



# Arch Mortgage May 2018

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Some non-GAAP measures of financial performance also may be referred to during this presentation. The reconciliation to GAAP and definition of operating income can be found in the Current Report on Form 8-K furnished to the SEC by Arch Capital Group Ltd. (the "Company") in connection with its most recent earnings press release, and is also available on the Company's website: [www.archcapgroup.com](http://www.archcapgroup.com). From time to time, the Company posts additional financial information and presentations to its website, including information with respect to its subsidiaries, and investors and other recipients of this information are encouraged to check the website.

## **Favorable market conditions for Mortgage Insurance (MI).**

- Rebounding economy, including home price appreciation.
- Credit box remains “tight” with no signs of subprime products.
- More stringent capital requirements (PMIERS) provide increased market discipline.

## **Diversification within MI products enhance the MI Segment’s earnings.**

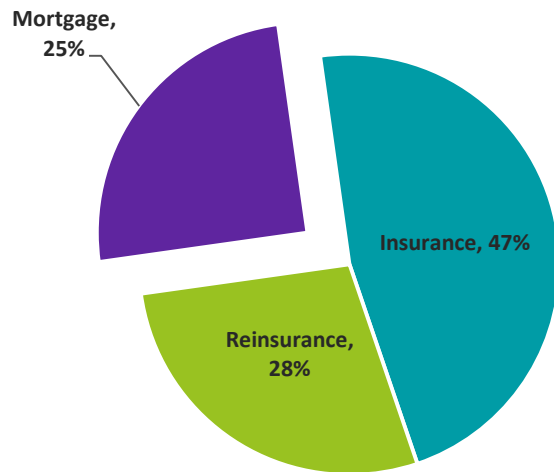
- Primary MI generated \$587 million of underwriting income in 2017.
- Non-traditional MI business generated \$79 million of underwriting (UW) income in 2017.
- Earned premium from business outside the U.S. doubled in 2017.

## **Sustainable earnings are visible with MI.**

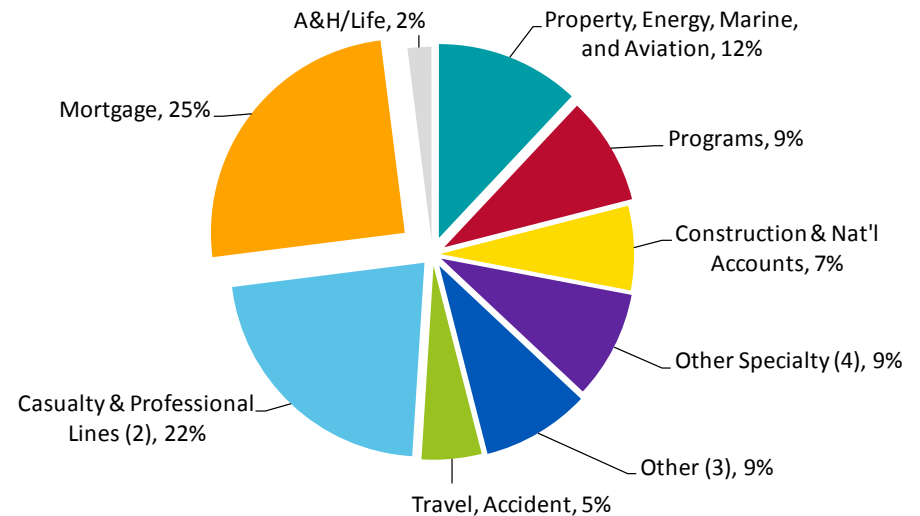
- Rate decreases only apply to New Insurance Written (NIW).
  - 60% plus of UW income three years from now will come from business written in 2017 and prior.
  - Five years from now, over 40% of UW income will still come from business written in 2017 and prior.
- Despite recent industry rate changes, new business Return on Equity remains attractive.

Diversification enhances earnings stability by enabling better cycle management.

**Arch Capital Group**  
**Net Written Premiums by Segment (\$4.5B)<sup>1</sup>**  
 TTM March 31, 2018

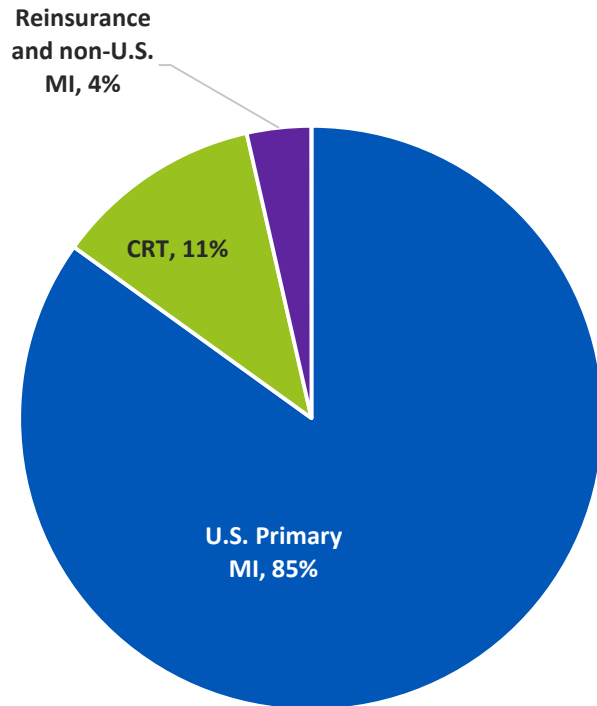


**Arch Capital Group**  
**Net Written Premiums by Line (\$4.5B)<sup>1</sup>**  
 TTM March 31, 2018



<sup>1</sup> Based on net premiums written, excluding amounts attributable to the "other" segment (Watford).  
<sup>2</sup> Includes casualty, professional liability, executive assurance, healthcare, contract binding and excess motor.  
<sup>3</sup> Includes insurance for lenders products, alternative markets and other insurance and reinsurance.  
<sup>4</sup> Includes reinsurance for proportional motor, trade credit, surety, workers' compensation catastrophe and other.

