



AMHERST
PIERPONT

An APS Portfolio Strategy special presentation

Trading MBS below par

July 2022

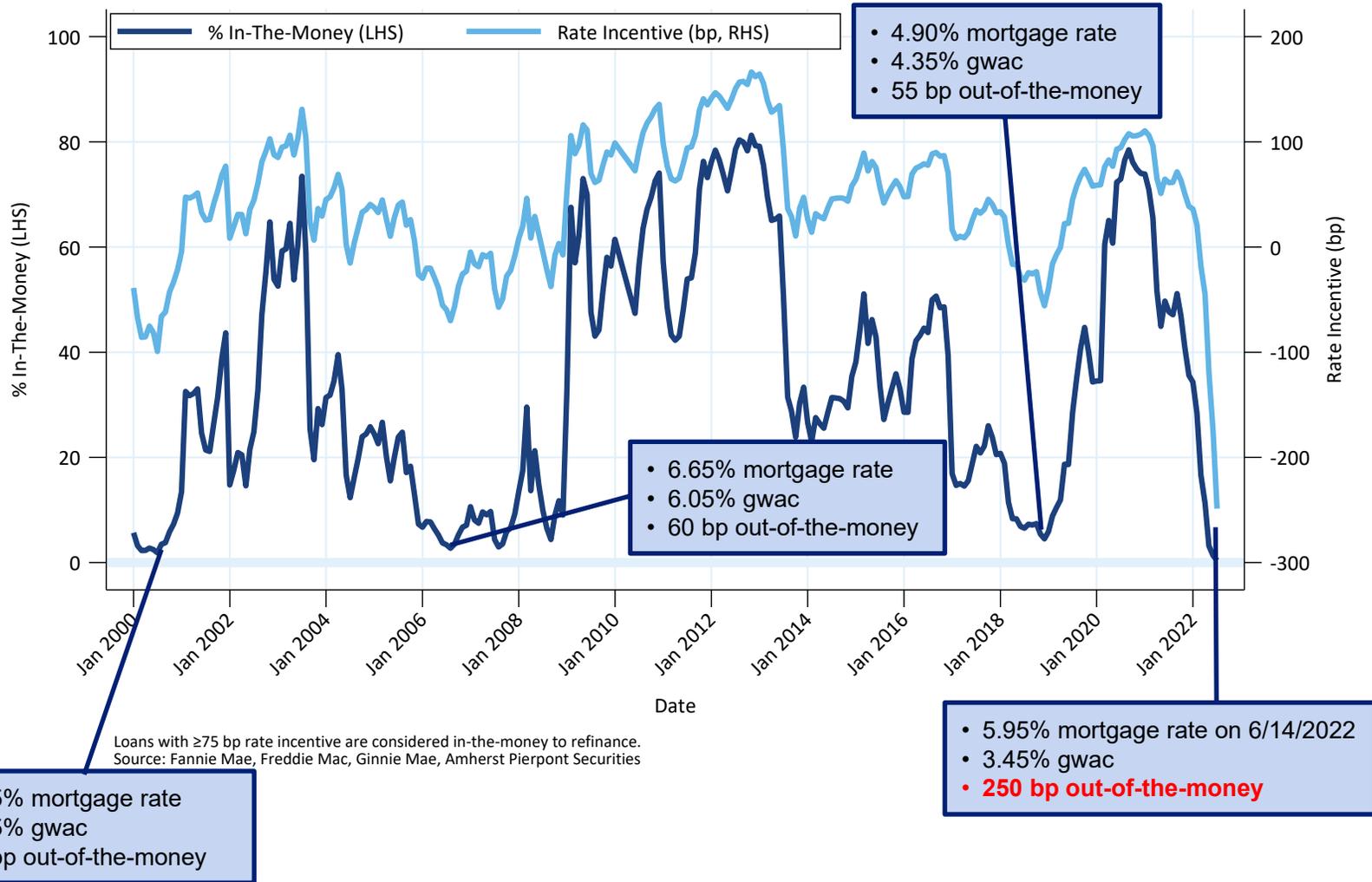
Brian Landy, CFA
Managing Director
Senior Strategist
blandy@apsec.com
1 (646) 776-7810

OVERVIEW

- Prepayment speeds matter for discount MBS
- Housing Turnover
- Cash-out refinancing
- Defaults
- Curtailments

