Mortgage Credit Risk Transfer (CRT) during a Pandemic

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2021 CARe Meeting
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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

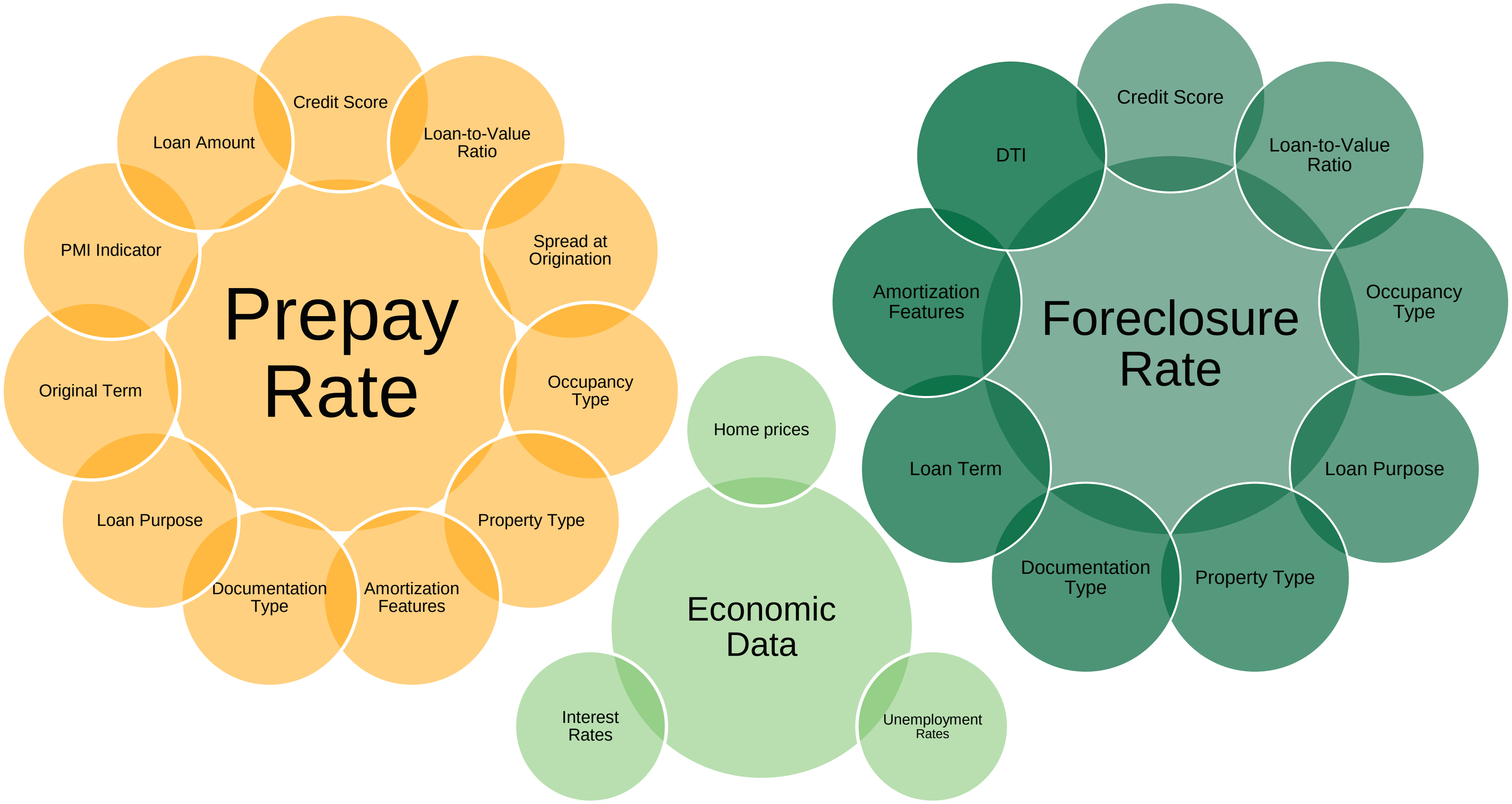
Basics of Private Mortgage Insurance (PMI)

- 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

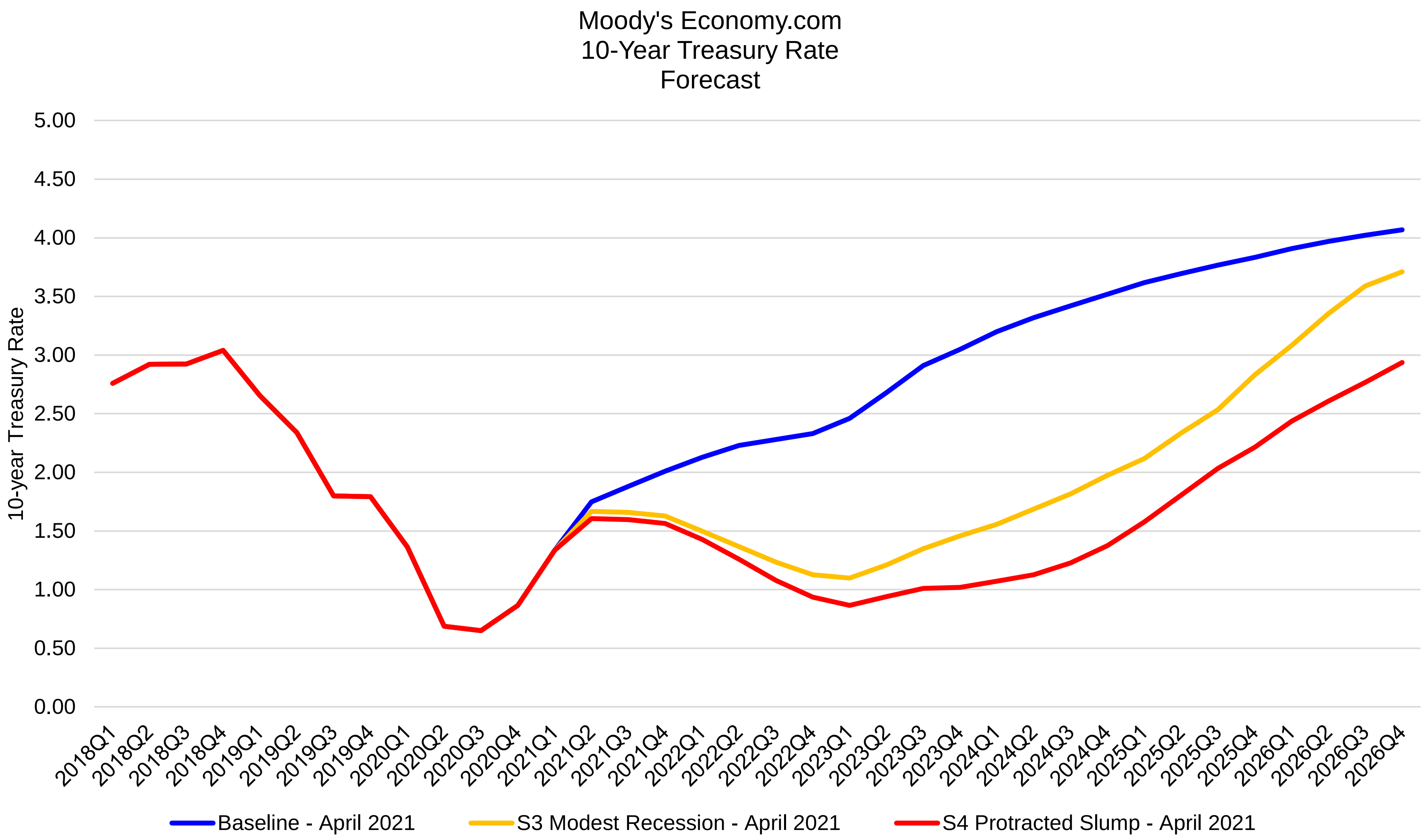
Back-End Credit Risk Transfer (CRT) Transactions
Types of Transactions

- 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)

