Mortgage Credit Risk Transfer (CRT) during a Pandemic

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2020 Virtual Casualty Actuaries in Reinsurance (CARe) Meeting
June 2, 2020

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Schmitz Discussion topics

- Credit Risk Transfer Brief Introduction
  - ✓ Private Mortgage Insurance (PMI)
  - ✓ Credit Risk Transfer (CRT)
- Economics during a pandemic
  - ✓ Interest Rates
  - ✓ Unemployment
  - ✓ Home Prices
- Reinsurance vs. Capital Markets during a pandemic

Polling Question 1:

How would you characterize your knowledge/involvement in the mortgage/CRT market?

A. Little or no knowledge/involvement
B. Modest knowledge/involvement
C. Average knowledge/involvement
D. Advanced/substantial knowledge/involvement
E. Expert or market leading knowledge/involvement

Basics of Private Mortgage Insurance (PMI)

- Front-end risk transfer
- Covers lender/investor for financial loss if borrower defaults
- Generally required if (loan > 80% x property value)
- Long term contracts with pricing set up front
- Reserves only cover delinquent loans – claims vs cures
- But ultimate losses have substantial tail risk
- Mismatch between revenue and expense
- Therefore contingency reserves and capital requirements
- Reserving: short-ish tail
- Pricing/PDR/Capital Adequacy: long tail!
- Also Enterprise Paid Mortgage Insurance (EPMI): GSE places coverage with panel of reinsurers

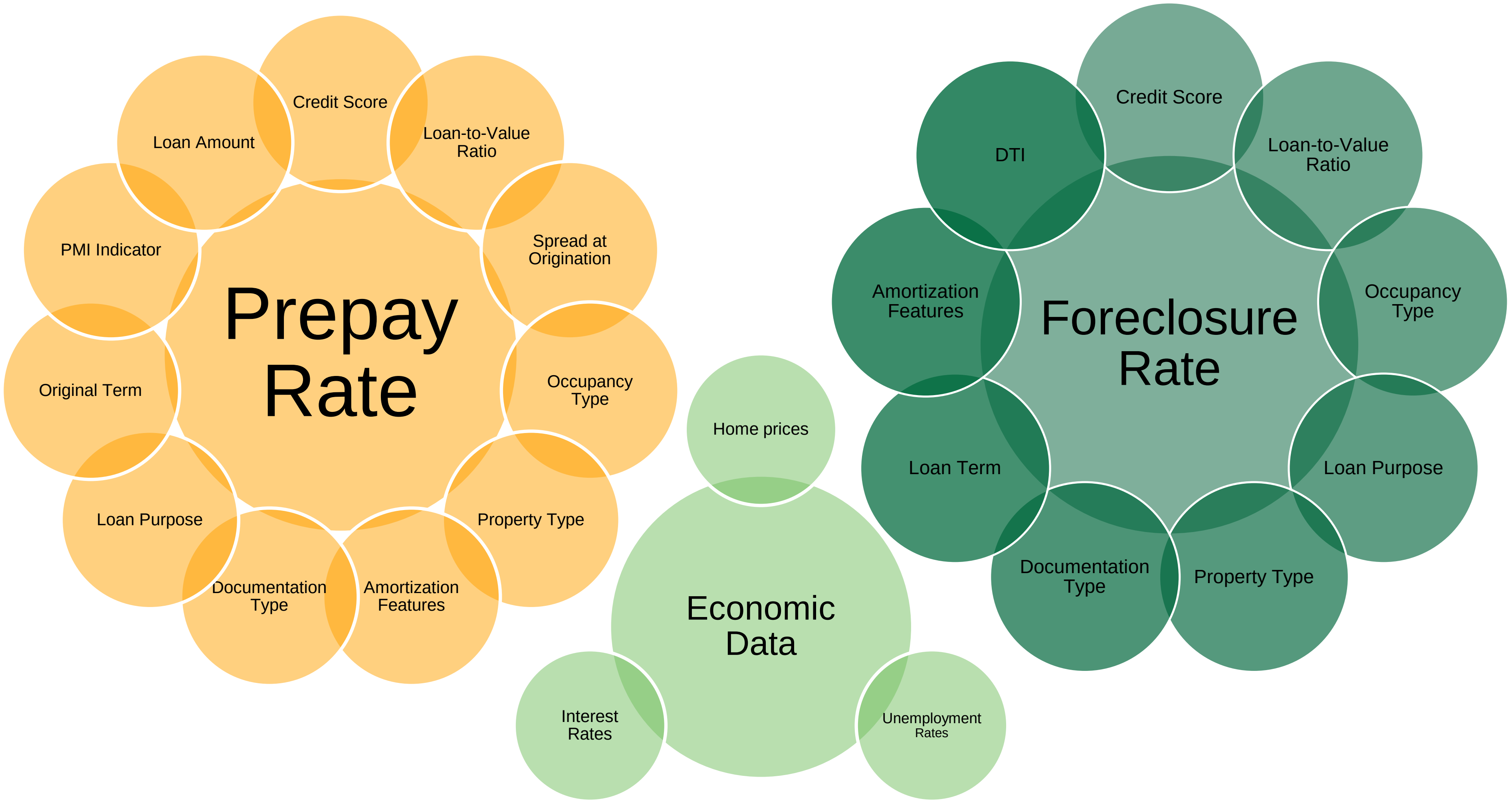
Back-End Credit Risk Transfer (CRT) Transactions