Arch Mortgage Segment  
FY2017 Underwriting Income  
\$691M



Mortgage Segment diversification  
enhances returns

- Expanded product offerings increase market opportunity.
- Leverages Arch MI underwriting and data.
- Allows optimization of capital allocation across products.
- Improves earnings stability.
- Positions Arch Mortgage for market evolution.

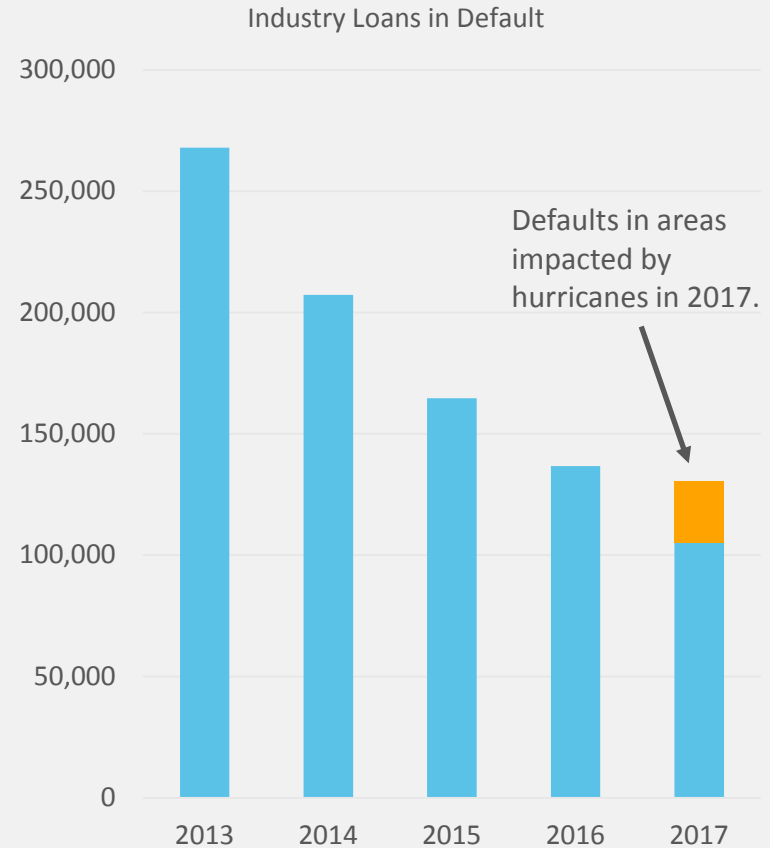
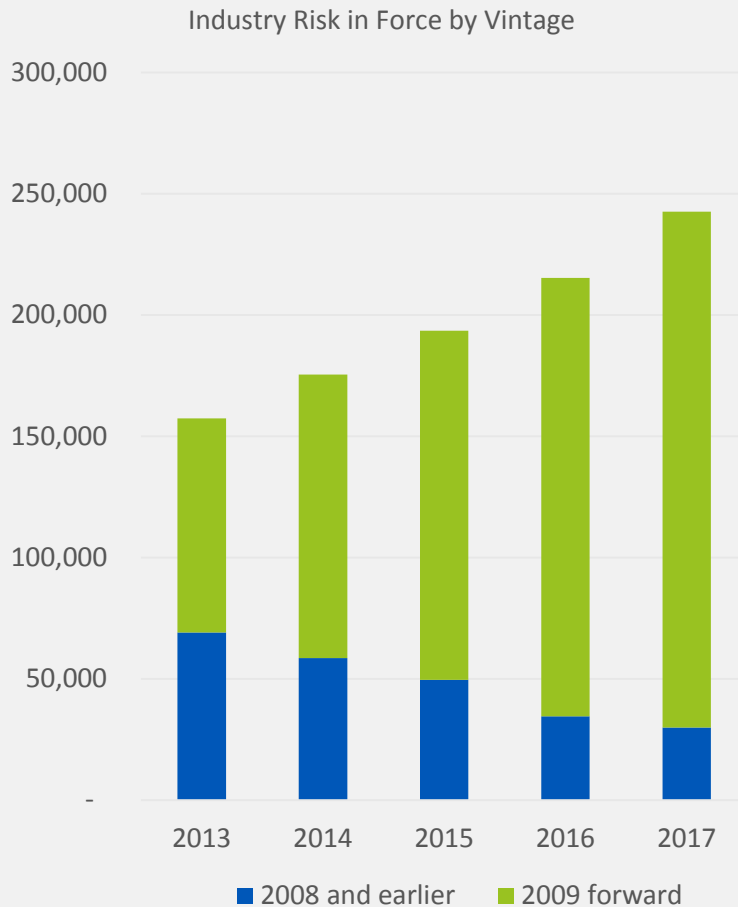
## Macroeconomic conditions support mortgage originations.

- Interest rates are in a “sweet spot” for mortgage insurers.
  - Rates are low enough to support home purchases – positive for Insurance in Force (IIF) growth.
  - Expectations for rising rates means declining refinancing activity – helps lower expenses.
- Unemployment has been declining while wage growth has been accelerating.
- Demographics: Strong household formations and aging of millennials supports growth in first-time home buyers.
- Affordability is at historically high levels.

## MI industry trends are very favorable.

- Lenders and GSEs remain generally conservative from an underwriting standpoint.
- Demand for MI remains strong as the upward trend in home prices since 2011 has made it more difficult for first-time homebuyers to make a 20% down payment.
- MI is still a “purchase” product. Expectations are that purchases will be at worst stable but likely to increase.

