities in our investment portfolio to third parties for short periods of time in exchange for collateral consisting of cash and other securities, are treated as collateralized financing arrangements in our consolidated balance sheets. In all of our securities lending agreements, the securities that we transfer to Borrowers (loaned securities) may be transferred or loaned by the Borrowers; however, pursuant to the terms of these agreements, we maintain effective control over all loaned securities, including: (i) retaining ownership of the securities;

(ii) receiving the related investment or other income; and (iii) having the right to request the return of the loaned securities at any time. We report such securities within other assets in our consolidated balance sheets. We receive cash or other securities as collateral for such loaned securities. Any cash collateral may be invested in liquid assets. Cash collateral, which is reinvested for our benefit by the intermediary in accordance with the investment guidelines contained in the securities lending and collateral agreements, is reflected in short-term investments, with an offsetting liability recognized in other liabilities for the obligation to return the cash collateral to the Borrower. Securities collateral we receive from Borrowers is held on deposit for the Borrower's benefit and we may not transfer or loan such securities collateral unless the Borrower is in default. Therefore, such securities collateral is not reflected in our consolidated financial statements given that the risks and rewards of ownership are not transferred to us from the Borrowers. See Note 6 for additional information.
Fees received and paid in connection with securities lending agreements are recorded in net investment income and interest expense, respectively, on the consolidated statements of operations.

Accounts and Notes Receivable

Accounts and notes receivable primarily consist of accrued premiums receivable due from our mortgage insurance customers, amounts billed and due from our Services customers for services our Services segment has performed, and profit commission receivable, if any, related to our reinsurance transactions. See Note 8 for details. Accounts and notes receivable are carried at their estimated collectible amounts, net of any allowance for doubtful accounts, and are periodically evaluated for collectability based on past payment history and current economic conditions. Accounts and notes receivable exclude unbilled receivables totaling $19.9 million, which represent receivables for services performed that are not yet billed. Unbilled receivables are presented in other assets.

Company-Owned Life Insurance ("COLI")

We are the beneficiary of insurance policies on the lives of certain of our current and past officers and employees. We have recognized the amount that could be realized upon surrender of the insurance policies in other assets in our consolidated balance sheets. See Note 9 for additional information.

Property and Equipment

Property and equipment is carried at cost, net of depreciation. For financial statement reporting purposes, computer hardware and software is generally depreciated over three or five years, furniture and fixtures is depreciated over seven years, and office equipment is depreciated over five years. Leasehold improvements are depreciated over the lesser of the estimated useful life of the asset improved or the remaining term of the lease. See Note 9 for additional information.

Goodwill and Other Acquired Intangible Assets, Net

Goodwill and other acquired intangible assets were established primarily in connection with our acquisition of Clayton. Goodwill is an asset representing the estimated future economic benefits arising from the assets we have acquired that were not individually identified and separately recognized, and includes the value of discounted expected future cash flows of Clayton, Clayton's workforce, expected synergies with our other affiliates and other unidentifiable intangible assets. Goodwill is deemed to have an indefinite useful life and is subject to review for impairment annually, or more frequently, whenever circumstances indicate potential impairment at the reporting unit level. A reporting unit represents a business for which discrete financial information is available; more than one reporting unit may be aggregated into a single reporting unit if they have similar economic characteristics. Events that could result in an interim assessment of goodwill impairment and/or a potential impairment charge include, but are not limited to: (i) significant under-performance relative to historical or projected future operating results; (ii) significant changes in the strategy for the Services segment; (iii) significant negative industry or economic trends; and (iv) a decline in Radian's market capitalization below book value if such decline is attributable to the Services segment. Management regularly updates certain assumptions related to our projections, including the likelihood of achieving the assumed potential revenues from new initiatives and business strategies, and if these or other items have a

significant negative impact on the reporting unit's projections we may perform additional analysis to determine whether an impairment charge is needed. Lower earnings over sustained periods also can lead to impairment of goodwill, which could result in a charge to earnings. The value of goodwill is primarily supported by revenue projections, which are mostly driven by projected transaction volume and margins.

In performing the interim quantitative analysis for our goodwill impairment test as of June 30, 2017, we elected to early adopt the update to the accounting standard regarding goodwill and other intangibles, which simplified the subsequent measurement of goodwill by eliminating step two of the goodwill impairment test. Under this guidance, if indicators for

impairment are present, we perform a quantitative analysis to evaluate our long-lived assets for potential impairment, and then determine the amount of the goodwill impairment by comparing a reporting unit's fair value to its carrying amount. After adjusting the carrying value for any impairment of other intangibles or long-lived assets, an impairment charge is recognized for any excess of the reporting unit's carrying amount over the reporting unit's estimated fair value, up to the full amount of the goodwill allocated to the reporting unit.

Intangible assets, other than goodwill, primarily consist of customer relationships, technology, trade name and trademarks, client backlog and non-competition agreements. Customer relationships represent the value of the specifically acquired customer relationships and are valued using the excess earnings approach using estimated client revenues, attrition rates, implied royalty rates and discount rates. The excess earnings approach estimates the present value of expected earnings in excess of a traditional return on business assets. Technology represents proprietary software used for loan review, underwriting and due diligence, managing the REO disposition process, performing surveillance of mortgage loan servicers, real estate valuations and client workflow solutions. Trade name and trademarks primarily reflect the value inherent in the recognition of the "Clayton" name and its reputation. For purposes of our intangible assets, we use the term client backlog to refer to the estimated present value of fees to be earned for services performed on loans currently under surveillance or REO assets under management. The value of a non-competition agreement is an appraisal of potential lost revenues that would arise from an individual leaving to work for a competitor or initiating a competing enterprise. For financial reporting purposes, intangible assets with finite lives are amortized over their applicable estimated useful lives in a manner that approximates the pattern of expected economic benefit from each intangible asset.

The calculation of the estimated fair value of goodwill and other acquired intangibles is performed primarily using an income approach and requires the use of significant estimates and assumptions that are highly subjective in nature, such as attrition rates, discount rates, future expected cash flows and market conditions. The most significant assumptions relate to the valuation of customer relationships. Our estimates are based upon assumptions believed to be reasonable, but which are inherently uncertain and unpredictable.

For more information on our accounting for goodwill and other intangibles, including our impairment analysis policy, see Note 7.

Accounting for Share-Based Compensation

The stock-based compensation cost related to share-based liability awards is based on the fair value as of the measurement date. The compensation cost for equity instruments is measured based on the grant-date fair value at the date of issuance. For share-based awards with performance conditions related to our own operations, the expense recognized is dependent on the probability of the performance measure being achieved. Compensation cost is generally recognized over the periods that an employee provides service in exchange for the award.

Effective January 1, 2017, upon the implementation of the update to the accounting standard regarding stock-based compensation, windfalls and shortfalls resulting from cancellations, expirations or exercises of stock options are reflected in the consolidated statements of operations as part of our income tax provision, as they occur. Prior to 2017, we applied the short-cut method, under the accounting standard regarding share-based payment, to account for the windfall tax benefits that were expected to result from the exercise of stock options. See Note 16 for further information.

Purchases of Convertible Debt Prior to Maturity

We account for the purchases of our outstanding convertible debt as induced conversions of convertible debt in accordance with the accounting standard regarding derecognition of debt with conversion and other options, and the accounting standard regarding debt modifications and extinguishments. The accounting standards require the recognition through earnings of an inducement charge equal to the fair value of the consideration delivered in excess of the consideration issuable under the original conversion terms. The remaining consideration delivered and transaction costs incurred are required to be allocated between the extinguishment of the liability component and the

reacquisition of the equity component. Therefore, we recognize a loss on induced conversion and debt extinguishment equal to the sum of: (i) the inducement charge; (ii) the difference between the fair value and the carrying value of the liability component of the purchased debt; (iii) transaction costs allocated to the debt component; and (iv) unamortized debt issuance costs related to the purchased debt.

Reinsurance

We cede insurance risk through the use of reinsurance contracts and follow reinsurance accounting for those transactions where significant risk is transferred. Loss reserves and unearned premiums are established before consideration is given to amounts related to our reinsurance agreements.

In accordance with the terms of the Single Premium QSR Program, rather than making a cash payment or transferring investments for ceded premiums written, Radian Guaranty holds the related amounts to collateralize the reinsurers' obligations and has established a corresponding funds withheld liability. Any loss recoveries and any potential profit commission to Radian Guaranty will be realized from this account. The reinsurers' share of earned premiums is paid from this account on a quarterly basis. This liability also includes an interest credit on funds withheld, which is recorded as ceded premiums at a rate specified in the agreement and, depending on experience under the contract, may be paid to either Radian Guaranty or the reinsurers. The ceding commission earned for premiums ceded pursuant to this transaction is attributable to other underwriting costs (including any related deferred policy acquisition costs). The unamortized portion of the ceding commission in excess of our related acquisition cost is reflected in other liabilities. Ceded premiums written are recorded on the balance sheet as prepaid reinsurance premiums and amortized to ceded premiums earned in a manner consistent with the recognition of income on direct premiums. See Note 8 for further discussion of our reinsurance transactions.

Variable Interest Entity

As a provider of mortgage insurance we may enter into contracts with variable interest entities ("VIEs"). VIEs include corporations, trusts or partnerships in which equity investors have: (i) insufficient equity at risk to allow it to finance its activities without additional subordinated financial support and (ii) at-risk equity holders that, as a group, do not have the characteristics of a controlling financial interest.

We perform an evaluation to determine whether we are required to consolidate the VIE's assets and liabilities in our consolidated financial statements, based on whether we are deemed to be the primary beneficiary. The primary beneficiary of a VIE is the variable interest holder that is determined to have the controlling financial interest as a result of having both (i) the power to direct the activities of a VIE that most significantly impact the economic performance of the VIE and (ii) the obligation to absorb losses or right to receive benefits from the VIE that potentially could be significant to the VIE. See Note 8 for additional information.

Restructuring and Other Exit Costs

Restructuring and other exit costs include items such as asset impairment charges (including loss from the sale of a business line), employee severance and benefit costs, facility and lease termination costs, contract terminations and other costs of restructuring or exiting activities. The timing of the future expense and associated cash payments for restructuring and other exit costs is dependent on the type of exit cost. We review assets for impairment in accordance with the accounting guidance for long-lived assets. The loss on sale of a business line is calculated by the excess of its carry amount over the sale price. Generally, our employee severance and benefit costs are part of the Company's ongoing benefit arrangement and are recognized when probable and estimable. A liability for facility and lease contract termination costs is recognized at the date we cease the use of rights conveyed by the contract and is measured at its fair value, which is determined based on the remaining contractual lease rentals reduced by estimated sublease rentals. Other contract termination and exit costs include future costs that will be incurred, which are recognized in total when they no longer will benefit the Company. The liabilities for restructuring and other exit costs are recorded in other liabilities.

Recent Accounting Pronouncements

Accounting Standards Adopted During 2018. In May 2014, the FASB issued an update to the accounting standard regarding revenue recognition. In July 2015, the FASB delayed the effective date for this updated standard for public companies to interim and annual periods beginning after December 15, 2017, and subsequently issued various clarifying updates. Our adoption of this standard, effective January 1, 2018, had no impact on our financial statements.

The disclosures required by this update are included above in "—Revenue Recognition—Services."
In January 2016, the FASB issued an update that makes certain changes to the standard for the accounting of financial instruments. Among other things, the update requires: (i) equity investments to be measured at fair value with changes in fair value recognized in net income; (ii) the use of the exit price notion when measuring the fair value of financial instruments for disclosure purposes; (iii) separate presentation of financial assets and financial liabilities by measurement category and form of financial asset; and (iv) separate presentation in other comprehensive income of the portion of the total change in the fair value

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of a liability resulting from a change in the instrument-specific credit risk (also referred to as “own credit”) when the organization has elected to measure the liability at fair value in accordance with the fair value option for financial instruments. The update also eliminates the requirement to disclose the methods and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost on the balance sheet. This update is effective for public companies for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. In February 2018, the FASB issued technical corrections related to this update, which addresses common questions regarding the application and adoption of the new guidance and the subsequent amendments. As a result of adopting these updates, equity securities are no longer classified as available for sale securities and changes in fair value are recognized through earnings. Consequently, we recorded a cumulative effect adjustment to retained earnings from accumulated other comprehensive income representing unrealized losses related to equity securities in the amount of $0.2 million, net of tax. In addition, we elected to utilize net asset value as a practical expedient to measure certain other investments, which resulted in an increase to other invested assets with an offset to retained earnings in the amount of $2.3 million, net of tax. Our adoption of both of these updates, effective January 1, 2018, resulted in a net increase to retained earnings of $2.1 million. See Notes 5 and 6 for additional information.

In January 2017, the FASB issued an update to the accounting standard regarding business combinations. This update clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The guidance requires an entity to evaluate if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or a group of similar identifiable assets; if so, the set of transferred assets and activities is not a business. The guidance also requires a business to include at least one substantive process and narrows the definition of outputs. The guidance is effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years and should be applied prospectively as of the beginning of the period of adoption. We adopted this update effective January 1, 2018 and it did not have a material impact on our financial statements.

In February 2018, the FASB issued an update to the accounting standard regarding income statement reporting of comprehensive income and reclassification of certain tax effects from accumulated other comprehensive income. The amendments in this update allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the TCJA. The provisions of this update are effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period, for reporting periods for which financial statements have not been available for issuance. We elected to early adopt this update effective January 1, 2018. As a result we recorded a reclassification adjustment from accumulated other comprehensive income to retained earnings in the amount of $2.7 million. See Note 10 for additional information regarding the TCJA.

In August 2018, the FASB issued an update to the accounting standard regarding the disclosure requirements for fair value measurements. The amendments in this update remove certain disclosure requirements regarding transfers between Level I and Level II assets as well as the requirement to disclose the valuation process for Level III assets. This update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. We elected to early adopt the full update as of December 31, 2018 and it did not have a material impact on our financial statements or disclosures.

Accounting Standards Not Yet Adopted. In February 2016, the FASB issued an update that replaces the existing accounting and disclosure requirements for leases of property, plant and equipment. The update requires lessees to recognize, as of the lease commencement date, assets and liabilities for all leases with lease terms of more than 12 months, which is a change from the current GAAP requirement to recognize only capital leases on the balance sheet. Leases are required to be classified as either operating or finance, with expense on operating leases recorded as a

single lease cost on a straight-line basis. For finance leases, interest expense on the lease liability is required to be recognized separately from the straight-line amortization of the right-of-use asset. Quantitative disclosures are required for certain items, including the cost of leases, the weighted-average remaining lease term, the weighted-average discount rate and a maturity analysis of lease liabilities. Additional qualitative disclosures are also required regarding the nature of the leases, such as basis, terms and conditions of: (i) variable interest payments; (ii) extension and termination options; and (iii) residual value guarantees. In July 2018 the FASB issued a further update containing certain targeted improvements to the accounting and disclosure requirements for leases, including an additional (and optional) transition method to recognize the cumulative-effect adjustment as of the beginning of the period of adoption, rather than recognizing the cumulative-effect adjustment as of the beginning of the earliest comparative period presented. We expect to elect the optional transition method to recognize the cumulative-effect adjustment as of the beginning $50 million, which represents a right of use asset, and a corresponding net increase in other liabilities for the same amount. The net increase of approximately $50 million in other liabilities represents a discounted lease liability of approximately $74 million from operating leases, primarily for our various facilities, which represents the present value of these future lease payments discounted at our incremental borrowing rate, partially offset by an adjustment for unamortized allowances and incentives. Additionally, upon adoption we expect to expand our financial statement disclosures as required by the amendments, as well as implement any necessary changes to our control environment and reporting processes to reflect the requirements of the amendments. See Note 14 for additional information about our leases. However, we do not expect the adoption of this standard to impact our stockholders' equity, results of operations or liquidity. In addition, we expect to elect the practical expedients for transitioning existing leases to the new standard as of the effective date. As a result of applying the practical expedients: (i) we are not required to reassess expired or existing contracts to determine if they contain additional leases; (ii) we are not required to reassess the lease classification for expired and existing leases; and (iii) we are not required to reassess initial direct costs for existing leases. The update is effective for us on January 1, 2019 and upon our adoption, we expect to record an increase in other assets of approximately $50 million, which represents a right of use asset, and a corresponding net increase in other liabilities for the same amount. The net increase of approximately $50 million in other liabilities represents a discounted lease liability of approximately $74 million from operating leases, primarily for our various facilities, which represents the present value of these future lease payments discounted at our incremental borrowing rate, partially offset by an adjustment for unamortized allowances and incentives. Additionally, upon adoption we expect to expand our financial statement disclosures as required by the amendments, as well as implement any necessary changes to our control environment and reporting processes to reflect the requirements of the amendments. See Note 14 for additional information about our leases.

of the period of adoption.$50 million, which represents a right of use asset, and a corresponding net increase in other liabilities for the same amount. The net increase of approximately $50 million in other liabilities represents a discounted lease liability of approximately $74 million from operating leases, primarily for our various facilities, which represents the present value of these future lease payments discounted at our incremental borrowing rate, partially offset by an adjustment for unamortized allowances and incentives. Additionally, upon adoption we expect to expand our financial statement disclosures as required by the amendments, as well as implement any necessary changes to our control environment and reporting processes to reflect the requirements of the amendments. See Note 14 for additional information about our leases.

In June 2016, the FASB issued an update to the accounting standard regarding the measurement of credit losses on financial instruments and certain other assets. This update requires that financial assets measured at their amortized cost basis be presented at the net amount expected to be collected. Credit losses relating to available-for-sale debt securities are to be recorded through an allowance for credit losses, rather than a write-down of the asset, with the amount of the allowance limited to the amount by which fair value is less than amortized cost. This update is effective for public companies for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted for the fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. This update is not applicable to credit losses associated with our mortgage insurance policies. We are currently evaluating the impact on our financial statements and future disclosures as a result of this update.

In March 2017, the FASB issued an update to the accounting standard regarding receivables. The new standard requires certain premiums on purchased callable debt securities to be amortized to the earliest call date. The amortization period for callable debt securities purchased at a discount will not be impacted. The provisions of this update are effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. We do not expect the adoption of this update to have a material effect on our financial statements and disclosures.

In August 2018, the FASB issued an update to the accounting standard regarding the accounting for long-duration insurance contracts. The new standard: (i) requires that assumptions used to measure the liability for future policy benefits be reviewed at least annually; (ii) defines and simplifies the measurement of market risk benefits; (iii) simplifies the amortization of deferred acquisition costs; and (iv) enhances the required disclosures about long-duration contracts. This update is effective for fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. Early adoption is permitted. We are currently evaluating the potential impact of the adoption of this update.

In August 2018, the FASB issued an update to the accounting standard regarding the capitalization of implementation costs for activities performed in a cloud computing arrangement that is a service contract. The new standard aligns the accounting for implementation costs of hosting arrangements that are service contracts with the accounting for capitalizing internal-use software. This update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. We are currently evaluating the potential impact of the adoption of this update and do not expect it to have a material effect on our financial statements and disclosures.

3. Net Income Per Share

Basic net income per share is computed by dividing net income by the weighted-average number of common shares outstanding, while diluted net income per share is computed by dividing net income attributable to common stockholders by the sum of the weighted-average number of common shares outstanding and the weighted-average number of dilutive potential common shares. Dilutive potential common shares relate to our share-based compensation arrangements and our outstanding convertible senior notes, if any. For all calculations, the determination of whether potential common shares are dilutive or anti-dilutive is based on net income.

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Notes to Consolidated Financial Statements (Continued)

The calculation of basic and diluted net income per share was as follows:

	Year Ended December 31,		
(In thousands, except per-share amounts)	2018	2017	2016
Net income—basic	$606,011	$121,088	$308,253
Adjustment for dilutive Convertible Senior Notes due 2019, net of tax (1)	—	(215)	5,816
Net income —diluted	$606,011	$120,873	$314,069
Average common shares outstanding—basic	214,267	215,321	211,789
Dilutive effect of Convertible Senior Notes due 2017	—	323	207
Dilutive effect of Convertible Senior Notes due 2019	—	457	14,263
Dilutive effect of stock-based compensation arrangements (2)	4,286	4,305	2,999
Adjusted average common shares outstanding—diluted	218,553	220,406	229,258
Net income per share:			
Basic	$2.83	$0.56	$1.46
Diluted	$2.77	$0.55	$1.37

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(1) As applicable, includes coupon interest, amortization of discount and fees, and other changes in income or loss that would result from the assumed conversion. Included in the year ended December 31, 2017 is a benefit related to our adjustment of estimated accrued expense to actual amounts, resulting from the January 2017 settlement of our obligations on the remaining Convertible Senior Notes due 2019.

(2) The following number of shares of our common stock equivalents issued under our share-based compensation arrangements were not included in the calculation of diluted net income per share because they were anti-dilutive:

	Year Ended December 31,		
(In thousands)	2018	2017	2016
Shares of common stock equivalents	337	353	1,042

4. Segment Reporting

We have two strategic business units that we manage separately—Mortgage Insurance and Services. Adjusted pretax operating income (loss) for each segment represents segment results on a standalone basis; therefore, inter-segment eliminations and reclassifications required for consolidated GAAP presentation have not been reflected.

We allocate to our Mortgage Insurance segment: (i) corporate expenses based on the segment's forecasted annual percentage of total revenue, which approximates the estimated percentage of time spent on the segment; (ii) all interest expense (except for interest expense related to an intercompany note with terms consistent with the original issued amount of $300 million from the Senior Notes due 2019 that were used to fund our purchase of Clayton, all of which is allocated to our Services segment); and (iii) all corporate cash and investments.

We allocate to our Services segment: (i) corporate expenses based on the segment's forecasted annual percentage of total revenue, which approximates the estimated percentage of time spent on the segment and (ii) the allocated interest expense related to the intercompany note as described above. No corporate cash or investments are allocated to the Services segment. Inter-segment activities are recorded at market rates for segment reporting and eliminated in consolidation.

Contract underwriting activities are reported within our Services segment. We include underwriting-related expenses for mortgage insurance, based on a pro-rata volume of mortgage applications excluding third-party contract underwriting services, in our Mortgage Insurance segment’s other operating expenses before corporate allocations. We include underwriting-related expenses for third-party contract underwriting services, based on a pro-rata volume of mortgage applications, in our Services segment’s cost of services and other operating expenses before corporate allocations, as applicable.

Adjusted Pretax Operating Income (Loss)

Our senior management, including our Chief Executive Officer (Radian's chief operating decision maker), uses adjusted pretax operating income (loss) as our primary measure to evaluate the fundamental financial performance of each of Radian's business segments and to allocate resources to the segments. Adjusted pretax operating income (loss) is defined as pretax income (loss) from continuing operations excluding the effects of net gains (losses) on investments and other financial instruments, loss on induced conversion and debt extinguishment, acquisition-related expenses, amortization or impairment of goodwill and other acquired intangible assets, and net impairment losses recognized in earnings and losses from the sale of lines of business.

Although adjusted pretax operating income excludes certain items that have occurred in the past and are expected to occur in the future, the excluded items represent those that are: (i) not viewed as part of the operating performance of our primary activities or (ii) not expected to result in an economic impact equal to the amount reflected in pretax income. These adjustments, along with the reasons for their treatment, are described below.

(1) *Net gains (losses) on investments and other financial instruments.* The recognition of realized investment gains or losses can vary significantly across periods as the activity is highly discretionary based on the timing of individual securities sales due to such factors as market opportunities, our tax and capital profile and overall market cycles. Unrealized gains and losses arise primarily from changes in the market value of our investments that are classified as trading or equity securities. These valuation adjustments may not necessarily result in realized economic gains or losses.

Trends in the profitability of our fundamental operating activities can be more clearly identified without the fluctuations of these realized and unrealized gains or losses and changes in fair value of other financial instruments. We do not view them to be indicative of our fundamental operating activities. Therefore, these items are excluded from our calculation of adjusted pretax operating income (loss).

(2) *Loss on induced conversion and debt extinguishment.* Gains or losses on early extinguishment of debt and losses incurred to purchase our convertible debt prior to maturity are discretionary activities that are undertaken in order to take advantage of market opportunities to strengthen our financial and capital positions; therefore, we do not view these activities as part of our operating performance. Such transactions do not reflect expected future operations and do not provide meaningful insight regarding our current or past operating trends. Therefore, these items are excluded from our calculation of adjusted pretax operating income (loss).

(3) *Acquisition-related expenses.* Acquisition-related expenses represent the costs incurred to effect an acquisition of a business (i.e., a business combination). Because we pursue acquisitions on a strategic and selective basis and not in the ordinary course of our business, we do not view acquisition-related expenses as a consequence of a primary business activity. Therefore, we do not consider these expenses to be part of our operating performance and they are excluded from our calculation of adjusted pretax operating income (loss).

(4) *Amortization or impairment of goodwill and other acquired intangible assets.* Amortization of acquired intangible assets represents the periodic expense required to amortize the cost of acquired intangible assets over their estimated useful lives. Acquired intangible assets with an indefinite useful life are also periodically reviewed for potential impairment, and impairment adjustments are made whenever appropriate. These charges are not viewed as part of the operating performance of our primary activities and therefore are excluded from our calculation of adjusted pretax operating income (loss).