Types of Transactions

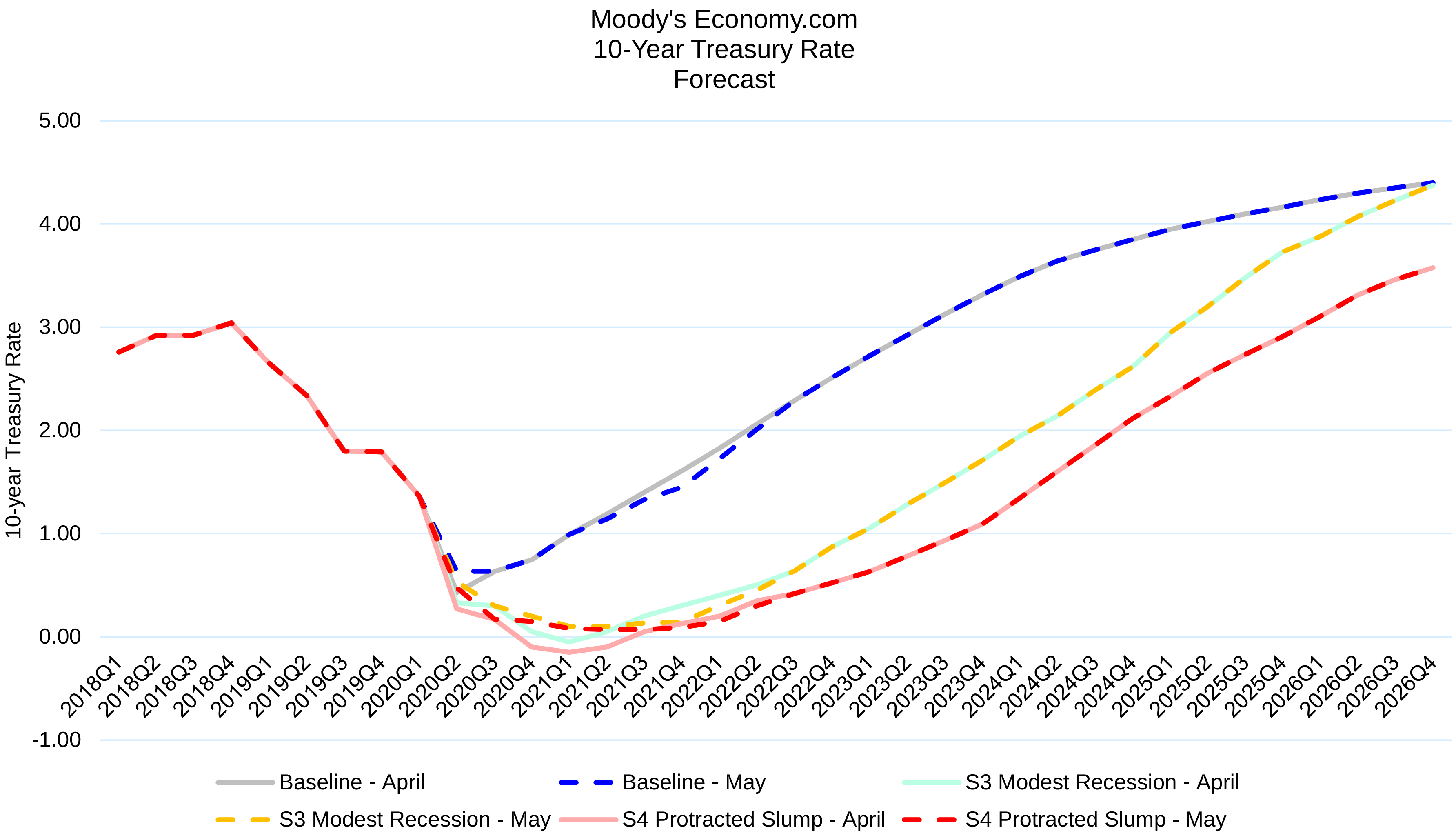
- Back-end credit risk sharing transactions pass some credit risk to the private market after GSE Acquisition
  - ✓ Debt Offerings
    - Fannie Mae Connecticut Avenue Securities (CAS)
    - Freddie Mac Structured Agency Credit Risk (STACR)
  - ✓ Credit Insurance Offerings
    - Fannie Mae Credit Insurance Risk Transfer (CIRT)
    - Freddie Mac Agency Credit Insurance Structure (ACIS)

Model Schema

Econometric Model (loan-level)

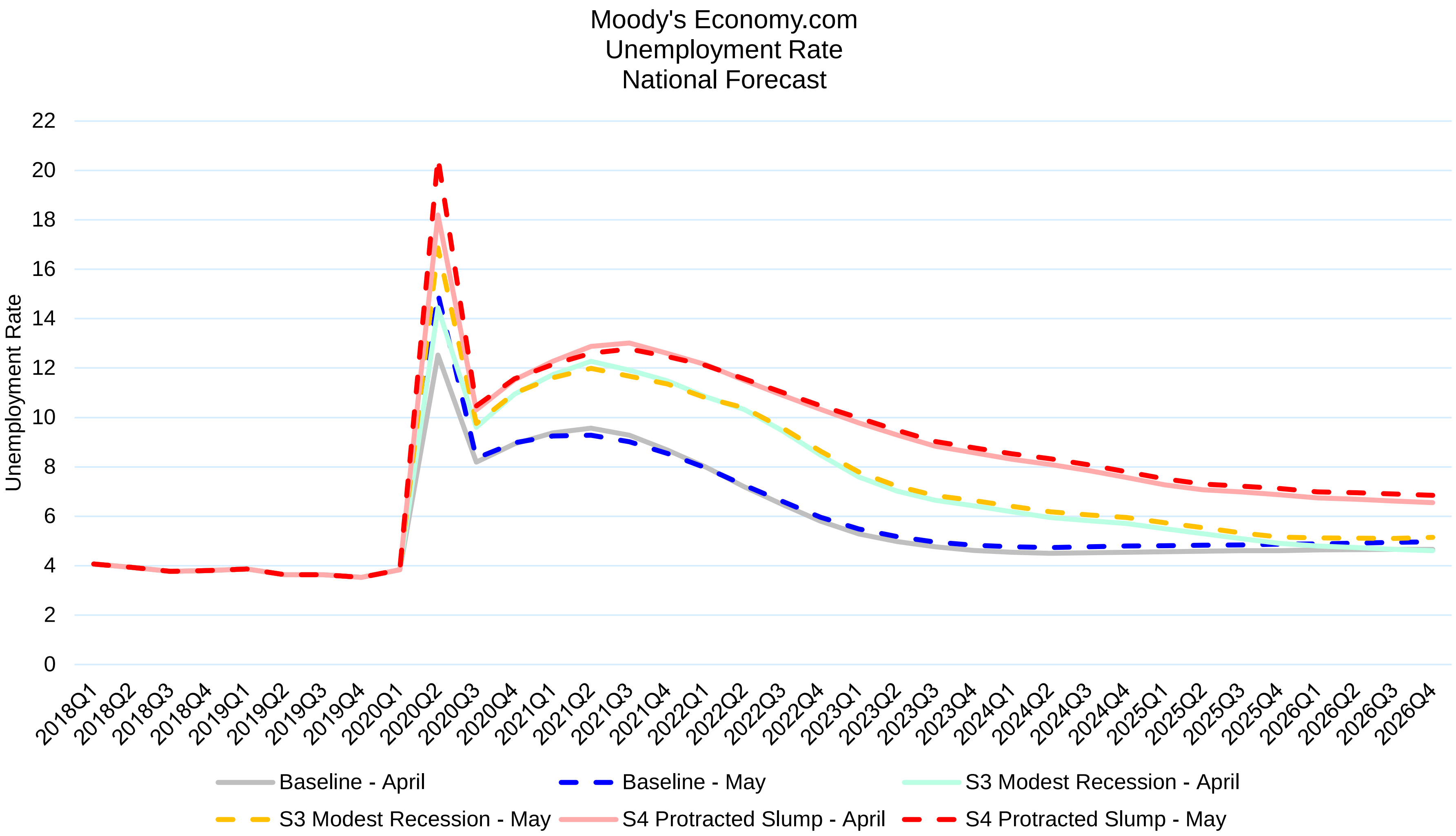


Economics during a pandemic: 10-Year Treasury



Moody’s Economy.com - May 2020 and April 2020 Forecasts - Interest Rates: 10-Year Treasury Constant Maturities, (% p.a., NSA)

Economics during a pandemic: Unemployment Rate



Moody's Economy.com - May 2020 and April 2020 Forecasts - Household Survey: Unemployment Rate, (%, SA)