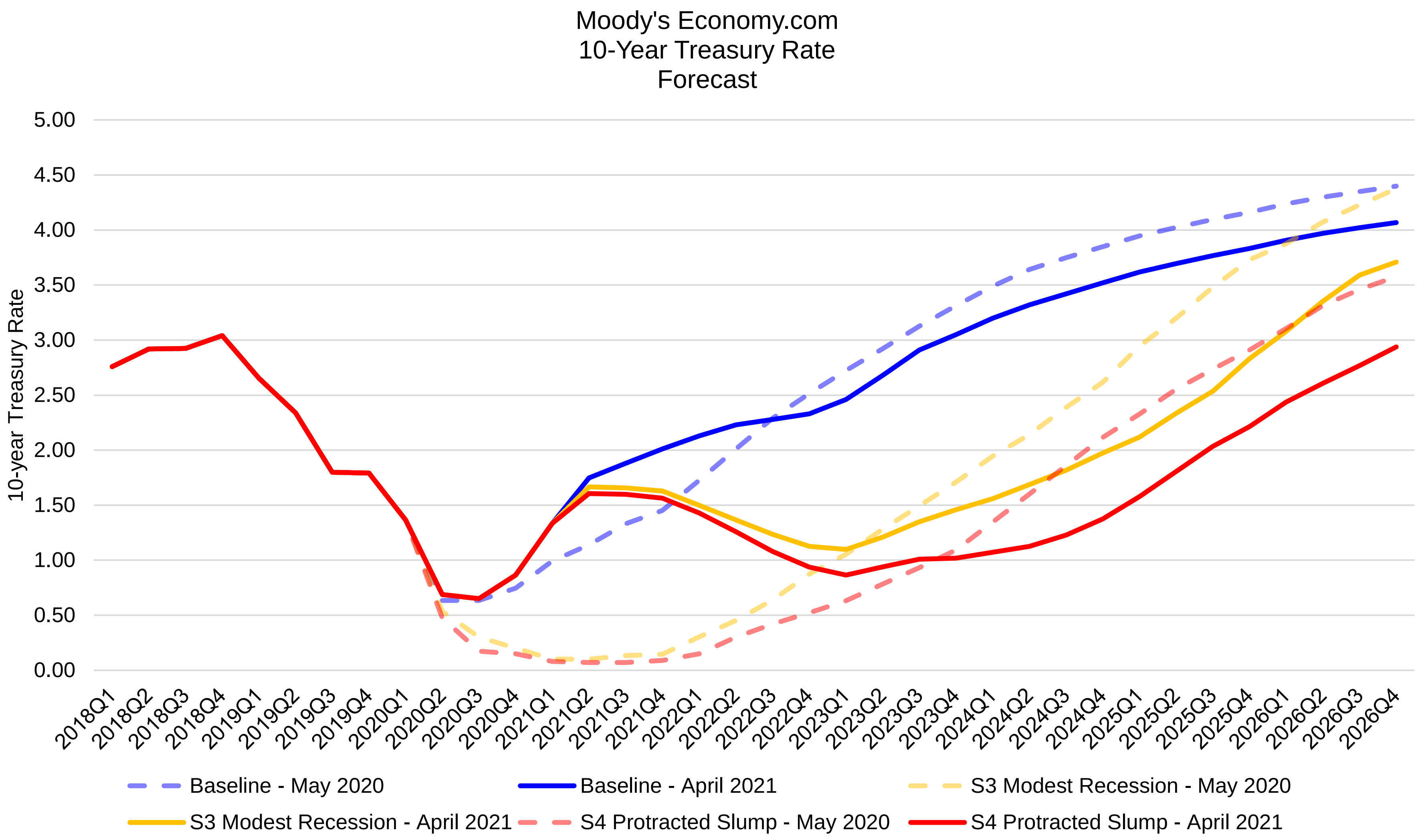


Economics during a pandemic: 10-Year Treasury



Moody’s Economy.com – April 2021 Forecasts - Interest Rates: 10-Year Treasury Constant Maturities, (% p.a., NSA)

Economics during a pandemic: 10-Year Treasury



Moody’s Economy.com – May 2020 and April 2021 Forecasts - Interest Rates: 10-Year Treasury Constant Maturities, (% p.a., NSA)

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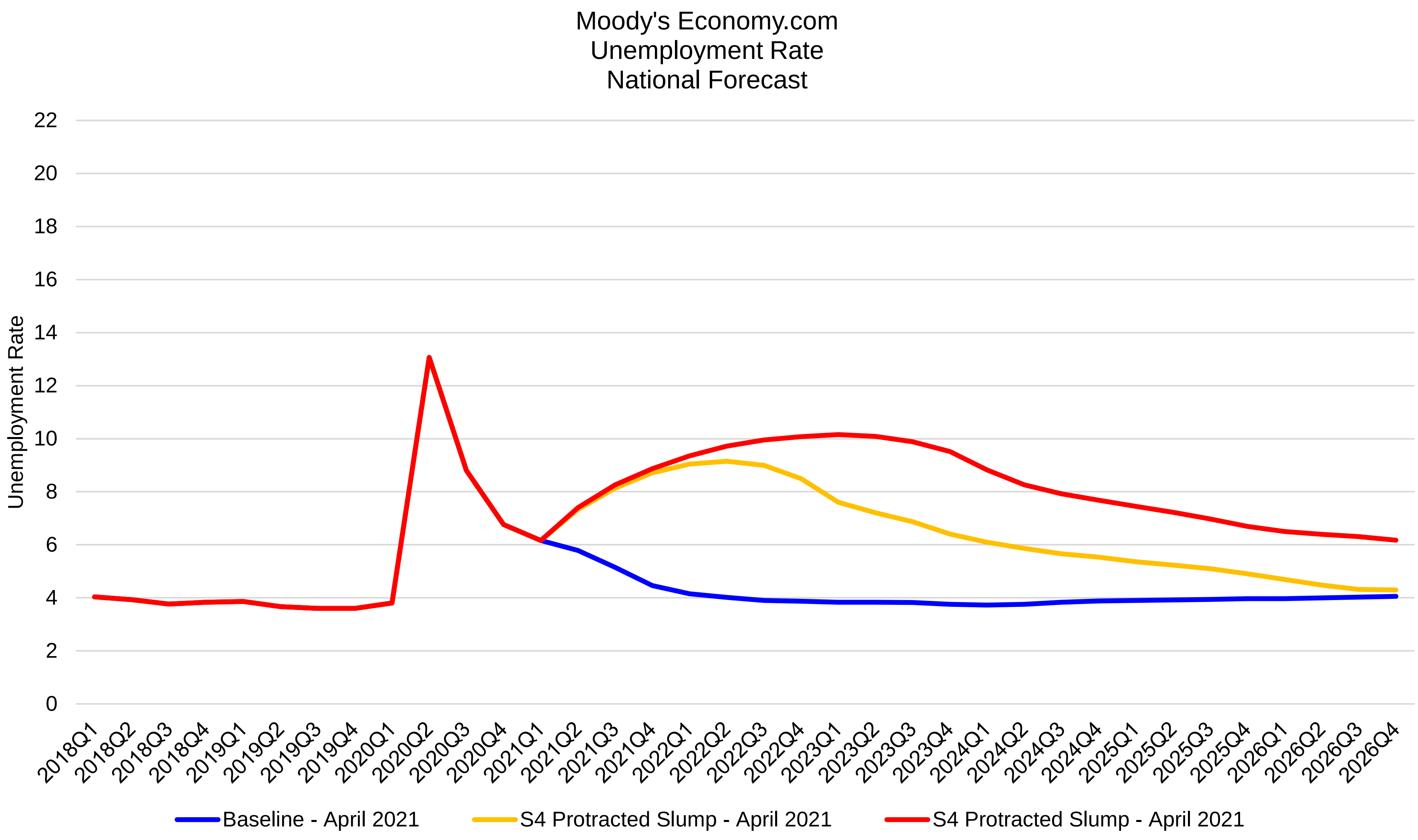
Polling Question 2 from CARe 2020:

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	**1%**
B.	Two years	**36%**
C.	Three years	**35%**
D.	Four years	**12%**
E.	Five years or more	**14%**

Economics during a pandemic: Unemployment Rate



Moody's Economy.com – April 2021 Forecasts - Household Survey: Unemployment Rate, (%, SA)

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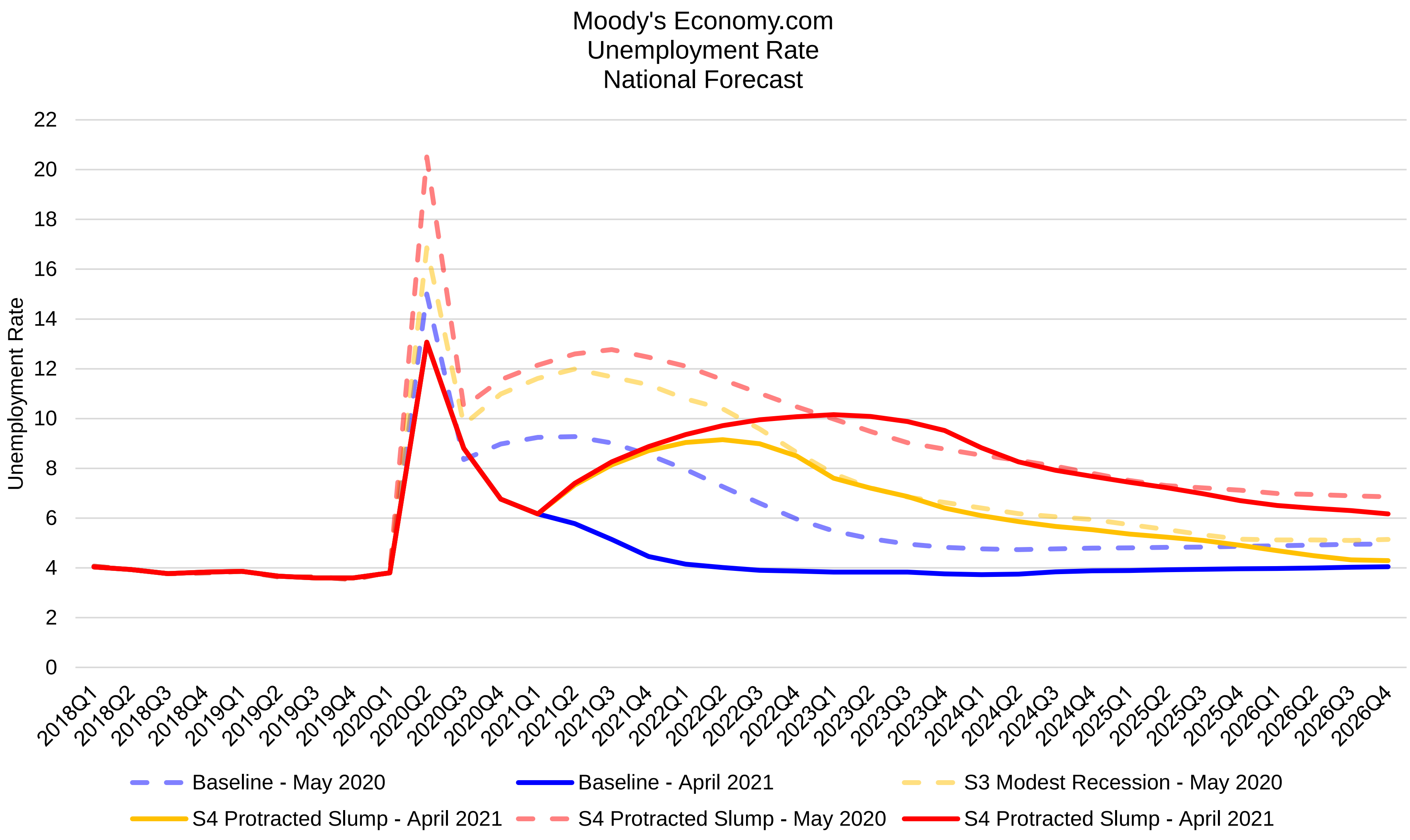
Economics during a pandemic: Unemployment Rate



Moody's Economy.com – May 2020 and April 2021 Forecasts - Household Survey: Unemployment Rate, (%, SA)

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 that pre-pandemic level of approximately 3% - 4%?