(5) *Net impairment losses recognized in earnings and losses from the sale of lines of business*. The recognition of net impairment losses on investments and the impairment of other long-lived assets does not result in a cash payment and can vary significantly in both amount and frequency, depending on market credit cycles and other factors. Losses from the sale of lines of business are highly discretionary as a result of strategic restructuring decisions, and generally do not occur in the normal course of our business. We do not view these losses to be indicative of our fundamental operating activities. Therefore, whenever these losses occur, we exclude them from our calculation of

adjusted pretax operating income (loss).

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Notes to Consolidated Financial Statements (Continued)

Summarized operating results for our segments as of and for the years ended, as applicable, were as follows:

(In thousands)	December 31, 2018 Mortgage Insurance	Services	Total
Net premiums written—insurance (1)	$991,021	$7,286	(2) $998,307
(Increase) decrease in unearned premiums	15,700	—	(2) 15,700
Net premiums earned—insurance	1,006,721	7,286	(2) 1,014,007
Services revenue	—	148,217	148,217
Net investment income	152,102	373	(2) 152,475
Other income	2,794	1,234	(2) 4,028
Total (3) (4)	1,161,617	157,110	1,318,727
Provision for losses	104,547	408	(2) 104,955
Policy acquisition costs	25,265	—	25,265
Cost of services	—	98,692	98,692
Other operating expenses before corporate allocations	135,372	53,250	188,622
Restructuring and other exit costs (5)	—	2,100	2,100
Total (4)	265,184	154,450	419,634
Adjusted pretax operating income (loss) before corporate allocations	896,433	2,660	899,093
Allocation of corporate operating expenses	80,134	11,974	92,108
Allocation of interest expense	43,685	17,805	61,490
Adjusted pretax operating income (loss)	$772,614	$(27,119)	$745,495
Total assets	$6,138,679	$175,973	$6,314,652

(1) Net of ceded premiums written under the QSR Program, the Single Premium QSR Program and the Excess-of-Loss Program. See Note 8 for additional information.
(2) Results from inclusion of the operations of EnTitle Direct, a national title insurance and settlement service company, acquired in March 2018.
(3) Excludes net losses on investments and other financial instruments of $42.5 million, not included in adjusted pretax operating income.
(4) Includes inter-segment revenues and expenses as follows:

(In thousands)	December 31, 2018 Mortgage Insurance	Services
Inter-segment revenues included in Services segment	$—	$3,245
Inter-segment expenses included in Mortgage Insurance segment	3,245	—

(5) Does not include impairment of long-lived assets and loss from the sale of a business line, which are not components of adjusted pretax operating income.

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Radian Group Inc.
Notes to Consolidated Financial Statements (Continued)

(In thousands)	December 31, 2017		
	Mortgage Insurance	Services	Total
Net premiums written—insurance (1)	$818,417	$—	$818,417
(Increase) decrease in unearned premiums (2)	114,356	—	114,356
Net premiums earned—insurance	932,773	—	932,773
Services revenue	—	161,833	161,833
Net investment income	127,248	—	127,248
Other income	2,886	—	2,886
Total (3) (4)	1,062,907	161,833	1,224,740
Provision for losses	136,183	—	136,183
Policy acquisition costs	24,277	—	24,277
Cost of services	—	105,812	105,812
Other operating expenses before corporate allocations	150,975	50,969	201,944
Restructuring and other exit costs (5)	—	6,828	6,828
Total (4)	311,435	163,609	475,044
Adjusted pretax operating income (loss) before corporate allocations	751,472	(1,776)	749,696
Allocation of corporate operating expenses	55,441	14,319	69,760
Allocation of interest expense	45,016	17,745	62,761
Adjusted pretax operating income (loss)	$651,015	$(33,840)	$617,175
Total assets	$5,733,918	$166,963 (6)	$5,900,881

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(1) Net of ceded premiums written under the QSR Program and the Single Premium QSR Program. See Note 8 for additional information.

(2) Effective December 31, 2017, we amended the 2016 Single Premium QSR Agreement to increase the amount of ceded risk for performing loans under the agreement from 35% to 65% for the 2015 through 2017 vintages, resulting in a reduction of $145.7 million in net premiums written.

(3) Excludes net gains on investments and other financial instruments of $3.6 million, not included in adjusted pretax operating income.

(4) Includes inter-segment revenues and expenses as follows:

(In thousands)	December 31, 2017	
	Mortgage Insurance	Services
Inter-segment revenues included in Services segment	$—	$6,730
Inter-segment expenses included in Mortgage Insurance segment	6,730	—

(5) Does not include impairment of long-lived assets and loss from the sale of a business line, which are not components of adjusted pretax operating income.

(6) The decrease in total assets for the Services segment at December 31, 2017, as compared to December 31, 2016, is primarily due to the impairment of goodwill and other acquired intangible assets. See Note 7 for further details.

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(In thousands)	December 31, 2016 Mortgage Insurance	Services	Total
Net premiums written—insurance (1)	$733,834	$—	$733,834
(Increase) decrease in unearned premiums	187,935	—	187,935
Net premiums earned—insurance	921,769	—	921,769
Services revenue	—	177,249	177,249
Net investment income	113,466	—	113,466
Other income	3,572	—	3,572
Total (2) (3)	1,038,807	177,249	1,216,056
Provision for losses	204,175	—	204,175
Policy acquisition costs	23,480	—	23,480
Cost of services	—	115,369	115,369
Other operating expenses before corporate allocations	140,624	55,815	196,439
Total (3)	368,279	171,184	539,463
Adjusted pretax operating income (loss) before corporate allocations	670,528	6,065	676,593
Allocation of corporate operating expenses	45,178	8,533	53,711
Allocation of interest expense	63,439	17,693	81,132
Adjusted pretax operating income (loss)	$561,911	$(20,161)	$541,750
Total assets	5,506,338	356,836	5,863,174

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(1) Net of ceded premiums written under the QSR Program and the Single Premium QSR Program. See Note 8 for additional information.

(2) Excludes net gains on investments and other financial instruments of $30.8 million, not included in adjusted pretax operating income.

(3) Includes inter-segment revenues and expenses as follows:

(In thousands)	December 31, 2016 Mortgage Insurance	Services
Inter-segment revenues included in Services segment	$—	$8,355
Inter-segment expenses included in Mortgage Insurance segment	8,355	

The reconciliation of adjusted pretax operating income (loss) to consolidated pretax income is as follows:

	December 31,		
(In thousands)	2018	2017	2016
Adjusted pretax operating income (loss):			
Mortgage insurance (1)	$772,614	$651,015	$561,911
Services (1)	(27,119)	(33,840)	(20,161)
Total adjusted pretax operating income	$745,495	$617,175	$541,750
Net gains (losses) on investments and other financial instruments	(42,476)	3,621	30,751
Loss on induced conversion and debt extinguishment	—	(51,469)	(75,075)
Acquisition-related expenses (2)	(881)	(105)	(519)
Impairment of goodwill	—	(184,374)	—
Amortization and impairment of other acquired intangible assets	(12,429)	(27,671)	(13,221)
Impairment of other long-lived assets (3)	(5,523)	(10,440)	—
Consolidated pretax income	$684,186	$346,737	$483,686

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(1) Includes inter-segment expenses and revenues as listed in the notes to the preceding tables.

(2) Acquisition-related expenses represent expenses incurred to effect the acquisition of a business, net of adjustments to accruals previously recorded for acquisition expenses.

(3) For the year ended December 31, 2018, this item comprises other operating expenses of $1.5 million and restructuring and other exit costs of $4.0 million, each as included in the consolidated statement of operations. For the year ended December 31, 2017, the full amount is included in restructuring and other exit costs in the consolidated statement of operations. See Note 1.

On a consolidated basis, "adjusted pretax operating income" is a measure not determined in accordance with GAAP. Total adjusted pretax operating income is not a measure of total profitability, and therefore should not be considered in isolation or viewed as a substitute for GAAP pretax income. Our definition of adjusted pretax operating income may not be comparable to similarly-named measures reported by other companies.

Concentration of Risk

As of December 31, 2018, California is the only state that accounted for more than 10% of our mortgage insurance business measured by primary RIF. California accounted for 12.3% of our Mortgage Insurance segment's primary RIF at December 31, 2018, compared to 12.4% at December 31, 2017. California accounted for 11.9% of our Mortgage Insurance segment's direct primary NIW for the year ended December 31, 2018, compared to 14.1% and 14.8% for the years ended December 31, 2017 and 2016, respectively.

There was no single mortgage insurance customer that accounted for more than 10% of NIW or more than 10% of our consolidated revenues (excluding net gains (losses) on investments and other financial instruments) in 2018, 2017 or 2016.

Net premiums earned attributable to foreign countries and long-lived assets located in foreign countries were immaterial for the periods presented.

5. Fair Value of Financial Instruments

The following is a list of assets that are measured at fair value by hierarchy level as of December 31, 2018:

	December 31, 2018		
(In thousands)	Level I	Level II	Total
Assets at Fair Value			
Investment Portfolio:			
U.S. government and agency securities	$199,302	$28,412	$227,714
State and municipal obligations	—	324,742	324,742
Money market instruments	95,132	—	95,132
Corporate bonds and notes	—	2,564,068	2,564,068
RMBS	—	353,224	353,224
CMBS	—	591,393	591,393
Other ABS	—	705,468	705,468
Equity securities	136,662	3,958	140,620
Other investments (1)	—	175,113	175,113
Total Investments at Fair Value (2)	431,096	4,746,378	5,177,474 (3)
Total Assets at Fair Value (4)	$431,096	$4,746,378	$5,177,474 (3)

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(1) Comprising short-term certificates of deposit and commercial paper.

(2) Does not include certain other invested assets of $3.4 million that is primarily invested in limited partnership investments valued using the net asset value as a practical expedient. Includes cash collateral held under securities lending agreements of $11.7 million that is reinvested in money market instruments.

(3) Includes $27.9 million of securities loaned to third-party Borrowers under securities lending agreements, classified as other assets in our consolidated balance sheets. See Note 6 for more information.

(4) Does not include the fair value of an immaterial embedded derivative, which we have accounted for separately as a freestanding derivative and classified in other assets in our consolidated balance sheet. See Note 8 for more information.

The following is a list of those assets that are measured at fair value by hierarchy level as of December 31, 2017:

	December 31, 2017			
(In thousands)	Level I	Level II	Total	
Assets at Fair Value				
Investment Portfolio:				
U.S. government and agency securities	$124,969	$8,023	$132,992	
State and municipal obligations	—	386,111	386,111	
Money market instruments	213,357	—	213,357	
Corporate bonds and notes	—	2,304,017	2,304,017	
RMBS	—	216,749	216,749	
CMBS	—	503,955	503,955	
Other ABS	—	676,158	676,158	
Foreign government and agency securities	—	36,448	36,448	
Equity securities	175,205	860	176,065	
Other investments (1)	—	25,720	25,720	
Total Investments at Fair Value (2)	513,531	4,158,041	4,671,572	(3)
Total Assets at Fair Value	$513,531	$4,158,041	$4,671,572	(3)

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(1) Comprising short-term certificates of deposit and commercial paper.

(2) Does not include certain other invested assets of $0.3 million, primarily invested in limited partnerships, accounted for as cost-method investments and not measured at fair value. Includes cash collateral held under securities lending agreements of $19.4 million reinvested in money market instruments.

(3) Includes $28.0 million of securities loaned to third-party Borrowers under securities lending agreements, classified as other assets in our consolidated balance sheets. See Note 6 for more information.

At December 31, 2018 and 2017, there were no material Level III assets measured at fair value, and no Level III liabilities. There were no investment transfers to or from Level III for the years ended December 31, 2018 and 2017. Activity related to Level III assets and liabilities (including realized and unrealized gains and losses, purchases, sales, issuances, settlements and transfers) was immaterial for the years ended December 31, 2018 and 2017.

Valuation Methodologies for Assets Measured at Fair Value

The following are descriptions of our valuation methodologies for financial assets and liabilities measured at fair value.

We are responsible for the determination of the value of all investments carried at fair value and the supporting methodologies and assumptions. To assist us in this responsibility, we utilize independent third-party valuation service providers to gather, analyze and interpret market information and estimate fair values based upon relevant methodologies and assumptions for various asset classes and individual securities. We perform monthly quantitative and qualitative analyses on the prices received from third parties to determine whether the prices are reasonable estimates of fair value. Our analysis includes: (i) a review of the methodology used by third-party pricing services; (ii) a comparison of pricing services' valuations to other independent sources; (iii) a review of month-to-month price fluctuations; and (iv) a comparison of actual purchase and sale transactions with valuations received from third parties. These processes are designed to ensure that our investment values are accurately recorded, that the data inputs and valuation techniques utilized are appropriate and consistently applied and that the assumptions are reasonable and consistent with the objective of determining fair value.

U.S. government and agency securities. The fair value of U.S. government and agency securities is estimated using observed market transactions, including broker-dealer quotes and actual trade activity as a basis for valuation. U.S.

government and agency securities are categorized in either Level I or Level II of the fair value hierarchy.
State and municipal obligations. The fair value of state and municipal obligations is estimated using recent transaction activity, including market observations. Valuation models are used, which incorporate bond structure, yield curve, credit spreads

and other factors. These securities are generally categorized in Level II of the fair value hierarchy or in Level III when market-based transaction activity is unavailable.

Money market instruments. The fair value of money market instruments is based on daily prices, which are published and available to all potential investors and market participants. As such, these securities are categorized in Level I of the fair value hierarchy.

Corporate bonds and notes. The fair value of corporate bonds and notes is estimated using recent transaction activity, including market observations. Spread models are used that incorporate issuer and structure characteristics, such as credit risk and early redemption features, where applicable. These securities are generally categorized in Level II of the fair value hierarchy or in Level III when market-based transaction activity is unavailable.

RMBS, CMBS, and Other ABS. The fair value of these instruments is estimated based on prices of comparable securities and spreads and observable prepayment speeds. These securities are generally categorized in Level II of the fair value hierarchy or in Level III when market-based transaction activity is unavailable. The fair value of any Level III securities is generally estimated by discounting estimated future cash flows.

Foreign government and agency securities. The fair value of foreign government and agency securities is estimated using observed market yields used to create a maturity curve and observed credit spreads from market makers and broker-dealers. These securities are categorized in Level II of the fair value hierarchy.

Equity securities. The fair value of these securities is generally estimated using observable market data in active markets or bid prices from market makers and broker-dealers. Generally, these securities are categorized in Level I or II of the fair value hierarchy, as observable market data are readily available. From time to time, certain equity securities may be categorized in Level III of the fair value hierarchy due to a lack of market-based transaction data or the use of model-based valuations.

Other investments. These securities primarily consist of commercial paper and short-term certificates of deposit, which are categorized in Level II of the fair value hierarchy. The fair value of these investments is estimated using market data for comparable instruments of similar maturity and average yield.

Other Fair Value Disclosure

The carrying value and estimated fair value of other selected assets and liabilities not carried at fair value in our consolidated balance sheets were as follows as of the dates indicated:

(In thousands)	December 31, 2018		December 31, 2017	
	Carrying Amount	Estimated Fair Value	Carrying Amount	Estimated Fair Value
Assets:				
Other invested assets (1)	$ —	$ —	$ 334	$ 3,226
Liabilities:				
Senior notes	1,030,348	1,007,687	1,027,074	1,093,934

(1) As a result of implementing the update to the standard for the accounting of financial instruments effective January 1, 2018, other invested assets, primarily consisting of investments in limited partnerships, are no longer carried at amortized cost, and instead are valued in our consolidated balance sheets using the net asset value as a practical expedient to estimate fair value.

Senior Notes. The fair value is estimated based on the quoted market prices for the same or similar instruments. See Note 12 for further information.

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6. Investments

Available for Sale Securities

Our available for sale securities within our investment portfolio consisted of the following as of the dates indicated:

(In thousands)	December 31, 2018 Amortized Cost	Fair Value		Gross Unrealized Gains	Gross Unrealized Losses
Fixed-maturities available for sale:					
U.S. government and agency securities	$85,532	$84,070	(1)	$46	$1,508
State and municipal obligations	138,022	138,313		2,191	1,900
Corporate bonds and notes	2,288,720	2,229,885		5,053	63,888
RMBS	334,843	332,142	(2)	1,785	4,486
CMBS	546,729	539,915		544	7,358
Other ABS	712,748	704,662		814	8,900
Total securities available for sale	4,106,594	4,028,987	(3)	10,433	88,040

(1) Includes securities with a fair value of $10.7 million serving as collateral for FHLB advances.
(2) Includes securities with a fair value of $77.7 million serving as collateral for FHLB advances.
(3) Includes $7.4 million of fixed maturity securities loaned to third-party Borrowers under securities lending agreements, classified as other assets in our consolidated balance sheets, as further described below.

(In thousands)	December 31, 2017 Amortized Cost	Fair Value		Gross Unrealized Gains	Gross Unrealized Losses
Fixed-maturities available for sale:					
U.S. government and agency securities	$69,667	$69,396		$96	$367
State and municipal obligations	156,587	161,722		5,834	699
Corporate bonds and notes	1,869,318	1,894,886		33,620	8,052
RMBS	189,455	187,229		636	2,862
CMBS	451,595	453,394		3,409	1,610
Other ABS	672,715	674,548		2,655	822
Foreign government and agency securities	31,417	32,207		823	33
Total fixed-maturities available for sale	3,440,754	3,473,382		47,073	14,445
Equity securities available for sale (2)	176,349	176,065		1,705	1,989
Total debt and equity securities	$3,617,103	$3,649,447	(1)	$48,778	$16,434

(1) Includes $14.7 million of fixed maturity securities and $13.2 million of equity securities loaned to third-party Borrowers under securities lending agreements, classified as other assets in our consolidated balance sheets, as further described below.
(2) Primarily consists of investments in fixed-income and equity exchange-traded funds and publicly-traded business development company equities.

Gross Unrealized Losses and Related Fair Values of Available for Sale Securities

For securities deemed "available for sale" and that are in an unrealized loss position, the following tables show the gross unrealized losses and fair values, aggregated by investment category and length of time that individual securities have been in a continuous unrealized loss position, as of the dates indicated. Included in the amounts as of December 31, 2018, are loaned

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securities under securities lending agreements that are classified as other assets in our consolidated balance sheets, as further described below.

	December 31, 2018								
	Less Than 12 Months			12 Months or Greater			Total		
($ in thousands) Description of Securities	# of securities	Fair Value	Unrealized Losses	# of securities	Fair Value	Unrealized Losses	# of securities	Fair Value	Unrealized Losses
U.S. government and agency securities	2	$27,415	$796	8	$23,476	$712	10	$50,891	$1,508
State and municipal obligations	12	41,263	955	16	39,982	945	28	81,245	1,900
Corporate bonds and notes	330	1,208,430	36,284	126	601,533	27,604	456	1,809,963	63,888
RMBS	15	92,315	782	28	77,395	3,704	43	169,710	4,486
CMBS	62	328,696	3,973	33	125,728	3,385	95	454,424	7,358
Other ABS	129	503,109	7,917	26	89,628	983	155	592,737	8,900
Total	550	$2,201,228	$50,707	237	$957,742	$37,333	787	$3,158,970	$88,040

	December 31, 2017								
	Less Than 12 Months			12 Months or Greater			Total		
($ in thousands) Description of Securities	# of securities	Fair Value	Unrealized Losses	# of securities	Fair Value	Unrealized Losses	# of securities	Fair Value	Unrealized Losses
U.S. government and agency securities	6	$23,309	$ 129	3	$9,799	$ 238	9	$33,108	$367
State and municipal obligations	21	65,898	699	—	—	—	21	65,898	699
Corporate bonds and notes	152	672,318	4,601	32	139,105	3,451	184	811,423	8,052
RMBS	8	19,943	204	26	101,812	2,658	34	121,755	2,862
CMBS	35	139,353	1,395	4	3,518	215	39	142,871	1,610
Other ABS	92	260,864	777	7	8,297	45	99	269,161	822
Foreign government and agency securities	5	7,397	33	—	—	—	5	7,397	33
Equity securities	13	149,785	1,989	—	—	—	13	149,785	1,989
Total	332	$1,338,867	$ 9,827	72	$262,531	$ 6,607	404	$1,601,398	$16,434

Although we held securities in an unrealized loss position as of December 31, 2018, we did not consider those securities to be other-than-temporarily impaired as of such date. For all investment categories, the unrealized losses of 12 months or greater duration as of December 31, 2018 were generally caused by interest rate or credit spread movements since the purchase date, and as such, we expect to recover the amortized cost basis of these securities. As of December 31, 2018, we did not have the intent to sell any debt securities in an unrealized loss position and we determined that it is more likely than not that we will not be required to sell the securities before recovery of their cost basis, which may be at maturity; therefore, we did not consider these investments to be other-than-temporarily impaired at December 31, 2018.

Other-than-temporary Impairment Activity. To the extent we determine that a security is deemed to have had an other-than-temporary impairment, an impairment loss is recognized. While we recognized other-than-temporary impairment losses in

earnings during the years ended December 31, 2018, 2017 and 2016, there were no other-than-temporary impairment losses recognized in accumulated other comprehensive income (loss) for those periods.
For the year ended December 31, 2018, we recorded other-than-temporary impairment losses in earnings of $1.7 million due to our intent to sell certain: (i) corporate bonds and notes and (ii) state and municipal obligations, each with an amortized cost basis greater than their fair value. While we recognized other-than-temporary impairment losses related to our intent to sell securities, there were no credit-related other-than-temporary impairment losses recognized in earnings during the year ended December 31, 2018.
For the year ended December 31, 2017, we recorded other-than-temporary impairment losses in earnings of $1.4 million. These losses comprised $0.4 million due to our intent to sell certain corporate bonds at a loss and $1.0 million due to credit deterioration, which included $0.5 million related to a convertible note of a non-public company issuer included in debt securities and $0.5 million related to a privately-placed equity security.
For the year ended December 31, 2016, we recorded other-than-temporary impairment losses in earnings of $0.5 million due to our intent to sell certain corporate bonds at a loss. While we recognized other-than-temporary impairment losses related to our intent to sell securities in earnings, there were no credit-related other-than-temporary impairment losses recognized in earnings during the year ended December 31, 2016.

Trading Securities

The trading securities within our investment portfolio, which are recorded at fair value, consisted of the following as of the dates indicated:

	December 31,	
(In thousands)	2018	2017
Trading securities:		
State and municipal obligations	$168,359	$214,841
Corporate bonds and notes	228,151	307,271
RMBS	21,083	29,520
CMBS	51,478	50,561
Foreign government and agency securities	—	4,241
Total	$469,071	$606,434 (1)

(1) At December 31, 2017, includes a de minimis amount of loaned securities under securities lending agreements that are classified as other assets in our consolidated balance sheets, as further described below.

Securities Lending Agreements

During the third quarter of 2017, we commenced participation in a securities lending program whereby we loan certain securities in our investment portfolio to Borrowers for short periods of time. These securities lending agreements are collateralized financing arrangements whereby we transfer securities to third parties through an intermediary in exchange for cash or other securities. However, pursuant to the terms of these agreements, we maintain effective control over all loaned securities. Although we report such securities at fair value within other assets in our consolidated balance sheets, rather than in investments, the detailed information provided in this Note includes these securities. See Notes 2 and 9 for additional information.
Under our securities lending agreements, the Borrower is required to provide to us collateral, consisting of cash or securities, in amounts generally equal to or exceeding (i) 102% of the value of the loaned securities (105% in the case of foreign securities) or (ii) another agreed-upon percentage not less than 100% of the market value of the loaned securities. Any cash collateral we receive may be invested in liquid assets.

The Borrower generally may return the loaned securities to us at any time, which would require us to return the collateral within the standard settlement period for the loaned securities on the principal exchange or market in which the securities are traded. We manage this liquidity risk associated with cash collateral by maintaining the cash collateral in a short-term money-market fund with daily availability. The credit risk under these programs is reduced by the amounts of collateral received. On a daily basis, the value of the underlying securities that we have loaned to the Borrowers is compared to the value of cash and securities collateral we received from the Borrowers, and additional cash or securities are requested or returned, as applicable. In addition, we are indemnified against counterparty credit risk by the intermediary.

Key balances related to our securities lending agreements at December 31, 2018, consisted of the following:

(In thousands)	December 31, 2018	December 31, 2017
Loaned securities: (1)		
U.S. government and agency securities	$ 9,987	$ —
Corporate bonds and notes	7,818	13,862
Foreign government and agency securities	—	867
Equity securities	10,055	13,235
Total loaned securities, at fair value	$ 27,860	$ 27,964
Total loaned securities, at amortized cost	$ 28,992	27,846
Securities collateral on deposit from Borrowers (2)	16,815	9,342
Reinvested cash collateral, at estimated fair value (3)	11,699	19,357

(1) Our securities loaned under securities lending agreements are reported at fair value within other assets in our consolidated balance sheets. All of our securities lending agreements are classified as overnight and revolving. None of the amounts are subject to offsetting.

(2) Securities collateral on deposit with us from Borrowers may not be transferred or re-pledged unless the Borrower is in default, and is therefore not reflected in our consolidated financial statements.

(3) All cash collateral received has been reinvested in accordance with the securities lending agreements and is included in short-term investments in our consolidated balance sheets. Amounts payable on the return of cash collateral under securities lending agreements are included within other liabilities in our consolidated balance sheets.