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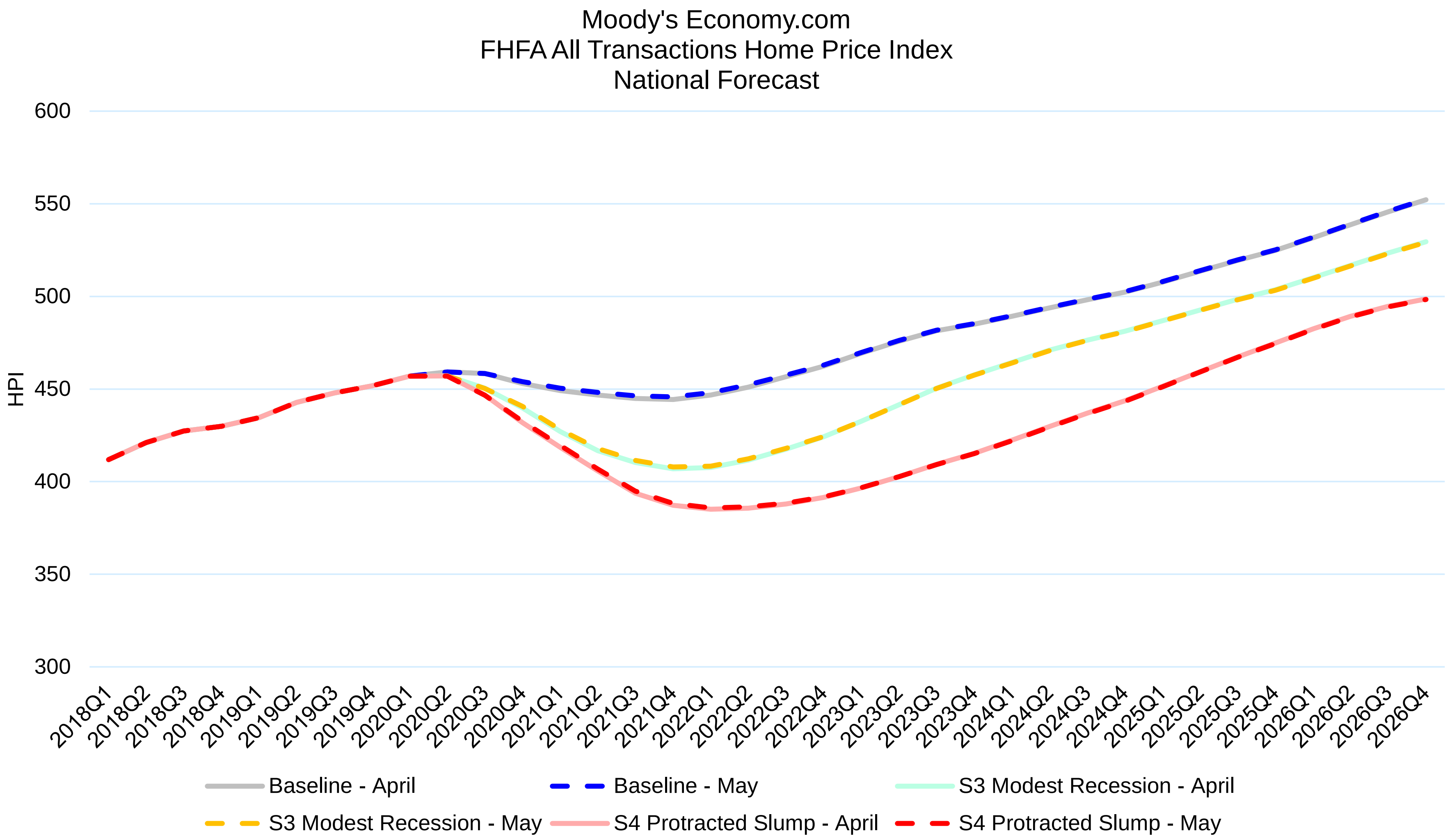
Polling Question 2:

Unemployment rates were in the 3% - 4% range prior to the pandemic spike. How long do you think it will take for the national rate to come back down to the long term average of approximately 5% - 6%?

A. One year or less
B. Two years
C. Three years
D. Four years
E. Five years or more

Economics during a pandemic: Home Prices (FHFA)



Moody’s Economy.com - May 2020 and April 2020 Forecasts - FHFA All Transactions Home Price Index, (Index 1980Q1=100, NSA)

Polling Question 3:

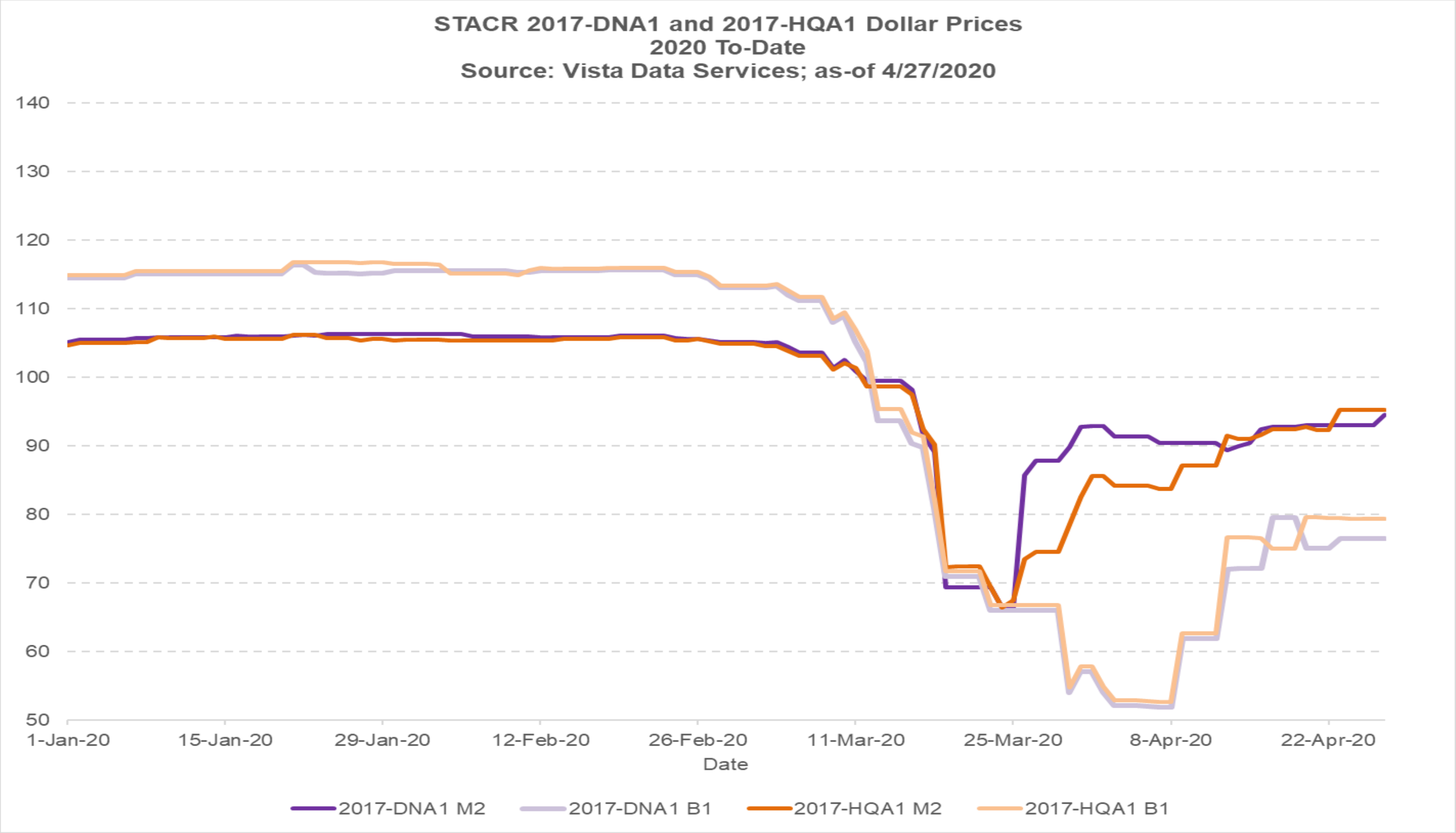
What do you think the annual home price change will be for the FHFA national index from June 2020 to June 2021?