## Insurance in Force (IIF) Is Growing and Defaults are Declining



Industry defined as U.S. MI operations of Arch, Radian Group, Inc. Essent Group, Inc. MGIC Investment Corp., Genworth Financial, Inc. and NMI Holdings, Inc. Industry excludes MIs that were placed in runoff, which would have RIF outstanding.

# Housing Affordability is Above Historical Average

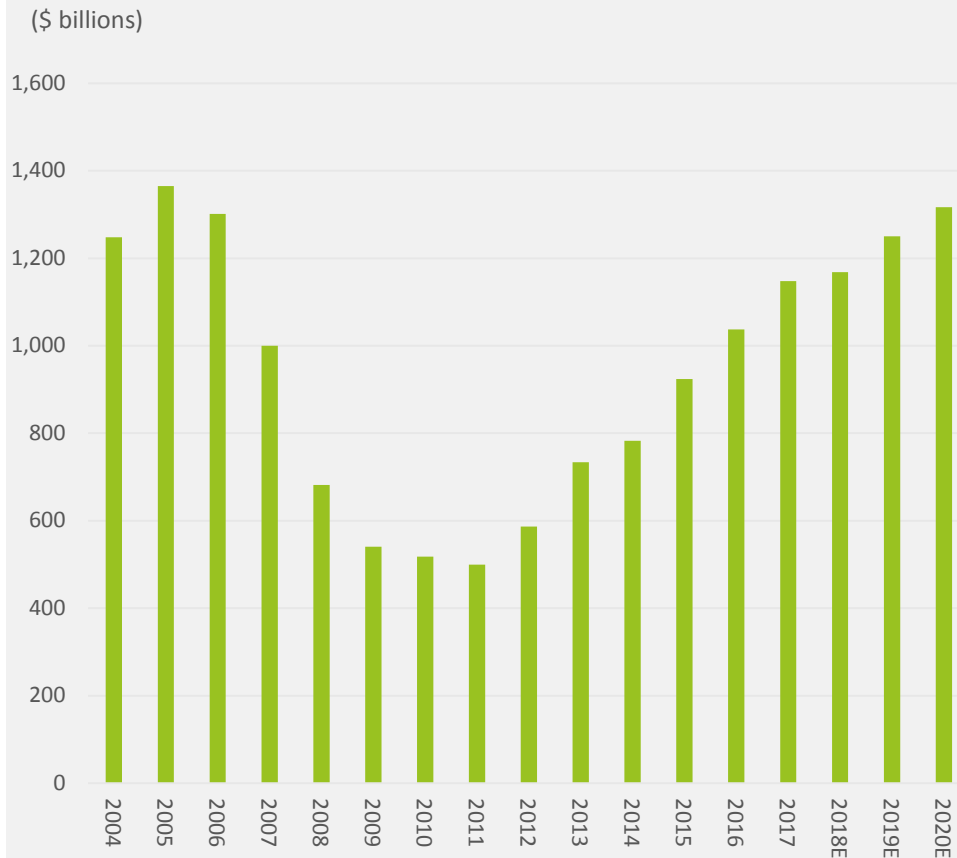
## Composite Housing Affordability Index for U.S.



Source: National Association of Realtors (NAR): Housing Affordability for the United States; Moody's Analytics Adjusted.