A. One year or less

B. Two years

C. Three years

D. Four years

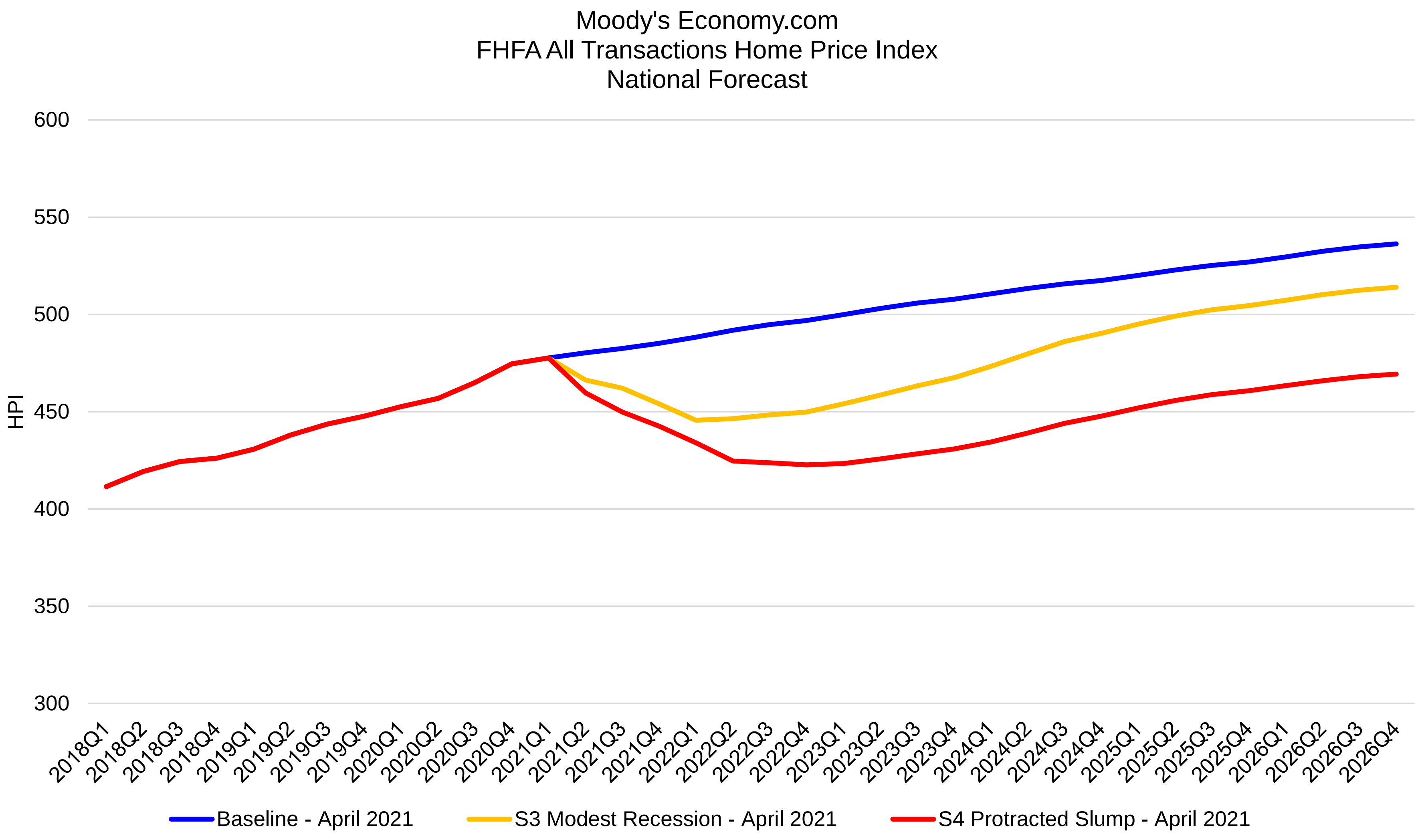
E. Five years or more

Polling Question 3 From 2020 CARe session:

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

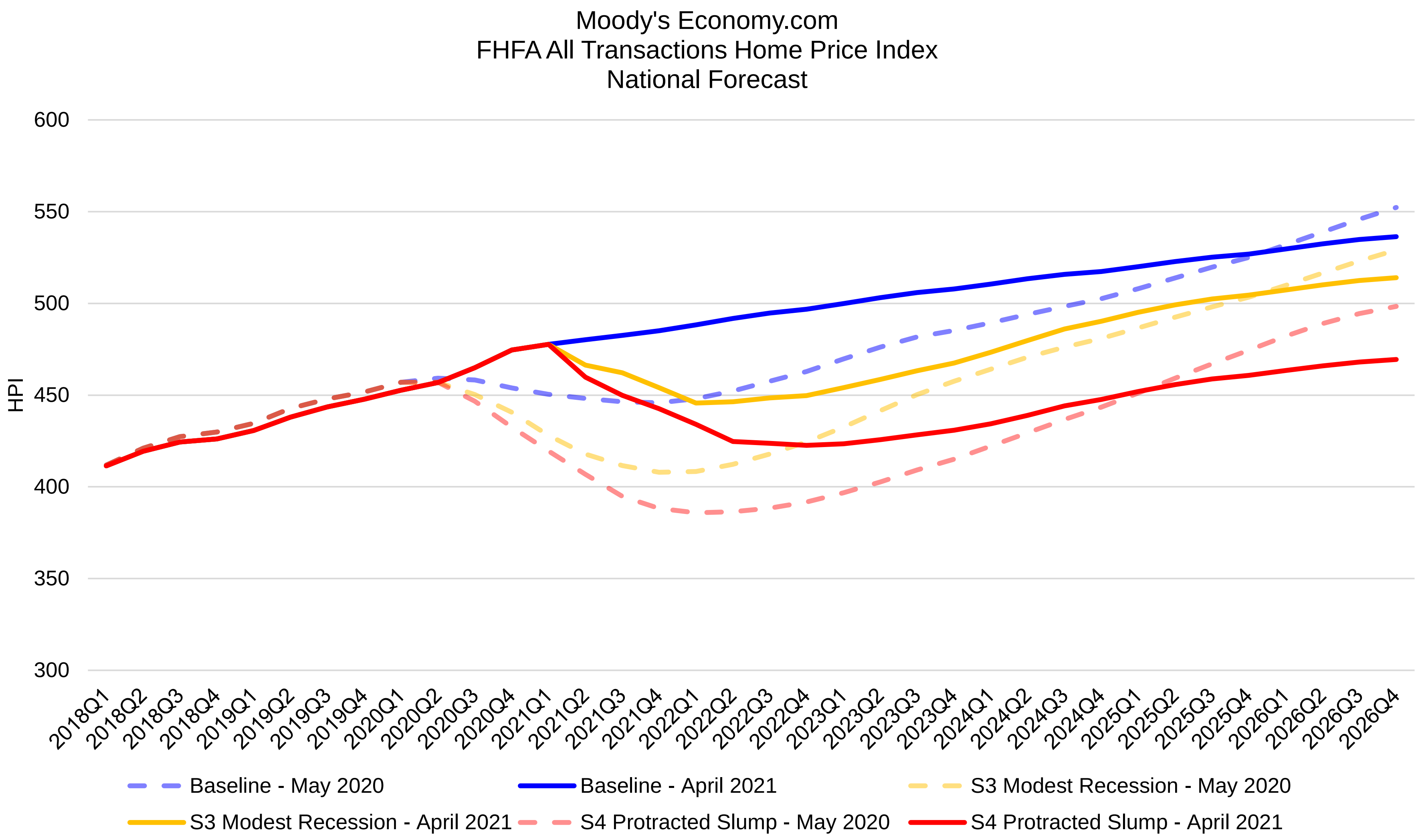
A.	-5.0% or worse	**20%**
B.	-5.0% to 0.0%	**53%**
C.	0.0% to 5.0%	**20%**
D.	5.0% or better	**5%**

Economics during a pandemic: Home Prices (FHFA)



Moody's Economy.com – April 2021 Forecasts - FHFA All Transactions Home Price Index, (Index 1980Q1=100, NSA)

Economics during a pandemic: Home Prices (FHFA)



Moody's Economy.com – May 2020 and April 2021 Forecasts - FHFA All Transactions Home Price Index, (Index 1980Q1=100, NSA)

Polling Question 3:

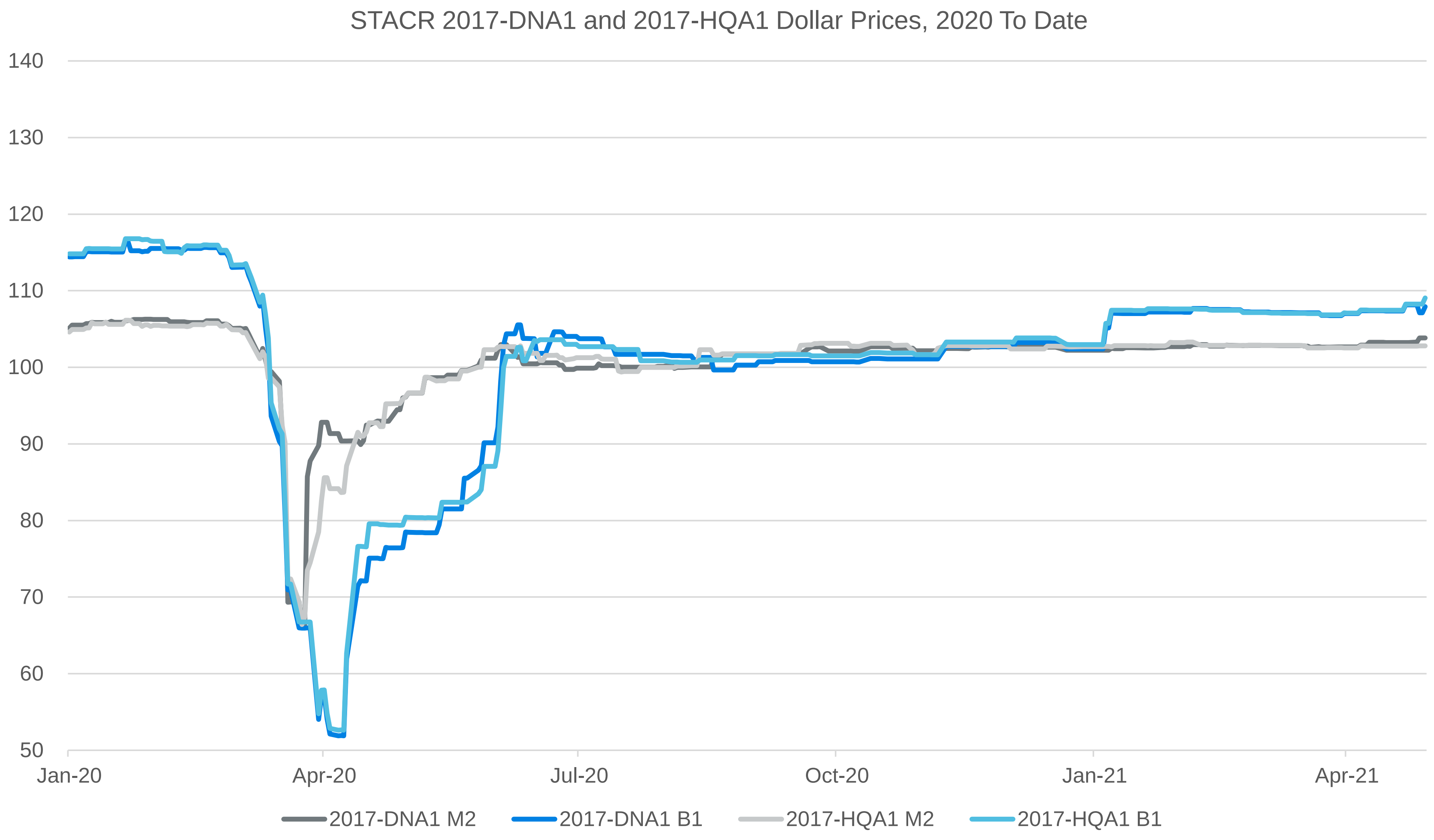
What do you think the annual home price change will be for the FHFA national index from June 2021 to June 2022?

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

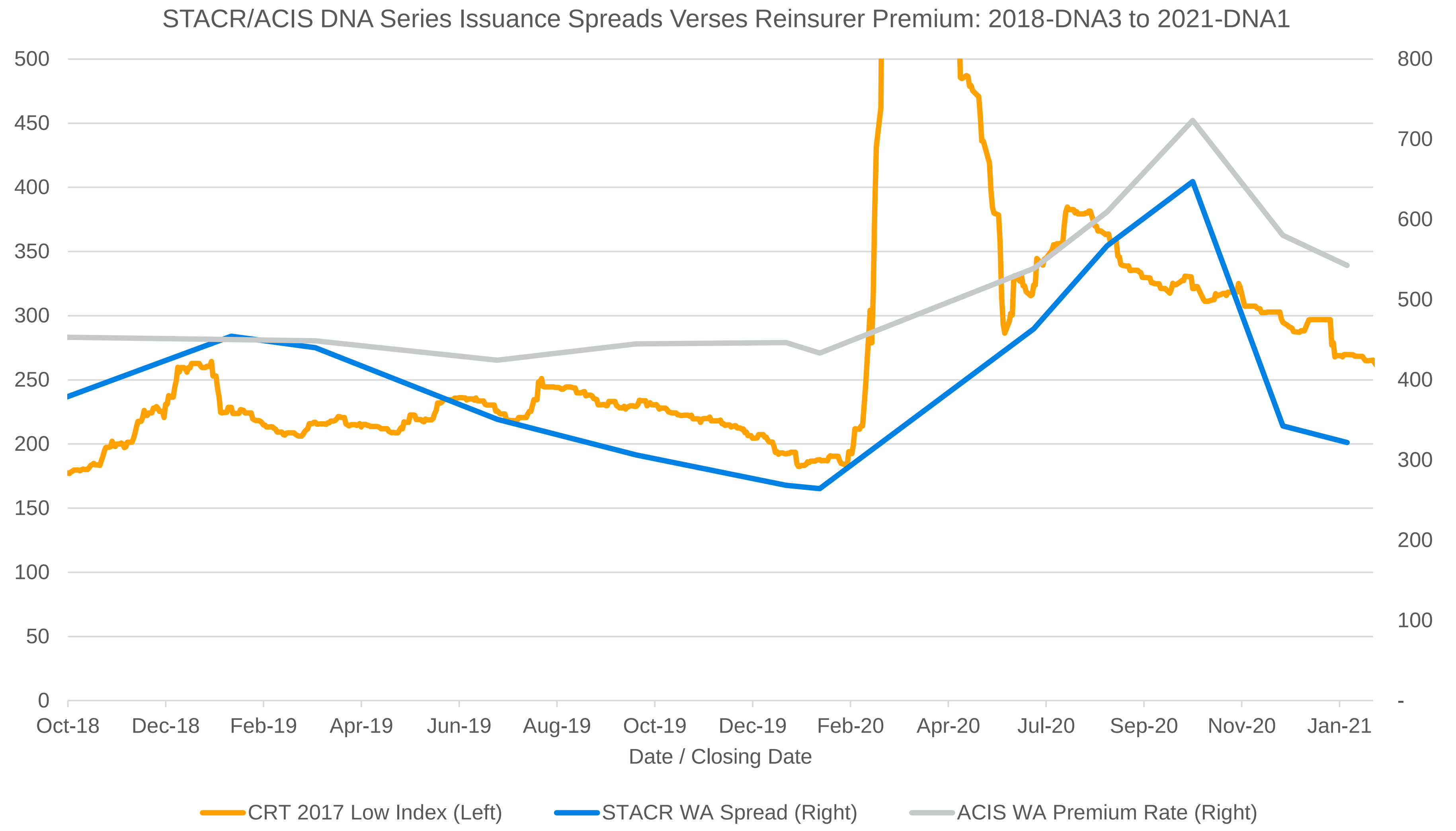
- Milliman performed an overview and comparison of GSE CRT price developments during times of financial market stresses, original article and update links below
  - ✓ https://www.milliman.com/en/insight/In-it-for-the-long-haul-A-case-for-the-expanded-use-of-the-GSEs-reinsurance-CRT-executions
  - ✓ https://www.milliman.com/en/insight/the-gse-crt-market-reopens-post-covid19-disruption-a-new-normal-or-more-troubles-on-the-horizon
- 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



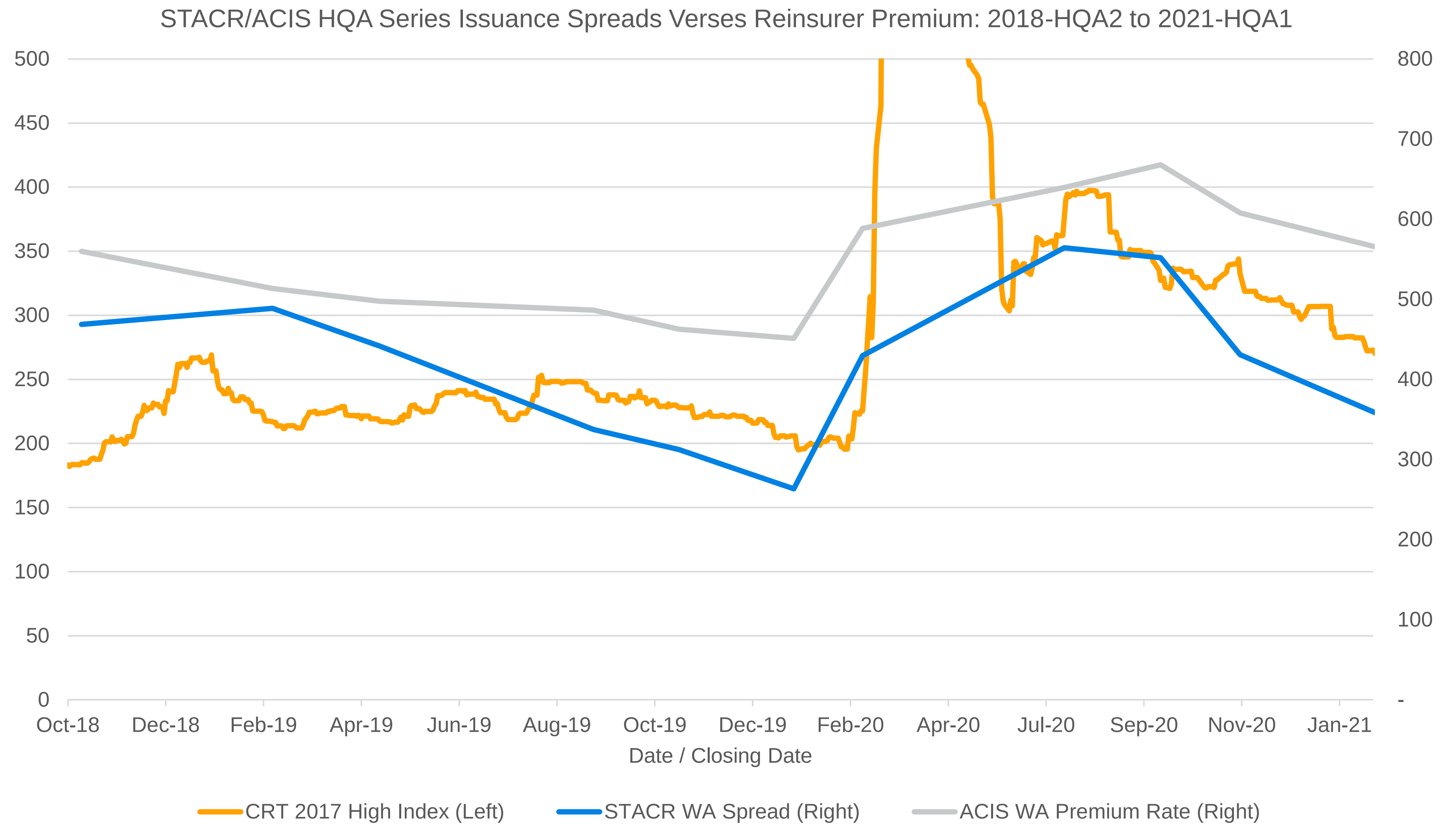
Vista Data Services as of April 29, 2021