A. -5.0% or worse
B. -5.0% to 0.0%
C. 0.0% to 5.0%
D. 5.0% or better

Capital Markets reaction to pandemic

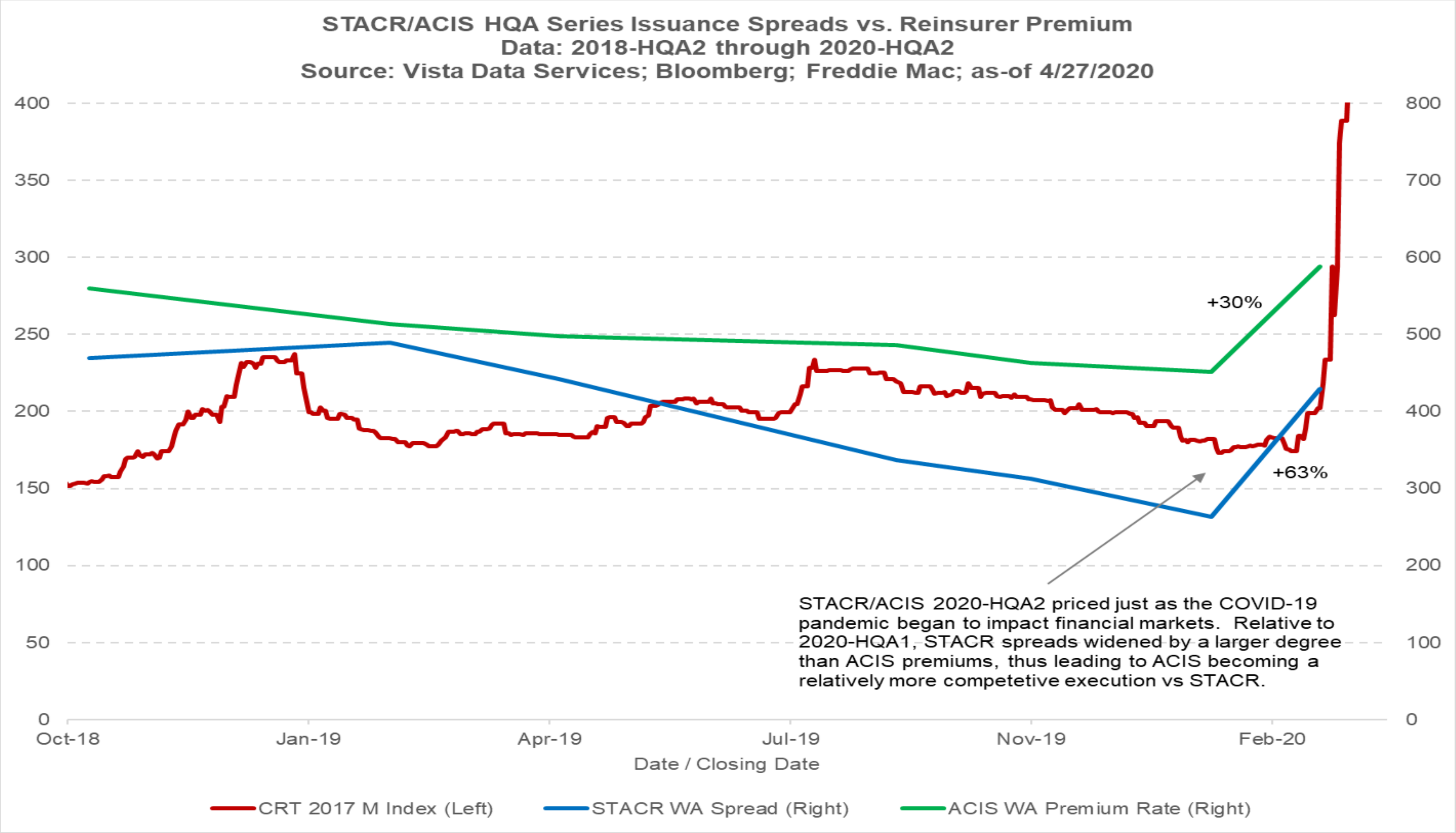
- Milliman recently performed an overview and comparison of GSE CRT price developments during times of financial market stresses
  - ✓ https://www.milliman.com/en/insight/In-it-for-the-long-haul-A-case-for-the-expanded-use-of-the-GSEs-reinsurance-CRT-executions
- Between 2017 and 2020, GSE CRT issuances reflect approximately a 75/25 split between capital markets executions and reinsurance executions
- Capital markets tend to be more volatile and represent a less stable source of risk capital during market stress
- Reinsurance markets heavily invest in understanding the risks of exposures during the underwriting process with less opportunity to trade out of the risk (illiquid risk position). Therefore, they tend to have a longer-term perspective of the exposure and price risks through market cycles