## Mortgage Originations from Purchase Transactions Should Help IIF Growth

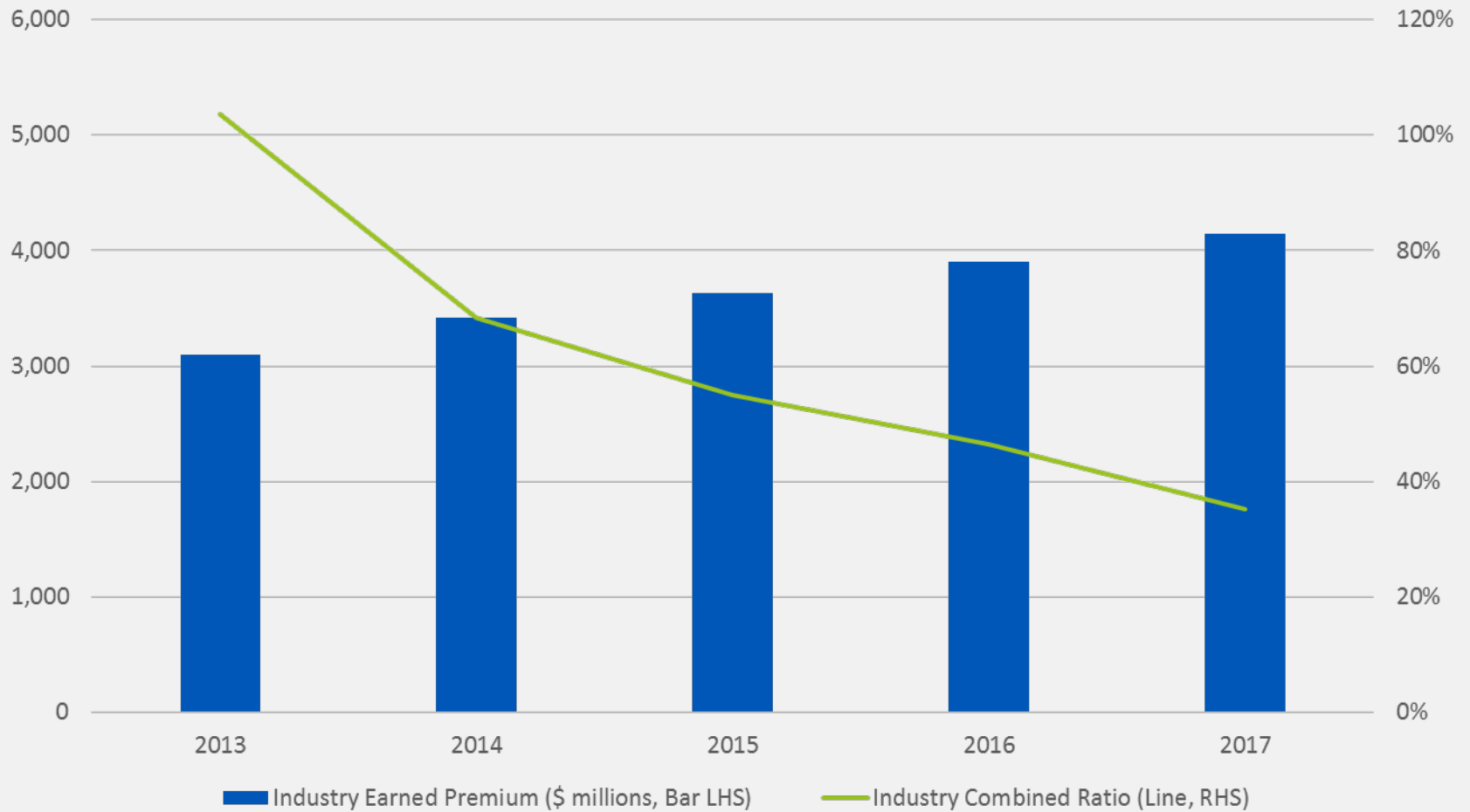


### Upward trend in purchase transactions reflects strong demand for housing.

- Strong demand for housing is supported by a robust job market and strong household formations.
- Unemployment rate declined to 3.9% in April, the lowest level since 2000.
- Average hourly wage growth approached 3% in April.
- Household formations increased to an annual rate of over 1.3 million in March.
- Mortgage insurers' penetration rate is 4x higher on purchase transactions than refinancing activity.

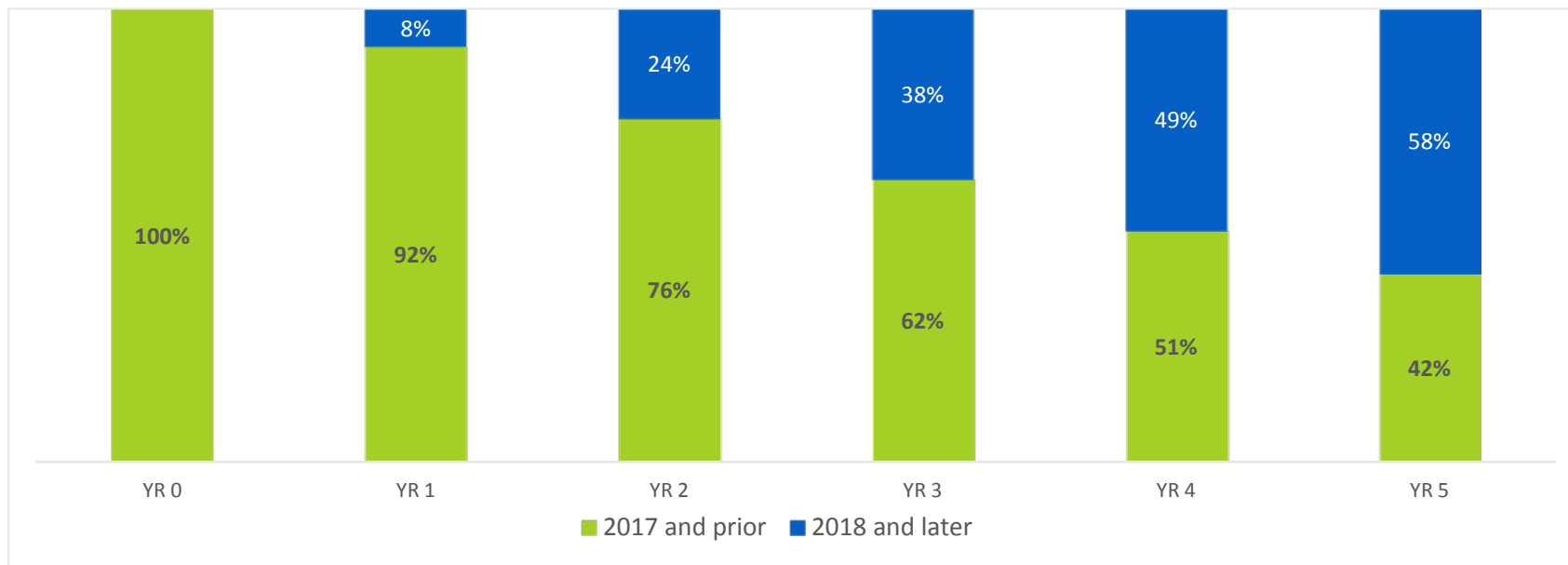
Source: Inside Mortgage Finance for historical data and Mortgage Bankers Association for expectations for 2018–2020.

## Solid Fundamentals Translate into Strong Top Line and Bottom Line Results



Industry defined as U.S. MI operations of Arch, Radian Group, Inc. Essent Group, Inc. MGIC Investment Corp., Genworth Financial, Inc. and NMI Holdings, Inc. Industry excludes MIs that were placed in runoff, which would have RIF outstanding.