Net Investment Income

Net investment income consisted of:

	Year Ended December 31,		
(In thousands)	2018	2017	2016
Investment income:			
Fixed-maturities	$141,552	$122,890	$115,880
Equity securities	7,157	4,318	86
Short-term investments	10,270	5,453	3,086
Other	976	987	1,161
Gross investment income	159,955	133,648	120,213
Investment expenses	(7,480)	(6,400)	(6,747)
Net investment income	$152,475	$127,248	$113,466

Net Gains (Losses) on Investments and Other Financial Instruments

Net realized and unrealized gains (losses), including impairment losses, on investments and other financial instruments consisted of:

(In thousands)	Year Ended December 31, 2018	2017	2016
Net realized gains (losses) on investments:			
Fixed-maturities available for sale (1)	$(11,256)	$(3,014)	$4,160
Trading securities	(1,840)	(5,995)	(237)
Equity securities	532	368	(170)
Short-term investments	(10)	(16)	(135)
Other invested assets	414	22	631
Other gains (losses)	66	32	64
Net realized gains (losses) on investments	(12,094)	(8,603)	4,313
Other-than-temporary impairment losses	(1,744)	(1,420)	(526)
Net unrealized gains (losses) on investment securities (2)	(27,287)	13,230	27,217
Total net gains (losses) on investments	(41,125)	3,207	31,004
Net gains (losses) on other financial instruments	(1,351)	414	(253)
Net gains (losses) on investments and other financial instruments	$(42,476)	$3,621	$30,751

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(1) Components of net realized gains (losses) on fixed-maturities available for sale include:

(In thousands)	Year Ended December 31, 2018	2017	2016
Gross investment gains from sales and redemptions	$1,986	$6,052	$10,326
Gross investment losses from sales and redemptions	(13,242)	(9,066)	(6,166)

(2) These amounts include unrealized gains (losses) on investment securities other than securities available for sale. For 2017 and 2016, the unrealized gains (losses) on investments exclude the net change in unrealized gains and losses on equity securities. Prior to the implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized gains (losses) associated with equity securities were classified in accumulated other comprehensive income.

Net Unrealized Gains (Losses) on Investment Securities

For each period indicated, the net change in unrealized gains (losses) on investment securities shown below represents a component of net gains (losses) on investments and other financial instruments. The net change in unrealized gains (losses) on trading securities and equity securities that were still held at each period end were as follows:

(In thousands)	Year Ended December 31, 2018	2017	2016
Net changes in unrealized gains (losses):			
Trading securities	$(16,462)	$8,827	$16,850
Equity securities (1)	(8,886)	—	—
Net changes in unrealized gains (losses) on investment securities	$(25,348)	$8,827	$16,850

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(1) Prior to the implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized losses associated with equity securities were classified in accumulated other comprehensive income.

Change in Unrealized Gains (Losses) Recorded in Accumulated Other Comprehensive Income (Loss)
The change in unrealized gains (losses) recorded in accumulated other comprehensive income (loss) consisted of the following:

(In thousands)	Year Ended December 31, 2018	2017	2016
Fixed-maturities:			
Unrealized holding gains (losses) arising during the period, net of tax	$(97,356)	$32,147	$8,822
Less reclassification adjustment for net gains (losses) included in net income (loss), net of tax	(10,270)	(2,556)	2,361
Net unrealized gains (losses) on investments, net of tax	$(87,086)	$34,703	$6,461
Equities (1):			
Unrealized holding gains (losses) arising during the period, net of tax	$—	$(244)	$(40)
Less reclassification adjustment for net gains (losses) included in net income (loss), net of tax	—	(86)	(110)
Net unrealized gains (losses) on investments, net of tax	$—	$(158)	$70

(1) Prior to our implementation of the update to the standard for the accounting of financial instruments effective January 1, 2018, the unrealized losses associated with equity securities were classified in accumulated other comprehensive income. Effective January 1, 2018, we measure our equity investments at fair value, with changes in fair value recognized in net income.

Contractual Maturities
The contractual maturities of fixed-maturity investments available for sale as follows:

(In thousands)	December 31, 2018 Amortized Cost	Fair Value
Due in one year or less	$56,350	$56,067
Due after one year through five years (1)	933,807	920,173
Due after five years through ten years (1)	1,142,145	1,107,129
Due after ten years (1)	379,972	368,899
RMBS (2)	334,843	332,142
CMBS (2)	546,729	539,915
Other ABS (2)	712,748	704,662
Total (3)	$4,106,594	$4,028,987

(1) Actual maturities may differ as a result of calls before scheduled maturity.
(2) RMBS, CMBS, and Other ABS are shown separately, as they are not due at a single maturity date.
(3) Available for sale includes securities loaned under securities lending agreements with a fair value of $7.4 million.

Other
As of December 31, 2018 and 2017, our investment portfolio included no securities of countries that have obligations that have been under particular stress due to economic uncertainty, potential restructuring and ratings downgrades. For the years ended December 31, 2018, 2017 and 2016, we did not sell or transfer any fixed-maturity investments classified as held to maturity. For the years ended December 31, 2018, 2017 and 2016, we did not transfer any securities from the available for sale or trading categories.

As of December 31, 2018, we did not have any investment in any person (including affiliates thereof) that exceeded 10% of our total stockholders' equity.

As of December 31, 2018, Radian had an aggregate amount of $88.4 million of U.S. government and agency securities and RMBS, classified as fixed-maturities available for sale within our investment securities portfolio, serving as collateral for our FHLB advances. There were no FHLB advances outstanding at December 31, 2017. See Note 13 for additional information.
Our investments include securities on deposit with various state insurance commissioners of $17.6 million and $11.8 million at December 31, 2018 and 2017, respectively.

7. Goodwill and Other Acquired Intangible Assets, Net

All of our goodwill and other acquired intangible assets relate to our Services segment. The following table shows the changes in the carrying amount of goodwill as of and for the years ended December 31, 2018 and 2017:

(In thousands)	Goodwill	Accumulated Impairment Losses	Net
Balance at December 31, 2016	$197,265	$(2,095)	$195,170
Goodwill acquired	126	—	126
Impairment losses	—	(184,374)	(184,374)
Balance at December 31, 2017	197,391	(186,469)	10,922
Goodwill acquired	3,170	—	3,170
Balance at December 31, 2018	$200,561	$(186,469)	$14,092

The following is a summary of the gross and net carrying amounts and accumulated amortization of our other acquired intangible assets as of the periods indicated:

	December 31, 2018		
(In thousands)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Client relationships	$84,000	$(48,227) (1)	$35,773
Technology	17,362	(13,141) (2)	4,221
Trade name and trademarks	8,340	(3,864)	4,476
Non-competition agreements	185	(177)	8
Licenses	463	(35)	428
Total	$110,350	$(65,444)	$44,906

	December 31, 2017		
(In thousands)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Client relationships	$82,530	$(41,596) (1)	$40,934
Technology	15,250	(8,922) (2)	6,328
Trade name and trademarks	8,340	(3,003)	5,337
Client backlog	6,680	(6,006)	674
Non-competition agreements	185	(168)	17
Total	$112,985	$(59,695)	$53,290

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(1) Includes an impairment charge of $14.9 million in the quarter ended June 30, 2017.
(2) Includes an impairment charge of $0.9 million in the quarter ended June 30, 2017.

For the years ended December 31, 2018, 2017 and 2016, amortization expense was $12.4 million, $11.8 million and $13.2 million, respectively. The estimated aggregate expense for 2019 and thereafter is as follows:

(In thousands)	
2019	$8,688
2020	7,321
2021	5,907
2022	5,375
2023	4,923
Thereafter	12,692
Total	$44,906

Accounting Policy Considerations

Goodwill is an asset representing the estimated future economic benefits arising from the assets we have acquired that are not individually identified and separately recognized, and includes the value of the discounted expected future cash flows from these businesses, the workforce, expected synergies with our other affiliates and other unidentifiable intangible assets. Goodwill is deemed to have an indefinite useful life and is subject to review for impairment annually, or more frequently, whenever events and circumstances indicate potential impairment.

In the second quarter of 2017, we elected to early adopt the update to the accounting standard regarding goodwill and other intangibles, as discussed in Note 2. In accordance with the updated standard, our goodwill impairment test is a two-step process. Step one compares a reporting unit's estimated fair value to its carrying value. If the carrying amount exceeds the estimated fair value, the second step must be completed to measure the amount of the reporting unit's goodwill impairment loss, if any. Any excess of the reporting unit's carrying amount over its estimated fair value is recognized as an impairment charge, up to the full amount of the goodwill allocated to the reporting unit, after adjusting the carrying value for any impairment of other intangibles or long-lived assets. For purposes of performing our goodwill impairment test, we have concluded that the Services segment constitutes one reporting unit to which all of our recorded goodwill is related.

We generally perform our annual goodwill impairment test during the fourth quarter of each year, using balances as of the prior quarter. However, if there are events and circumstances that indicate that it is more likely than not that the fair value of a reporting unit is less than the carrying amount, we will perform additional analysis on an interim basis. As part of our goodwill impairment assessment, we estimate the fair value of the reporting unit using primarily an income approach and, at a lower weighting, a market approach. The key driver in our fair value analysis is forecasted future cash flows.

For financial reporting purposes, other acquired intangible assets with finite lives will be amortized over their applicable estimated useful lives in a manner that approximates the pattern of expected economic benefit from each intangible asset, as follows:

	Estimated Useful Life	
Client relationships	5 years	- 15 years
Technology	3 years	- 8 years
Trade name and trademarks	6 years	- 10 years
Licenses	10 years	
Non-competition agreements	2 years	- 3 years

For additional information on our accounting policies for goodwill and other acquired intangible assets, see Note 2.

Impairment Analysis

2018 Activity

Goodwill. We conducted our annual goodwill impairment analysis in the fourth quarter of 2018. Although the goodwill associated with our fourth quarter 2018 acquisitions is included in our goodwill as of December 31, 2018, these recent acquisitions were excluded from our impairment analysis as of the measurement date.

As part of our annual goodwill impairment assessment in 2018, we estimated the fair value of the reporting unit using primarily an income approach and, to a lesser extent, a market approach. The key factor in our fair value analysis was forecasted future cash flows, which were less than originally had been expected at the acquisition date. We considered both positive and negative factors and concluded that, after considering all of the factors and evidence available, there is no impairment of goodwill as of December 31, 2018 because the estimated fair value of the reporting unit exceeded our carrying amount.

Other Acquired Intangible Assets. As of December 31, 2018, we also evaluated the recoverability of our other acquired intangible assets. Factors affecting the estimated fair value of our goodwill, as described above, were also considered in estimating the recoverability of our other acquired intangible assets. Based on our analysis, there was no impairment indicated for other acquired intangible assets, as the carrying amounts were estimated to be recoverable from future cash flows. As of December 31, 2018, the balance of client relationships and technology includes recently acquired assets from our fourth quarter 2018 acquisitions. These recently acquired assets were excluded from our recoverability analysis.

2017 Activity

Goodwill. We performed an interim goodwill impairment test as of June 30, 2017, due to events and circumstances identified during our June 30, 2017 qualitative analysis that indicated that it was more likely than not that the fair value was less than the carrying amount. We performed our qualitative assessment of goodwill at June 30, 2017, focusing on the impact of certain key factors affecting our Services segment, including: (i) decisions related to changes in the business strategy for our Services segment determined in the second quarter of 2017, following our Chief Executive Officer’s evaluation of both existing products and new product development opportunities and (ii) second quarter 2017 results for our Services segment which were negatively impacted by market trends. Our expectation that these market trends would persist negatively impacted our projected future cash flows compared to the projections used in our prior valuation.

Our Chief Executive Officer joined Radian in March 2017 and initiated a review to evaluate the strategic direction of the Services segment. Based on this strategic review, in the second quarter of 2017, we made several decisions with respect to business strategy for the segment in order to reposition the Services business to drive future growth and profitability. We determined to: (i) discontinue certain initiatives, as discussed below and (ii) shift the strategy of the Services segment to focus on core products and services that, in the current market environment, are expected to have higher growth potential, to produce more predictable, recurring revenue streams over time and to better align with our market expertise and the needs of our customers. Our strategic decisions included an intent to scale back or, in certain cases, discontinue certain planned or existing initiatives, such as discontinuing a new product line which, based on a market study received in the second quarter of 2017, would have required significant additional investment to achieve the growth rates that had been expected. The impact of the strategic decisions determined during the second quarter resulted in a meaningful reduction in the fair value of the Services segment since the previous annual impairment test.

During the second quarter of 2017, the Services segment performed below forecasted levels. In combination with the recent underperformance of the Services segment, the anticipated business and growth opportunities for certain business lines in our Services segment had been impacted by: (i) market demand, which was lower than anticipated; (ii) increased competition, including with respect to product alternatives and pricing; and (iii) delays in the realization of efficiencies and margin improvements associated with certain technology initiatives. The demand for certain products and services had decreased due to several factors. Given the decreased volume of refinancings in the mortgage market that began in the first half of 2017, our customers had excess internal capacity which they were choosing to utilize and as a result they were less reliant on outsourcing to us. Additionally, due to market and competitive pressures, we renewed the contract terms with one of our largest customers during the second quarter of 2017, with lower pricing and volumes than expected in order to retain the engagement. We also experienced lower than expected customer acceptance for certain of our current and proposed products and services. The impact of these

factors, partially offset by related future expense reductions, constituted a majority of the decline in the fair value of the Services segment since the previous annual impairment test.

Our quantitative valuation analysis, performed in connection with our annual goodwill impairment analysis in 2016, relied heavily on achieving the growth rates in our projected future cash flows. The impact of the market trends observed during the second quarter of 2017, which we expected to continue, together with our strategic decisions discussed above, resulted in changes to our expected product mix and the expected growth rates associated with various initiatives, which in turn generated material reductions to our forecasted net cash flows. Given the significant negative impact that the market trends and our strategic decisions would have on the timing and amount of our projected future cash flows in comparison to our original projections, we performed a quantitative analysis of the associated goodwill and other acquired intangible assets as of June 30, 2017.

As a result of the quantitative goodwill analysis, we recorded an impairment charge of $184.4 million for the three months ended June 30, 2017, to reduce the carrying amount of the Services segment to its estimated fair value. As discussed further below, prior to finalizing this amount, we also evaluated the recoverability of the segment's other acquired intangible assets and recorded impairment charges of $15.8 million related to the Services segment's other acquired intangible assets. See "*—Other Acquired Intangible Assets*," below. Substantially all of our goodwill and other acquired intangible assets will continue to be deductible for tax purposes in accordance with the originally scheduled amortization period of approximately 15 years.

During the fourth quarter of 2017, we elected to perform a qualitative annual goodwill impairment analysis, which requires us to assess all relevant events and circumstances that could affect the significant inputs used to determine the fair value of the reporting unit. We considered factors such as: (i) the increase in and timing of revenues during the third and fourth quarters of 2017 (as compared to the forecasted amounts for the same periods); (ii) the impact to projected cash flows, a significant input used to determine the fair value of the reporting unit, associated with the TCJA enacted in the fourth quarter of 2017; (iii) our recent interim goodwill impairment test and recognition of impairment charges; and (iv) the recent sale of a business line. Based on our qualitative assessment in the fourth quarter of 2017, we concluded that it was not "more likely than not" that the fair value of the Services reporting unit was less than its carrying amount as of December 31, 2017.

O*ther Acquired Intangible Assets.* As of June 30, 2017, we evaluated the recoverability of our other acquired intangible assets. Factors affecting the estimated fair value of our goodwill, as described above, also affected the estimated recoverability of our other acquired intangible assets. Based on our analysis in the second quarter of 2017, impairment was indicated for the Services segment's client relationships and technology, related to certain product lines that were affected by the factors above. There was no impairment indicated for the remaining intangible assets, as the remaining carrying amounts were estimated to be recoverable despite the decline in projected earnings.

Client relationships represent the value of the specifically acquired customer relationships and are valued using the excess earnings approach using estimated client revenues, attrition rates, implied royalty rates and discount rates. The excess earnings approach estimates the present value of expected earnings in excess of a traditional return on business assets. For the three months ended June 30, 2017, we recorded an impairment charge of $14.9 million related to the segment's client relationships, primarily due to the changes in estimated client revenues based on the factors discussed above. The remaining carrying value of client relationships is supported by projected earnings.

For the three months ended June 30, 2017, we also recorded an impairment charge of $0.9 million related to technology, representing the estimated unrecoverable value of a portion of the acquired proprietary software used to provide services in a product line impacted by the factors described above. The remaining carrying value of technology was supported by technology that we expected to continue to use in its current form, in either the same or an alternative capacity.

8. Reinsurance

In our mortgage insurance business, we use reinsurance as part of our risk distribution strategy, including to manage our capital position and risk profile. Premiums are ceded under the Single Premium QSR Program, the QSR Program and the Excess-of-Loss Program.

The effect of reinsurance on our mortgage insurance net premiums written and earned is as follows:

(In thousands)	Year Ended December 31, 2018	2017	2016
Net premiums written—insurance:			
Direct	$1,082,285	$1,032,735	$1,000,111
Assumed	6,901 (1)	25	29
Ceded (2)	(98,165)	(214,343)	(266,306)
Net premiums written—insurance	$991,021	$818,417	$733,834
Net premiums earned—insurance:			
Direct	$1,066,864	$990,016	$999,093
Assumed	6,904 (1)	28	35
Ceded (2)	(67,047)	(57,271)	(77,359)
Net premiums earned—insurance	$1,006,721	$932,773	$921,769

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(1) Includes premiums earned from our participation in certain Front-end and Back-end credit risk transfer programs.
(2) Net of profit commission.

Single Premium QSR Program

2016 Single Premium QSR Agreement. In the first quarter of 2016, in order to proactively manage the risk and return profile of Radian Guaranty's insured portfolio and continue managing its capital position under the PMIERs financial requirements in a cost-effective manner, Radian Guaranty entered into the 2016 Single Premium QSR Agreement with a panel of third-party reinsurers. Under the 2016 Single Premium QSR Agreement, effective January 1, 2016, Radian Guaranty began ceding the following Single Premium IIF and NIW, subject to certain conditions:

- 20% of its existing performing Single Premium Policies written between January 1, 2012 and March 31, 2013;
- 35% of its existing performing Single Premium Policies written between April 1, 2013 and December 31, 2015; and
- 35% of its Single Premium NIW from January 1, 2016 to December 31, 2017, subject to a limitation on ceded premiums written equal to $195 million for policies issued between January 1, 2016 and December 31, 2017.

Radian Guaranty receives a 25% ceding commission for premiums ceded pursuant to this transaction. Radian Guaranty also receives a profit commission, provided that the loss ratio on the loans covered under the agreement generally remains below 55%. Losses on the ceded risk above this level reduce Radian Guaranty's profit commission on a dollar-for-dollar basis.

The agreement is scheduled to terminate on December 31, 2027; however, Radian Guaranty has the option, based on certain conditions and subject to a termination fee, to terminate the agreement as of January 1, 2020, or at the end of any calendar quarter thereafter, which would result in Radian Guaranty reassuming the related RIF in exchange for a net payment from the reinsurer calculated in accordance with the terms of the agreement.

Effective December 31, 2017, we amended the 2016 Single Premium QSR Agreement to increase the amount of ceded risk on performing loans under the agreement from 35% to 65% for the 2015 through 2017 vintages. As of the effective date, the result of this amendment increased the amount of risk ceded on Single Premium Policies, including for the purposes of calculating any future ceding commissions and profit commissions that Radian Guaranty will earn. It also increased the future amounts of our ceded premiums and ceded losses. RIF ceded under the 2016 Single Premium QSR Agreement was $6.3 billion as of December 31, 2018, compared to $6.9 billion and $3.8 billion as of December 31, 2017 and 2016, respectively.

2018 Single Premium QSR Agreement. In October 2017, we entered into the 2018 Single Premium QSR Agreement with a panel of third-party reinsurers. Under the 2018 Single Premium QSR Agreement, we expect to cede 65% of our Single Premium NIW beginning with the business written in January 2018, subject to certain conditions that may

affect the amount ceded, including a limitation on ceded premiums written equal to $335 million for policies issued between January 1, 2018 and December 31, 2019. Notwithstanding this limitation, the parties may mutually agree to amend the agreement, including with respect to any limitations on the amounts of insurance that may be ceded.

Radian Guaranty receives a 25% ceding commission for premiums ceded pursuant to this transaction. Radian Guaranty also receives an annual profit commission based on the performance of the loans subject to the agreement, provided that the loss ratio on the subject loans is below 56% for that calendar year. Radian Guaranty may discontinue ceding new policies under the agreement at the end of any calendar quarter.

The agreement is scheduled to terminate on December 31, 2029. However, Radian Guaranty may terminate this agreement prior to the scheduled date if one or both of the GSEs no longer grant full credit for the reinsurance. Radian Guaranty also has the option, based on certain conditions and subject to a termination fee, to terminate the agreement as of January 1, 2022, or at the end of any calendar quarter thereafter. Termination of the agreement would result in Radian Guaranty reassuming the related RIF in exchange for a net payment from the reinsurer calculated in accordance with the terms of the agreement. RIF ceded under the 2018 Single Premium QSR Agreement was $1.9 billion as of December 31, 2018.

QSR Program

In 2012, Radian Guaranty entered into the QSR Program with a third-party reinsurance provider. Radian Guaranty has ceded the maximum amount permitted under the QSR Program and is no longer ceding NIW under this program. RIF ceded under the QSR Program was $0.9 billion, $1.2 billion and $1.6 billion as of December 31, 2018, 2017 and 2016, respectively.

Ceded Premiums, Commissions and Losses

The following tables show the amounts related to the Single Premium QSR Program and the QSR Program for the periods indicated:

	Single Premium QSR Program			QSR Program		
	Year Ended December 31,			Year Ended December 31,		
(In thousands)	2018	2017	2016	2018	2017	2016
Ceded premiums written (1)	$74,876	$193,517	$233,206	$13,486	$19,356	$28,097
Ceded premiums earned (1)	44,286	27,284	29,808	19,660	28,503	42,515
Ceding commissions written	29,745	55,333	66,153	3,890	5,536	8,019
Ceding commissions earned (2)	22,097	13,774	15,303	11,349	13,122	16,573
Ceded losses	4,574	2,490	2,262	512	771	1,858

(1) Net of profit commission.
(2) Includes amounts reported in policy acquisition costs and other operating expenses.

Excess-of-Loss Program

In November 2018, Radian Guaranty entered into a fully collateralized reinsurance agreement with Eagle Re, an unaffiliated special purpose reinsurer domiciled in Bermuda. This reinsurance agreement provides for up to $434.0 million of aggregate excess-of-loss reinsurance coverage for the applicable percentage of mortgage insurance losses on new defaults on an existing portfolio of eligible Monthly Premium Policies issued between January 1, 2017 and January 1, 2018, with an initial RIF of $9.1 billion. In addition, Radian Guaranty entered into a separate excess-of-loss reinsurance agreement for up to $21.4 million of coverage, representing a pro rata share of the credit risk alongside the risk assumed by Eagle Re on those Monthly Premium Policies.

Radian Guaranty and its affiliates have retained the first-loss layer of $204.9 million of aggregate losses. Eagle Re and a separate third-party reinsurer provide 90% and 10% coverage, respectively, on the mezzanine layer of up to $214.1 million of losses (in excess of the retained losses of $204.9 million). Eagle Re also provides 100% coverage on the next layer of $241.4 million of aggregate losses. Radian Guaranty and its affiliates will then retain losses in excess of the outstanding reinsurance coverage amount. The aggregate excess of loss reinsurance coverage decreases over a ten-year period as the principal balances of the underlying covered mortgages decrease and as claims are paid by

Eagle Re. The outstanding reinsurance coverage amount will stop amortizing if certain thresholds are reached, such as if the reinsured mortgages were to experience an elevated level of delinquencies or certain credit enhancement tests were not maintained. Radian Guaranty has rights to terminate the reinsurance agreement upon the occurrence of certain events, including an option to terminate on or after November 25, 2023.

Eagle Re financed its coverage by issuing mortgage insurance-linked notes in an aggregate amount of $434.0 million to unaffiliated investors. The notes mature on November 25, 2028, but are subject to earlier termination by Eagle Re, upon Radian Guaranty's exercise of its rights to terminate the reinsurance agreement. The notes are non-recourse to any assets of Radian Guaranty or its affiliates. The proceeds of the notes have been deposited into a reinsurance trust account for the benefit of Radian Guaranty, and are required to be the source of reinsurance claim payments to Radian Guaranty and principal repayments on the mortgage insurance-linked notes. Funds in the reinsurance trust account are required to be invested in U.S. government money market funds, cash or U.S. Treasury securities at all times.

The reinsurance premium due to Eagle Re is calculated by multiplying the outstanding reinsurance coverage amount at the beginning of a period by a coupon rate, which is the sum of one-month LIBOR plus a contractual risk margin, and then subtracting actual investment income collected on the assets in the reinsurance trust during the preceding month. As a result, the premiums we pay will vary based on (i) the spread between LIBOR and the rates on the investments held by the reinsurance trust and (ii) the outstanding amount of reinsurance coverage. Radian Guaranty will also pay an additional annual premium to reimburse Eagle Re for expenses in connection with the issuance of the Notes and Eagle Re's annual anticipated operating expenses, which are not expected to be material. If the reinsurance agreement is not terminated after five years from issuance, the reinsurance premium's risk margin payable to Eagle Re increases by 50%.