Relative Pricing of Capital Markets vs. Reinsurance



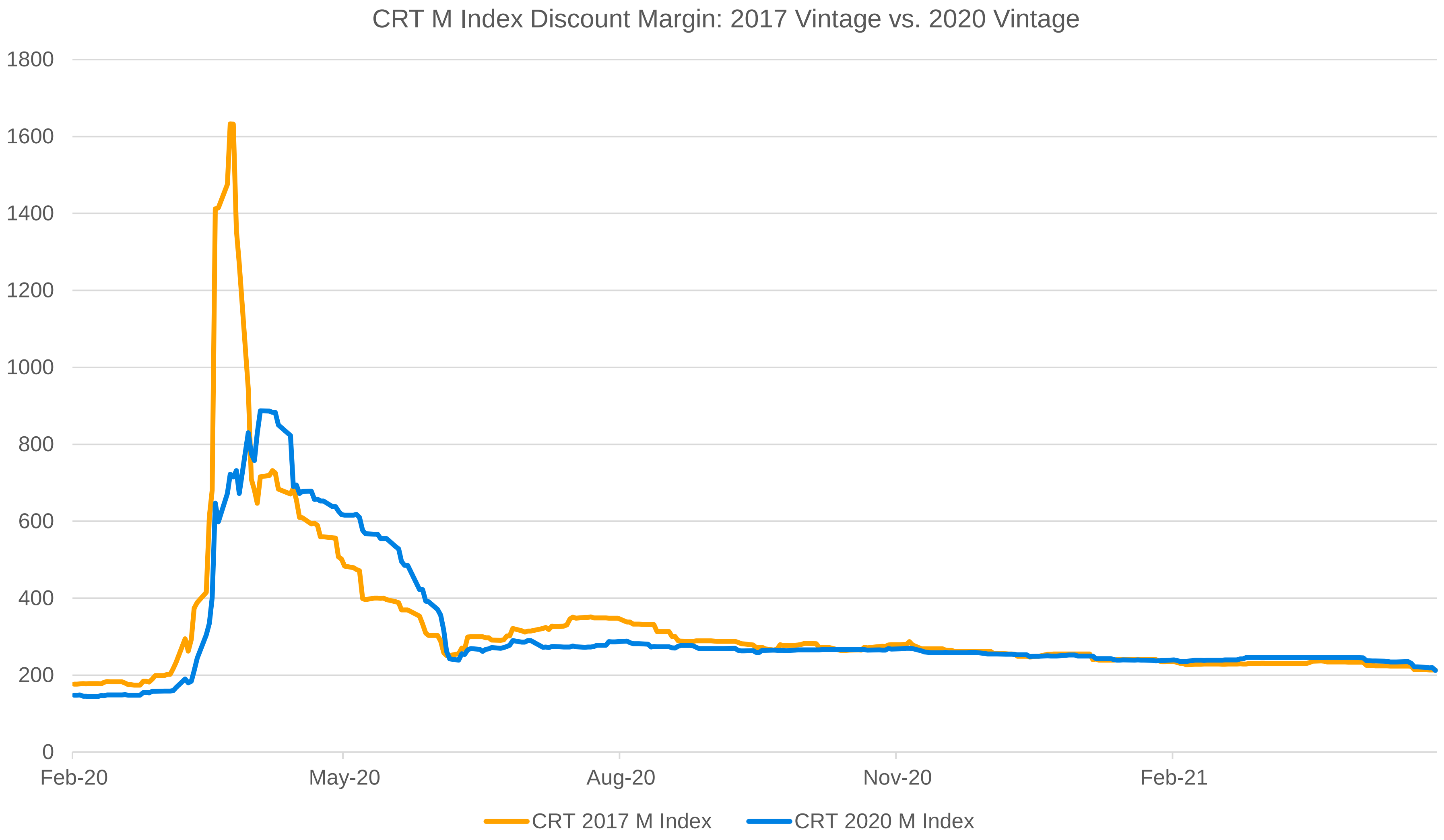
Source: Vista Data Services, Bloomberg, Freddie Mac as of April 29, 2020.

Relative Pricing of Capital Markets vs. Reinsurance



Source: Vista Data Services, Bloomberg, Freddie Mac as of April 29, 2020.

Capital Markets new deals vs. seasoned deals



Vista Data Services as of April 29, 2021

Closing Thoughts before turning over to Seamus

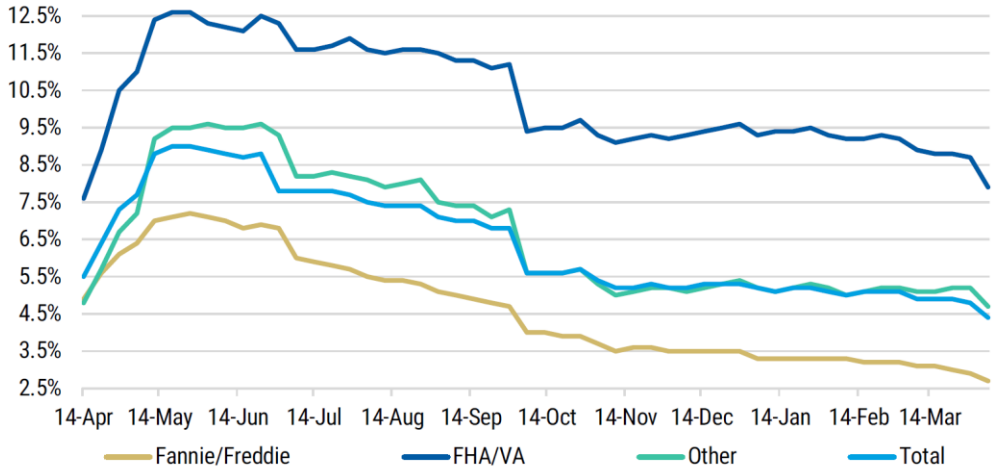
- The GSEs use of CRT has historically relied more heavily on the capital markets relative to the reinsurance markets
- The Capital markets dislocations during the pandemic suggests that reinsurance may be a more reliable and viable option in market stressed conditions and capital markets dislocations
- The Capital markets have recovered substantially from the dislocations during the early stages of the pandemic, as seen in above
- There has been a decoupling of capital markets and reinsurance in recent CRT issuance (separate Freddie pools for reinsurance and capital markets)
- Reinsurance executions are easier for GSEs to rapidly execute since due diligence and rating agency reviews slow capital markets execution. So paying a bit more for reinsurance in the current environment for stability and quick execution allows for complimentary executions with the capital markets

Fearon Discussion Topics

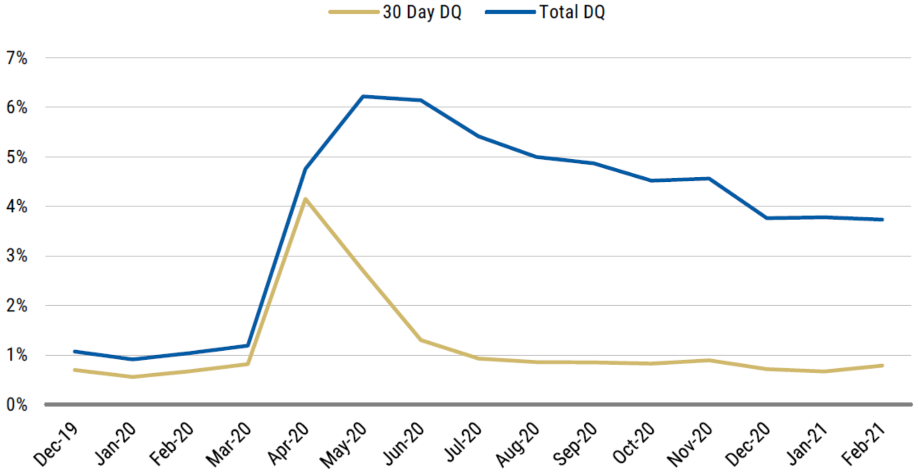
- Home Prices and the residential home market
- Mortgage Delinquency performance
- Prepayment activity
- Multifamily