Capital Markets reaction to pandemic – seasoned CRT deal



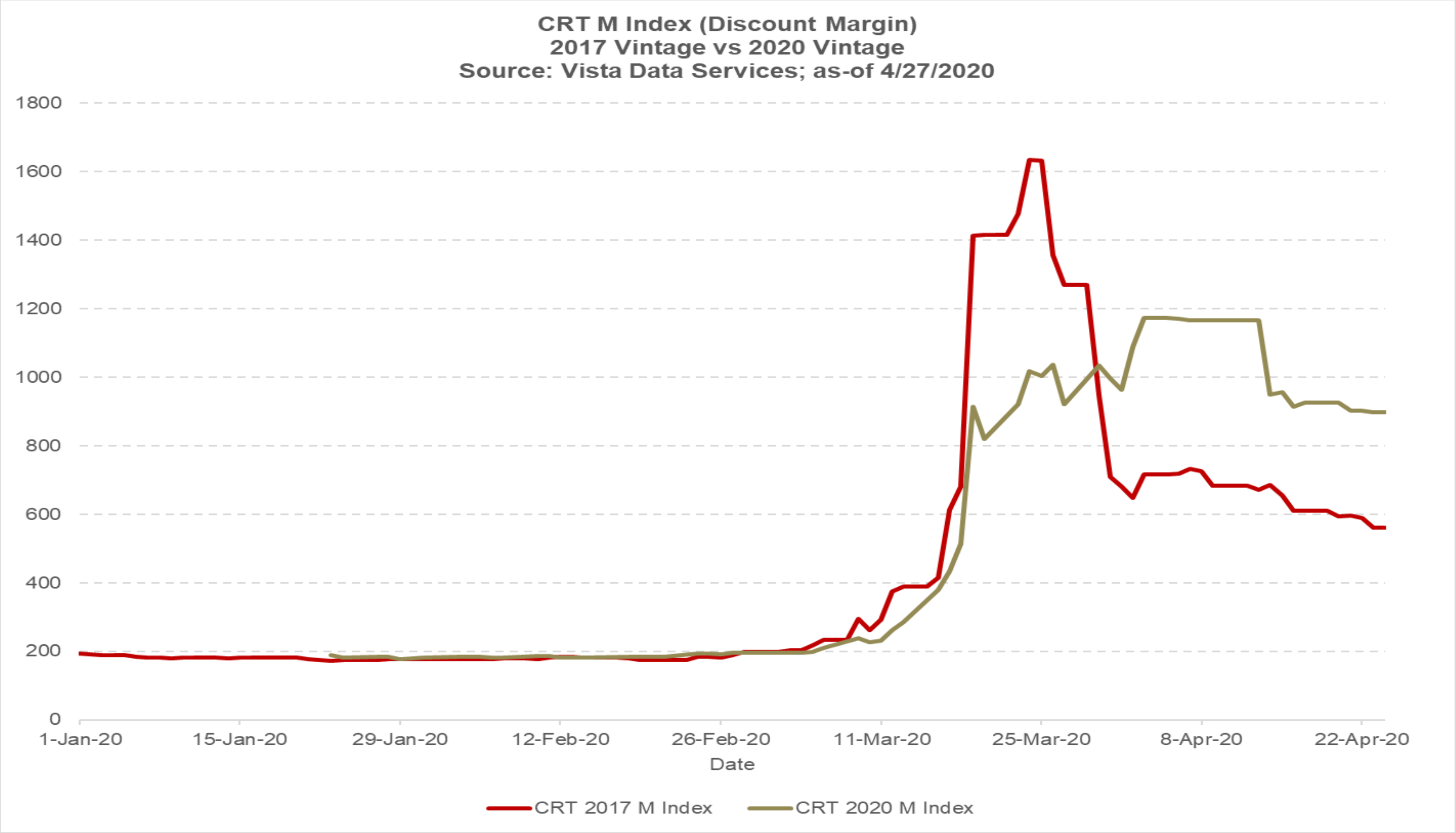
Source: Vista Data Services as of April 27, 2020.

Relative Pricing of Capital Markets vs. Reinsurance



Source: Vista Data Services, Bloomberg, Freddie Mac as of April 27, 2020.

Capital Markets new deals vs. seasoned deals



Source: Vista Data Services as of April 27, 2020.

Closing Thoughts before turning over to Seamus

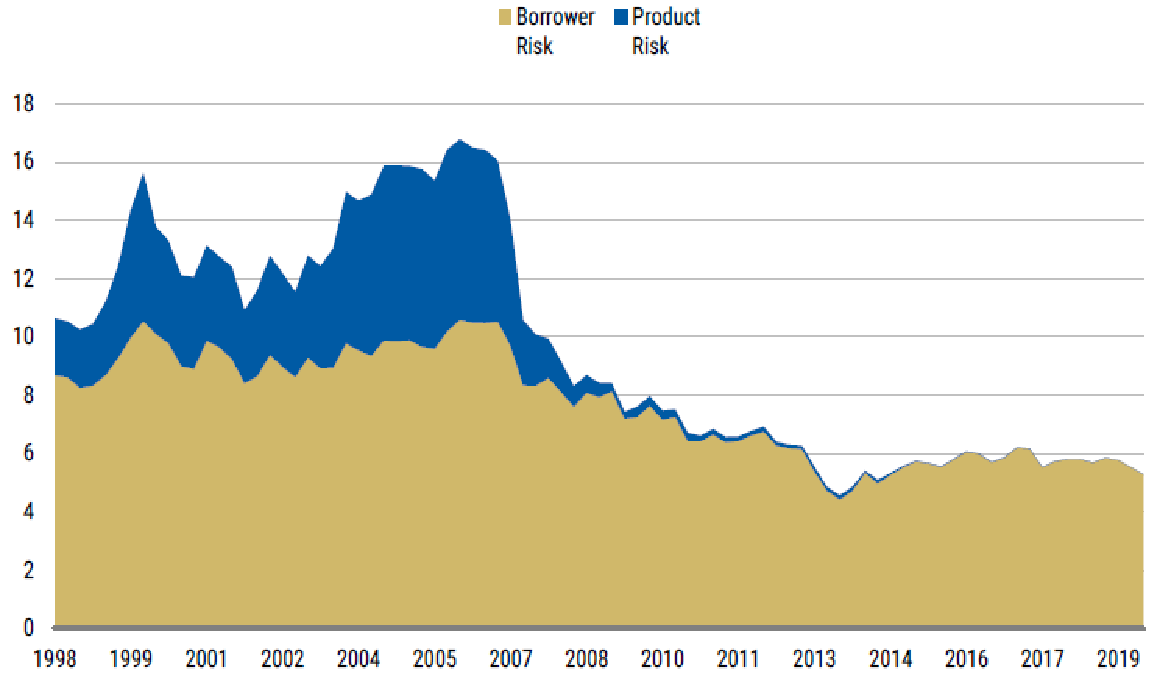
- The GSEs use of CRT has historically relied more heavily on the capital markets relative to the reinsurance markets
- The Capital markets dislocations during the pandemic suggests that reinsurance may be a more reliable and viable option going forward

Fearon Discussion Topics

- Why this is not a repeat of the Great Recession
- Borrower protections during Covid-19
- GSE Forbearance Programs
- Some early data

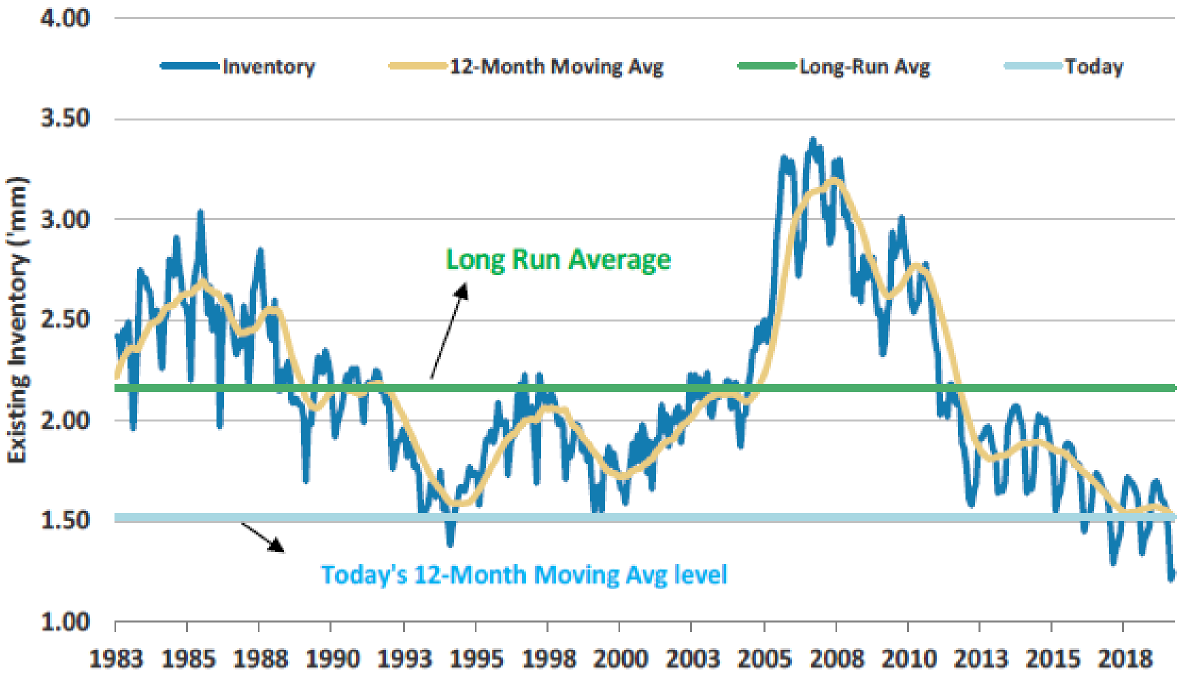
Why this is not a repeat of the Great Recession