In connection with our excess of loss reinsurance agreement with Eagle Re, we concluded that (i) the risk transfer requirements for reinsurance accounting were met as Eagle Re is assuming significant insurance risk and has a reasonable possibility of a significant loss; and (ii) Eagle Re is a variable interest entity ("VIE"). Based on the accounting guidance that addresses VIEs, because Radian does not have: (i) the power to direct the activities of Eagle Re that most significantly affect its economic performance or (ii) the obligation to absorb losses or the right to receive benefits from Eagle Re that potentially could be significant to Eagle Re, we have not consolidated Eagle Re in our consolidated financial statements. We have also concluded that the reinsurance agreement contains an embedded derivative, which we have accounted for separately as a freestanding derivative. See Note 2 for additional accounting policy information.

Although the risk transfer requirements for reinsurance accounting have been met and there is also no recourse to Radian Guaranty by the holders of the mortgage insurance-linked notes, reinsurance does not relieve us of our obligations to our policyholders. In the event the VIE is unable to meet its obligations to us, our insurance subsidiaries would be liable to make claims payments to our policyholders. In the event that all of the assets in the reinsurance trust (consisting of U.S. government money market funds, cash or U.S. Treasury securities) have become worthless and the VIE is unable to make its payments to us, our maximum potential loss would be the amount of mortgage insurance claim payments for losses on the insured policies, net of the aggregate reinsurance payments already received, up to the full $434.0 million aggregate excess-of-loss reinsurance coverage amount. In the same scenario, the related embedded derivative of $1.1 million, currently recorded in other assets, would no longer have value.

Eagle Re represents our only variable interest entity as of December 31, 2018. The following table presents Eagle Re's total assets as well as Radian Guaranty's maximum exposure to loss associated with Eagle Re, each as of December 31, 2018.

		Maximum Exposure to Loss		
(In thousands)	**Total VIE Assets (1)**	**On - Balance Sheet**	**Off - Balance Sheet (3)**	**Total**
Eagle Re	$434,034	$1,114 (2)	$434,034	435,148
Total	$434,034	$1,114	$434,034	435,148

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(1) Eagle Re's assets are required to be invested in U.S. government money market funds, cash or U.S. Treasury securities. Eagle Re's liabilities consist of its mortgage insurance-linked notes of $434.0 million, as described

above.

(2) Represents the fair value of the related embedded derivative, included in other assets in our consolidated balance sheets.

(3) Represents the maximum amount that would be payable in the future by Radian Guaranty to its policyholders on claims, without the benefit of any corresponding reinsurance recoverables, in the event of the combination of two events: (i) all of the assets in the reinsurance trust (consisting of U.S. government money market funds, cash or U.S. Treasury securities) have become worthless and (ii) $660.4 million of claims have been paid on the reinsured RIF.

Collateral

Although we use reinsurance as one of our risk management tools, reinsurance does not relieve us of our obligations to our policyholders. In the event the reinsurers are unable to meet their obligations to us, our insurance subsidiaries would be liable for any defaulted amounts. However, in all of our reinsurance transactions, the reinsurers have established a trust to help

secure our potential cash recoveries. In addition, for the Single Premium QSR Program, Radian Guaranty holds amounts received from ceded premiums written to collateralize the reinsurers' obligations, which is reported in reinsurance funds withheld on our consolidated balance sheets. Any loss recoveries and profit commissions to Radian Guaranty related to the Single Premium QSR Program are expected to be realized from this account.

Other

In our title insurance business, we also use reinsurance as part of our risk distribution strategy. EnTitle Insurance's reinsurance agreement with a third-party reinsurer provides for coverage of 100% of losses in excess of $1.0 million ultimate net loss on a per claim basis, subject to certain aggregate limits. For the year ended December 31, 2018, the effect of this agreement was immaterial to our results of operations. In addition, on March 27, 2018, EnTitle Insurance entered into a loss portfolio transfer reinsurance transaction in which all policies issued by EnTitle Insurance and outstanding at the time, subject to certain limitations, became reinsured by a third party.

9. Other Assets

The following table shows the components of other assets for the periods indicated:

	December 31,	
(In thousands)	2018	2017
Deposit with the IRS (1)	$—	$88,557
Company-owned life insurance	83,377	85,862
Internal-use software (2)	51,367	48,751
Current federal income tax receivable (1)	44,506	—
Property and equipment (3)	37,090	38,291
Accrued investment income	34,878	31,389
Loaned securities (Note 6)	27,860	27,964
Unbilled receivables	19,917	22,257
Deferred policy acquisition costs	17,311	16,987
Reinsurance recoverables	14,402	8,492
Other	36,992	39,299
Total other assets	$367,700	$407,849

(1) In 2018, Radian utilized its "qualified deposits" with the U.S. Treasury to settle its $31 million obligation to the IRS, and in 2019, the Company expects the IRS to refund to Radian the remaining $58 million that was previously on deposit. As such, the remaining balances of the deposits with the IRS as of December 31, 2018 are included in current federal income tax receivable. In January 2019, we received $33 million of the $58 million refund from the IRS and expect to receive the remaining $25 million in the coming months. See Note 10 for additional information regarding the IRS Matter.

(2) Internal-use software, at cost, has been reduced by accumulated amortization of $60.3 million and $48.4 million at December 31, 2018 and 2017, respectively, as well as $5.1 million of impairment charges in 2018. Amortization expense was $11.4 million, $10.7 million and $6.0 million for the years ended December 31, 2018, 2017 and 2016 respectively.

(3) Property and equipment at cost, less accumulated depreciation of $62.9 million and $57.6 million at December 31, 2018 and 2017, respectively. Depreciation expense was $8.0 million, $6.9 million and $5.6 million for the years ended December 31, 2018, 2017 and 2016 respectively.

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10. Income Taxes

Income Tax Provision

The components of our consolidated income tax provision from continuing operations are as follows:

	Year Ended December 31,		
(In thousands)	2018	2017	2016
Current provision (benefit)	$(42,398)	$59,122	$4,546
Deferred provision	120,573	166,527	170,887
Total income tax provision	$78,175	$225,649	$175,433

The reconciliation of taxes computed at the statutory tax rate of 21% in 2018 and 35% in 2017 and 2016 to the provision for income taxes is as follows:

	Year Ended December 31,		
(In thousands)	2018	2017	2016
Provision for income taxes computed at the statutory tax rate	$143,679	$121,358	$169,290
Change in tax resulting from:			
Repurchase premium on convertible notes	—	(96)	9,988
State tax provision (benefit), net of federal impact	5,570	(15,641)	(8,974)
Valuation allowance	(1,856)	18,197	10,663
Remeasurement of net deferred tax assets due to the TCJA	—	102,617	—
Impact related to settlement of IRS Matter	(73,585)	—	—
Other, net	4,367	(786)	(5,534)
Provision for income taxes	$78,175	$225,649	$175,433

Deferred Tax Assets and Liabilities

The significant components of our net deferred tax assets and liabilities from continuing operations are summarized as follows:

(In thousands)	December 31, 2018	2017
Deferred tax assets:		
Accrued expenses	$17,487	$30,267
Unearned premiums	34,686	35,035
Differences in fair value of financial instruments	1,115	—
Net unrealized loss on investments	16,297	—
State income taxes	67,069	68,577
Partnership investments	—	47,991
Loss reserves	1,044	1,397
Alternative minimum tax credit carryforward	—	57,086
Goodwill and intangibles	35,068	36,947
Deferred policy acquisition and ceding commission costs	15,288	14,888
Share-based compensation	10,776	10,190
Other	13,091	16,421
Total deferred tax assets	211,921	318,799
Deferred tax liabilities:		
Partnership investments	639	—
Differences in fair value of financial instruments	—	3,833
Net unrealized gain on investments	—	6,792
Depreciation	12,201	11,138
Other	2,942	2,446
Total deferred tax liabilities	15,782	24,209
Less: Valuation allowance	64,496	65,023
Net deferred tax asset	$131,643	$229,567

Tax Reform

On December 22, 2017, H.R.1, the TCJA, was signed into law. In accordance with the provisions of the accounting standard regarding accounting for income taxes, changes in tax rates and tax law are accounted for in the period of enactment, which, for federal legislation, is the date the President signed the bill into law. Effective January 1, 2018, the TCJA, among other things, reduced the federal corporate income tax rate from 35% to 21%, repealed the corporate alternative minimum tax and modified certain limitations on executive compensation. Under GAAP, the effect of tax rate changes on deferred tax balances is recorded as a component of the income tax provision related to continuing operations for the period in which the new tax law is enacted.

Accordingly, in 2017, we recognized a non-cash income tax expense of $102.6 million related to the remeasurement of our net deferred tax assets, which was included as a component of the income tax provision for the year ended December 31, 2017. Additionally, as a result of finalizing our interpretation of related guidance, we completed our accounting in the fourth quarter of 2018 during the one-year measurement period from the enactment date, as provided under Staff Accounting Bulletin No. 118, “Income Tax Accounting Implications of the Tax Cuts and Jobs Act,” issued by the SEC staff in December 2017. No material adjustments to our provisional amounts were required.

For periods beginning after December 31, 2017, we began realizing a significant reduction in our annualized effective tax rate, before considering Discrete Items, primarily due to the reduction in the federal corporate tax rate from 35% to

21%.

Current and Deferred Taxes

As of December 31, 2018, we recorded a net current income tax receivable of $43.8 million, which primarily relates to the unused portion of our qualified deposits relating to our IRS settlement, partially offset by liabilities of $33.6 million related to applying the standards of accounting for uncertainty in income taxes. We have $2.2 million of U.S. NOL carryforwards, related to our March 2018 acquisition of EnTitle, which is subject to limitation under IRC Section 382. To the extent not utilized, the U.S. NOL carryforwards will expire by tax year 2038. Certain entities within our consolidated group have also generated deferred tax assets of approximately $67.7 million, relating primarily to state and local NOL carryforwards which, if unutilized, will expire during various future tax periods.

Valuation Allowances

We are required to establish a valuation allowance against our deferred tax assets when it is more likely than not that all or some portion of our deferred tax assets will not be realized. At each balance sheet date, we assess our need for a valuation allowance. Our assessment is based on all available evidence, both positive and negative. This requires management to exercise judgment and make assumptions regarding whether our deferred tax assets will be realized in future periods. We have determined that certain non-insurance entities within Radian may continue to generate taxable losses on a separate company basis in the near term and may not be able to fully utilize certain state and local NOLs on their state and local tax returns. Therefore, with respect to deferred tax assets relating to these state and local NOLs and other state timing adjustments, we retained a valuation allowance of $64.5 million at December 31, 2018 and $65.0 million at December 31, 2017.

Tax Benefit Preservation Measures

We currently have a tax benefit preservation plan, together with certain amendments to our amended and restated bylaws and our amended and restated certificate of incorporation (collectively, our “Tax Benefit Preservation Measures”), that was established to protect our ability to utilize our NOLs and other tax attributes by attempting to prevent an “ownership change” under U.S. federal income tax rules. Our Tax Benefit Preservation Measures expire in 2019.

IRS Matter

In July 2018, we finalized a settlement with the IRS related to adjustments we had been contesting that resulted from the examination by the IRS of our 2000 through 2007 consolidated federal income tax returns. The IRS opposed the recognition of certain tax losses and deductions that were generated through our investment in a portfolio of non-economic REMIC residual interests and proposed denying the associated tax benefits of these items.

This settlement with the IRS resolved the issues and concluded all disputes related to the IRS Matter. In the three-month period ended June 30, 2018, we recorded tax benefits of $73.6 million, which includes both the impact of the settlement with the IRS as well as the reversal of certain previously accrued state and local tax liabilities. In 2018, under the terms of the settlement, Radian utilized its “qualified deposits” with the U.S. Treasury to settle its $31 million obligation to the IRS, and in 2019, the Company expects the IRS to refund to Radian the remaining $58 million that was previously on deposit. See Note 9 for additional information about these qualified deposits.

Unrecognized Tax Benefits

As of December 31, 2018, we have $16.6 million of unrecognized tax benefits that would affect the effective tax rate, if recognized. We have no interest or penalty accrued as of December 31, 2018. Our policy for the recognition of interest and penalties associated with uncertain tax positions is to record such items as a component of our income tax provision, of which $2.2 million and $1.8 million were recorded for the years ended December 31, 2017 and 2016, respectively. In 2018, we recorded an income tax benefit of $61.6 million for interest and penalties primarily related to our IRS settlement.

A reconciliation of the beginning and ending unrecognized tax benefits is as follows:

	Year Ended December 31,	
(In thousands)	2018	2017
Balance at beginning of period	$123,951	$123,028
Tax positions related to the current year:		
Increases	5,058	2,343
Tax positions related to prior years:		
Increases	26,465	24,122
Decreases	(43,146)	(1,437)
Settlements with taxing authorities	(52,353)	—
Lapses of applicable statute of limitation	(26,423)	(24,105)
Balance at end of period	$33,552	$123,951

Our total net unrecognized tax benefits decreased by $90.4 million from December 31, 2017 to December 31, 2018, primarily due to a $43.1 million decrease in prior year tax positions and a $52.4 million decrease due to settlements with taxing authorities. The settlement of the IRS Matter was the primary contributor to both of these decreases. These decreases were partially offset by an increase of $26.5 million in our net unrecognized tax benefits related to prior years. This net increase primarily reflects the impact of unrecognized tax benefits associated with our recognition of certain premium income. Although unrecognized tax benefits for this item decreased due to the expiration of the applicable statute of limitations for the taxable period ended December 31, 2014, the related amounts continued to impact subsequent years and resulted in a corresponding increase to the unrecognized tax benefits. Over the next twelve months, our unrecognized tax benefits may decrease by approximately $6.5 million due to the expiration of the applicable statute of limitations relating to the 2015 tax year. The statute of limitations related to our federal consolidated income tax return remains open for tax years 2015-2017. Additionally, among the entities within our consolidated group, various tax years remain open to potential examination by state and local taxing authorities.

11. Losses and Loss Adjustment Expenses

Our reserve for losses and LAE, at the end of each period indicated, consisted of:

	Year Ended December 31,	
(In thousands)	2018	2017
Mortgage Insurance loss reserves	$397,891	$507,588
Services loss reserves (1)	3,470	—
Total reserve for losses and LAE	$401,361	$507,588

(1) A majority of this amount is subject to reinsurance, with the related reinsurance recoverables reported in other assets in our consolidated balance sheet, and relates to the acquisition of EnTitle Direct, completed on March 27, 2018. See Note 8 for information about our use of reinsurance in our title insurance business.

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The following table shows our mortgage insurance reserve for losses and LAE by category at the end of each period indicated:

(In thousands)	Year Ended December 31, 2018	2017
Reserves for losses by category:		
Prime	$231,169	$285,022
Alt-A and A minus and below	119,527	170,873
IBNR and other	13,864	16,021
LAE	10,271	13,349
Reinsurance recoverable (1)	10,992	8,315
Total primary reserves	385,823	493,580
Total pool reserves (2)	11,640	13,463
Total First-lien reserves	397,463	507,043
Other (3)	428	545
Total reserve for losses	$397,891	$507,588

(1) Represents ceded losses on reinsurance transactions, including the QSR Program and the Single Premium QSR Program. These amounts are included in the reinsurance recoverables reported in other assets in our consolidated balance sheets.
(2) Includes reinsurance recoverable of $17 thousand and $35 thousand as of December 31, 2018 and December 31, 2017, respectively.
(3) Does not include our second-lien PDR that is included in other liabilities.

For the periods indicated, the following table presents information relating to our mortgage insurance reserve for losses, including our IBNR reserve and LAE, but excluding our second-lien mortgage loan PDR:

(In thousands)	Year Ended December 31, 2018	2017	2016
Balance at January 1,	$507,588	$760,269	$976,399
Less: Reinsurance recoverables (1)	8,350	6,851	8,286
Balance at January 1, net of reinsurance recoverables	499,238	753,418	968,113
Add: Losses and LAE incurred in respect of default notices reported and unreported in:			
Current year (2)	135,291	185,486	206,383
Prior years	(31,699)	(49,286)	(3,516)
Total incurred	103,592	136,200	202,867
Deduct: Paid claims and LAE related to:			
Current year (2)	5,856	25,011	11,410
Prior years	210,092	365,369	406,152
Total paid	215,948	390,380	(3) 417,562
Balance at end of period, net of reinsurance recoverables	386,882	499,238	753,418
Add: reinsurance recoverables (1)	11,009	8,350	6,851
Balance at December 31,	$397,891	$507,588	$760,269

(1) Related to ceded losses recoverable, if any, on reinsurance transactions, the QSR Program and the Single Premium QSR Program. See Note 8 for additional information.
(2)

Related to underlying defaulted loans with a most recent default notice dated in the year indicated. For example, if a loan had defaulted in a prior year, but then subsequently cured and later re-defaulted in the current year, that default

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would be considered a current year default. For 2017, includes payments made on pool commutations, in some cases for loans not previously in default.

(3) Includes the payment of $54.8 million made in connection with the scheduled final settlement of the Freddie Mac Agreement in the third quarter of 2017.

Reserve Activity

2018 Activity

Loss Reserves. Our mortgage insurance loss reserves at December 31, 2018 declined as compared to December 31, 2017, primarily as a result of the amount of paid claims continuing to outpace losses incurred related to new default notices reported in the current year. Reserves established for new default notices were the primary driver of our incurred losses for 2018, and they were primarily impacted by the number of new primary default notices received in the period and our related gross Default to Claim Rate assumption applied to those new defaults, which declined from 10% at December 31, 2017 to 8% at December 31, 2018. The provision for losses during 2018 was positively impacted by favorable reserve development on prior year defaults, which was primarily driven by a reduction during the period in certain Default to Claim Rate assumptions for these prior year defaults compared to the assumptions used at December 31, 2017. The reductions in Default to Claim Rate assumptions resulted from observed trends, primarily higher Cures than were previously estimated.

Hurricane Impact 2018/2017. During the third quarter of 2017, Hurricanes Harvey and Irma caused extensive property damage to areas of Texas, Florida and Georgia, as well as other general disruptions including power outages and flooding. Although the mortgage insurance we write protects the lenders from a portion of losses resulting from loan defaults, it does not provide protection against property loss or physical damage. Our Master Policies contain an exclusion against physical damage, including damage caused by floods or other natural disasters. Depending on the policy form and circumstances, we may, among other things, deduct the cost to repair or remedy physical damage above a de minimis amount from a claim payment and/or, under certain circumstances, deny a claim where (i) the property underlying a mortgage in default is subject to unrestored physical damage or (ii) the physical damage is deemed to be the principal cause of default. Following Hurricanes Harvey and Irma, we observed an increase in new primary defaults from FEMA Designated Areas associated with these hurricanes. As expected most of these hurricane-related defaults cured by the end of 2018, and at higher cure rates than the rates for our general population of defaults. We assigned a 3% Default to Claim Rate assumption to the new primary defaults from FEMA Designated Areas associated with Hurricanes Harvey and Irma that were reported subsequent to those two natural disasters and through February 2018. These incremental defaults did not have a material impact on our provision for losses in 2017 or 2018.

Claims Paid. Total claims paid decreased for 2018, compared to 2017. The decrease in claims paid is consistent with the ongoing decline in the outstanding default inventory. In addition, claims paid for 2017 were higher because they included payments that were made in connection with the scheduled final settlement of the Freddie Mac Agreement in the third quarter of 2017.

2017 Activity

Our loss reserves at December 31, 2017 declined as compared to December 31, 2016, primarily as a result of the amount of paid claims and Cures continuing to outpace losses incurred related to new default notices reported in the current year. Reserves established for new default notices were the primary driver of our total incurred loss for 2017, and they were primarily impacted by the number of new primary default notices received in the period and our related gross Default to Claim Rate assumption applied to those new defaults, which, except as discussed above for FEMA Designated Areas associated with Hurricanes Harvey and Irma, declined from 12% at December 31, 2016 to 10% at December 31, 2017. The provision for losses during 2017 was positively impacted by favorable reserve development on prior year defaults, which was primarily driven by a reduction during the period in certain Default to Claim Rate assumptions for these prior year defaults compared to the assumptions used at December 31, 2016. The reductions in

Default to Claim Rate assumptions resulted from observed trends, primarily higher Cures than were previously estimated.
2016 Activity
Our loss reserves at December 31, 2016 declined as compared to December 31, 2015, primarily as a result of the amount of paid claims continuing to exceed losses incurred related to new default notices reported in the current year. Reserves established for new default notices were the primary driver of our total incurred loss for 2016, and they were impacted primarily by the number of new primary default notices received in the period and our related gross Default to Claim Rate

assumption applied to those new defaults, which was 12% as of December 31, 2016. The impact to incurred losses from reserve development on default notices reported in prior years was not significant during 2016.

Reserve Assumptions

Default to Claim Rate

Our aggregate weighted-average Default to Claim Rate assumption (net of Claim Denials and Rescissions) used in estimating our primary reserve for losses was 33% (31% excluding pending claims) at December 31, 2018 compared to 31% (29% excluding pending claims) at December 31, 2017. The increase in our Default to Claim Rate in 2018 was primarily driven by a reduction in the number of defaults in FEMA Designated Areas associated with Hurricanes Harvey and Irma (which had a lower Default to Claim Rate of 3%). Excluding the impact of defaults associated with these FEMA Designated Areas, our aggregate weighted-average net Default to Claim Rate (net of Claims Denials and Rescissions) was 33% at December 31, 2018, as compared to 38% at December 31, 2017. As of December 31, 2018, our gross Default to Claim Rates on our primary portfolio ranged from 8% for new defaults, to 68% for other defaults not in Foreclosure Stage, and 75% for Foreclosure Stage Defaults. As of December 31, 2017, these gross Default to Claim Rates ranged from 10% for new defaults, to 62% for other defaults not in Foreclosure Stage, and 81% for Foreclosure Stage Defaults. Our Default to Claim Rate estimates on defaulted loans are mainly developed based on the Stage of Default and Time in Default of the underlying defaulted loans grouped according to the period in which the default occurred, as measured by the progress toward foreclosure sale and the number of months in default. Our estimate of expected Rescissions and Claim Denials (net of expected Reinstatements) embedded in our estimated Default to Claim Rate is generally based on our recent experience. Consideration is also given to differences in characteristics between those rescinded policies and denied claims and the loans remaining in our defaulted inventory.

Loss Mitigation

As our insurance written in years prior to and including 2008 has become a smaller percentage of our overall insured portfolio, a reduced amount of Loss Mitigation Activity has occurred with respect to the claims we receive, and we expect this general trend to continue. As a result, our future Loss Mitigation Activity is not expected to mitigate our paid losses significantly. Our estimate of such net future Loss Mitigation Activities, inclusive of claim withdrawals, reduced our loss reserve as of December 31, 2018 and 2017 by $32 million and $31 million, respectively. The amount of estimated Loss Mitigation Activities incorporated into our reserve analysis at any point in time is affected by a number of factors, including not only our estimated rate of Rescissions, Claim Denials and Claim Curtailments on future claims, but also the volume and attributes of our defaulted insured loans, our estimated Default to Claim Rate and our estimated Claim Severity, among other assumptions.

Our reported Rescission, Claim Denial and Claim Curtailment activity in any given period is subject to challenge by our lender and servicer customers. We expect that a portion of previous Rescissions will be reinstated and previous Claim Denials will be resubmitted with the required documentation and ultimately paid; therefore, we have incorporated this expectation into our IBNR reserve estimate. Our IBNR reserve estimate of $11.3 million and $10.4 million at December 31, 2018 and 2017, respectively, includes reserves for this activity.

We also accrue for the premiums that we expect to refund to our lender customers in connection with our estimated Rescissions.

Sensitivity Analysis

We considered the sensitivity of first-lien loss reserve estimates at December 31, 2018 by assessing the potential changes resulting from a parallel shift in Claim Severity and Default to Claim Rate estimates for primary loans. For example, assuming all other factors remain constant, for every one percentage point change in primary Claim Severity (which we estimate to be 96.0% of risk exposure at December 31, 2018), we estimated that our loss reserves would change by approximately $3.8 million at December 31, 2018. Assuming all other factors remain constant, for every one percentage point change in our overall primary net Default to Claim Rate (which we estimate to be 33% at December 31, 2018, including our assumptions related to Rescissions and Claim Denials), we estimated a $10.4

million change in our loss reserves at December 31, 2018.

Additional Disclosures

The following tables provide information as of and for the periods indicated about: (i) incurred losses, net of reinsurance; (ii) the total of IBNR liabilities plus expected development on reported claims, included within the net incurred loss amounts; (iii) the cumulative number of reported defaults; and (iv) cumulative paid claims, net of reinsurance. The default year represents the period that a new default notice is first reported to us by loan servicers, related to borrowers that missed two monthly payments.

The information about net incurred losses and paid claims development for the years ended prior to 2018 is presented as supplementary information.

($ in thousands)	Incurred Losses, Net of Reinsurance										As of December 31, 2018	
	Year Ended December 31,											
	Unaudited											
Default Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total of IBNR Liabilities Plus Expected Development on Reported Claims (1)	Cumulative Number of Reported Defaults (2)
2009	$ 1,671,239	$ 1,894,783	$ 1,930,263	$ 1,939,479	$ 1,974,568	$ 1,991,796	$ 2,016,412	$ 2,018,907	$ 2,022,629	$ 2,025,828	$ 1,572	213.836
2010		1,102,856	1,215,136	1,192,482	1,195,056	1,207,774	1,220,289	1,218,264	1,219,469	1,221,938	1,019	146.324
2011			1,058,625	1,152,016	1,052,277	1,050,555	1,062,579	1,061,161	1,059,116	1,060,376	970	118.972
2012				803,831	763,969	711,213	720,502	715,646	714,783	713,750	586	89.845
2013					505,732	405,334	401,444	404,333	402,259	400,243	344	71.749
2014						337,784	247,074	265,891	264,620	260,098	241	58.215
2015							222,555	198,186	178,042	183,952	292	49.825
2016								201,016	165,440	149,753	428	46.264
2017									180,851	151,802	1,212	47.283
2018										131,513	1,876	39.598
									Total	$ 6,299,253		

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(1) Represents reserves as of December 31, 2018 related to IBNR liabilities.