CRT Performance – Delinquency & Prepayment

Forbearance rates continue to decline and GSE mortgages are outperforming

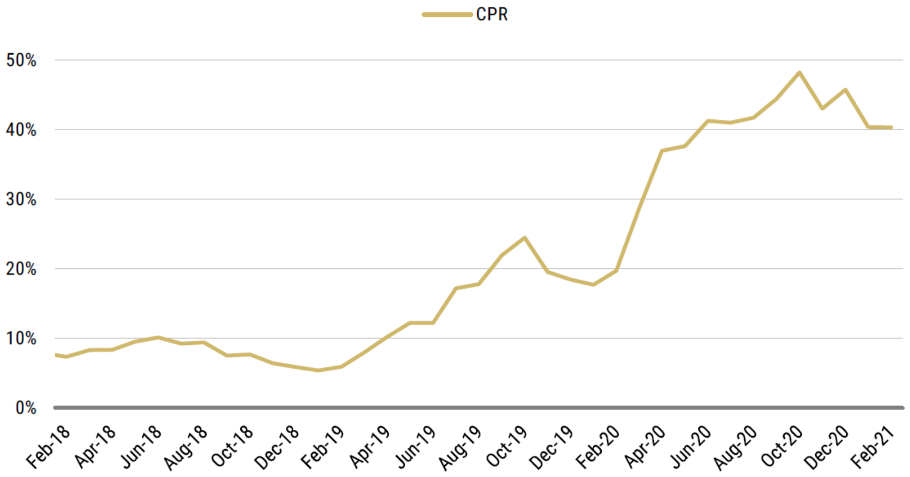


Delinquencies have declined since the 2Q20 peak and new DQs are back to pre-Covid levels



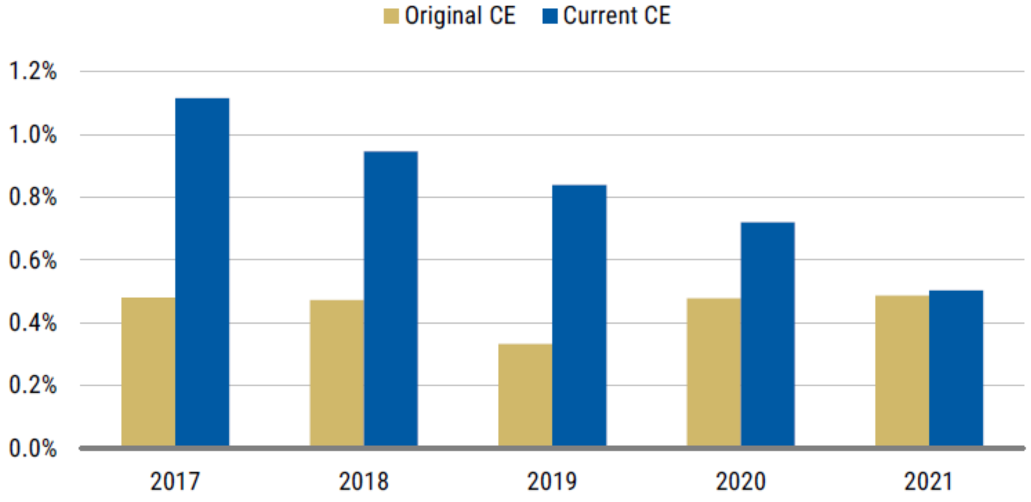
Prepayments continue at elevated levels…

Prepayment Rates across CRT universe



… deleveraging the CRT capital structure

CRT B1 Credit Enhancement (CE) / Attachment



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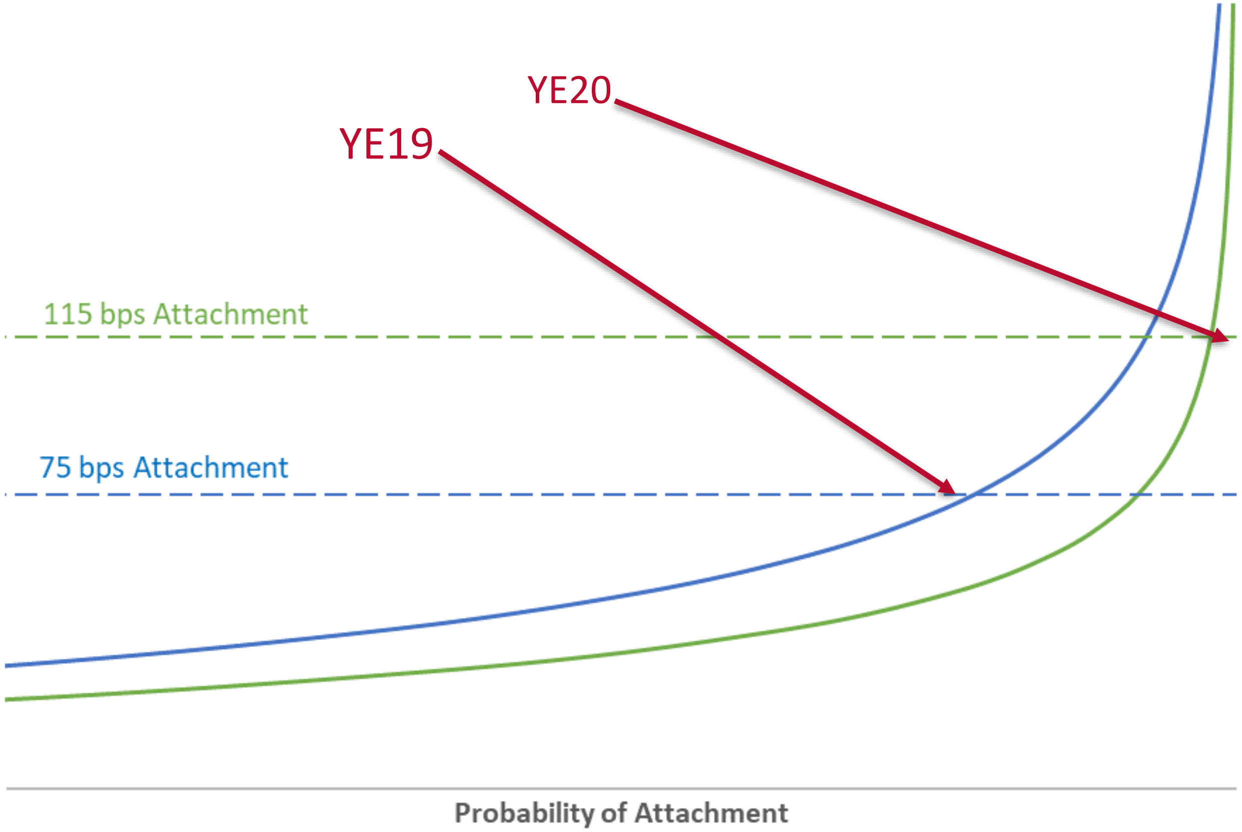
COVID proved to be a CRT deleveraging event

HPA and Prepayments were much higher than expected during 2020 …

	Actual @ YE 19	Expected @ YE 20	Actual @ YE 20
HPA	100	103.5	106.7
MTM LTV	67%	65%	63%
UPB	100	83	65
CRT Attachment	75 bps	90 bps	115 bps

HPA and UPB indexed to 100 at ye19
CRT Attachment is the weighted average attachment across a typical CRT reinsurer

.. and so the typical YE19 CRT portfolio was much less likely to attach at YE20 than it was at YE19, despite COVID



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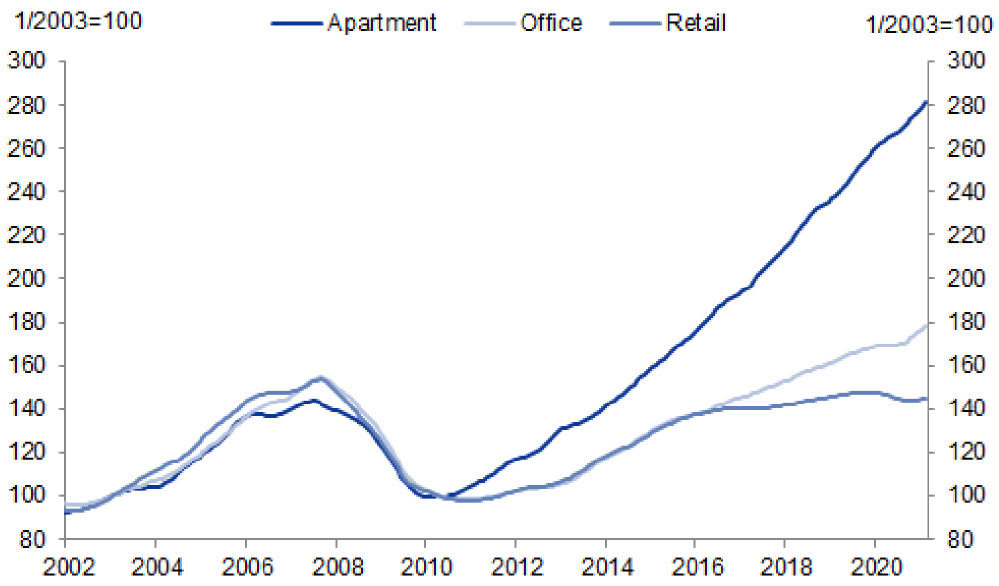
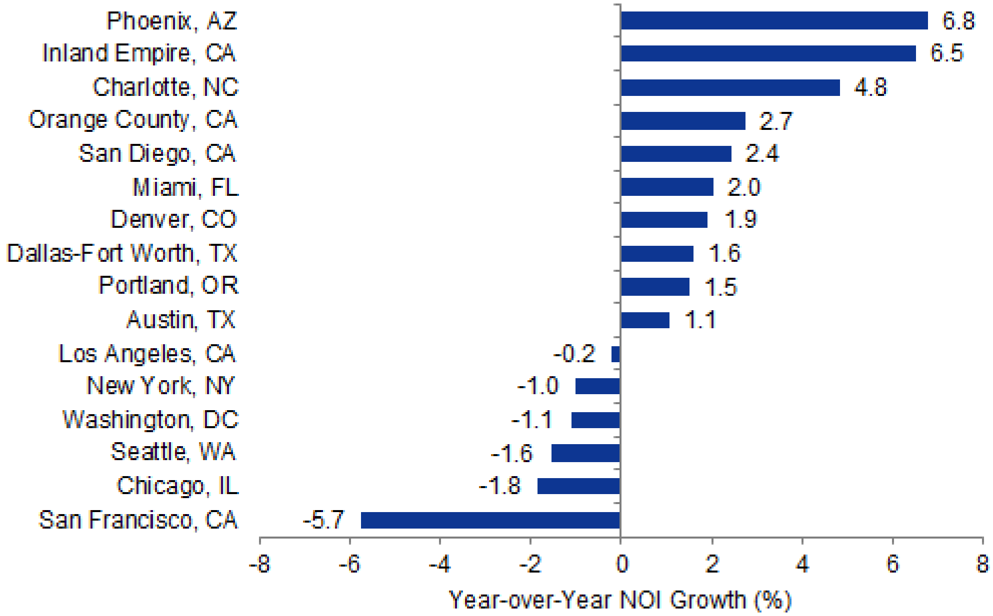
Multifamily Summary