Credit is much better….



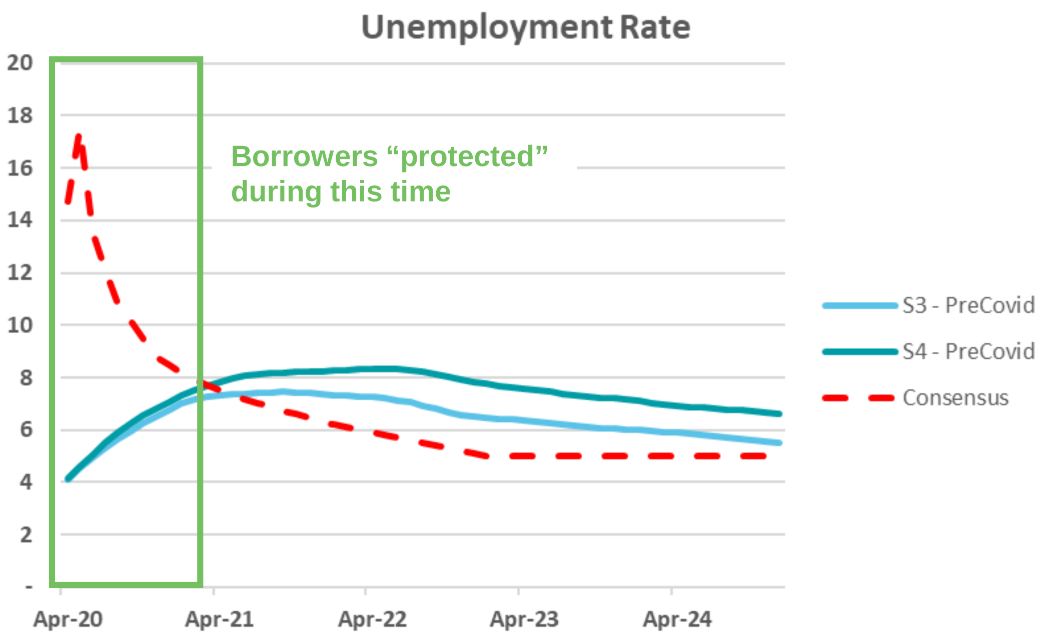
Source: Urban Institute

…..and so are housing market conditions



Source: Morgan Stanley Research

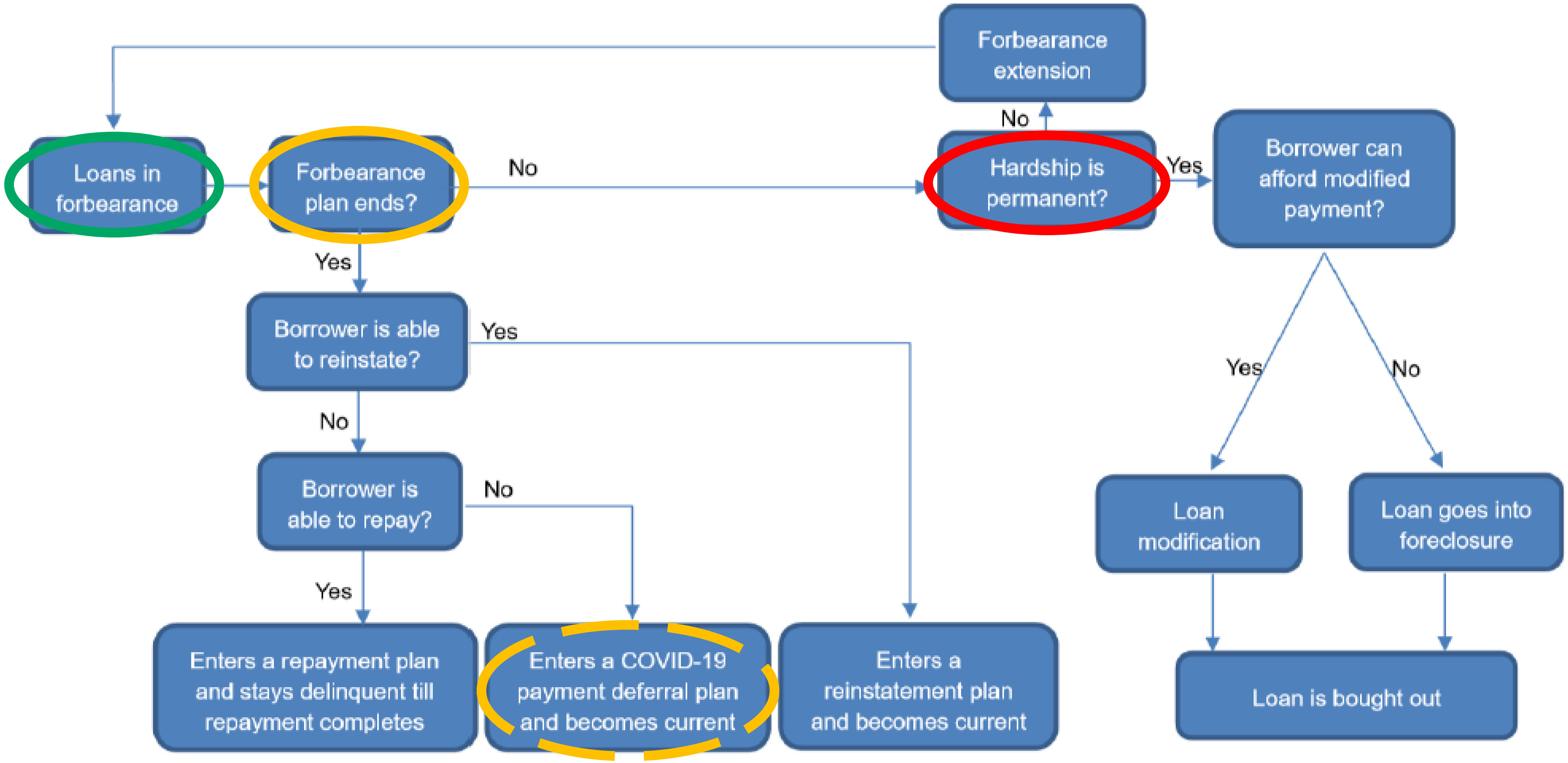
Borrower protections during Covid-19



Consensus = Bloomberg Composite

- Loss outcomes will not follow that suggested by headline unemployment due to significant borrower protections
  - ✓ Helicopter cash
  - ✓ Increased unemployment benefits
  - ✓ Forbearance programs
- Unemployment benefits give significant protections to the lower income groups, which are disproportionally impacted by Covid-19
  - ✓ Borrowers with an annual salary of ~$54k or less prior to losing their jobs will receive the same or more in income from unemployment benefits
  - ✓ Job losses are disproportionally in the service and retail industries where the majority of employees earn less than this $54k
- This skew of Covid-19 unemployment toward lower income groups will impact renters and FHA borrowers disproportionately more than GSE borrowers
- Government stimulus and GSE forbearance and foreclosure moratorium should reduce the number of distressed home sales