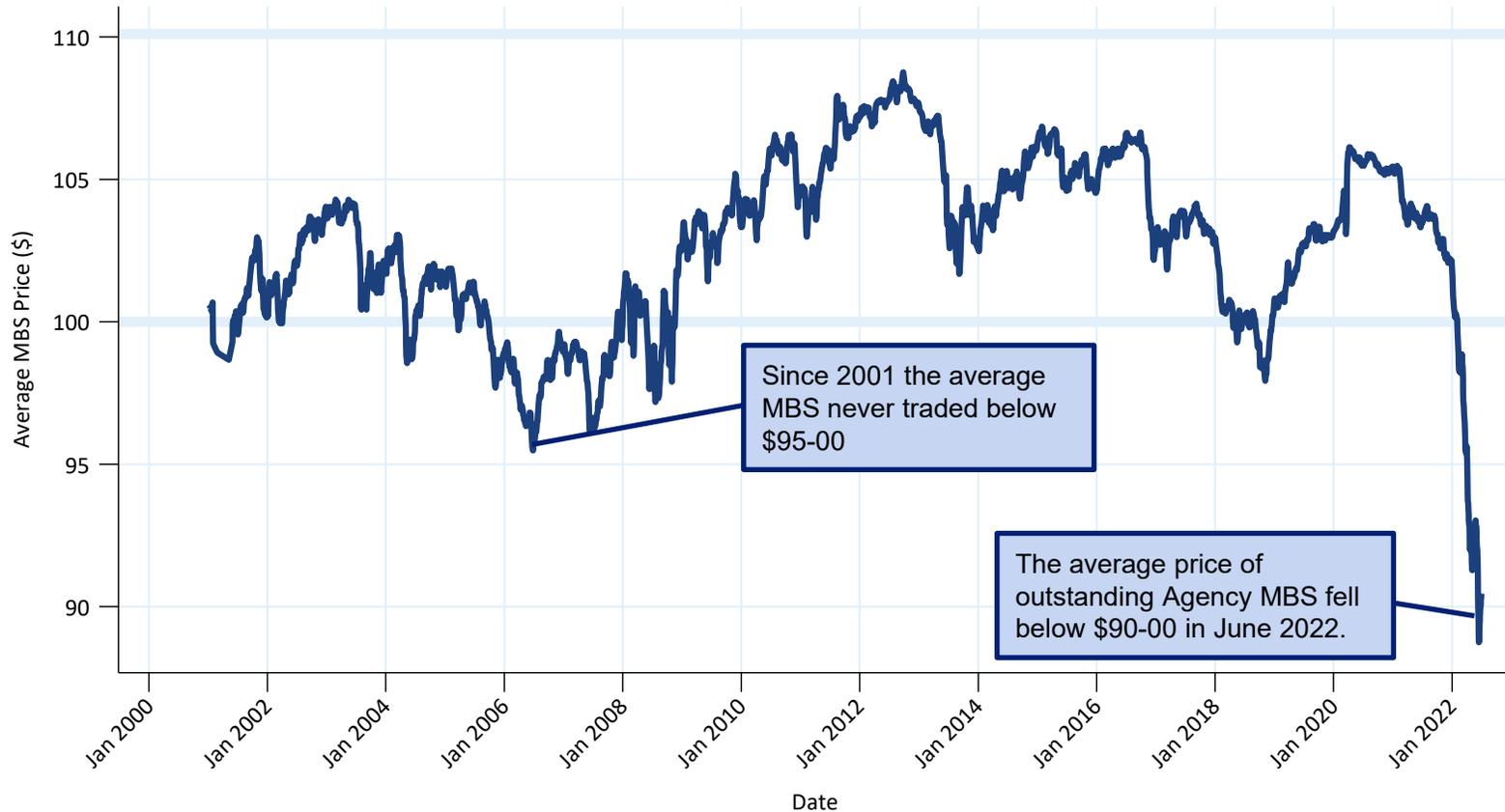
FOR THE FIRST TIME IN YEARS, LESS THAN 5% OF OUTSTANDING 30-YEAR MBS HAVE INCENTIVE TO REFINANCE