## Underwriting Income Composition on U.S. Model Portfolio by IIF Vintage<sup>1, 2</sup> Assuming 10% Price Reduction Today

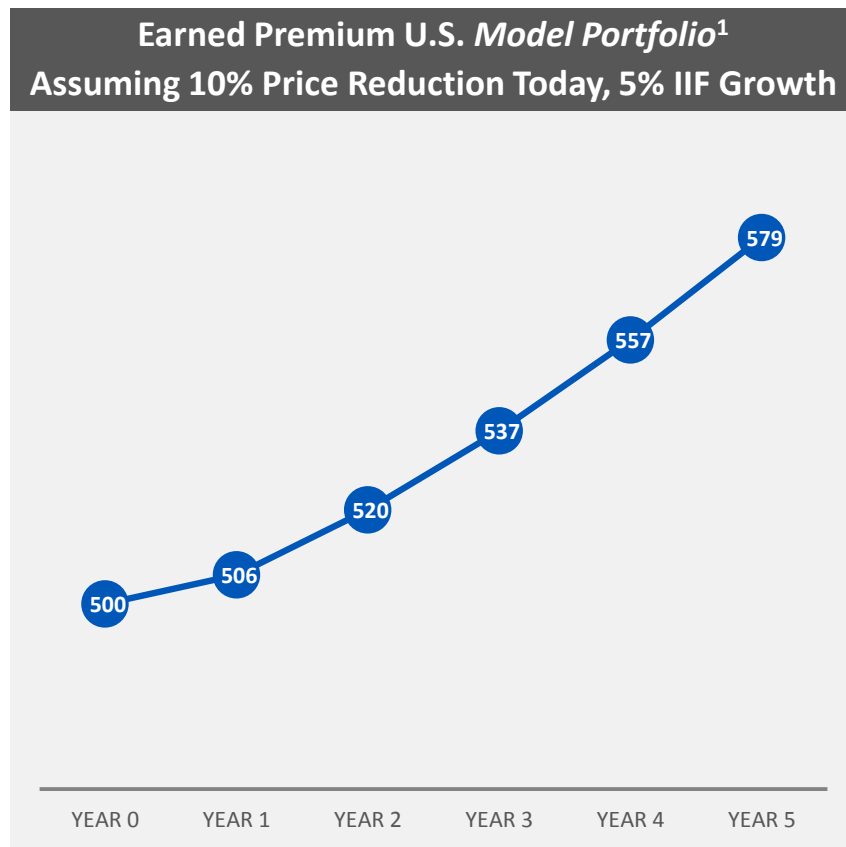
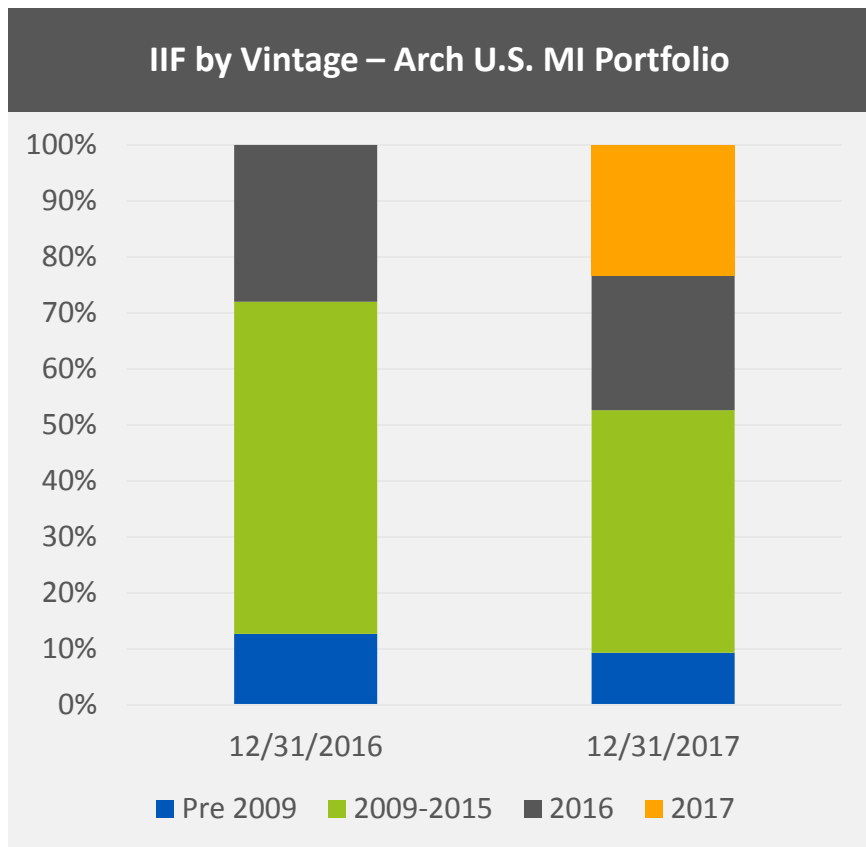


- It takes five years for price changes to meaningfully impact underwriting income.
- 60% plus of underwriting income three years from now will come from business written in 2017 and prior.

***Assumptions on Model Portfolio for illustrative purposes only and are not intended to reflect the actual, current or future results for Arch U.S. MI.***

<sup>1</sup> Assumptions: \$100B IIF at YR0, 80% persistency, 50 bps premium yield before price reduction, 10% assumed price reduction on new business, 25% loss ratio on pre-price reduction basis, 20% expense ratio on pre-price reduction basis. <sup>2</sup> Assumes IIF stays flat at \$100B over the 5 years.