Apartment property prices continue to rise



Rent growth generally remains positive outside the largest metro areas



Stimulus compensated for lost income across the multifamily universe

An unemployed renter would expect to receive a one-time payment of $600 and an additional $300 weekly in unemployment benefits from the federal government through the middle of March 2021

Median-renter income	**$ 42,500**		
Employment Status	**Total Income 1.1.20 - 3.14.21**	**% of no employment change**	**% of households**
Job Lost 3/31/20	$ 34,249	67%	10%
Job lost for 3 Months	$ 50,774	99.6%	15%
No Change in Employment	$ 50,975	100%	75%
Income relative no employment/income change			**96%**

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Berenbom Discussion Topics

- Performance of loans that entered COVID-19 related forbearance plans
- Comparison of modeled Credit Risk Transfer (CRT) results from 2020 and 2021
- 2020 FHFA Enterprise Capital Framework and its implications for the CRT market

Loans in Forbearance Plans Performed Better than Expected

Freddie Mac’s Population of Forborne Loans as of March 31st, 2021

For existing CRT transactions, 63% of loans in COVID-19 related Forbearance have exited Forbearance

	Borrowers w/ Missed Payments | 91%			Borrowers Always Current | 9%	
Current	Self Cured 23%	Paid-off 28%		Active 71%	Paid off 29%
Payment Relief	Repayment Plan 1%	Payment Deferral 41%	Flex or Other Mod 1%		
Delq or Default	DQ/Trial Period 4%	Credit Event 2%			

Notes: Forbearance exits definition: for the most recent Payment Date, loans for which no active forbearance was reported, or a payment deferral was granted and was current regardless of the forbearance status
Population evaluated is any loans in CRT transactions that entered forbearance between May-2020 and Mar-2021 Reporting Periods, which correspond to the Mar-2020 and Dec-2020 servicer reporting
Delinquency is based on Apr-2020 to Mar-2021 Reporting Periods, which corresponds to the Mar-2020 to Feb-2021 servicer reporting
Credit Events includes liquidations for Actual Loss transactions and D180 Credit Event for Fixed Severity Transactions

Source: Freddie Mac

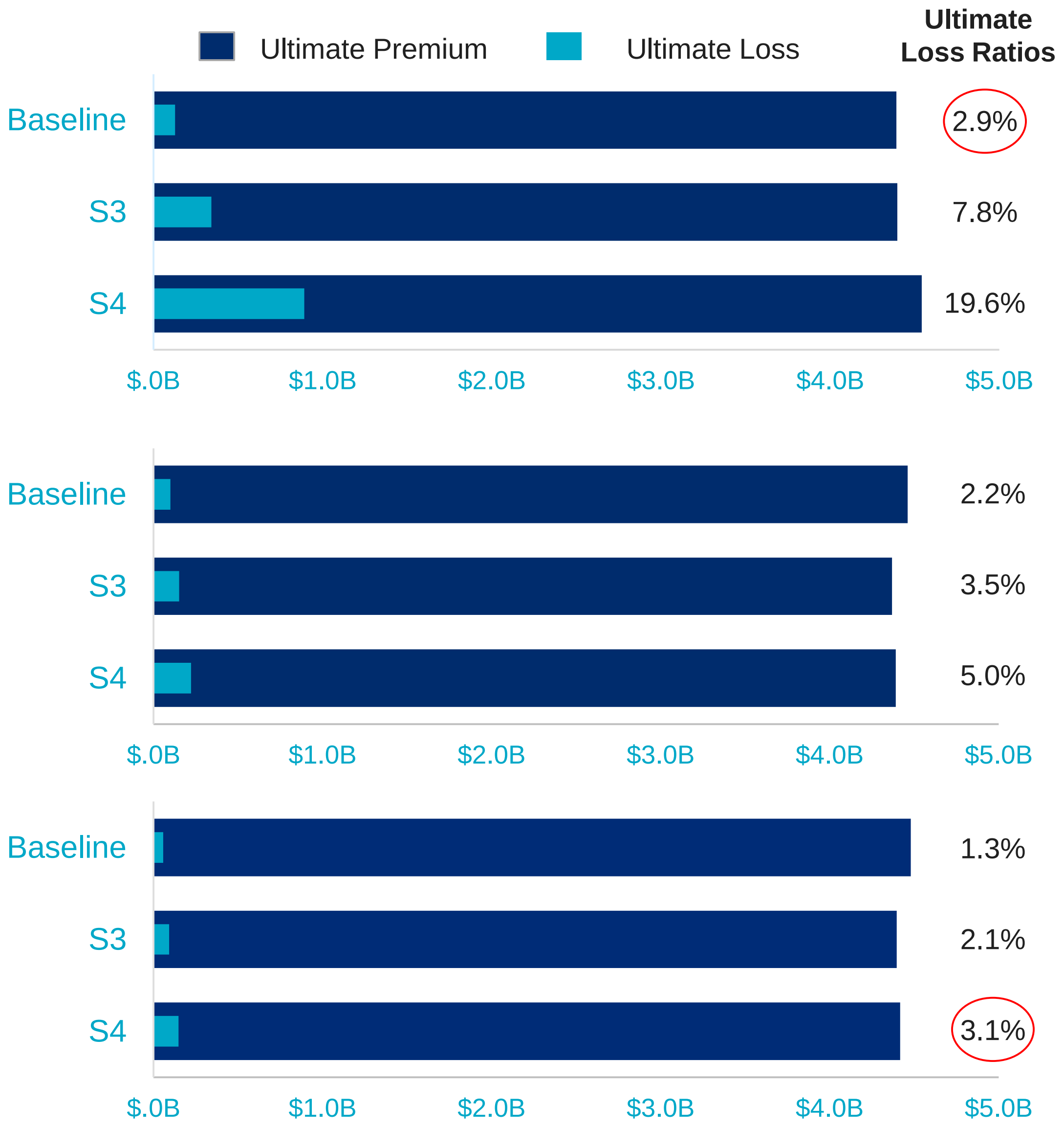
CRT Outperformed Expectations through the COVID-19 Cycle

Model Run:

- May, 2020
- No impacts of forbearance

- May, 2021
- No impacts of forbearance

- May, 2021
- Contemplates impacts of forbearance

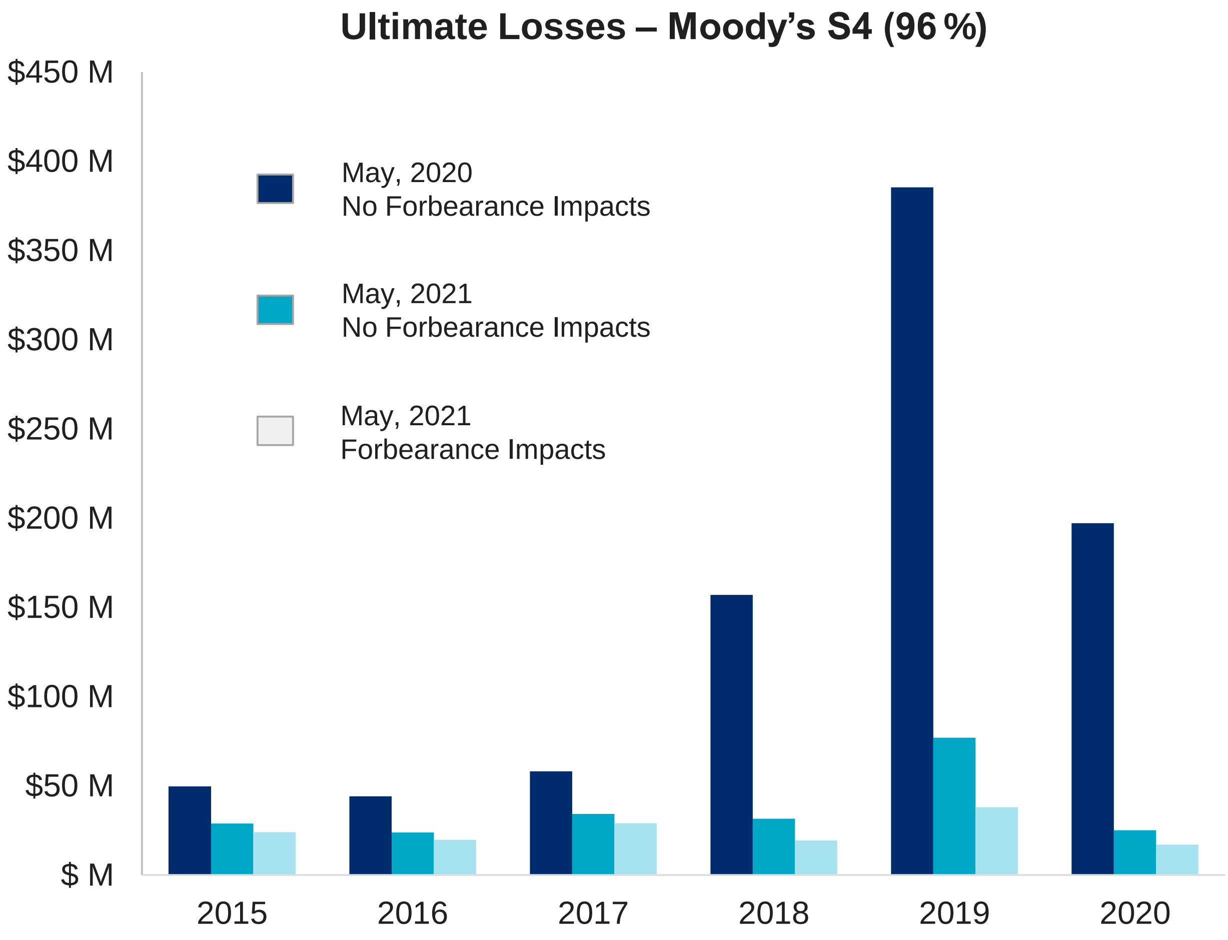


- Expected modeled results have declined dramatically over the past year – losses down 25% in baseline scenario, 56% in Moody's S3, and 75% in Moody's S4
- Modeling the impact of forbearance programs on impacted loans reduces losses by an additional 30-45%
- More optimistic economic outlook and strong housing performance driving improved results