Only 1.3% of mortgages are in-the-money to refinance, the lowest since July 2000



THE AVERAGE PRICE OF AN AGENCY POOL FELL BELOW \$90-00 IN JUNE 2022

The average agency MBS has typically traded above par



Source: Fannie Mae, Freddie Mac, Ginnie Mae, Amherst Pierpont Securities

SMALL DIFFERENCES IN MBS PREPAYMENT SPEEDS HAVE A BIG IMPACT ON FAIR VALUE IN DISCOUNT MBS

Small differences in prepayment speeds can have a big effect on MBS price

UMBS Price	Prepayment Scenario						
	-30%	-20%	-10%	Base CPR	10%	20%	30%
100	-0-06	-0-04	-0-02	9.6	0-02	0-03+	0-05
99	-0-08+	-0-05+	-0-02+	8.3	0-02+	0-05	0-07
98	-0-11	-0-07	-0-03+	7.8	0-03	0-06	0-09
97	-0-13	-0-08+	-0-04	7.5	0-04	0-07+	0-11
96	-0-15+	-0-10	-0-05	7.3	0-04+	0-09	0-13
95	-0-17+	-0-11+	-0-05+	7.2	0-05+	0-10+	0-15
94	-0-19+	-0-12+	-0-06	7.0	0-06	0-11+	0-17
93	-0-22	-0-14	-0-07	6.8	0-06+	0-12+	0-18+
92	-0-24	-0-15+	-0-07+	6.6	0-07	0-14	0-20+
91	-0-26	-0-17	-0-08	6.4	0-07+	0-15	0-22

The deeper the discount,
the bigger the effect on price.

Note: Speeds as of 6/2/2022 using FNCL 2.5% MBS priced at \$91-04 with 4.29% gross WAC, 6 WALA, 352 WAM, \$412k weighted average original loan size. For each row an instantaneous parallel rate shift is found that prices the pool at that row's price using constant OAS. The life CPR is printed in the center column, "Base CPR." The turnover speed for each row is shocked up/down by the percentage indicated in each column, and a new price is calculated at constant OAS. The pay-up is the difference between that price and the row's UMBS price.

Source: Yield Book, Amherst Pierpont Securities

- Prepayments at par produce a profit on every dollar of MBS purchased at a discount
- The more dollars prepaid and the deeper the discount, the bigger the profit

WITH A CHANGE IN MBS PRICE COMES A CHANGE IN PRIMARY PREPAYMENT RISK

Prepayments in discount MBS depend less on rates and more on other things

MBS pricing	Primary prepayment risk
Above par	Refinancing incentive
Below par	Housing turnover
	Cash-out equity
	Default
	Curtailment

OVERVIEW

- Prepayment speeds matter for discount MBS
- Housing Turnover
- Cash-out refinancing
- Defaults
- Curtailments

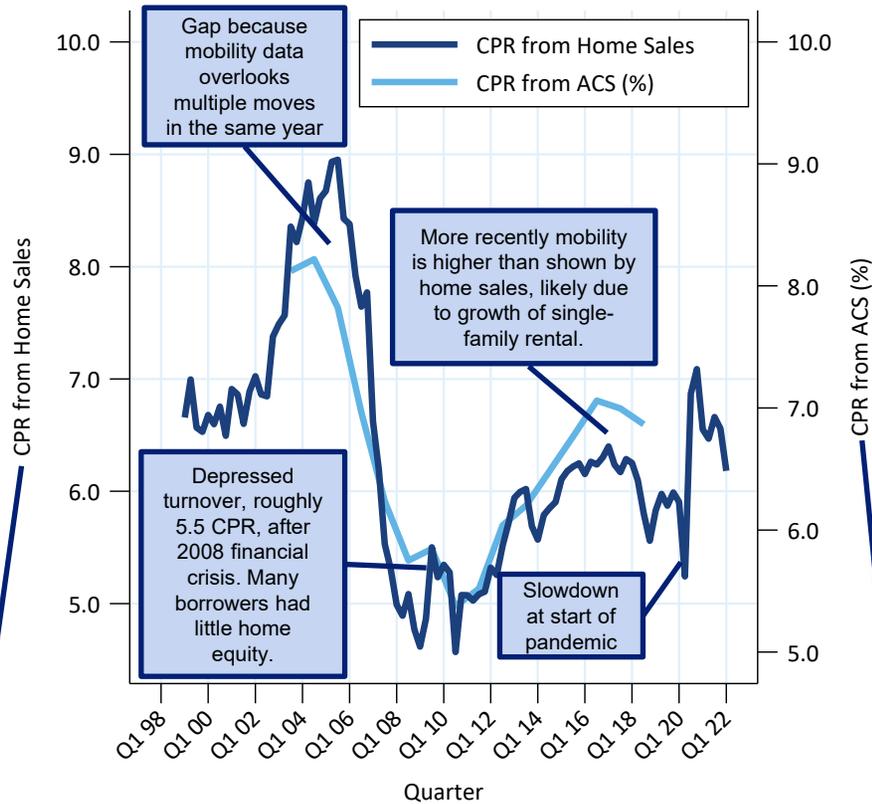
PEOPLE BUY HOUSES BECAUSE THEY WANT OR NEED TO MOVE

Trading up, trading down, moving neighborhoods, relocating and household formation drive turnover