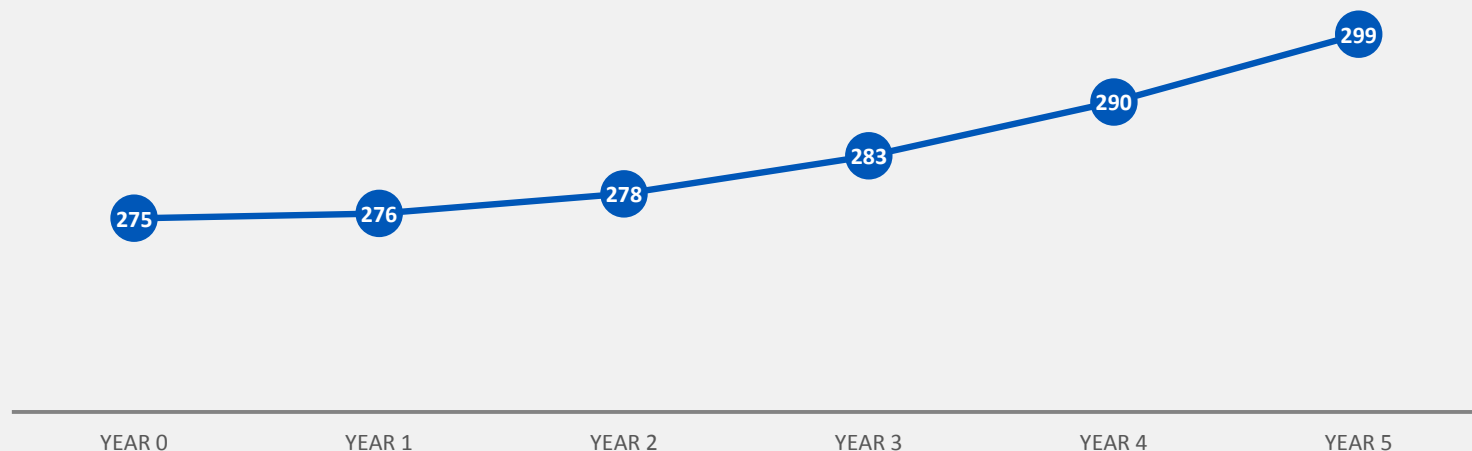
Pricing actions taken in 2018 will not affect pricing on business written prior to 2018; therefore, its effect on near-term revenue is modest.



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<sup>1</sup> Assumptions: \$100B IIF at Year 0, 80% persistency, 50 bps premium yield before price reduction, 10% assumed price reduction on new business, 25% loss ratio on pre-price reduction basis, 20% expense ratio on pre-price reduction basis, 5% IIF Growth.

## Underwriting Income on U.S. Model Portfolio (\$M)<sup>1</sup> Assuming 10% Price Reduction Today, 5% IIF Growth



***Assumptions on Model Portfolio for illustrative purposes only and are not intended to reflect the actual, current or future results for Arch U.S. MI.***

<sup>1</sup> Assumptions: \$100B IIF at Year 0, 80% persistency, 50 bps premium yield before price reduction, 10% assumed price reduction on new business, 25% loss ratio on pre-price reduction basis, 20% expense ratio on pre-price reduction basis, 5% IIF Growth.

Arch U.S. MI uses RateStar to manage its exposure to housing cycles related to macroeconomic, loan, property and borrower attributes.

RateStar consists of 1.3M unique rates and adjustments across 17 risk dimensions.

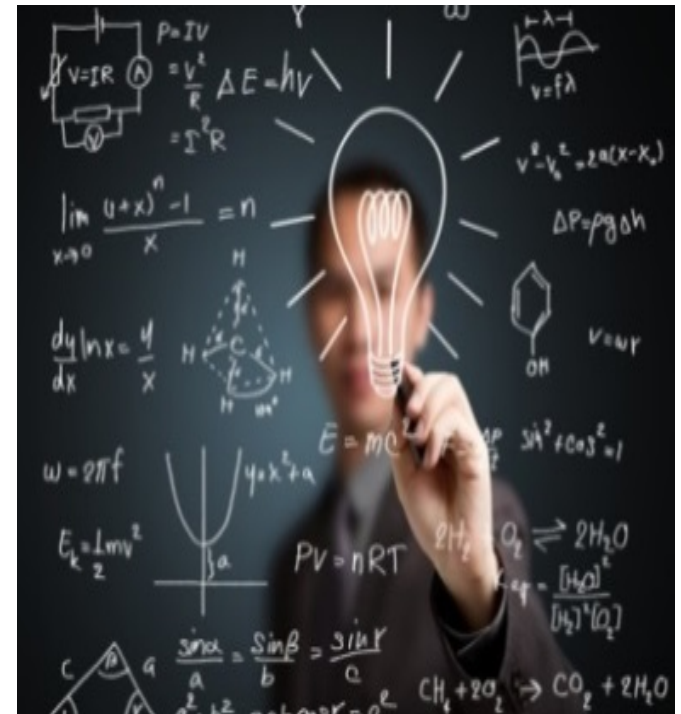
- Arch U.S. MI risk-based pricing (RBP) accounted for 80% of NIW in 1Q2018.

RBP depends on three critical processes.

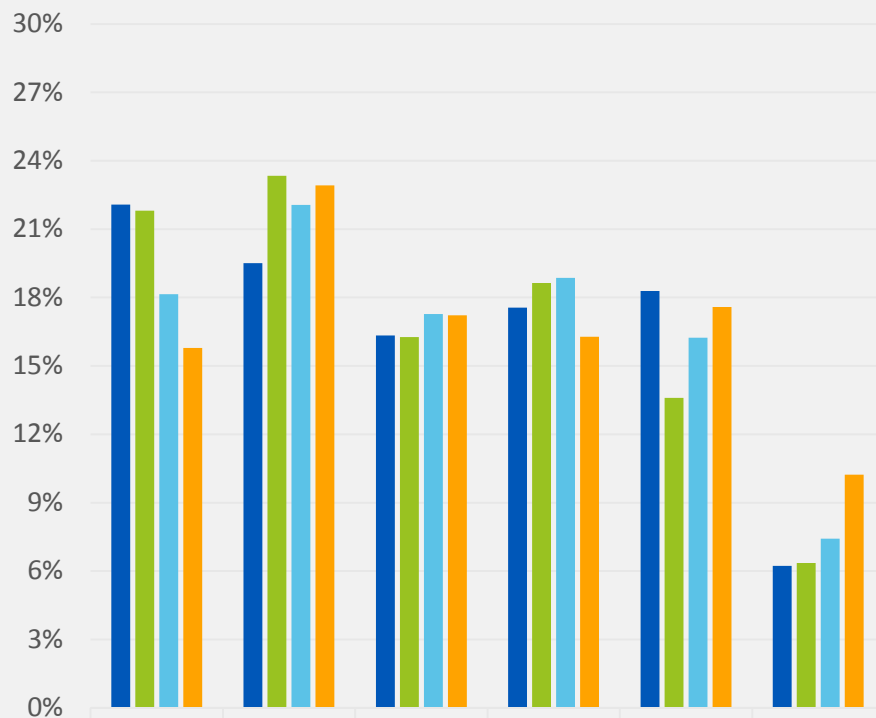
- Employ sophisticated analytics to determine the appropriate price for a risk.
- Develop pricing flexibility with state regulatory filings.
- Interface with mortgage originator systems.