Notes: Only transactions with pre-COVID inception dates used (up through ACIS 2020-HQA2). Results assume an Economic Call

Source: Milliman's M-PIRe

Modeled Results of Newer Vintages Materially Improved

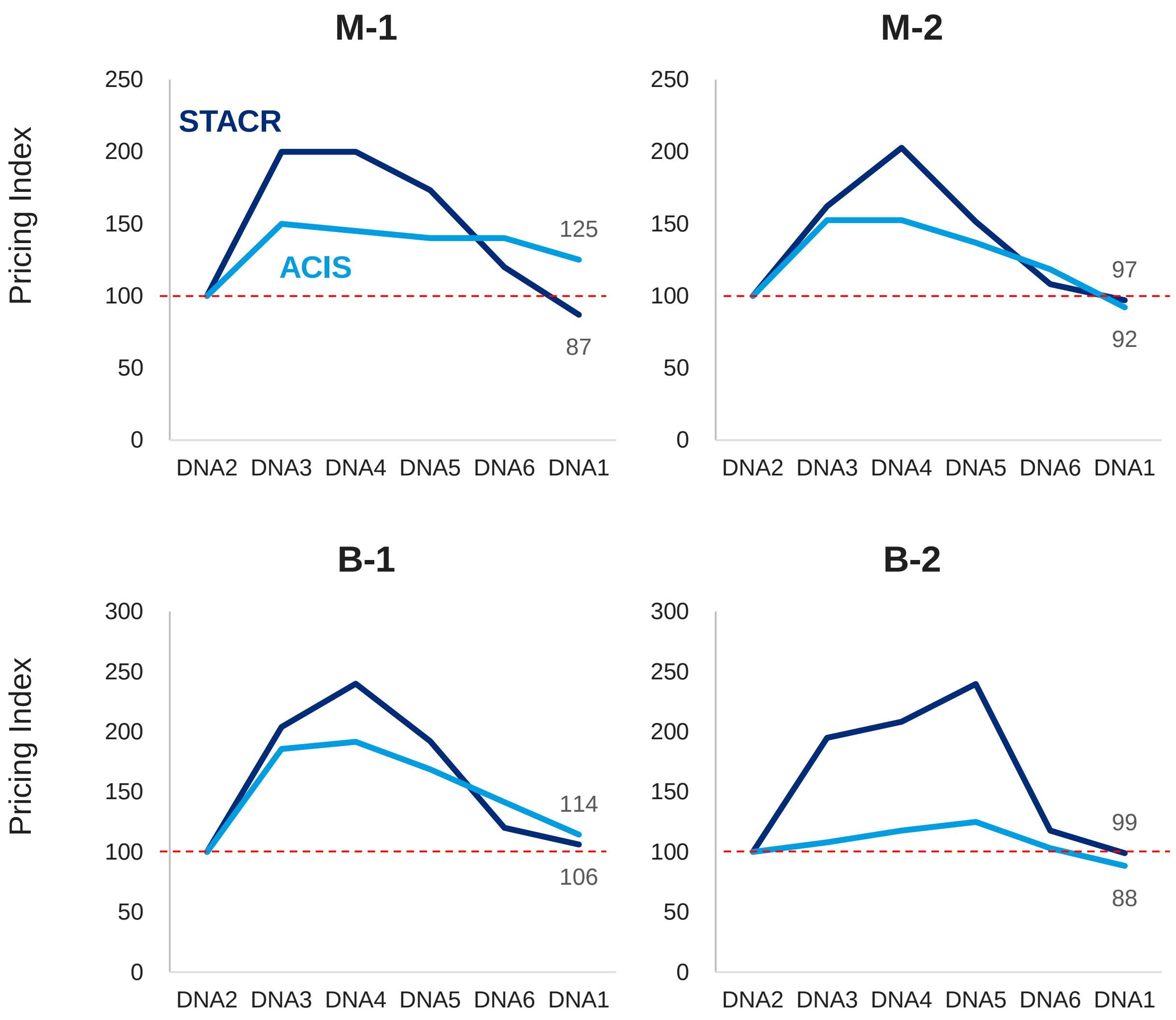


- The most recent transactions (2018-2020) have the least embedded home price appreciation, and are the most vulnerable to losses
- Post-COVID transactions have low modeled losses
  - Tightened credit standards led to pristine loan quality
  - Reinsurance structures have increased retentions
  - Highest risk-adjusted returns in years

Notes: Only transactions with pre-COVID inception dates used (up through ACIS 2020-HQA2). Results assume an Economic Call

Source: Milliman's M-PIRe

Reinsurance CRT Pricing Less Volatile Than Capital Markets

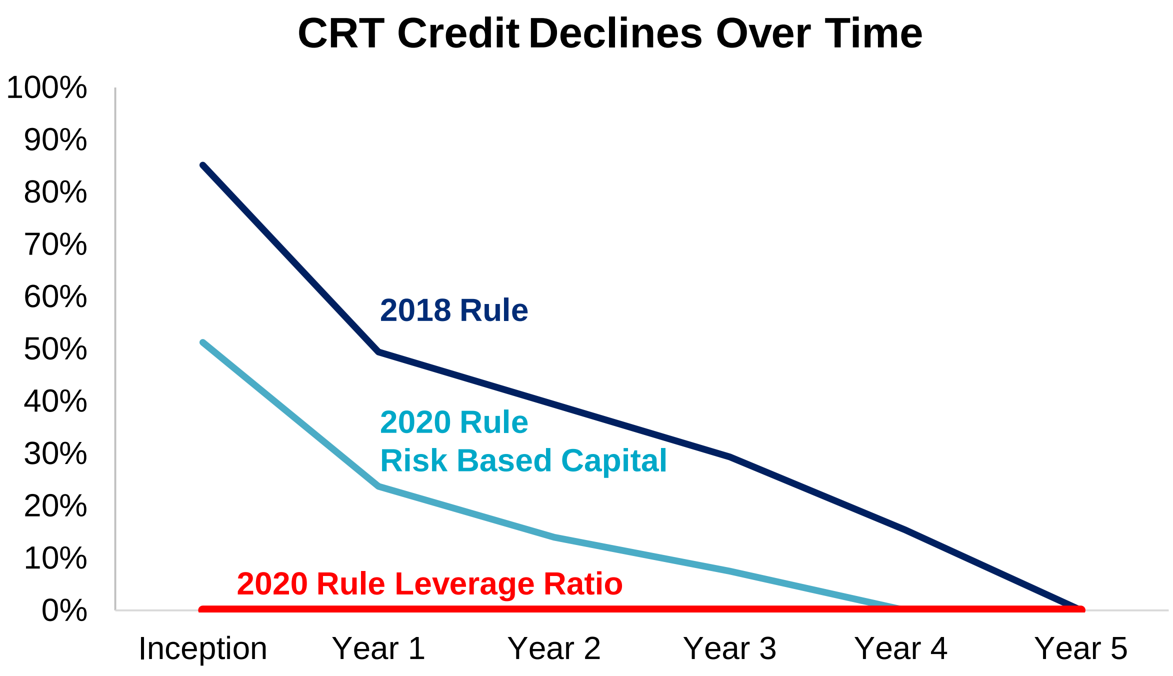


- Reinsurance execution pricing (ACIS) less volatile than capital market issuance pricing (STACR) through COVID
- Reducing M-1 detachments have limited further rate tightening (i.e., M-1s more risk dense)
- Price decreasing in response to increasing demand for B-1 and B-2 when attachments increased to 25 bps

Index = 100 on pre-COVID DNA2 placement. Nominal rates illustrated and not adjusted for change in credit quality or structure.

Source: Bloomberg

New FHFA Capital Rule Disincentivizes CRT



- Federal Housing Finance Agency (FHFA) finalized a new Enterprise Capital Framework (ECF) in November 2020, causing significant reductions in CRT risk-based capital benefit
- CRT capital credit declines rapidly under the final ECF, increasing cost of capital to uneconomic levels
- Removal of discretionary call option further increases lifetime cost of capital
- Largely as a result of the new ECF, Fannie Mae has not issued a CRT transaction since March 2020

Notes: CRT Credit = Capital Benefit from CRT / Remaining CRT Limit
Assumed 5% Annual Home Price Appreciation, 15% Annual Prepayments, 1 bp Annual Paid Losses

Source: GC Analytics

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Resources Available to Explore Participating in Future Credit Risk Transfer Transactions

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

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

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Thank you

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