HOME SALES AND MOBILITY DATA SUGGEST TURNOVER IS TYPICALLY 6.5 CPR

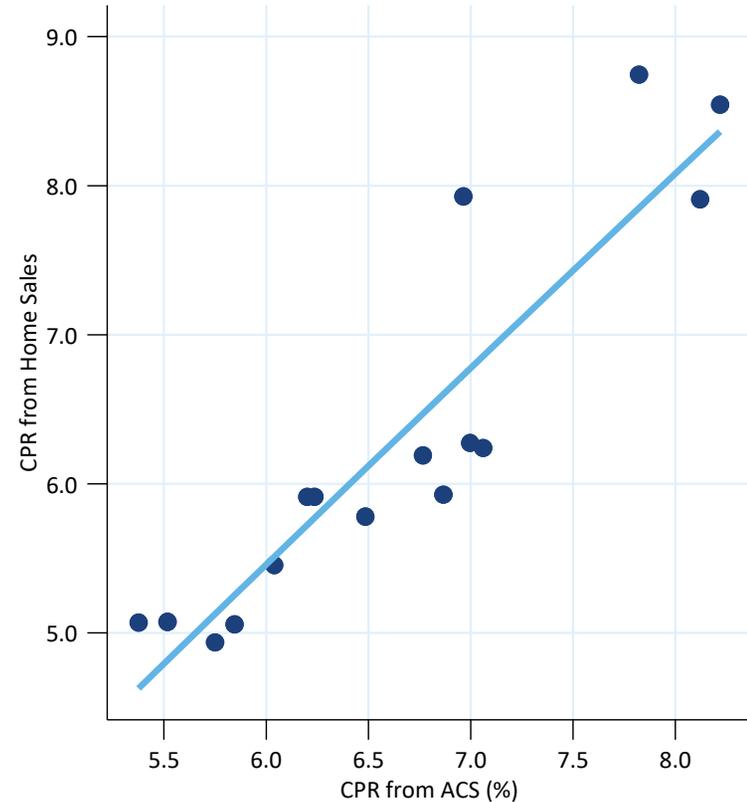
Typical turnover is roughly 6.5 CPR



Housing turnover speed estimated using existing home sales and housing stock.
 Source: US Census Bureau American Community Survey, NAR, Amherst Pierpont Securities
 ACS mobility data presented as-of July 1 of the year before ACS reporting.

Calculates turnover CPR using existing home sales and housing stock

Both measures are consistent since 2009



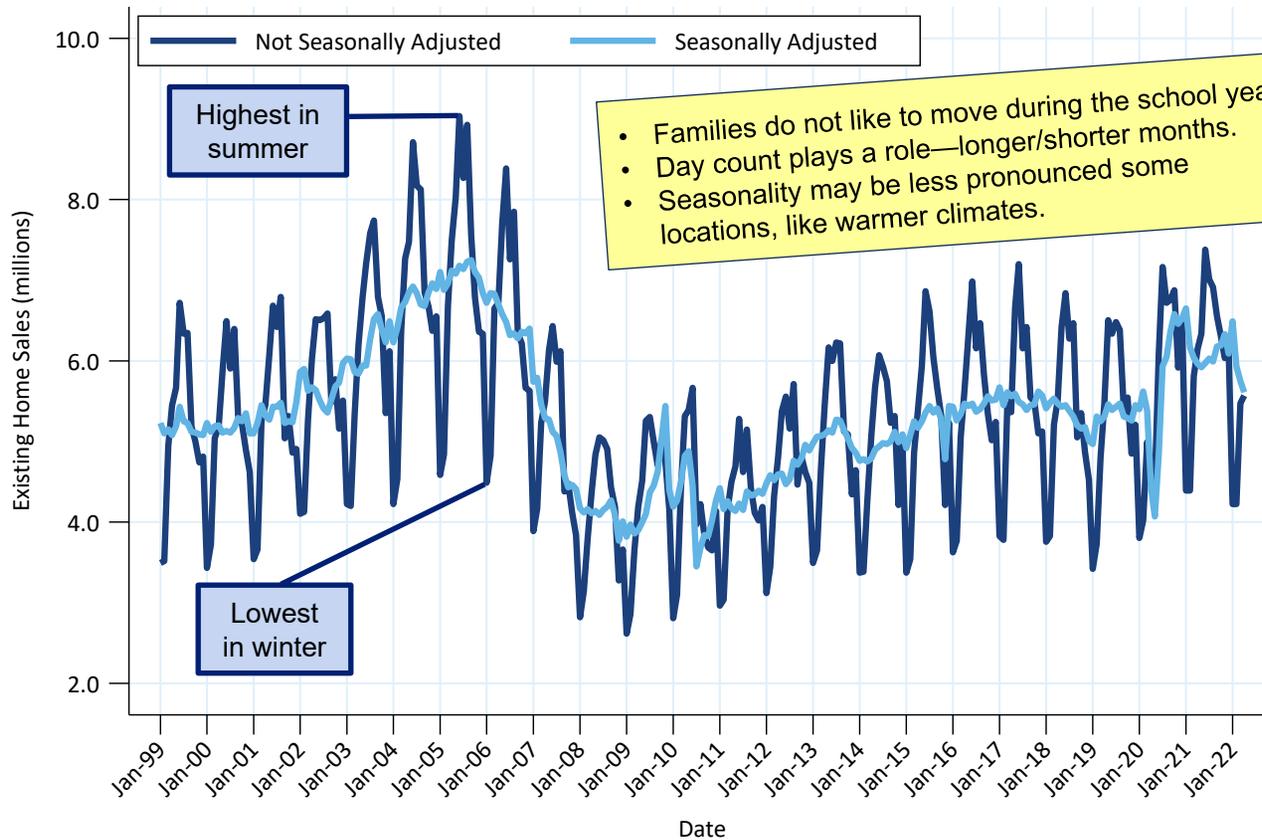
Housing turnover speed estimated using existing home sales and housing stock.
 Source: US Census Bureau American Community Survey, NAR, Amherst Pierpont Securities
 ACS mobility data presented as-of July 1 of the year before ACS reporting.