Competitor adoption of RBP should be net positive for industry.

- Broad based adoption of RBP should improve industry's ability to manage through deterioration in the credit cycle.
- Competitors remain behind Arch's ten years of RBP experience.



## Market Share of NIW with LTV > 95%

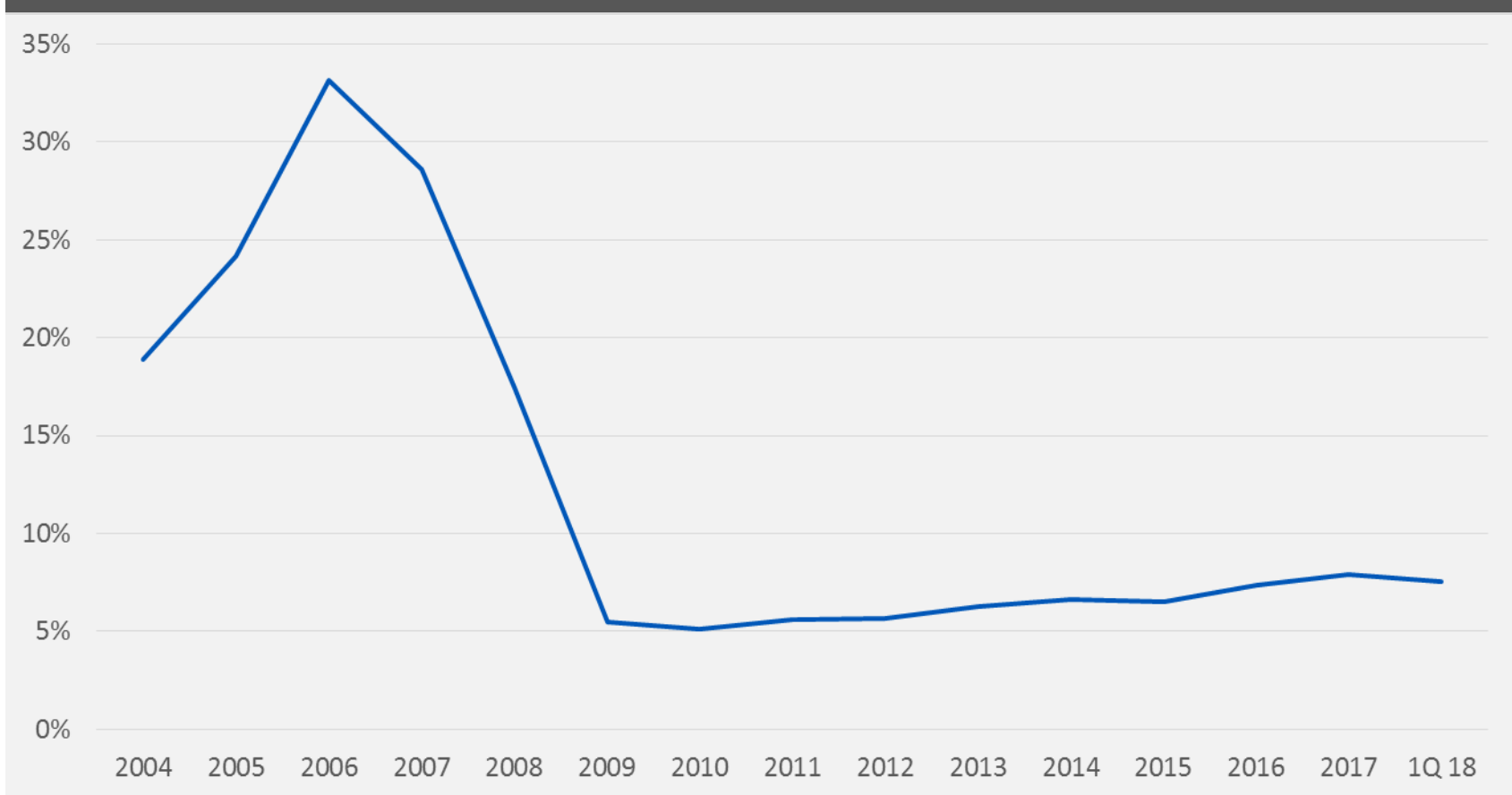


## RateStar is effective at managing emerging underwriting risks.

- On July 29, 2017, Fannie Mae increased the debt-to-income (DTI) threshold in its automated underwriting system (AUS) to 50% from 45%.
  - The portion of Fannie Mae’s high LTV mortgages with a DTI greater than 45% increased from ~2% before the change to **almost 20% in 4Q17**.
  - Mortgages with DTI ratios greater than 45% represented **12% of Arch’s NIW in 1Q18**.
    - We believe our portion of mortgages with DTI ratios greater than 45% is less than the industry’s portion — which we believe is ~20% — because RateStar incorporates DTI in pricing.
  - Fannie Mae recently enacted restrictions to curb its acquisitions of mortgages with DTI ratios greater than 45%; FICO below 700.