(2) Represents total number of new default notices received in each calendar year as compiled monthly based on reports received from loan servicers. As reflected in our Default to Claim Rate assumptions, a significant portion of reported defaults generally do not result in a claim. In certain instances, a defaulted loan may cure, and then re-default in a later period. Consistent with our reserving practice, each new event of default is treated as a unique occurrence and therefore certain loans that cure and re-default may be included as a reported default in multiple periods. Included in this amount for the year ended December 31, 2018 and December 31, 2017 are 3,776 and 8,862 notices, respectively, of new primary defaults related to the FEMA Designated Areas associated with Hurricanes Harvey and Irma.

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	Cumulative Paid Claims, Net of Reinsurance									
	Year Ended December 31,									
(In thousands)										
	Unaudited									
Default Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2009	$136,413	$619,496	$1,236,210	$1,471,264	$1,711,019	$1,807,031	$1,921,134	$1,958,660	$1,986,076	$2,004,219
2010		11,810	394,278	700,316	956,598	1,055,935	1,145,497	1,178,546	1,198,031	1,210,281
2011			40,392	323,216	756,820	892,959	982,830	1,016,855	1,038,582	1,048,966
2012				19,200	295,332	528,744	631,982	672,271	692,291	702,136
2013					34,504	191,040	307,361	357,087	379,036	388,688
2014						13,108	115,852	200,422	233,607	246,611
2015							10,479	84,271	142,421	163,916
2016								11,061	76,616	119,357
2017									24,653	66,585
2018										5,584
									Total	$5,956,343
					All outstanding liabilities before 2009, net of reinsurance					33,479
					Liabilities for claims, net of reinsurance (1)					$376,389

(1) Calculated as follows:

(In thousands)	
Incurred losses, net of reinsurance	$6,299,253
Add: All outstanding liabilities before 2009, net of reinsurance	33,479
Less: Cumulative paid claims, net of reinsurance	5,956,343
Liabilities for claims, net of reinsurance	$376,389

The following table provides a reconciliation of the net incurred losses and paid claims development tables above to the Mortgage Insurance reserve for losses and LAE at December 31, 2018:

(In thousands)	December 31, 2018
Net outstanding liabilities - Mortgage Insurance:	
Reserve for losses and LAE, net of reinsurance	$376,389
Reinsurance recoverables on unpaid claims	11,009
Unallocated LAE	10,493
Total gross reserve for losses and LAE (1)	$397,891

(1) Excludes Services reserve for losses and LAE of $3.5 million.

The following is supplementary information about average historical claims duration as of December 31, 2018, representing the average distribution of when claims are paid relative to the year of default:

	Average Annual Percentage Payout of Incurred Losses by Age, Net of Reinsurance (Unaudited)									
Years	1	2	3	4	5	6	7	8	9	10
Mortgage Insurance	6.1%	34.5%	31.4%	13.8%	7.4%	4.1%	2.9%	1.5%	1.2%	0.9%

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12. Senior Notes

The carrying value of our senior notes at December 31, 2018 and 2017 was as follows:

($ in thousands)		December 31, 2018	2017
5.500%	Senior Notes due 2019	$158,324	$157,636
5.250%	Senior Notes due 2020	232,729	231,834
7.000%	Senior Notes due 2021	195,867	195,146
4.500%	Senior Notes due 2024	443,428	442,458
	Total Senior Notes	$1,030,348	$1,027,074

Extinguishment of Debt

2017 Activity

Repurchases of Senior Notes due 2019, 2020 and 2021. During the third quarter of 2017, pursuant to cash tender offers, we purchased aggregate principal amounts of $141.4 million, $115.9 million and $152.3 million of our Senior Notes due 2019, 2020 and 2021, respectively. We funded the purchases with $450.8 million in cash (plus accrued and unpaid interest due on the purchased notes). These purchases resulted in a loss on induced conversion and debt extinguishment of $45.8 million. At December 31, 2017, the remaining principal amounts of our outstanding Senior Notes due 2019, 2020 and 2021 were $158.6 million, $234.1 million and $197.7 million, respectively.

Repurchases of Convertible Senior Notes due 2017 and 2019. During the second quarter of 2017, we purchased an aggregate principal amount of $21.6 million of our outstanding Convertible Senior Notes due 2017. We funded the purchases with $31.6 million in cash (plus accrued and unpaid interest due on the purchased notes). These purchases of Convertible Senior Notes due 2017 resulted in a loss on induced conversion and debt extinguishment of $1.2 million.

In connection with our purchases of Convertible Senior Notes due 2017, we terminated a corresponding portion of the capped call transactions we entered into in 2010 related to the initial issuance of the Convertible Senior Notes due 2017. We received proceeds of $4.1 million for this termination.

In November 2016, we announced our intent to exercise our redemption option for the remaining $68.0 million aggregate principal amount of our Convertible Senior Notes due 2019. As a result of the average closing price of our common stock exceeding the conversion price of $10.60 prior to the redemption date, all of the holders of these notes elected to exercise their conversion rights. Radian elected to settle all of the notes surrendered for conversion with cash. We settled our obligations with respect to these conversions on January 27, 2017, with a cash payment of $110.1 million. At the time of settlement, this transaction resulted in a pretax charge of $4.5 million, representing the difference between the fair value and the carrying value, net of unamortized issuance costs, of the liability component of the Convertible Senior Notes due 2019. This transaction also resulted in an aggregate decrease as of the settlement date of 6.4 million diluted shares for the purposes of determining diluted net income per share.

As of December 31, 2017, there were no Convertible Senior Notes due 2017 or Convertible Senior Notes due 2019 outstanding.

2016 Activity

Repurchases of Convertible Senior Notes due 2017 and 2019. During 2016, we entered into privately negotiated agreements to purchase, for cash or a combination of cash and shares of Radian Group common stock, aggregate principal amounts of $30.1 million and $322.0 million, respectively, of our outstanding Convertible Senior Notes due 2017 and 2019. We funded the purchases with $235.0 million in cash (plus accrued and unpaid interest due on the purchased notes) and by issuing to certain of the sellers 17.0 million shares of Radian Group common stock. These purchases of Convertible Senior Notes due 2017 and 2019 resulted in a pretax charge of $60.1 million. This loss represents:

- the $41.8 million market premium representing the excess of the fair value of the total consideration delivered to the sellers of the Convertible Senior Notes due 2017 and 2019 over the fair value of the common stock issuable pursuant to the original conversion terms of the purchased notes;
- the $17.2 million difference between the fair value and the carrying value, net of unamortized issuance costs, of the liability component of the purchased notes; and
- the $1.1 million impact of related transaction costs.

In connection with our privately negotiated purchases of Convertible Senior Notes due 2017 in March 2016, we terminated a corresponding portion of the capped call transactions we had entered into in 2010 related to the initial issuance of the Convertible Senior Notes due 2017. As a result of this termination, we received consideration of 0.2 million shares of Radian Group common stock, which was valued at $2.6 million based on a stock price on the closing date of $11.86. In accordance with the accounting standards regarding equity and contracts in an entity's own equity, the total consideration received was recorded as an increase to additional paid-in capital. The shares of Radian Group common stock received were retired, resulting in a decrease in shares issued and outstanding and a corresponding increase in unissued shares.

Redemption of Senior Notes due 2017. On August 12, 2016, we redeemed the remaining $195.5 million aggregate principal amount of our Senior Notes due 2017 for the price established in accordance with the indenture governing the notes. We paid $211.3 million in cash (including accrued interest through the redemption date) to holders of the notes at redemption and recorded a loss on debt extinguishment of $15.0 million.

Senior Notes

Senior Notes due 2019. In May 2014, in anticipation of the Clayton acquisition, we issued $300 million principal amount of Senior Notes due 2019 and received net proceeds of $293.8 million. These notes mature on June 1, 2019 and bear interest at a rate of 5.500% per annum, payable semi-annually on June 1 and December 1 of each year, commencing on December 1, 2014.

Senior Notes due 2020. In June 2015, we issued $350 million aggregate principal amount of Senior Notes due 2020 and received net proceeds of $343.3 million. These notes mature on June 15, 2020 and bear interest at a rate of 5.250% per annum, payable semi-annually on June 15 and December 15 of each year, commencing on December 15, 2015.

Senior Notes due 2021. In March 2016, we issued $350 million aggregate principal amount of Senior Notes due 2021 and received net proceeds of $343.4 million. These notes mature on March 15, 2021 and bear interest at a rate of 7.000% per annum, payable semi-annually on March 15 and September 15 of each year, commencing on September 15, 2016.

Senior Notes due 2024. In September 2017, we issued $450 million aggregate principal amount of Senior Notes due 2024 and received net proceeds of $442.2 million. These notes mature on October 1, 2024 and bear interest at a rate of 4.500% per annum, payable semi-annually on April 1 and October 1 of each year, with interest payments commencing on April 1, 2018.

Redemption Terms in Senior Notes. We have the option to redeem the Senior Notes due 2019, 2020, 2021 and 2024 in whole or in part, at any time or from time to time prior to maturity, at a redemption price equal to the greater of: (i)

100% of the aggregate principal amount of the notes to be redeemed or (ii) a “make-whole amount,” which is the sum of the present values of the remaining scheduled payments of principal and interest (excluding any portion of interest accrued to the redemption date) in respect of the notes to be redeemed, discounted to the redemption date at the applicable treasury rate plus 50 basis points, plus, in each case, accrued and unpaid interest thereon to, but excluding, the redemption date.

Covenants in Senior Notes. The Senior Notes due 2019, 2020, 2021 and 2024 have covenants customary for securities of this nature, including covenants related to the payments of the notes, reports, compliance certificates and modification of the covenants. Additionally, the applicable indentures include covenants restricting us from encumbering the capital stock of a

designated subsidiary (as defined in the respective indentures for the notes) or disposing of any capital stock of any designated subsidiary unless either all of the stock is disposed of or we retain more than 80% of the stock.

13. Other Liabilities

The following table shows the components of other liabilities as of the dates indicated:

(In thousands)	Year Ended December 31, 2018	2017
Deferred ceding commission	$91,400	$89,907
FHLB advances	82,532	—
Accrued compensation	61,452	67,687
Amount payable on the return of cash collateral under securities lending agreements	11,699	19,357
Current federal income taxes	—	96,740
Other	86,576	80,154
Total other liabilities	$333,659	$353,845

FHLB Advances

In August 2016, Radian Guaranty and Radian Reinsurance became members of the FHLB. As members, they may borrow from the FHLB, subject to certain conditions, which include the need to post collateral and the requirement to maintain a minimum investment in FHLB stock, in part depending on the level of their outstanding FHLB advances. As of December 31, 2018, we had $82.5 million of fixed-rate advances outstanding with a weighted average interest rate of 2.73%. Interest on the FHLB advances is payable quarterly, or at maturity if the term of the advance is less than 90 days. As of December 31, 2018, $60.5 million of the FHLB advances mature in 2019, $3.0 million mature in 2020, $8.0 million mature in 2021, $9.0 million mature in 2023 and $2.0 million mature in 2024. Principal is due at maturity. For obligations with maturities greater than or equal to 90 days, we may prepay the debt at any time, subject to a prepayment fee calculation.

The FHLB advances are required to be collateralized by eligible assets with a market value that must be maintained at a minimum of approximately 103% to 105% of the principal balance of the FHLB advances (based on the eligible collateral we have provided at December 31, 2018, which consisted of an aggregate amount of $88.4 million in U.S. government and agency securities and RMBS from fixed-maturities available for sale within our investment securities portfolio).

Amount Payable on the Return of Cash Collateral under Securities Lending Agreements

We participate in a securities lending program through which we loan certain securities in our investment portfolio to Borrowers for short periods of time. These securities lending agreements, whereby we transfer securities to third parties through an intermediary in exchange for cash or other securities, are considered collateralized financing arrangements. Amounts payable on the return of cash collateral under securities lending agreements are classified as other liabilities in our consolidated balance sheets. See Note 6 for additional information.

Revolving Credit Facility

On October 16, 2017, Radian Group entered into a three-year, $225.0 million unsecured revolving credit facility with a syndicate of bank lenders. Terms of the credit facility include an accordion feature that allows Radian Group, at its option, to increase the total borrowing capacity during the term of the agreement, subject to our obtaining the necessary increased commitments from lenders (which may include then existing or other lenders), up to a total of $300 million. Effective October 26, 2018, Radian Group exercised its rights under the accordion feature to add another global bank to the existing syndicate of bank lenders and to increase the amount of total commitments under the credit facility by $42.5 million, bringing the aggregate unsecured revolving credit facility to $267.5 million. Subject to certain limitations, borrowings under the credit facility may be used for working capital and general corporate purposes, including capital contributions to Radian Group’s insurance and reinsurance subsidiaries as well as

growth initiatives. The credit facility contains customary representations, warranties, covenants, terms and conditions. Our ability to borrow under the credit facility is conditioned on the satisfaction of certain financial and other covenants, including covenants related to

minimum net worth and statutory surplus, a maximum debt-to-capitalization level, limits on certain types of indebtedness and liens, minimum liquidity levels and Radian Guaranty's eligibility as a private mortgage insurer with the GSEs. At December 31, 2018, Radian Group was in compliance with all the covenants and there were no amounts outstanding under this revolving credit facility.

14. Commitments and Contingencies

Legal Proceedings

We are routinely involved in a number of legal and regulatory claims, assertions, actions, reviews, audits, inquiries and investigations by various regulatory entities involving compliance with laws or other regulations, the outcome of which are uncertain. These legal proceedings could result in adverse judgments, settlements, fines, injunctions, restitutions or other relief that could require significant expenditures or have other effects on our business. In accordance with applicable accounting standards and guidance, we establish accruals only when we determine both that it is probable that a loss has been incurred and the amount of the loss is reasonably estimable. We accrue the amount that represents our best estimate of the probable loss; however, if we can only determine a range of estimated losses, we accrue an amount within the range that, in our judgment, reflects the most likely outcome, and if none of the estimates within the range is more likely, we accrue the minimum amount of the range.

In the course of our regular review of pending legal and regulatory matters, we determine whether it is reasonably possible that a potential loss may have a material impact on our liquidity, results of operations or financial condition. If we determine such a loss is reasonably possible, we disclose information relating to such potential loss, including an estimate or range of loss or a statement that such an estimate cannot be made. On a quarterly basis, we review relevant information with respect to loss contingencies and update our accruals, disclosures and estimates of reasonably possible losses or range of losses based on such reviews. We are often unable to estimate the possible loss or range of loss until developments in such matters have provided sufficient information to support an assessment of the range of possible loss, such as quantification of a damage demand from plaintiffs, discovery from other parties and investigation of factual allegations, rulings by the court on motions or appeals, analysis by experts, and the progress of settlement negotiations. In addition, we generally make no disclosures for loss contingencies that are determined to be remote. For matters for which we disclose an estimated loss, the disclosed estimate reflects the reasonably possible loss or range of loss in excess of the amount accrued, if any.

Loss estimates are inherently subjective, based on currently available information, and are subject to management's judgment and various assumptions. Due to the inherently subjective nature of these estimates and the uncertainty and unpredictability surrounding the outcome of legal and other proceedings, actual results may differ materially from any amounts that have been accrued.

As described in Note 10, on September 4, 2014 we received formal Notices of Deficiency from the IRS related to certain losses and deductions resulting from our investment in a portfolio of non-economic REMIC residual interests. As previously disclosed, we contested adjustments resulting from the examination by the IRS of our 2000 through 2007 consolidated federal income tax returns. In July 2018, we finalized a settlement with the IRS related to the adjustments we had been contesting. This settlement with the IRS resolved the issues and concluded all disputes related to the IRS Matter. In 2018, under the terms of the settlement, Radian utilized its "qualified deposits" with the U.S. Treasury to settle its $31 million obligation to the IRS, and in 2019, the Company expects the IRS to refund to Radian the remaining $58 million that was previously on deposit.

On December 22, 2016, Ocwen Loan Servicing, LLC and Homeward Residential, Inc. (collectively, "Ocwen") filed a complaint in the U.S. District Court for the Eastern District of Pennsylvania against Radian Guaranty (the "Complaint") alleging breach of contract and bad faith claims and seeking monetary damages and declaratory relief. Ocwen has also initiated similar legal proceedings against several other mortgage insurers. On December 17, 2016, Ocwen separately filed a parallel arbitration petition against Radian Guaranty before the American Arbitration Association ("AAA") asserting substantially the same allegations (the "Arbitration"). Ocwen's filings together listed 9,420 mortgage insurance

certificates issued under multiple insurance policies, including Pool Insurance policies, as subject to the dispute. On June 5, 2017, Ocwen filed an amended complaint and an amended petition (collectively, the "Amended Filings") with both the court and the AAA, respectively, together listing 8,870 certificates as subject to the dispute. On April 11, 2018, the parties entered into a confidential agreement with respect to all certificates subject to the dispute. The confidential agreement resolved certain categories of claims involved in the dispute and, on April 12, 2018, the parties filed a stipulation of voluntary dismissal of the federal court proceeding and the trial judge issued an Order dismissing all claims and counterclaims subject to the parties' agreement. Radian Guaranty was not required to make any payment in connection with this confidential agreement. Pursuant to the confidential agreement, the parties: (1) dismissed the federal court proceeding; (2) narrowed the scope of the dispute to Ocwen's breach of contract claims

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seeking payment of insurance benefits on approximately 2,500 certificates that Ocwen was previously pursuing through the Amended Filings; and (3) agreed to resolve the remaining dispute through the Arbitration. Radian Guaranty believes that Ocwen's allegations and claims in the legal proceedings described above are without merit and legally deficient, and plans to defend these claims vigorously. We are not able to estimate a reasonably possible loss, if any, or range of loss in this matter because of the current preliminary stage of the Arbitration.

On August 31, 2018, Nationstar Mortgage LLC d/b/a Mr. Cooper ("Nationstar") filed a complaint in the U.S. District Court for the Eastern District of Pennsylvania against Radian Guaranty (the "Complaint") alleging breach of contract, bad faith, and unjust enrichment claims and seeking monetary damages and declaratory relief. The Complaint lists 3,014 mortgage insurance certificates issued under multiple insurance policies as subject to disputes involving insurance coverage decisions. The Complaint further lists 2,231 mortgage insurance certificates issued under multiple insurance policies as subject to disputes involving premium refund requests. Radian Guaranty believes that Nationstar's allegations and claims in the legal proceedings described above are without merit and legally deficient, and plans to defend these claims vigorously. We are not able to estimate a reasonably possible loss, if any, or range of loss in this matter because of the preliminary stage of the litigation.

We also are periodically subject to reviews and audits, as well as inquiries, information-gathering requests and investigations. In connection with these matters, from time to time we receive requests and subpoenas seeking information and documents related to aspects of our business.

Our Master Policies establish the timeline within which any suit or action arising from any right of an insured under the policy generally must be commenced. In general, any suit or action arising from any right of an insured under the policy must be commenced within two years after such right first arose for primary insurance and within three years for certain other policies, including certain Pool Insurance policies. Although we believe that our Loss Mitigation Activities are justified under our policies, we continue to face challenges from certain lender and servicer customers regarding our Loss Mitigation Activities, which have resulted in some reversals of our decisions regarding Rescissions, Claim Denials or Claim Curtailments. We are currently in discussions with these customers regarding Loss Mitigation Activities and our claim payment practices, which if not resolved, could result in arbitration or judicial proceedings and we may need to reassume the risk on, and increase loss reserves for, those policies or pay additional claims. See Note 11 for further information.

Further, there are loans in our total defaulted portfolio (in particular, our older defaulted portfolio) for which actions or proceedings (such as foreclosure that provide the insured with title to the property) may not have been commenced within the outermost deadline in our Prior Master Policy. We are evaluating these loans regarding this potential violation and our corresponding rights under the Prior Master Policy. While we can provide no assurance regarding the ultimate resolution of these issues, it is possible that arbitration or legal proceedings could result.

Other

Securities regulations became effective in 2005 that impose enhanced disclosure requirements on issuers of ABS (including mortgage-backed securities). To allow our customers to comply with these regulations at that time, we typically were required, depending on the amount of credit enhancement we were providing, to provide: (i) audited financial statements for the insurance subsidiary participating in the transaction or (ii) a full and unconditional holding company-level guarantee for our insurance subsidiaries' obligations in such transactions. Radian Group has guaranteed two structured transactions for Radian Guaranty involving $87.8 million of remaining credit exposure as of December 31, 2018.

We provide contract underwriting as an outsourced service to our customers. Under our current contract underwriting program the remedy we offer is limited indemnification to our contract underwriting customers only with respect to those loans that we simultaneously underwrite for both secondary market compliance and for potential mortgage insurance eligibility. In 2018, payments for losses related to contract underwriting remedies were de minimis. In 2018, our provision for contract underwriting expenses was de minimis and our reserve for contract underwriting obligations

at December 31, 2018 was $0.2 million. We monitor this risk and negotiate our underwriting fee structure and recourse agreements on a client-by-client basis. We also routinely audit the performance of our contract underwriters.

We lease office space for use in our operations. The lease agreements, which expire periodically through August 2032, contain provisions for scheduled periodic rent increases. Net rental expense in connection with these leases totaled $9.7 million in 2018, $5.7 million in 2017 and $5.0 million in 2016. The commitment for non-cancelable operating leases in future years is as follows:

(In thousands)	
2019	$11,310
2020	10,847
2021	10,165
2022	10,100
2023	10,251
Thereafter	56,317
Total	$108,990

At December 31, 2018, there were no future minimum receipts expected from sublease rental payments.

15. Capital Stock

2018 Activity

On August 16, 2018, Radian Group's board of directors approved a new share repurchase program that authorizes the Company to repurchase up to $100 million of its common stock in the open market or in privately negotiated transactions, based on market and business conditions, stock price and other factors. As of December 31, 2018, the full purchase authority of up to $100 million remained available under this program, which expires on July 31, 2019.

On August 9, 2017, Radian Group's board of directors authorized a share repurchase program to spend up to $50 million to repurchase Radian Group common stock in the open market or in privately negotiated transactions, based on market and business conditions, stock price and other factors. Radian established a trading plan under Rule 10b5-1 of the Exchange Act to implement the program. The Company completed this program during the first half of 2018 by purchasing 3.0 million shares of Radian Group common stock at an average price of $16.56 per share, including commissions.

2017 Activity

On June 29, 2016, Radian Group's board of directors authorized a share repurchase program to spend up to $125 million to repurchase Radian Group common stock. In order to implement the program, Radian adopted a trading plan under Rule 10b5-1 of the Exchange Act during the third quarter of 2016. During the second quarter of 2017, 380 shares were purchased at an average price of $15.59 per share, which represented the only purchases made under the plan. This share repurchase program expired on June 30, 2017.

2016 Activity

In the first quarter of 2016, we announced and completed a share repurchase program. Pursuant to this program, we purchased an aggregate of 9.4 million shares of Radian Group common stock for $100.2 million, at a weighted-average price per share of $10.62, including commissions. No further purchase authority remains under this share repurchase program.

As partial consideration for our March 2016 privately negotiated purchases of a portion of our Convertible Senior Notes due 2017 and 2019, we issued to the sellers 17.0 million shares of Radian Group common stock. In addition, in connection with our termination of the corresponding portion of the related capped call transactions, we received consideration of 0.2 million shares of Radian Group common stock. See Note 12 for additional information regarding these transactions.

All shares of Radian Group common stock that we received from the above transactions were retired, resulting in a decrease in shares issued and outstanding and a corresponding increase in unissued shares.

Other Purchases

We may purchase shares on the open market to settle stock options exercised by employees and purchases under our Employee Stock Purchase Plan. Through December 31, 2018, from time to time we also purchased shares on the open market

to fund certain 401(k) matches. In addition, upon the vesting of certain restricted stock awards under our equity compensation plans, we may withhold from such vested awards shares of our common stock to satisfy the tax liability of the award recipients.

Dividends Paid

In each of the quarters during 2018, 2017 and 2016, we declared quarterly cash dividends on our common stock equal to $0.0025 per share.

16. Share-Based and Other Compensation Programs

On May 10, 2017, our stockholders approved the Amended and Restated Equity Compensation Plan, which amended and restated the 2014 Equity Plan. In addition to the Amended and Restated Equity Compensation Plan, we also have awards outstanding under our 2008 Equity Plan and 1995 Equity Plan. The last awards granted pursuant to the 2008 Equity Plan and 1995 Equity Plan were granted in 2014 and 2008, respectively. All awards granted under the Equity Plans have been performance-based or time-vested awards in the form of non-qualified stock options, restricted stock, RSUs, phantom stock, or stock appreciation rights. The maximum contractual term for stock options and similar instruments under the Equity Plans is 10 years, although awards of these instruments may be granted with shorter terms.