GSE COVID-19 Forbearance



Source: Citi Research, Reinstatement is when the borrower pays off the full forbearance amount as a lump sum.

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Early data – supports some optimism

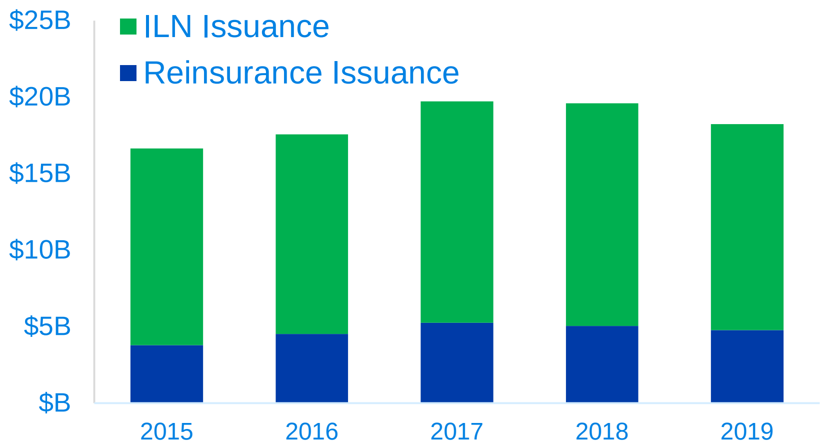
- MBA survey through May 10^{th} suggest 6.25% of GSE loans are in forbearance
  - ✓ ~ $1/3^{rd}$ (of the 6.25%) are continuing to make payments
  - ✓ ~ 99% (of the 6.25%) have equity in the home on a MTM basis
  - ✓ ~ 11.25% of Ginnie Mae loans are in forbearance
- The story that “everyone is falling behind on their payments” is not correct
  - ✓ The share of people paying their rent on time in April and May 2020 is not dramatically different from what we saw in April and May of 2019, and the share of people paying their rent for May 2020 is ahead compared with the same time in April 2020
- Housing supply and demand dynamics imply support for home prices
  - ✓ Very low interest rates offer some support to the demand side of the housing market, while the supply side recedes via the unwillingness of homeowners to offer properties for sale under the current public health conditions

Berenbom Discussion Topics

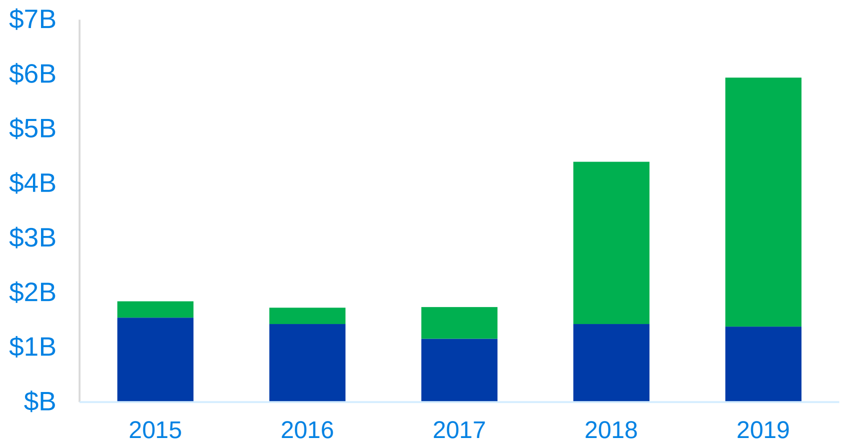
- History of GSE and Mortgage Insurer (MI) Credit Risk Transfer (CRT)
- Impact of COVID-19
- Reinsurance Market Opportunities Resulting from COVID-19 Disruption

Confluence of Events Created Largest Source of New Premium Since Hurricane Andrew

$25 Billion+ GSE CRT Limit Reinsured



$5 Billion+ MI CRT Limit Reinsured

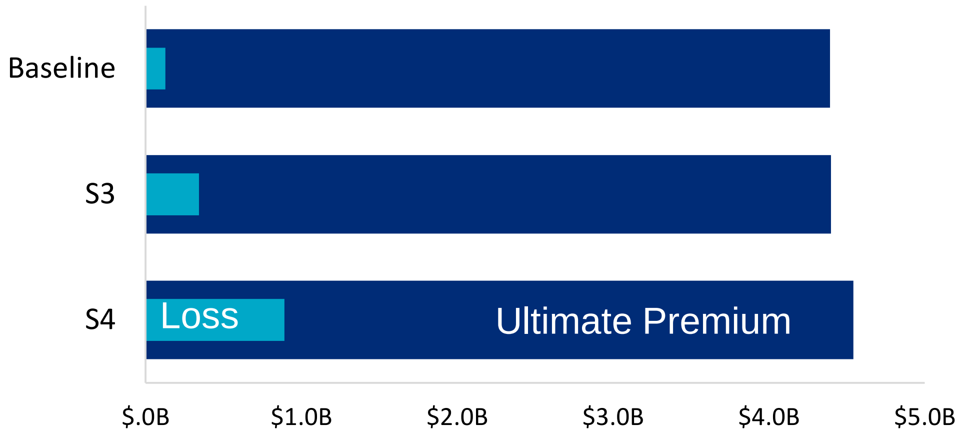


- Fannie Mae and Freddie Mac directed by FHFA to introduce private capital and transfer credit risk to the capital and reinsurance markets in 2013
- 103 GSE reinsurance transactions to date
- The need to meet increased MI capital requirements facilitated the growth of MI CRT
- Reinsurer thesis for Credit Risk Transfer:
  - ✓ Diversified line of reinsurance business generally not correlated to natural perils
  - ✓ Ongoing programmatic placements allow for temporal diversification
  - ✓ Attractive returns following post-crisis enhancements to loan manufacturing process
  - ✓ High quality of data and availability of modeling and third-party advisors / MGUs