PMIERS encourage underwriting discipline by requiring significantly more capital for riskier loans.

PMIERS Risk-Based Required Assets/Risk Written by Vintage



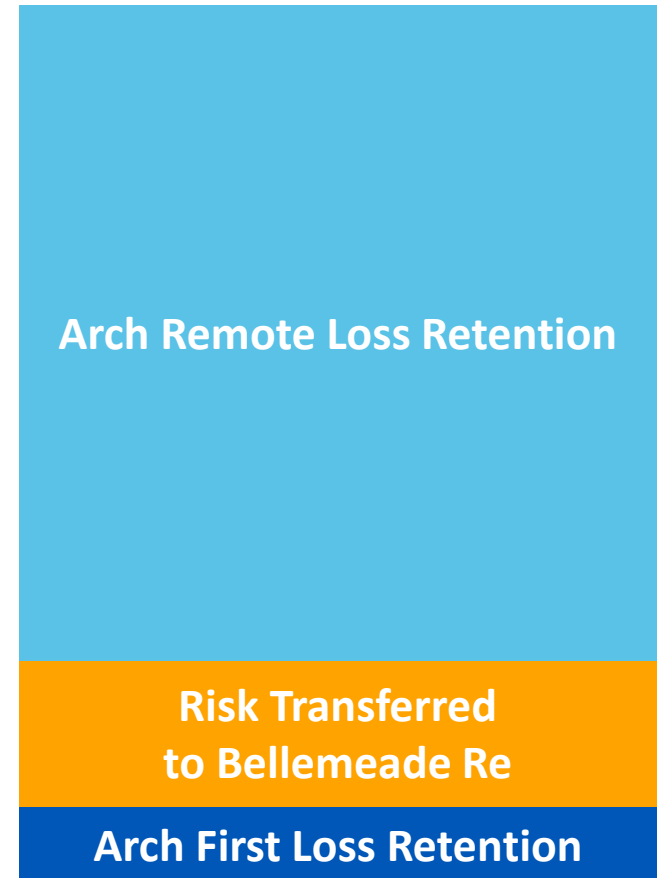


- Four issues transferred \$1.3 billion of RIF totaling \$30 billion in aggregate.
- Attachment and detachment points vary by transaction.
  - Two most recent transactions attached at 2.25% of RIF and detached at 7.25% of RIF.

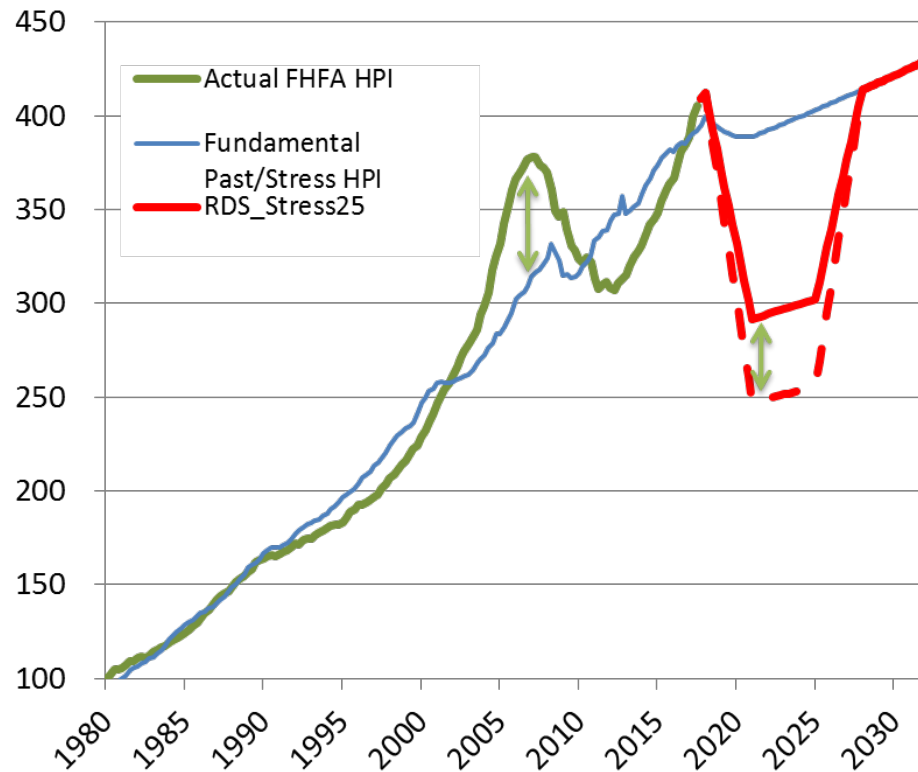
## Bellemeade Re accomplishes three key objectives for Arch.

1. Mitigates losses in a stress scenario.
2. Reduces required capital.
3. Provides insight into capital markets' view of mortgage risk.

### Bellemeade Re Structure



- Caps our exposure to mortgage risk at 25% of tangible equity.
  - RDS is designed to require more capital as mortgage and credit risk expand.
  - Current RDS is 16.4% of tangible equity.
- Preserves our ability to compete following a severe event.



**Arch Mortgage's market leadership and culture of innovation has developed new earnings streams that directly benefit shareholders.**

- Arch's Mortgage Segment plays an important role in our specialty insurance businesses by providing a predictable stream of high average returns.
- Potential for higher average returns from Mortgage given current hard market conditions.
- Diversified approach to MI businesses puts Arch in a better position to navigate through changes in market opportunities.
- Development of fee income enhances the Arch Mortgage Segment's earnings.
  - Arch MRT receives a ceding commission for administering GSEs' purchase of investor paid MI.
  - Arch Credit Risk Services earns fee income by advising clients on CRT transactions.

## Questions?

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