The Amended and Restated Equity Compensation Plan authorizes the issuance of up to 8,954,109 shares, plus such number of shares of common stock that were subject to awards outstanding under the 2014 Equity Plan and the 2008 Equity Plan prior to the effective date of the Amended and Restated Equity Plan that subsequently terminate, expire or are cancelled and become available for issuance under the Amended and Restated Equity Compensation Plan ("Prior Plan Shares"). There were 7,906,190 shares available for grant under the Amended and Restated Equity Compensation Plan as of December 31, 2018 (the "share reserve"), which includes Prior Plan Shares. Each grant of restricted stock, RSUs, or performance share awards under the Amended and Restated Equity Compensation Plan (other than those settled in cash) reduces the share reserve available for grant under the Amended and Restated Equity Compensation Plan by 1.31 shares for every share subject to such grant. Absent this share reserve adjustment for outstanding restricted stock, RSUs, phantom stock or performance share awards, our shares remaining available for grant under the Amended and Restated Equity Compensation Plan would have been 11,108,244 shares as of December 31, 2018. Awards under the Amended and Restated Equity Compensation Plan that provide for settlement solely in cash (and not common shares) do not count against the share reserve.

Most awards vest at the end of the performance or service period. In the event of a grantee's death or disability, awards generally vest immediately. Upon retirement, awards generally vest immediately or at the end of the performance period, if any. Awards granted under the Equity Plans to officers and our non-employee directors provide for "double trigger" vesting in the event of a change of control. As a result, awards granted to officers will vest in connection with a change of control only in the event the grantee's employment is terminated by us without cause or the grantee terminates employment for "good reason," in each case within 90 days before or one year after the change of control. Awards to our non-employee directors will vest in connection with a change of control only in the event the grantee fails to be appointed to the board of directors of the surviving entity or is not nominated for reelection, or fails to be reelected after nomination, to the board of directors of the Company or the surviving entity, in each case at any time beginning upon the change of control and ending 90 days following the first meeting of the stockholders of the Company or the surviving entity after the change in control. In the event of a hypothetical change of control as of December 31, 2018, we estimate that the vesting of awards, assuming for purposes of this hypothetical that "double trigger" vesting occurred, would have resulted in a pretax accounting charge to us of approximately $19.7 million, representing the acceleration of compensation expense.

We use the Monte Carlo valuation model to determine the fair value of all cash-settled awards where stock price is a factor in determining the vesting, as well as for cash- or equity-settled performance awards where there exists a similar stock price-based market condition. The Monte Carlo valuation model incorporates multiple input variables,

including expected life, volatility, risk-free rate of return and dividend yield for each award to estimate the probability that a vesting condition will be achieved. In determining these assumptions for the Monte Carlo valuations, we consider historic and observable market data.

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Depending on certain characteristics of the awards granted under the various Equity Plans noted above, they are accounted for as either liabilities or equity instruments. The following table summarizes awards outstanding and compensation expense recognized for each type of share-based award as of and for the years ended:

($ in thousands)	December 31, 2018		2017		2016	
Share-Based Compensation Programs	Liability Recorded/ Equity Instruments Outstanding	Compensation Cost Recognized (1)	Liability Recorded/ Equity Instruments Outstanding	Compensation Cost Recognized (1)	Liability Recorded/ Equity Instruments Outstanding	Compensation Cost Recognized (1)
Liabilities: RSUs—Cash-Settled	$—	$ —	$—	$ 1	$18	$ (718)
Equity:						
RSUs—Equity Settled	3,716,631	16,593	3,434,966	12,207	3,208,454	13,285
Non-Qualified Stock Options	1,313,791	602	1,692,743	851	2,839,778	3,286
Phantom Stock	234,427	1	234,302	1	234,174	2
Employee Stock Purchase Plan		453		432		449
Equity		17,649		13,491		17,022
Total all share-based plans		$ 17,649		$ 13,492		$ 16,304

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(1) For purposes of calculating compensation cost recognized, we generally consider awards effectively vested (and we recognize the full compensation costs) when grantees become retirement eligible.

The following table reflects additional information regarding all share-based awards for the years indicated:

(In thousands)	Year Ended December 31, 2018	2017	2016
Total compensation cost recognized	$17,649	$13,492	$16,304
Less: Costs deferred as acquisition costs	324	269	206
Stock-based compensation expense	$17,325	$13,223	$16,098

RSUs (Cash-Settled)

Time-Vested RSUs— At December 31, 2015, a total of 262,694 time-vested RSUs (to be settled in cash), originally granted to our non-employee directors during 2009 and 2010, remained outstanding. On February 10, 2016, these time-vested RSUs (to be settled in cash) were converted into time-vested RSUs to be settled in common stock. Upon the director's termination of service with us, the non-employee director generally will be entitled to the equivalent number of shares of common stock.

RSUs (Equity Settled)

Information with regard to RSUs to be settled in stock for the periods indicated is as follows:

	Number of Shares	Weighted-Average Grant Date Fair Value
Unvested, December 31, 2017 (1)	3,434,976	$ 12.90
Granted	1,058,045	$ 15.58
Vested	(258,845)	$ 12.61
Forfeited	(470,543)	$ 18.07
Unvested, December 31, 2018 (1)	3,763,633	$ 13.04

(1) Included in unvested amounts are certain awards to employees and non-employee directors that are exercisable upon termination or retirement.

The weighted-average grant date fair value of RSUs granted during 2017 and 2016 was $16.84 and $11.79, respectively. The total fair value of RSUs vested during 2018, 2017 and 2016 was $3.3 million, $1.4 million, and $5.8 million, respectively.

Performance-Based RSUs—In 2018, 2017 and 2016, executive and non-executive officers were granted performance-based RSUs to be settled in common stock with target awards totaling 595,320, 456,510, and 701,110; respectively. The maximum payout at the end of the three-year performance period is 200% of a grantee's target number of RSUs. The maximum payout for awards based on the TSR Measures described below is generally subject to a maximum cap of six times the value of the grantee's target award on the grant date.

The vesting of the performance-based RSUs granted in 2018 to each executive officer and non-executive will be based upon the cumulative growth in Radian's book value per share, adjusted for certain defined items, over a three-year performance period.

The vesting of approximately 50% of the performance-based RSUs granted to each executive officer in 2017 and 2016 is dependent upon (i) Radian Group's TSR compared to the median TSR of a designated peer group of companies as of the date of grant (the "Relative TSR Measure") and (ii) Radian Group's absolute TSR ("Absolute TSR Measure," and together with the Relative TSR Measure, the "TSR Measures"), in each case measured over a three-year performance period and subject to certain conditions. The remaining 50% of each executive officer's target award will vest based on the cumulative growth in Radian's book value per share, adjusted for certain defined items, over a three-year performance period. The vesting of performance-based RSUs granted to non-executives in 2017 is the same as described above for executive officers. The vesting of performance-based RSUs granted to non-executives in 2016 is entirely based on the TSR Measures described above and does not include a book value measure.

The grant date fair value of the performance-based RSUs that are based on the cumulative growth in Radian's book value per share is calculated based on the stock price as of the grant date, discounted for the lack of dividends earned over the vesting period and the one-year post-vesting holding period, as applicable. The compensation cost that is recognized over the remaining requisite service period is based on our expectations of the probable level of achievement of the performance condition.

The grant date fair value of the performance-based RSUs that are based on TSR Measures is determined using a Monte Carlo valuation model using the following assumptions:

	2017	2016
Expected life	3 years	3 years
Risk-free interest rate (1)	1.6 %	0.9 %
Volatility of Radian's stock (2)	28.0 %	29.7 %
Average volatility of peer companies (3)	30.6 %	38.2 %

Dividend yield	0.06	%	0.08	%
Discount rate (4)	10.7	%	10.7	%

(1) The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant.

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(2) Volatility of Radian's stock is used in the calculation of the grant date fair value of the portion of the awards based on TSR Measures, as described above. Volatility is determined at the date of grant using the historical share price volatility and the expected life of each award.
(3) Average volatility of peer companies is used in the calculation of the grant date fair value of the portion of the awards based on the Relative TSR Measure, as described above.
(4) A discount is applied to executive officer awards to reflect illiquidity during the one-year post-vesting holding period.

Also in 2017, 123,496 performance-based RSUs to be settled in common stock were granted to the Company's former chief executive officer pursuant to the terms of his retirement agreement. Vesting for these performance-based RSUs only occurs if a stock price hurdle is met during the performance period, which begins 10 days prior to the first anniversary of the grant date and ends on the fifth anniversary of the grant date, or upon the death of the grantee or a change in control of the Company. The stock price hurdle requires that the closing price of our common stock on the New York Stock Exchange equals or exceeds 120% of the grant date share price, or $22.46, for 10 consecutive trading days during the performance period.

Time-Vested RSUs— Information with regard to grants of time-vested RSUs to be settled in common stock is as follows for the periods indicated:

	Year Ended December 31,		
	2018	2017 (1)	2016 (2)
Time-vested RSUs granted to certain executives and non-executive officers	385,962 (1)	372,489	180,380
Time-vested RSUs granted to non-employee directors	76,763 (3)	68,337	356,040 (4)
Total time-vested RSUs granted (5)	462,725	440,826	536,420

(1) The time-vested RSU awards granted in 2018 and 2017 are scheduled to vest in: (i) pro rata installments on each of the first three anniversaries of the grant date or (ii) generally at the end of three years.
(2) The time-vested RSU awards granted in 2016 generally are subject to three-year cliff vesting.
(3) The time-vested RSU awards granted in 2018 to non-employee directors generally are subject to one-year cliff vesting.
(4) Includes 262,694 time-vested awards granted on February 10, 2016 to convert the outstanding fully-vested 2009 and 2010 time-vested RSUs (to be settled in cash) awarded to our non-employee directors into time-vested RSUs to be settled in shares of our common stock on the conversion date (generally defined as a director's termination of service with us).
(5) The grant date fair value of time-vested RSUs was calculated based on the closing price of our common stock on the New York Stock Exchange on the date of grant, discounted for the lack of dividends earned over the vesting period, and is recognized as compensation expense over the service period.

Non-Qualified Stock Options

Information with regard to stock options for the periods indicated is as follows:

($ in thousands, except per-share amounts)	Number of Shares	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (1)
Outstanding, December 31, 2017	1,692,743	$ 8.16		
Granted	—	$ —		
Exercised	(375,573)	$ 3.79		
Forfeited	(4,379)	$ 14.38		
Expired	—	$ —		
Outstanding, December 31, 2018	1,312,791	$ 9.39	4.9	$ 9,500

Exercisable, December 31, 2018	966,478	$ 7.91	4.0	$ 8,361
Available for grant, December 31, 2018	7,906,190			

(1) Based on the market price of $16.36 at December 31, 2018.

The following table summarizes additional information concerning stock option activity for the periods indicated:

($ in thousands, except per-share amounts)	Years Ended December 31, 2018	2017	2016
Granted (number of shares)	—	—	342,090
Weighted-average grant date fair value per share (1)	$—	$—	$ 9.72
Aggregate intrinsic value of options exercised	$ 6,274	$ 14,389	$ 1,519
Tax benefit of options exercised	$ 1,318	$ 5,036	$ 532
Cash received from options exercised	$ 1,425	$ 7,131	$ 717

(1) We use the Monte Carlo valuation model in determining the grant date fair value of stock options issued to executives and non-executives using the assumptions noted in the following table:

	Year Ended December 31, 2016	
Derived service period (years)	3.02 - 4.00	
Risk-free interest rate (a)	1.72	%
Volatility (b)	94.20	%
Dividend yield	0.08	%

(a) The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant.
(b) Volatility is determined at the date of grant using historical share price volatility and expected life of each award.

Upon the exercise of stock options, we generally issue shares from the authorized, unissued share reserves when the exercise price is less than the treasury stock repurchase price and from treasury stock when the exercise price is greater than the treasury stock repurchase price.

The following table summarizes information concerning outstanding and exercisable options at December 31, 2018:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number Outstanding	Weighted Average Remaining Contractual Life (Years)	Weighted Average Exercise Price	Number Exercisable	Weighted Average Exercise Price
$2.45 - $3.58	565,317	3.4	$ 2.45	565,317	$ 2.45
$5.76 - $7.06	—	0.0	$ —	—	$ —
$10.42 - $15.44	578,612	6.0	$ 13.53	306,611	$ 14.74
$18.42	168,862	6.3	$ 18.42	20,000	$ 18.42
	1,312,791	4.9	$ 9.39	891,928	$ 7.03

Generally, the stock option awards have a four-year vesting period, with 50% of the award vesting on or after the third anniversary of the grant date and the remaining 50% of the award vesting on or after the fourth anniversary of the grant date, provided the applicable stock price performance hurdle is met, as described below. The fair value of stock options vested during the year ended December 31, 2018 was $1.3 million $3.3 million
$1.3 million

There were no stock options granted in 2017 and 2018. For stock option awards granted in 2016, in addition to the time-based vesting requirements, the options contain a performance hurdle whereby the options will only vest if the closing price of our common stock on the New York Stock Exchange exceeds approximately $15.20 (125% of the option exercise price) for 10 consecutive trading days ending on or after the third anniversary of the date of grant.

Employee Stock Purchase Plan

On May 9, 2018, stockholders of Radian approved the Amended and Restated Radian Group Inc. ESPP, which amended and restated the Radian Group Inc. 2008 Employee Stock Purchase Plan. Under this plan, we issued 103,668; 105,476; and

151,121 shares to employees during the years ended December 31, 2018, 2017 and 2016, respectively, and when amended in 2018, an additional 1,250,000 shares of our authorized but unissued common stock were reserved for issuance. In January 2019, we issued 51,187 shares from the shares available for issuance under our Amended and Restated Radian Group Inc. ESPP. As a result, 1,997,613 shares currently remain available for issuance under the Amended and Restated Radian Group Inc. ESPP.

The Amended and Restated Radian Group Inc. ESPP is designed to allow eligible employees to purchase shares of our common stock at a discount of 15% off the lower of the fair market value of our common stock at the beginning or end of a six-month offering period (each period being the first and second six months in a calendar year).

The following assumptions were used in our calculation of Employee Stock Purchase Plan compensation expense during 2018:

	January 1, 2018	July 1, 2018
Expected life	6 months	6 months
Risk-free interest rate	1.76 %	2.43 %
Volatility	31.49 %	32.80 %
Dividend yield	0.05 %	0.06 %

Unrecognized Compensation Expense

As of December 31, 2018, unrecognized compensation expense related to the unvested portion of all of our share-based awards was $23.9 million. Absent a change of control under the Equity Plans, this expense is expected to be recognized over a weighted-average period of approximately 2.1 years.

17. Benefit Plans

The Radian Group Inc. Savings Incentive Plan (“Savings Plan”) covers substantially all of our full-time and our part-time employees. Participants can contribute up to 100% of their base earnings as pretax and/or after-tax (Roth IRA) contributions up to a maximum amount of $18,500 for 2018. The Savings Plan also includes a catch-up contribution provision whereby participants who are or will be age 50 and above during the Savings Plan year may contribute an additional contribution. The maximum catch-up contribution for the Savings Plan in 2018 was $6,000. Effective January 1, 2018, we match up to 100% of the first 6.0% of base earnings contributed in any given year. Previously, in 2016 and 2017 the match was up to 100% of the first 4.5% of annual base earnings. Our expense for matching funds for the years ended December 31, 2018, 2017 and 2016 was $6.1 million, $4.8 million and $4.9 million, respectively.

Certain of the benefits of this plan are as follows:

- allows for the immediate eligibility of new hire participation and provides for the automatic enrollment of eligible employees;
- provides for the immediate vesting of matching contributions (including existing unvested matching contributions attributable to prior periods) and the elimination of all restrictions (other than Radian Group’s Insider Trading Policy) on a participant’s ability to diversify his/her position in matching contributions; and
- permits Radian Group to make discretionary, pro rata (based on eligible pay) cash allocations to each eligible participant’s account, with vesting upon completion of three years of service with us.

Other Contributions

We contributed immaterial amounts to other postretirement benefit plans in 2018.

18. Accumulated Other Comprehensive Income (Loss)

The following table shows the rollforward of accumulated other comprehensive income (loss) as of the periods indicated:

	Year Ended December 31, 2018		
(In thousands)	Before Tax	Tax Effect	Net of Tax
Balance at beginning of period	$32,669	$9,584	$23,085
Cumulative effect of adopting the accounting standard update for financial instruments	284	60	224
Cumulative effect of adopting the accounting standard update for the reclassification of certain tax effects	—	(2,724)	2,724
Balance adjusted for cumulative effect of adopting accounting standard updates	32,953	6,920	26,033
Other comprehensive income (loss) (“OCI”):			
Unrealized gains (losses) on investments:			
Unrealized holding gains (losses) arising during the period	(123,235)	(25,879)	(97,356)
Less: Reclassification adjustment for net gains (losses) included in net income (1)	(13,000)	(2,730)	(10,270)
Net unrealized gains (losses) on investments	(110,235)	(23,149)	(87,086)
Net foreign currency translation adjustments	5	1	4
Net actuarial gains (losses)	163	34	129
OCI	(110,067)	(23,114)	(86,953)
Balance at end of period	$(77,114)	$(16,194)	$(60,920)

	Year Ended December 31, 2017		
(In thousands)	Before Tax	Tax Effect	Net of Tax
Balance at beginning of period	$(19,063)	$(6,668)	$(12,395)
OCI:			
Unrealized gains (losses) on investments:			
Unrealized holding gains (losses) arising during the period	46,235	14,332	31,903
Less: Reclassification adjustment for net gains (losses) included in net income (1)	(4,065)	(1,423)	(2,642)
Net unrealized gains (losses) on investments	50,300	15,755	34,545
Foreign currency translation adjustments:			
Unrealized foreign currency translation adjustments	225	75	150
Less: Reclassification adjustment for liquidation of foreign subsidiary and other adjustments included in net income (2)	(1,109)	(388)	(721)
Net foreign currency translation adjustments	1,334	463	871
Net actuarial gains (losses)	98	34	64
OCI	51,732	16,252	35,480
Balance at end of period	$32,669	$9,584	$23,085

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(In thousands)	Year Ended December 31, 2016 Before Tax	Tax Effect	Net of Tax
Balance at beginning of period	$(28,425)	$(9,948)	$(18,477)
OCI:			
Unrealized gains (losses) on investments:			
Unrealized holding gains (losses) arising during the period	13,510	4,728	8,782
Less: Reclassification adjustment for net gains (losses) included in net income (1)	3,463	1,212	2,251
Net unrealized gains (losses) on investments	10,047	3,516	6,531
Net foreign currency translation adjustments	(724)	(250)	(474)
Net actuarial gains (losses)	39	14	25
OCI	9,362	3,280	6,082
Balance at end of period	$(19,063)	$(6,668)	$(12,395)

(1) Included in net gains (losses) on investments and other financial instruments in our consolidated statements of operations.
(2) Included in restructuring and other exit costs in our consolidated statements of operations.

19. Statutory Information

We prepare our statutory financial statements in accordance with the accounting practices required or permitted, if applicable, by the insurance departments of the respective states of domicile of our insurance subsidiaries. Required SAPP are established by a variety of NAIC publications, as well as state laws, regulations and general administrative rules. In addition, insurance departments have the right to permit other specific practices that may deviate from prescribed practices. As of December 31, 2018, we did not have any prescribed or permitted statutory accounting practices that resulted in reported statutory surplus or risk-based capital being different from what would have been reported had NAIC statutory accounting practices been followed.

Radian Group serves as the holding company for our insurance subsidiaries, through which we conduct our mortgage insurance business. These insurance subsidiaries are subject to comprehensive, detailed regulation by the insurance departments in the various states where our insurance subsidiaries are domiciled or licensed to transact business. Insurance laws vary from state to state, but generally grant broad supervisory powers to state agencies or officials to examine insurance companies and enforce rules or exercise discretion affecting almost every significant aspect of the insurance business, including the power to revoke or restrict an insurance company’s ability to write new business. The state insurance regulations include various capital requirements and dividend restrictions based on our insurance subsidiaries’ statutory financial position and results of operations, as described below. Our failure to maintain adequate levels of capital could lead to intervention by the various insurance regulatory authorities, which could materially and adversely affect our business, business prospects and financial condition. As of December 31, 2018, the amount of restricted net assets held by our consolidated insurance subsidiaries (which represents our equity investment in those insurance subsidiaries) totaled $3.6 billion of our consolidated net assets.

The ability of Radian’s mortgage insurance subsidiaries to pay dividends on their common stock is restricted by certain provisions of the insurance laws of Pennsylvania, their state of domicile. Under Pennsylvania’s insurance laws, dividends and other distributions may only be paid out of an insurer’s positive unassigned surplus, measured as of the end of the prior fiscal year, unless the Pennsylvania Insurance Commissioner approves the payment of dividends or other distributions from another source.

On March 31, 2017, we reallocated $175 million of capital, in the form of cash and marketable securities, from Radian Guaranty to Radian Reinsurance. The reallocation was accomplished by way of an Extraordinary Distribution, approved by the Pennsylvania Insurance Department, from Radian Guaranty to Radian Group, and a simultaneous capital contribution from Radian Group to Radian Reinsurance in the same amount. These transactions resulted in a

$175 million decrease in Radian Guaranty's statutory policyholders' surplus (i.e., statutory capital and surplus) and a corresponding increase in Radian Reinsurance's statutory policyholders' surplus. Until September 30, 2017, the reallocation of capital had no impact on Radian Guaranty's Available Assets under the PMIERs, because Radian Reinsurance was considered an exclusive affiliated reinsurer of

Radian Guaranty and, as such, Radian Guaranty's Available Assets and Minimum Required Assets were determined on an aggregate basis, taking into account the assets and insured risk of Radian Guaranty and any exclusive affiliated reinsurers. However, effective in the third quarter of 2017, Radian Reinsurance is no longer considered an exclusive affiliated reinsurer of Radian Guaranty, due to its participation in the credit risk transfer programs with Fannie Mae and Freddie Mac. Although this change impacted Radian Guaranty's Available Assets and Minimum Required Assets under the PMIERs, it did not affect Radian Guaranty's compliance with the PMIERs financial requirements.

At December 31, 2018, although Radian Guaranty and Radian Reinsurance had statutory policyholders' surplus of $814.1 million and $356.2 million, respectively, both companies had negative unassigned surplus balances, due primarily to the need for mortgage guaranty insurers to establish and maintain contingency reserves. Radian Guaranty had negative unassigned surplus of $701.9 million at December 31, 2018, compared to negative unassigned surplus of $765.0 million at December 31, 2017. Radian Reinsurance, which began operations in December 2015, had negative unassigned surplus of $84.8 million at December 31, 2018, compared to negative unassigned surplus of $112.1 million at December 31, 2017. If either of these insurers had positive unassigned surplus as of the end of the prior fiscal year, such insurer only may pay dividends or other distributions during any 12-month period in an aggregate amount less than or equal to the greater of: (i) 10% of the preceding year-end statutory policyholders' surplus; or (ii) the preceding year's statutory net income. Due to the negative unassigned surplus balances at the end of 2018, no dividends or other distributions can be paid from Radian Guaranty or Radian Reinsurance without approval from the Pennsylvania Insurance Commissioner. In addition to the payment of the $175 million Extraordinary Distribution by Radian Guaranty in 2017, as described above, on December 21, 2018, Radian Guaranty distributed $450 million in capital, in the form of cash and marketable securities, to Radian Group. This transfer was approved by the Pennsylvania Insurance Department as an Extraordinary Distribution and resulted in a $450 million decrease in Radian Guaranty's statutory policyholders' surplus. Radian Reinsurance did not pay any dividends or other distributions in 2018 or 2017.

Radian Guaranty

Radian Guaranty is domiciled and licensed in Pennsylvania as a stock casualty insurance company authorized to carry on the business of credit insurance, which includes the authority to write mortgage guaranty insurance. It is a monoline insurer, restricted to writing first-lien residential mortgage guaranty insurance.

Under state insurance regulations, Radian Guaranty is required to maintain minimum surplus levels and, in certain states, a minimum ratio of statutory capital relative to the level of net RIF, or Risk-to-capital. There are 16 RBC States that currently impose a Statutory RBC Requirement. The most common Statutory RBC Requirement is that a mortgage insurer's Risk-to-capital may not exceed 25 to 1. In certain of the RBC States, a mortgage insurer must satisfy a MPP Requirement. The statutory capital requirements for the non-RBC States are de minimis (ranging from $1 million to $5 million); however, the insurance laws of these states generally grant broad supervisory powers to state agencies or officials to enforce rules or exercise discretion affecting almost every significant aspect of the insurance business, including the power to revoke or restrict an insurance company's ability to write new business. Unless an RBC State grants a waiver or other form of relief, if a mortgage insurer, such as Radian Guaranty, is not in compliance with the Statutory RBC Requirement of that state, the mortgage insurer may be prohibited from writing new mortgage insurance business in that state. Radian Guaranty's domiciliary state, Pennsylvania, is not one of the RBC States.

Radian Guaranty was in compliance with the Statutory RBC Requirements or MPP Requirements, as applicable, in each of the RBC States as of December 31, 2018. The NAIC is in the process of developing a new Model Act for mortgage insurers, which is expected to include, among other items, new capital adequacy requirements for mortgage insurers. In May 2016, a working group of state regulators released an exposure draft of this Model Act. The process for developing this framework is ongoing. While the outcome and timing of this process are uncertain, the new Model Act, if and when finalized by the NAIC, has the potential to increase capital requirements in those states that adopt the

Model Act. However, we continue to believe the changes to the Model Act will not result in financial requirements that require greater capital than the level currently required under the PMIERs financial requirements. See Note 1 for information regarding the PMIERs, which set requirements for private mortgage insurers to remain approved insurers of loans purchased by the GSEs.