Source: Guy Carpenter

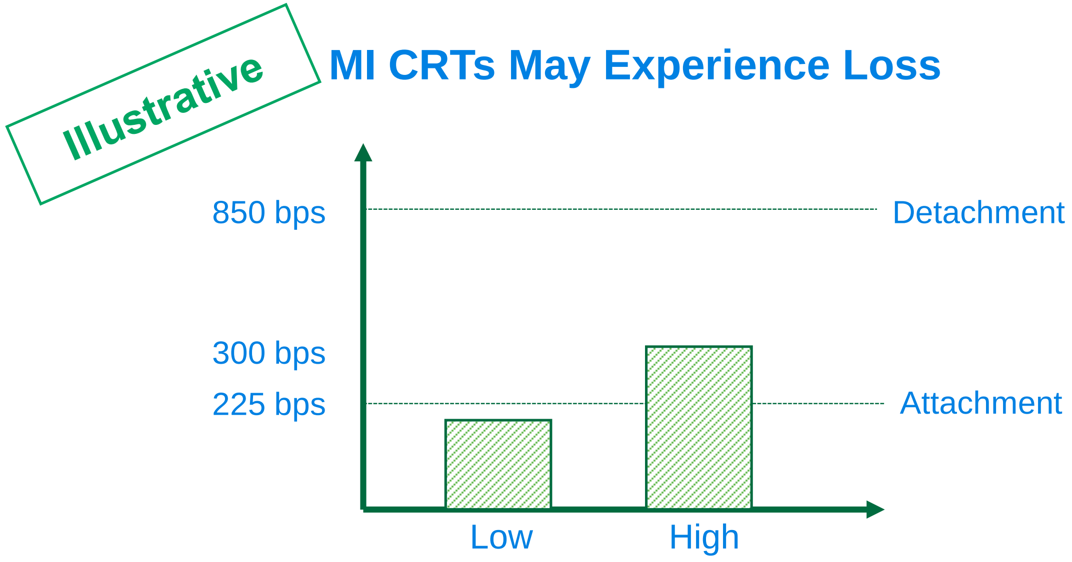
COVID-19 to Negatively Impact CRT Performance

Modeled GSE CRT Loss Post COVID-19



Assumes called when economically beneficial for cedent to do so

MI CRTs May Experience Loss



- Higher unemployment and economic contraction to adversely impact CRT performance
- However, Fed response and GSE forbearance programs to mute resulting losses
- Modeled loss is not adjusted for impact of forbearance program and is therefore overstated
- Difficult to assess the impact in these early stages of the recovery

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Source: Guy Carpenter Analytics and Milliman M-PIRE for GSE Modeled Loss

Forbearance Impact on ACIS/CIRT Transactions

- Forbearance programs are expected to reduce the likelihood of borrower defaults, and so will temper the increase in losses expected from the COVID-19 shock
- ACIS and CIRT structures have contractual mechanisms to reduce or eliminate limit amortization if delinquencies reach a certain level
  - ✓ For ACIS, this will result in additional premium collected by reinsurers, particularly for higher tranches
  - ✓ For CIRT, premium is based on unpaid principal balance rather than limit, so would not be affected
- Early (2013-2015) ACIS/CIRT transactions were on a fixed-severity basis, rather than actual loss
  - ✓ Loans were considered to default if they reached 180 days delinquent (D180) or were disposed of (short sale, third-party sale, deed-in-lieu, or REO) prior to 180 days
  - ✓ Based on the volume of D180 loans, a severity table was used to calculate the losses applied to the CRT structure
  - ✓ The forbearance being widely offered to borrowers will cause a large volume of loans to reach D180 status
  - ✓ Some, but not all, fixed-severity transactions offer a grace period of 18 months for loans affected by a natural disaster (which will apply to COVID-19 related forbearance)

Forbearance Program Expected to Increase MI Short-Term Capital Needs

PMIERs

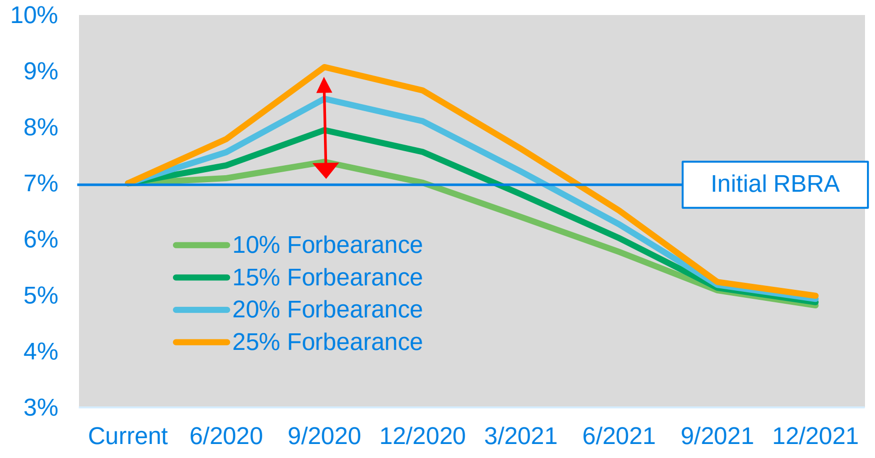
Table 8:
Non-performing Loans (more than one missed monthly payment)

Delinquency Status	Factor[1]
2 – 3 Missed monthly payments, no claim filed	55%
4 – 5 Missed monthly payments, no claim filed	69%
6 – 11 Missed monthly payments, no claim filed	78%
>= 12 Missed monthly payments, no claim filed	85%
Pending Claims	106%

[1]Additional FEMA Declared Haircut

- Private Mortgage Insurer Eligibility Requirements (PMIERs) set the standards and guidelines that an MI must meet to write insurance on GSE loans
- The risk-based required asset (RBRA) is the amount of capital that an MI must hold, and is calculated on a loan-level basis based on loan characteristics and performance
  - ✓ For this calculation, loans in forbearance are treated as delinquent (non-performing)
- Forbearance delinquencies are treated less harshly than ordinary delinquencies, with a 0.30 multiplier applied to the factors above
- Even with this reduction, the capital needed for a loan entering forbearance increases from ~7.5% to 16.5%-25.5% of RIF

PMIERs Risk-Based Required Assets



*RBRA is displayed as a % of initial RIF

Simplifying Assumptions

- Initial risk based required asset amount is 7.0% of RIF
- Forbearance take-up applied to closing RIF and occurs evenly between Q2 2020 and Q3 2020 (loans are delinquent)
- 5% of forbearance loans roll to claim; remainder cure evenly over the four quarters following forbearance take-up
- Loans roll to claim liquidate after 18 months of delinquency
- 30% multiplier for loans in forbearance lasts for 12 months
- 15% constant CPR
- No additional delinquencies

COVID-19 Creates Disruption and Reinsurance Market Opportunities

In short term, forbearance programs creating spike in MI capital requirements and opportunities for reinsurers

May not be sufficient capital market investor demand in the near future creating opportunities for the reinsurance market to take share from capital markets on future MI and GSE CRT programs

Pristine credit quality and higher reinsurance market rates

Resources Available to Explore Participating in Future Credit Risk Transfer Transactions

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Fannie Mae

https://www.fanniemae.com/portal/funding-the-market/credit-risk/credit-insurance.html

https://www.fanniemae.com/loanperformance

Freddie Mac

https://crt.freddiemac.com/offerings/acis.aspx

https://clarity.freddiemac.com/

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Thank you

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