Radian Guaranty's statutory net income, statutory policyholders' surplus and contingency reserve as of or for the years ended December 31, 2018, 2017 and 2016 were as follows:

	December 31,		
(In millions)	2018	2017	2016
Statutory net income	$501.9	$445.1	$480.8
Statutory policyholders' surplus	814.1	1,201.0	1,349.7
Contingency reserve	2,109.9	1,667.0	1,260.6

Radian Guaranty's Risk-to-capital calculation appears in the table below. For purposes of the Risk-to-capital requirements imposed by certain states, statutory capital is defined as the sum of statutory policyholders' surplus plus statutory contingency reserves.

	December 31,	
($ in millions)	2018	2017
RIF, net (1)	$40,711.3	$36,793.5
Common stock and paid-in capital	$1,416.0	$1,866.0
Surplus Note	100.0	100.0
Unassigned earnings (deficit)	(701.9)	(765.0)
Statutory policyholders' surplus	814.1	1,201.0
Contingency reserve	2,109.9	1,667.0
Statutory capital	$2,924.0	$2,868.0
Risk-to-capital	13.9:1	12.8:1

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(1) Excludes risk ceded through all reinsurance programs (including with affiliates) and RIF on defaulted loans.

Radian Guaranty's statutory capital increased by $56.0 million in 2018, primarily due to Radian Guaranty's statutory net income of $501.9 million during the year, partially offset by the $450 million in distribution of capital to Radian Group, as described above.

The net increase in Radian Guaranty's Risk-to-capital in 2018 was primarily due to the growth in IIF combined with the smaller overall increase in statutory capital due to the $450 million distribution of capital to Radian Group. Radian Guaranty's net RIF increased during the year due to strong growth in NIW and IIF, partially offset by the increased reinsurance benefit pursuant to the Single Premium QSR Program and the Excess-of-Loss Program.

We have actively managed Radian Guaranty's capital position in various ways, including: (i) through internal and external reinsurance arrangements; (ii) by seeking opportunities to reduce our risk exposure through commutations and other negotiated transactions; and (iii) by contributing additional capital from Radian Group.

In December 2017, Radian Group transferred $100 million of cash and marketable securities to Radian Guaranty in exchange for a Surplus Note issued by Radian Guaranty. This Surplus Note has a 0% interest rate and is scheduled to mature on December 31, 2027. The Surplus Note may be redeemed at any time upon 30 days prior notice, subject to the approval of the Pennsylvania Insurance Department.

Radian Reinsurance

Radian Reinsurance is domiciled and licensed in Pennsylvania as a stock casualty insurance company authorized to carry on the business of credit insurance, which includes the authority to reinsure policies of mortgage guaranty insurance. Radian Reinsurance is only licensed or authorized to write direct mortgage guaranty insurance in Pennsylvania. Radian Reinsurance is required to maintain a minimum statutory surplus of $20 million to remain an authorized reinsurer in all states.

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Notes to Consolidated Financial Statements (Continued)

Radian Reinsurance's statutory net income, statutory policyholders' surplus and contingency reserve as of and for the years ended December 31, 2018, 2017 and 2016 were as follows:

	December 31,		
(In millions)	2018	2017	2016
Statutory net income	$86.1	$64.3	$60.3
Statutory policyholders' surplus	356.2	328.9	147.6
Contingency reserve	293.5	234.0	180.3

Combined Risk-to-Capital Ratio and Other Mortgage Insurance Subsidiaries

The Risk-to-capital ratio for our combined mortgage insurance operations was 12.8 to 1 as of December 31, 2018, compared to 12.1 to 1 as of December 31, 2017. In addition to Radian Guaranty and Radian Reinsurance, this combined ratio also includes Radian Guaranty Reinsurance, Radian Mortgage Assurance, Radian Investor Surety Inc., Radian Insurance and Radian Mortgage Guaranty Inc. Radian Insurance is the only other entity that had any remaining RIF as of December 31, 2018, totaling $15.0 million. The aggregate statutory net income, statutory policyholders' surplus and contingency reserve for these five subsidiaries as of and for the years ended December 31, 2018, 2017 and 2016 were as follows:

	December 31,		
(In millions)	2018	2017	2016
Statutory net income (loss)	$(2.8)	$0.1	$(6.1)
Statutory policyholders' surplus	58.0	58.6	57.1
Contingency reserve	1.7	1.7	1.5

EnTitle Insurance

EnTitle Insurance's statutory policyholders' surplus and statutory net loss were $27.0 million and $1.8 million, respectively, as of and for the year ended December 31, 2018.

Through EnTitle Insurance, we maintain escrow deposits as a service to our customers. Amounts held in escrow and excluded from assets and liabilities in our consolidated balance sheets totaled $4.7 million as of December 31, 2018. These amounts were held at third-party financial institutions and not considered assets of the Company. Should one or more of the financial institutions at which escrow deposits are maintained fail, there is no guarantee that we would recover the funds deposited, whether through Federal Deposit Insurance Corporation coverage or otherwise. In the event of any such failure, we could be held liable for the disposition of these funds owned by third parties.

Principal Differences between GAAP and SAPP

The differences between the statutory financial statements and financial statements presented on a GAAP basis represent differences between GAAP and SAPP principally for the following reasons:

(a) Under SAPP, mortgage insurance companies are required to establish a contingency reserve equal to 50% of premiums earned in each year, generally to be maintained for 10 years, whereas no such reserve is required under GAAP.

(b) Under SAPP, insurance policy acquisition costs are charged against operations in the year incurred, and considered in the recognition of unearned premiums. Under GAAP, such costs are generally deferred and amortized.

(c) Under SAPP, deferred tax assets are only recognized to the extent they are expected to be recovered within a one- to three-year period subject to a capital and surplus limitation. Changes in deferred tax assets and deferred tax liabilities are recognized as a direct benefit or charge to unassigned surplus, whereas under GAAP changes in deferred tax assets and deferred tax liabilities are generally recorded as a component of income tax expense.

(d) Under SAPP, fixed-maturity investments are generally valued at amortized cost. Under GAAP, those investments are generally recorded at fair value.

(e) Under SAPP, certain assets, designated as non-admitted assets, are charged directly against statutory surplus. Such assets are reflected on our GAAP financial statements.

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20. Quarterly Financial Data (Unaudited)

	2018 Quarters				
(In thousands, except per-share amounts)	First	Second	Third	Fourth	Year
Net premiums earned—insurance	$242,550	$251,344	$258,431	$261,682	$1,014,007
Services revenue	33,164	36,828	36,566	38,414	144,972
Net investment income	33,956	37,473	38,995	42,051	152,475
Net gains (losses) on investments and other financial instruments	(18,887)	(7,404)	(4,480)	(11,705)	(42,476)
Provision for losses	37,283	19,337	20,881	27,140	104,641
Policy acquisition costs	7,117	5,996	5,667	6,485	25,265
Cost of services	23,126	24,205	25,854	24,939	98,124
Other operating expenses	63,243	70,184	70,125	77,266	280,818
Restructuring and other exit costs	551	925	4,464	113	6,053
Amortization and impairment of other acquired intangible assets	2,748	2,748	3,472	3,461	12,429
Net income	114,486	208,949	142,797	139,779	606,011
Diluted net income per share (1)	$0.52	$0.96	$0.66	$0.64	$2.77
Weighted-average shares outstanding-diluted	219,883	217,830	217,902	217,883	218,553

	2017 Quarters				
	First	Second	Third	Fourth	Year
Net premiums earned—insurance	$221,800	$229,096	$236,702	$245,175	$932,773
Services revenue	38,027	37,802	39,571	39,703	155,103
Net investment income	31,032	30,071	32,540	33,605	127,248
Net gains (losses) on investments and other financial instruments	(2,851)	5,331	2,480	(1,339)	3,621
Provision for losses	46,913	17,222	35,841	35,178	135,154
Policy acquisition costs	6,729	6,123	5,554	5,871	24,277
Cost of services	28,375	25,635	27,240	23,349	104,599
Other operating expenses	68,377	68,750	64,195	65,999	267,321
Restructuring and other exit costs	—	—	12,038	5,230	17,268
Loss on induced conversion and debt extinguishment	4,456	1,247	45,766	—	51,469
Impairment of goodwill	—	184,374	—	—	184,374
Amortization and impairment of other acquired intangible assets	3,296	18,856	2,890	2,629	27,671
Net income (loss)	76,472	(27,342)	65,142	6,816 (2)	121,088
Diluted net income (loss) per share (1)	$0.34	$(0.13)	$0.30	$0.03 (2)	$0.55
Weighted-average shares outstanding-diluted	221,497	215,152	219,391	220,250	220,406

(1) Diluted net income per share is computed independently for each period presented. Consequently, the sum of the quarters may not equal the total net income per share for the year.

(2) The fourth quarter of 2017 reflects an incremental tax provision related to the remeasurement of our net deferred tax assets as a result of the enactment of the TCJA.

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Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.
None.
Item 9A. Controls and Procedures.
Disclosure Controls and Procedures
We maintain disclosure controls and procedures designed to provide reasonable assurance that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.
Our management, including our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act) as of December 31, 2018 pursuant to Rule 15d-15(b) under the Exchange Act. Management necessarily applied its judgment in assessing the costs and benefits of such controls and procedures, which by their nature, can provide only reasonable assurance regarding management's control objectives. Management does not expect that our disclosure controls and procedures will prevent or detect all errors and fraud. A control system, irrespective of how well it is designed and operated, can only provide reasonable assurance and cannot guarantee that it will succeed in its stated objectives.
Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of December 31, 2018, our disclosure controls and procedures were effective to provide reasonable assurance that the information required to be disclosed by us in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms.
Management's Report on Internal Control over Financial Reporting
Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. Our internal control over financial reporting includes those policies and procedures that: (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect our transactions and dispositions of our assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP and that our receipts and expenditures are being made only in accordance with authorizations of our management and our directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.
Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.
Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of our internal control over financial reporting, as of December 31, 2018, using the criteria described in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on our evaluation under the updated internal control framework in *Internal Control-Integrated Framework (2013)*, management concluded that our internal control over financial reporting was effective as of December 31, 2018. The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report appearing in Item 8 of this Annual Report on Form 10-K.
There was no change in the internal control over financial reporting that occurred during the period covered by this report that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None.

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PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item is incorporated by reference to, and will be contained in, our definitive proxy statement, which will be filed within 120 days after December 31, 2018. Accordingly, we have omitted the information from this Item pursuant to General Instruction G (3) of Form 10-K.

Item 11. Executive Compensation.

The information required by this Item is incorporated by reference to, and will be contained in, our definitive proxy statement, which will be filed within 120 days after December 31, 2018. Accordingly, we have omitted the information from this Item pursuant to General Instruction G (3) of Form 10-K.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this Item is incorporated by reference to, and will be contained in, our definitive proxy statement, which will be filed within 120 days after December 31, 2018. Accordingly, we have omitted the information from this Item pursuant to General Instruction G (3) of Form 10-K.

Equity Compensation Plans

The following table sets forth certain information relating to the Company’s equity compensation plans as of December 31, 2018. Each number of securities reflected in the table is a reference to shares of our common stock.

Plan Category (1)	(a) Number of securities to be issued upon exercise of outstanding options, warrants and rights		(b) Weighted-average exercise price of outstanding options, warrants and rights		(c) Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column(a))	
Equity compensation plans approved by stockholders (2)	5,310,851	(3)	$ 2.98	(4)	9,955,831	(5)
Equity compensation plans not approved by stockholders	—		—		—	
Total	$ 5,310,851	(3)	$ 2.98	(4)	$ 9,955,831	(5)

(1) The table does not include information for equity compensation plans assumed by us in mergers, under which we do not grant additional awards.

(2) These plans consist of our 1995 Equity Plan, 2008 Equity Plan, the Amended and Restated Equity Compensation Plan and our Amended and Restated Radian Group Inc. ESPP.

(3) Represents 234,427 shares of phantom stock issued under our 1995 Equity Plan, 696,187 non-qualified stock options and 889,760 RSUs issued under our 2008 Equity Plan, and 616,604 non-qualified stock options and 2,873,873 RSUs issued under our Amended and Restated Equity Compensation Plan. Of the RSUs included herein, 1,646,223 are performance-based stock-settled RSUs that could potentially pay out between 0% and 200% of this represented target, and 123,496 are performance-based stock-settled RSUs that could pay out to our former chief executive officer at 0% or 100%.

(4) The shares of phantom stock and RSUs were granted at full value, and therefore, have a weighted-average exercise price of $0. Excluding shares of phantom stock and RSUs from this calculation, the weighted-average exercise price of outstanding non-qualified stock options was $9.39 at December 31, 2018.

(5) Includes 7,906,190 shares available for issuance under our Amended and Restated Equity Compensation Plan, and 2,048,800 shares available for issuance under our Amended and Restated Radian Group Inc. ESPP, in each case as of December 31, 2018. In January 2019, we issued 51,187 shares from the shares available for issuance under our Amended and Restated Radian Group Inc. ESPP. As a result, 1,997,613 shares currently remain available for issuance under the Amended and Restated Radian Group Inc. ESPP.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this Item is incorporated by reference to, and will be contained in, our definitive proxy statement, which will be filed within 120 days after December 31, 2018. Accordingly, we have omitted the information from this Item pursuant to General Instruction G (3) of Form 10-K.

Item 14. Principal Accountant Fees and Services.

The information required by this Item is incorporated by reference to, and will be contained in, our definitive proxy statement, which will be filed within 120 days after December 31, 2018. Accordingly, we have omitted the information from this Item pursuant to General Instruction G (3) of Form 10-K.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a)

1. Financial Statements—See the “Index to Consolidated Financial Statements” included in Item 8 of this report for a list of the financial statements filed as part of this report.

2. Exhibits—See “Index to Exhibits” on page 211 of this report for a list of exhibits filed as part of this report.

3. Financial Statement Schedules—See the “Index to Financial Statement Schedules” on page 221 of this report for a list of the financial statement schedules filed as part of this report.

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Schedule IV—Reinsurance (December 31, 2018, 2017 and 2016)
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Item 16. Form 10-K Summary.

None.

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INDEX TO EXHIBITS

Exhibit Number	Exhibit
2.1	Unit Purchase Agreement, dated as of May 6, 2014, by and among (i) the Registrant, (ii) Clayton Holdings LLC and (iii) Cobra Green LLC, a Delaware limited liability company, and Paul T. Bossidy (incorporated by reference to Exhibit 2 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended March 31, 2014)
2.2	Stock Purchase Agreement, dated as of December 22, 2014, between Radian Guaranty Inc. and Assured Guaranty Corp. (incorporated by reference to Exhibit 2.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated December 22, 2014 and filed on December 23, 2014)
3.1	Third Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated May 11, 2004 and filed on May 12, 2004)
3.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated May 22, 2008 and filed on May 29, 2008)
3.3	Second Amendment to the Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated May 12, 2010 and filed on May 18, 2010)
3.4	Certificate of Amendment of Certificate of Incorporation of the Registrant effective as of May 15, 2013 (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated May 14, 2013 and filed on May 20, 2013)
3.5	Certificate of Amendment of the Amended and Restated Certificate of Incorporation of the Registrant effective as of May 11, 2016 (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated May 11, 2016 and filed on May 17, 2016)
3.6	Certificate of Change of Registered Agent and Registered Office of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated November 10, 2010 and filed on November 16, 2010)
3.7	Certificate of Designation of Series A Junior Participating Preferred Stock (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated October 9, 2009 and filed on October 13, 2009)
3.8	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated November 9, 2016 and filed on November 14, 2016)
4.1	Specimen certificate for Common Stock (incorporated by reference to Exhibit 4.1 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 1999)
4.2	Amended and Restated Tax Benefit Preservation Plan, dated as of February 12, 2010, between the Registrant and The Bank of New York Mellon (incorporated by reference to Exhibit 4.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated February 12, 2010 and filed on February 17, 2010)

4.3	First Amendment to the Amended and Restated Tax Benefit Preservation Plan, dated as of May 3, 2010, between the Registrant and The Bank of New York Mellon (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated May 3, 2010 and filed on May 4, 2010)
4.4	Senior Indenture dated as of March 4, 2013 between the Registrant and U.S. Bank National Association, as Trustee (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated February 27, 2013 and filed on March 4, 2013)
4.5	Second Supplemental Indenture, dated as of May 13, 2014, between the Registrant and U.S. Bank National Association, as Trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated May 7, 2014 and filed on May 13, 2014)

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Exhibit Number	Exhibit
4.6	Form of 5.500% Senior Note due 2019 (included within Exhibit 4.14)
4.7	Third Supplemental Indenture dated as of June 19, 2015 between the Registrant and U.S. Bank National Association, as Trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated June 16, 2015 and filed on June 19, 2015)
4.8	Form of 5.250% Senior Notes due 2020 (included within Exhibit 4.18)
4.9	Fourth Supplemental Indenture dated as of March 18, 2016 between the Registrant and U.S. Bank National Association, as Trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated March 15, 2016 and filed on March 18, 2016)
4.10	Form of 7.000% Senior Note due 2021 (included within Exhibit 4.20)
4.11	Fifth Supplemental Indenture dated as of September 26, 2017 between the Registrant and U.S. Bank National Association, as Trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated September 26, 2017 and filed on September 26, 2017)
4.12	Form of 4.500% Senior Notes due 2024 (included within Exhibit 4.11)
+10.1	Form of Executive Officer Severance Agreement (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated December 30, 2010 and filed on January 6, 2011)
+10.2	Radian Group Inc. Amended and Restated Benefit Restoration Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated November 6, 2007 and filed on November 13, 2007)
+10.3	Amendment No. 1 to the Radian Group Inc. Amended and Restated Benefit Restoration Plan, effective January 1, 2008 (incorporated by reference to Exhibit 10.16 to the Registrant's Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2008)
+10.4	Comprehensive 401(k) Profit Sharing Plan Nonstandard Adoption Agreement, effective January 1, 2016
+10.5	Qualified Retirement Plan and Trust Defined Contribution Basic Plan Document, adopted by Radian Group Inc. effective January 1, 2016
10.6	Radian Group Inc. 1995 Equity Compensation Plan (Amended and Restated May 9, 2006) (incorporated by reference to Appendix A to the Registrant's Definitive Proxy Statement for the 2006 Annual Meeting of Stockholders (file no. 1-11356), as filed with the Securities and Exchange Commission on April 18, 2006)
+10.7	Amendment to Radian Group Inc. 1995 Equity Compensation Plan (Amended and Restated May 9, 2006) dated February 5, 2007 (incorporated by reference to Exhibit 10.17 to the Registrant's Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2006)
+10.8	Amendment No. 2 to Radian Group Inc. 1995 Equity Compensation Plan, dated November 6, 2007 (incorporated by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2007)

+10.9	Form of Stock Option Grant Letter under 1995 Equity Compensation Plan (incorporated by reference to Exhibit 10 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2004)
+10.10	Form of Restricted Stock Award Agreement for awards granted before February 5, 2007 under 1995 Equity Compensation Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2005)
+10.11	Form of Restricted Stock Award Agreement for awards granted on or after February 5, 2007 under 1995 Equity Compensation Plan (incorporated by reference to Exhibit 10.20 to the Registrant's Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2006)

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Exhibit Number	Exhibit
+10.12	Form of Phantom Stock Agreement for Non-Employee Directors under 1995 Equity Compensation Plan (incorporated by reference to Exhibit 10.6 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated February 8, 2005 and filed on February 14, 2005)
+10.13	Radian Group Inc. Amended and Restated 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.1 to the Registrant’s Registration Statement on Form S-8 (file no. 333-174428) filed on May 23, 2011)
+10.14	Form of Stock Option Grant Letter under 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.6 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2008)
+10.15	Form of Restricted Stock Award Agreement under 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.7 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2008)
+10.16	Form of Phantom Stock Agreement for Non-Employee Directors under 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.8 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2008)
+10.17	Amendment to Form of 2008 Phantom Stock Agreement for Non-Employee Directors under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.5 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2009)
+10.18	Form of 2009 Restricted Stock Award Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2009)
+10.19	Form of 2009 Stock Appreciation Right Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.3 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2009)
+10.20	Form of Restricted Stock Unit Award Agreement for Employees under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.34 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2009
+10.21	Form of 2009 Restricted Stock Unit Award Agreement for Non-Employee Directors under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.4 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2009)
+10.22	Amended and Restated Radian Group Inc. 2008 Executive Long-Term Incentive Cash Plan (incorporated by reference to Exhibit 10.3 to the Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended March 31, 2011)
+10.23	Form of 2010 Performance-Based Restricted Stock Unit Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.3 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2010)

+10.24	Form of 2010 Stock Option Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2010)
+10.25	Form of 2010 Executive Long-Term Incentive Cash Plan Award (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2010)
+10.26	Radian Group Inc. Amended and Restated Performance Share Plan (incorporated by reference to Exhibit 10.2 to the Registrant's Amended Current Report on Form 8-K (file no. 1-11356) dated February 8, 2005 and filed on February 14, 2005)
+10.27	Amended and Restated Radian Group Inc. Voluntary Deferred Compensation Plan for Directors (incorporated by reference to Exhibit 10.34 to the Registrant's Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2014)

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Exhibit Number	Exhibit
+10.28	Amended and Restated Radian Voluntary Deferred Compensation Plan for Officers (incorporated by reference to Exhibit 10.35 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2014)
+10.29	Radian Group Inc. 2008 Employee Stock Purchase Plan, as amended and restated on December 11, 2012 (incorporated by reference to Exhibit 10.42 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2012)
+10.30	Radian Group Inc. Employee Stock Purchase Plan, as amended and restated as of May 9, 2018 (incorporated by reference to Appendix A to the Registrant’s Definitive Proxy Statement on Schedule 14A (file no. 1-11356) filed on April 9, 2018 for the 2018 Annual Meeting of Stockholders)
+10.31	Radian Group Inc. STI/MTI Incentive Plan for Executive Employees (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated November 12, 2009 and filed on November 18, 2009)
+10.32	Radian Group Inc. STI Incentive Plan For Financial Guaranty Employees (incorporated by reference to Exhibit 10.42 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2013)
+10.33	Enhance Financial Services Group Inc. 1997 Long-Term Incentive Plan for Key Employees (As Amended Through June 3, 1999) (incorporated by reference to Exhibit 10.2.2 to the Quarterly Report on Form 10-Q (file no. 1-10967) for the period ended June 30, 1999, of Enhance Financial Services Group Inc.)
+10.34	Enhance Reinsurance Company Supplemental Pension Plan (incorporated by reference to Exhibit 10.4 to the Annual Report on Form 10-K (file no. 1-10967) for the year ended December 31, 1999, of Enhance Financial Services Group Inc.)
+10.35	Amendment to Enhance Reinsurance Company Supplemental Pension Plan, effective January 1, 2008 (incorporated by reference to Exhibit 10.40 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2008)
+10.36	Certain Compensation Arrangements with Directors (Effective May, 2008) (incorporated by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2008)
10.37	Net Worth and Liquidity Maintenance Agreement, dated as of October 10, 2000, between Radian Guaranty Inc. and Radian Insurance Inc. (incorporated by reference to Exhibit 10.26 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2002)
10.38	Form of Expense Allocation and Services Agreement between the Registrant and each of Radian Guaranty Inc., Radian Insurance Inc., Radian Asset Assurance Inc. and Amerin Guaranty Corporation (incorporated by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2005)
10.39	Form Amendment to Expense Allocation and Services Agreement between the Registrant and each of Radian Guaranty Inc. Radian Insurance Inc., Radian Asset Assurance Inc. and Amerin Guaranty Corporation

	(incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on form 10-Q (file no. 1-11356) for the period ended March 31, 2009)
10.40	Radian Group Inc. Allocation of Consolidated Tax Liability Agreement between the Registrant and each of its subsidiaries, dated January 1, 2002, including Addendums 1 through 6 dated between January 1, 2002 and July 10, 2008 (incorporated by reference to Exhibit 10.49 to the Registrant's Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2008)
+10.41	Form of 2011 Performance Based Restricted Stock Unit Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2011)
+10.42	Form of 2011 Stock Option Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2011)

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Exhibit Number	Exhibit
+10.43	Severance Agreement, dated December 23, 2011, between Teresa Bryce Bazemore and the Registrant (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) filed December 29, 2011)
+10.44	Transfer Letter Agreement between the Registrant and Derek Brummer, dated April 3, 2013 (incorporated by reference to Exhibit 10.63 to the Registrant's Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2013)
10.45	Commutation, Reassumption and Release Agreement, effective as of January 1, 2012 (signed January 24, 2012), between Assured Guaranty Municipal Corp. (formerly Financial Security Assurance Inc.), Assured Guaranty (Europe) Ltd. (formerly Financial Security Assurance (U.K.) Limited), and Radian Asset Assurance Inc. (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated January 30, 2012 and filed on January 30, 2012)
+10.46	Form of 2012 Performance Based Restricted Stock Unit Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2012)
+10.47	Form of 2012 Stock Option Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2012)
+10.48	Form of 2013 Performance-Based Restricted Stock Unit Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2013)
+10.49	Form of 2013 Stock Option Agreement under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2013)
10.50	Master Transaction Agreement, dated as of August 29, 2013, by and between Radian Guaranty Inc. and Federal Home Loan Mortgage Corporation (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated August 29, 2013 and filed on August 30, 2013)
+10.51	2014 Stock Option Agreement under the 2014 Equity Compensation Plan, dated as of June 17, 2014, between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2014)
+10.52	2014 Stock Option Agreement under the 2014 Equity Compensation Plan, dated as of June 17, 2014, between the Registrant and C. Robert Quint (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2014)
+10.53	Form of 2014 Performance-Based Restricted Stock Unit Grant Letter under the 2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2014)
+10.54	

	Form of 2014 Stock Option Agreement under the 2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2014)
10.55	Confidential Settlement Agreement and Release, dated as of September 16, 2014 by and among Radian Guaranty Inc., Countrywide Home Loans, Inc., and Bank of America, N.A., as a successor to BofA Home Loans Servicing f/k/a Countrywide Home Loans Servicing LP on its own behalf and as successor in interest by de jure merger to Countrywide Bank FSB, formerly Treasury Bank (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated September 16, 2014 and filed on September 19, 2014)
+10.56	Letter Agreement, effective as of December 10, 2014, between the Registrant and J. Franklin Hall (including Attachment A - Severance Agreement and Attachment B - Restrictive Covenant Agreement) (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated December 10, 2014 and filed on December 15, 2014)

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Exhibit Number	Exhibit
+10.57	Radian Group Inc. 2014 Equity Compensation Plan (incorporated by reference to Appendix A to the Registrant’s Definitive Proxy Statement on Schedule 14A (file no. 1-11356) filed on April 7, 2014 for the 2014 Annual Meeting of Stockholders)
10.58	Accelerated Share Repurchase Agreement, dated as of June 18, 2015, between the Registrant and Deutsche Bank AG, London Branch with Deutsche Bank Securities Inc. acting as agent (incorporated by reference to Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2015)
+10.59	2014 Stock Option Agreement under the 2014 Equity Compensation Plan, dated as of July 9, 2015, between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2015)
+10.60	2015 Performance-Based Restricted Stock Unit Grant Letter under the 2014 Equity Compensation Plan, dated as of July 9, 2015, between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2015)
+10.61	Form of 2015 Stock Option Agreement under the 2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.3 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2015)
+10.62	Form of 2015 Performance-Based Restricted Stock Unit Grant Letter under the 2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.4 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2015)
+10.63	Form of Amendment to Restricted Stock Unit Award Agreement for Non-Employee Directors under the 2008 Equity Compensation Plan (incorporated by reference to Exhibit 10.91 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2015)
+10.64	Form of 2015 Time-Based Restricted Stock Unit Grant Letter under the 2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.92 to the Registrant’s Annual Report on Form 10-K (file no. 1-11356) for the year ended December 31, 2015)
+10.65	Severance Agreement and Release, effective March 30, 2016, between the Registrant and Joseph D’Urso (incorporated by reference to Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended March 31, 2016)
+10.66	2016 Performance-Based Restricted Stock Unit Grant Letter under the 2014 Equity Compensation Plan, dated as of May 11, 2016, between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2016)
+10.67	2016 Stock Option Agreement under the 2014 Equity Compensation Plan, dated as of May 11, 2016, between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2016)
+10.68	Form of 2016 Performance-Based Restricted Stock Unit Grant Letter under the 2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.3 to the Registrant’s Quarterly Report on Form 10-Q (file no.

	1-11356) for the period ended June 30, 2016)
+10.69	Form of 2016 Stock Option Agreement under the 2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.4 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2016)
+10.70	Form of Executive Severance Agreement (incorporated by reference to Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2016)
+10.71	Form of Restrictive Covenant Agreement (incorporated by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended September 30, 2016)
+10.72	Employment Agreement, dated as of February 8, 2017, between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K (file no. 1-11356) dated February 7, 2017 and filed on February 13, 2017)

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+10.73	Restrictive Covenants Agreement, dated as of February 8, 2017, between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated February 7, 2017 and filed on February 13, 2017)
+10.74	Form of Restricted Stock Unit Agreement between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated February 7, 2017 and filed on February 13, 2017)
+10.75	Retirement Agreement, dated as of February 8, 2017, between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.4 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated February 7, 2017 and filed on February 13, 2017)
+10.76	Consulting Agreement, dated as of February 8, 2017, between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.5 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated February 7, 2017 and filed on February 13, 2017)
+10.77	Form of Performance Based Restricted Stock Unit Agreement between the Registrant and Sanford A. Ibrahim (incorporated by reference to Exhibit 10.6 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated February 7, 2017 and filed on February 13, 2017)
+10.78	Radian Group Inc. STI/MTI Incentive Plan for Executive Employees, as amended and restated (incorporated by reference to Exhibit 10.7 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated February 7, 2017 and filed on February 13, 2017)
+10.79	Radian Group Inc. Equity Compensation Plan (Amended and Restated as of May 10, 2017 (incorporated by reference to Appendix A to the Registrant's Definitive Proxy Statement on Schedule 14A (file no. 1-11356) filed on April 10, 2017 for the 2017 Annual Meeting of Stockholders)
+10.80	Form of 2017 Performance-Based Restricted Stock Unit Grant Letter (book value) under the Radian Group Inc. Equity Compensation Plan between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2017)
+10.81	Form of 2017 Performance-Based Restricted Stock Unit Grant Letter (TSR) under the Radian Group Inc. Equity Compensation Plan between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2017)
+10.82	Form of 2017 Time-Based Restricted Stock Unit Grant Letter under the Radian Group Inc. Equity Compensation Plan between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2017)
+10.83	Form of Executive Officer 2017 Performance-Based Restricted Stock Unit Grant Letter (book value) under the Radian Group Inc. Equity Compensation Plan (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2017)
+10.84	

	Form of Executive Officer 2017 Performance-Based Restricted Stock Unit Grant Letter (TSR) under the Radian Group Inc. Equity Compensation Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2017)
+10.85	Form of Executive Officer 2017 Time-Based Restricted Stock Unit Grant Letter under the Radian Group Inc. Equity Compensation Plan (incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q (file no. 1-11356) for the period ended June 30, 2017)
+10.86	2018 Performance-Based Restricted Stock Unit Grant Letter (book value) under the Radian Group Inc. Equity Compensation Plan between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q (file 1-11356) for the period ended June 30, 2018)
+10.87	2018 Time-Based Restricted Stock Unit Grant Letter under the Radian Group Inc. Equity Compensation Plan between the Registrant and Richard G. Thornberry (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q (file 1-11356) for the period ended June 30, 2018)

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Exhibit Number	Exhibit
+10.88	Form of Executive Officer 2018 Performance-Based Restricted Stock Unit Grant Letter (book value) under the Radian Group Inc. Equity Compensation Plan (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q (file 1-11356) for the period ended June 30, 2018)
+10.89	Form of Executive Officer 2018 Time-Based Restricted Stock Unit Grant Letter under the Radian Group Inc. Equity Compensation Plan (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q (file 1-11356) for the period ended June 30, 2018)
10.90	Credit Agreement, dated October 16, 2017, by and among the Registrant, Royal Bank of Canada, as Administrative Agent, RBC Capital Markets and U.S. Bank National Association, as Syndication Agents, Joint Lead Arrangers and Joint Book Runners, Associated Bank, National Association, as Documentation Agent, and certain other banks and financial institutions (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (file no. 1-11356) dated October 16, 2017 and filed on October 20, 2017)
*10.91	Augmenting Lender Supplement, dated October 26, 2018, to the Credit Agreement, dated as of October 16, 2017, among the Registrant, the Lenders party thereto and Royal Bank of Canada, as administrative agent
*10.92	First Amendment, dated as of December 21, 2018, to the Credit Agreement, dated as of October 16, 2017 (as amended by that certain Augmenting Lender Supplement dated as of October 26, 2018), by and among the Registrant, each of the lenders from time to time party thereto, Royal Bank of Canada, as administrative agent, and the other agents and arrangers party thereto
*21	Subsidiaries of the Registrant
*23.1	Consent of PricewaterhouseCoopers LLP
*31	Rule 13a-14(a) Certifications
**32	Section 1350 Certifications
*101	The following financial information from Radian Group Inc.'s Annual Report on Form 10-K for the year ended December 31, 2018, is formatted in XBRL (eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2018 and December 31, 2017, (ii) Consolidated Statements of Operations for the years ended December 31, 2018, 2017, and 2016, (iii) Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2018, 2017, and 2016, (iv) Consolidated Statements of Changes in Common Stockholders' Equity for the years ended December 31, 2018, 2017, and 2016, (v) Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017, and 2016, and (vi) the Notes to Consolidated Financial Statements.

*Filed herewith.
**Furnished herewith.
+ Management contract, compensatory plan or arrangement

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SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on February 28, 2019.

Radian Group Inc.

By: /s/ Richard G. Thornberry

Richard G. Thornberry
Chief Executive Officer

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Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on February 28, 2019, by the following persons on behalf of the registrant and in the capacities indicated.

Name	Title
/s/ RICHARD G. THORNBERRY **Richard G. Thornberry**	Chief Executive Officer (Principal Executive Officer) and Director
/s/ J. FRANKLIN HALL **J. Franklin Hall**	Senior Executive Vice President, Chief Financial Officer (Principal Financial Officer)
/s/ ROBERT J. QUIGLEY **Robert J. Quigley**	Senior Vice President, Controller (Principal Accounting Officer)
/s/ HERBERT WENDER **Herbert Wender**	Non-Executive Chairman of the Board
/s/ DAVID C. CARNEY **David C. Carney**	Director
/s/ HOWARD B. CULANG **Howard B. Culang**	Director
/s/ LISA W. HESS **Lisa W. Hess**	Director
/s/ STEPHEN T. HOPKINS **Stephen T. Hopkins**	Director
/s/ GAETANO MUZIO **Gaetano Muzio**	Director
/s/ GREGORY V. SERIO **Gregory V. Serio**	Director
/s/ NOEL J. SPIEGEL **Noel J. Spiegel**	Director

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All other schedules are omitted because the required information is not present or is not present in amounts sufficient to require submission of the schedules, or because the information required is included in our Consolidated Financial Statements and notes thereto.

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Radian Group Inc. and Its Consolidated Subsidiaries
Schedule I
Summary of Investments—Other Than Investments in Related Parties
December 31, 2018

Type of Investment	Amortized Cost	Fair Value	Amount Reflected on the Consolidated Balance Sheet
(In thousands)			
Fixed-maturities available for sale:			
Bonds:			
U.S. government and agency securities	$85,532	$84,070	$84,070
State and municipal obligations	138,022	138,313	138,313
Corporate bonds and notes	2,288,720	2,229,885	2,229,885
RMBS	334,843	332,142	332,142
CMBS	546,729	539,915	539,915
Other ABS	712,748	704,662	704,662
Total securities available for sale	4,106,594	4,028,987	4,028,987
Trading securities	468,696	469,071	469,071
Equity securities:			
Common stocks	150,344	140,620	140,620
Total equity securities	150,344	140,620	140,620
Short-term investments (1)	538,977	538,796	538,796
Other invested assets	308	3,415	3,415
Total investments other than investments in related parties	$5,264,919	$5,180,889 (2)	$5,180,889 (2)

(1) Includes cash collateral held under securities lending agreements of $11.7 million that is reinvested in money market instruments.

(2) Includes $7.4 million of fixed maturity securities available for sale, $10.1 million of trading securities and $10.4 million of equity securities loaned under securities lending agreements that are classified as other assets in our consolidated balance sheets.

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Radian Group Inc.
Schedule II—Financial Information of Registrant
Condensed Balance Sheet
Parent Company Only

(In thousands, except per-share amounts)	December 31, 2018	2017
Assets		
Investments		
Fixed-maturities available for sale—at fair value	$321,401	$10,785
Trading securities—at fair value	56,011	—
Equity securities—at fair value	29,375	—
Short-term investments—at fair value	238,185	83,356
Total investments	644,972	94,141
Cash	32,352	13,173
Investment in subsidiaries, at equity in net assets (Note B)	3,927,268	3,764,865
Accounts and notes receivable (Note C)	101,072	103,561
Federal income taxes recoverable, net—current	49,381	35,741
Other assets (Note D)	58,993	166,051
Total assets	$4,814,038	$4,177,532
Liabilities and Stockholders' Equity		
Senior Notes (Note E)	$1,030,348	$1,027,074
Federal income taxes—deferred	243,341	97,067
Other liabilities	51,634	53,353
Total liabilities	1,325,323	1,177,494
Common stockholders' equity		
Common stock: par value $.001 per share; 485,000 shares authorized at December 31, 2018 and 2017; 231,132 and 233,417 shares issued at December 31, 2018 and 2017, respectively; 213,473 and 215,814 shares outstanding at December 31, 2018 and 2017, respectively	231	233
Treasury stock, at cost: 17,660 and 17,603 shares at December 31, 2018 and 2017, respectively	(894,870)	(893,888)
Additional paid-in capital	2,724,733	2,754,275
Retained earnings	1,719,541	1,116,333
Accumulated other comprehensive income (loss)	(60,920)	23,085
Total common stockholders' equity	3,488,715	3,000,038
Total liabilities and stockholders' equity	$4,814,038	$4,177,532

See Supplemental Notes.

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Radian Group Inc.
Schedule II—Financial Information of Registrant
Condensed Statements of Operations
Parent Company Only

(In thousands)	Year Ended December 31, 2018	2017	2016
Revenues:			
Net investment income	$21,294	$22,528	$20,834
Net gains (losses) on investments and other financial instruments	(470)	(328)	(150)
Other income	—	80	49
Total revenues	20,824	22,280	20,733
Expenses:			
Loss on induced conversion and debt extinguishment	—	51,469	75,075
Interest expense	17,805	18,033	29,002
Total expenses (Note F)	17,805	69,502	104,077
Pretax gain (loss) from continuing operations	3,019	(47,222)	(83,344)
Income tax benefit	(3,319)	(141,437)	(8,676)
Equity in net income of affiliates	599,673	26,873	382,921
Net income	606,011	121,088	308,253
Other comprehensive income (loss), net of tax	(86,953)	35,480	6,082
Comprehensive income	$519,058	$156,568	$314,335

See Supplemental Notes.

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Radian Group Inc.
Schedule II—Financial Information of Registrant
Condensed Statements of Cash Flows
Parent Company Only

(In thousands)	**Year Ended December 31,** 2018	2017	2016
Net cash provided by (used in) operating activities	254,698	(23,654)	38,902
Cash flows from investing activities:			
Proceeds from sales of:			
Fixed-maturity investments available for sale	6,779	58,007	47,058
Trading securities	—	—	30,350
Equity securities	—	—	24,992
Proceeds from redemptions of:			
Fixed-maturity investments available for sale	12,391	60,414	49,578
Trading securities	—	—	10,000
Purchases of:			
Fixed-maturity investments available for sale	(37,552)	(134,456)	(137,431)
Sales, redemptions and (purchases) of :			
Short-term investments, net	(131,164)	210,529	(40,288)
Other assets, net	(3,317)	(1,107)	239
Capital distributions from subsidiaries	—	924	15,000
Capital contributions to subsidiaries	(30,338)	(21,643)	(1,500)
Acquisition of subsidiaries	—	—	(30,443)
(Issuance) repayment of note receivable from affiliate (Note C)	—	(44)	201,631
Net cash provided by (used in) investing activities	(183,201)	172,624	169,186
Cash flows from financing activities:			
Dividends paid	(2,140)	(2,154)	(2,105)
Issuance of senior notes, net	—	442,163	343,417
Purchases and redemptions of senior notes	—	(593,527)	(445,072)
Proceeds from termination of capped calls	—	4,208	—
Issuance of common stock	1,385	7,132	717
Purchases of common shares	(50,053)	(6)	(100,188)
Credit facility commitment fees paid	(1,510)	(1,993)	—
Excess tax benefits from stock-based awards (Note A)	—	—	98
Net cash provided by (used in) financing activities	(52,318)	(144,177)	(203,133)
Increase (decrease) in cash and restricted cash	19,179	4,793	4,955
Cash and restricted cash, beginning of period	13,173	8,380	3,425
Cash and restricted cash, end of period	$32,352	$13,173	$ 8,380

See Supplemental Notes.

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Radian Group Inc.
Schedule II—Financial Information of Registrant
Parent Company Only
Supplemental Notes
Note A

The Radian Group Inc. (the “Parent Company”, “we” or “our”) financial statements represent the stand-alone financial statements of the Parent Company. These financial statements have been prepared on the same basis and using the same accounting policies as described in the consolidated financial statements included herein, except that the Parent Company uses the equity-method of accounting for its majority-owned subsidiaries. These financial statements should be read in conjunction with our consolidated financial statements and the accompanying notes thereto.

Note B

During 2018, the Parent Company made total capital contributions of $98.1 million to its subsidiaries. This amount included a $30.3 million cash contribution to Radian Title Services Inc., part of which was used to acquire EnTitle Direct in March 2018, and a $1.7 million capital contribution to Enhance Financial Services Group Inc. in lieu of receiving tax payments due under our tax sharing agreement. We also effectively contributed $66.1 million to Clayton Group Holdings Inc. to reflect the impairment of the interest receivable on our intercompany note that was recorded during 2018 of $17.8 million and the outstanding intercompany receivable balance of $48.3 million representing the services segment’s share of unreimbursed direct and allocated costs.

During 2018, the Parent Company received a $450.0 million distribution from Radian Guaranty, which included $55.4 million of cash and $394.6 million of marketable securities. Under the cumulative earnings approach, we considered this distribution to be a return on investment and classified as operating cash flow. The Parent Company also received tax payments of $229.6 million from its subsidiaries under our tax sharing agreement.

During 2017, the Parent Company made total capital contributions of $521.0 million to its subsidiaries. This amount included a $175.0 million contribution to Radian Reinsurance, consisting of $21.4 million of cash and $153.6 million of marketable securities, and a $0.2 million cash contribution to Radian Mortgage Assurance. The Parent Company also made a $3.1 million capital contribution to Enhance Financial Services Group Inc. in lieu of receiving tax payments due under our tax sharing agreement. We also effectively contributed $342.7 million to Clayton Group Holdings Inc. to reflect the impairment of our $300 million intercompany note receivable and $42.7 million of interest receivable on the intercompany note as of December 31, 2017.

During 2017, the Parent Company received a $175.0 million distribution from Radian Guaranty, which included $21.4 million of cash and $153.6 million of marketable securities, all of which was subsequently contributed to Radian Reinsurance. In addition, the Parent Company liquidated three of its subsidiaries and received liquidating dividends totaling $26.5 million. This amount reflected liquidating dividends from Radian Mortgage Insurance, Radian Mortgage Reinsurance Company and RDN Investments, Inc. of $24.9 million, $1.0 million and $0.6 million, respectively, and included cash dividends of $2.7 million, $0.6 million and $0.5 million, respectively, and the distribution of deferred and current tax recoverables of $22.2 million, $0.4 million and $0.1 million, respectively. The Parent Company also received tax payments of $50.7 million from its subsidiaries under our tax sharing agreement.

Note C

Accounts and notes receivable included a $300 million note receivable from Clayton Group Holdings Inc. as of December 31, 2018 and 2017. This represents the original principal amount related to the Senior Notes due 2019, which funded the acquisition of Clayton in June 2014. Interest on the note is payable semi-annually on June 1 and December 1. The interest payment represents coupon interest plus issuance costs (amortized on a straight line basis over the term of the note). The principal is due on June 1, 2019 although, in the event of non-payment, the note terms reflect that the note remains outstanding and continues to accrue interest at the coupon rate. The Services segment has not generated sufficient cash flow to reimburse the Parent Company for its share of its direct and allocated operating expenses and interest expense, and we do not expect that the Services segment will be able to bring its reimbursement obligations current in the foreseeable future. Therefore, we have recorded an allowance against the outstanding balance of the $300 million note receivable at December 31, 2018 and 2017.

Accounts and notes receivable also included, as of December 31, 2018 and 2017, a $100 million Surplus Note from Radian Guaranty. In December 2017, the Parent Company transferred $100 million of primarily marketable securities and a

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small amount of cash to Radian Guaranty in exchange for a Surplus Note issued by Radian Guaranty. See Note 19 of Notes to Consolidated Financial Statements for additional information related to the Surplus Note.

Note D

Other assets decreased as of December 31, 2018, compared to December 31, 2017, by $107.1 million, primarily as a result of the settlement of the Company's dispute related to the IRS Matter and the Company's utilization of its $88.6 million of "qualified deposits" with the U.S. Treasury to settle its $31 million obligation to the IRS. In 2019, the Company expects the IRS to refund the remaining $58 million that was previously on deposit. Also contributing to this decrease was a $28.7 million net decrease in the intercompany receivable balance primarily related to the Services segment (See Notes C and F for additional information), offset by increases in other assets. As disclosed above in Note C, the Services segment has not generated sufficient cash flow to reimburse the Parent Company for its share of a portion of its direct and all of its allocated operating expenses and interest expense related to the $300 million note receivable. Therefore, at December 31, 2018 and 2017, we recorded an allowance of $60.5 million and $42.7 million, respectively, against the outstanding balance of the interest receivable. During 2018, the intercompany receivable balance reflected an increase in the balance due related to the Services segment's share of direct and allocated operating expenses of $13.0 million and $8.5 million, which was advanced to the Services segment and used for the acquisition of Independent Settlement Services and Five Bridges in the fourth quarter of 2018. At December 31, 2018, we recorded an allowance of $48.3 million against the entire outstanding intercompany receivable balance from Clayton Group Holdings Inc., which represented the Services segments' share of unreimbursed direct and allocated operating expenses.

Note E

During 2017, the Parent Company successfully completed a series of transactions to strengthen its capital position, including reducing its overall cost of capital and improving the maturity profile of its debt. See Notes 12 and 15 of Notes to Consolidated Financial Statements for additional information on our loss on induced conversion and debt extinguishment, senior notes and capital stock.

At December 31, 2018, the maturities of the principal amount of our senior notes in future years are as follows:

(In thousands)	
2019	$158,623
2020	234,126
2021	197,661
2024	450,000
Total	$1,040,410

Note F

The Parent Company provides certain services to its subsidiaries. The Parent Company allocates to its subsidiaries expenses it incurs in the capacity of supporting those subsidiaries, including operating expenses, which are allocated based on the forecasted annual percentage of total revenue, which approximates the estimated percentage of time spent on certain subsidiaries, and interest expense, which is allocated based on relative capital. These expenses are presented net of allocations in the Statements of Operations. Substantially all operating expenses and most of our interest expense, except for discount amortization on our senior notes, have been allocated to the subsidiaries for 2018, 2017 and 2016.

Amounts allocated to the subsidiaries for expenses are based on actual cost, without any mark-up. The Parent Company considers these charges fair and reasonable. The subsidiaries generally reimburse the Parent Company for these costs in a timely manner, which has the impact of temporarily improving the cash flows of the Parent Company, if accrued expenses are reimbursed prior to actual payment. See Note D for additional information.

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The following table shows the components of our Parent Company expenses that have been allocated to our subsidiaries for the periods indicated:

	Year Ended December 31,		
(in thousands)	2018	2017	2016
Allocated operating expenses	$94,815	$72,764	$56,446
Allocated interest expenses	42,195	44,686	52,092
Total allocated expenses	$137,010	$117,450	$108,538

Interest expense was relatively unchanged in 2018 as compared to 2017. Interest expense during 2017 and 2016 reflected the discount amortization on our senior notes, as well as coupon interest attributable to the Convertible Senior Notes due 2019 and the Senior Notes due 2019. The reduction in interest expense in 2017 as compared to 2016 was primarily attributable to lower expense following the induced conversion and extinguishment of $21.6 million of our remaining Convertible Senior Notes due 2017 in the second quarter of 2017 and the redemption of the remaining $68.0 million of our Convertible Senior Notes due 2019 during January 2017.

Note G

We, and certain of our subsidiaries, have entered into the following intercompany guarantees:

- Radian Group and Radian Mortgage Assurance are parties to a guaranty agreement, which provides that Radian Group will make sufficient funds available to Radian Mortgage Assurance to ensure that Radian Mortgage Assurance has a minimum of $5 million of statutory policyholders’ surplus every calendar quarter. Radian Mortgage Assurance had $8.7 million of statutory policyholders’ surplus and no RIF exposure as of December 31, 2018.
- To allow our mortgage insurance customers to comply with applicable securities regulations for issuers of ABS (including mortgage-backed securities), we have been required, depending on the amount of credit enhancement we were providing, to provide: (i) audited financial statements for the insurance subsidiary participating in these transactions or (ii) a full and unconditional holding-company level guarantee for our insurance subsidiaries’ obligations in such transactions. Radian Group has guaranteed two structured transactions for Radian Guaranty with $87.8 million of aggregate remaining credit exposure as of December 31, 2018.
- Radian Group and Radian Guaranty Reinsurance are parties to an Assumption and Indemnification Agreement with regard to obligations under our tax-sharing arrangements. Pursuant to this agreement, Radian Group is required to assume certain obligations that arise as a result of our tax-sharing arrangement.

Radian Group Inc.
Schedule IV—Reinsurance
Insurance Premiums Earned
Years Ended December 31, 2018, 2017 and 2016

($ in thousands)	Gross Amount	Ceded to Other Companies	Assumed from Other Companies	Net Amount	Assumed Premiums as a Percentage of Net Premiums	
2018	$1,074,298	$67,195	$ 6,904	$1,014,007	0.68	%
2017	$990,016	$57,271	$ 28	$932,773	0.00	%
2016	$999,093	$77,359	$ 35	$921,769	0.00	%