Calculate turnover CPR using mobility data from the Census' American Community Survey.

DRIVERS OF HOUSING TURNOVER

- Seasonality—time of year
- Seasoning—time in the home
- Interest rates
- Borrower life cycle—borrower age
- Home equity
 - Home price appreciation
 - Unemployment
 - Geography
- Loan size
- Credit score
 - Credit availability
- Loan Purpose
- Mortgage Insurance
- Loan Assumability

HOUSING TURNOVER INCREASES OVER 80% FROM JANUARY TO JUNE



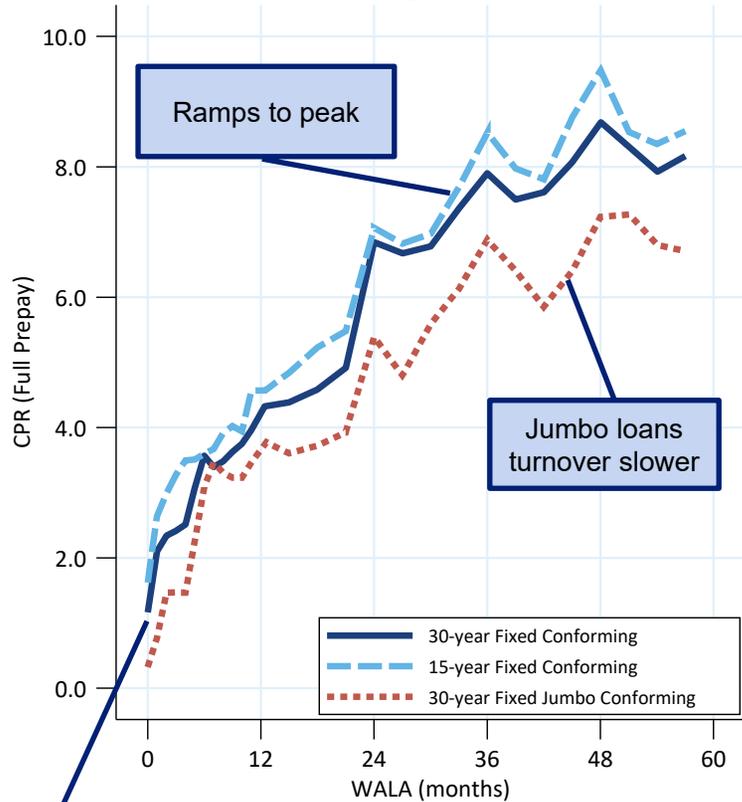
Month	Seasonal Factor
January	68%
February	71%
March	95%
April	104%
May	114%
June	125%
July	118%
August	119%
September	102%
October	100%
November	91%
December	94%

Source: NAR, Amherst Pierpont Securities

Buy bonds when prices drop after low winter prints.

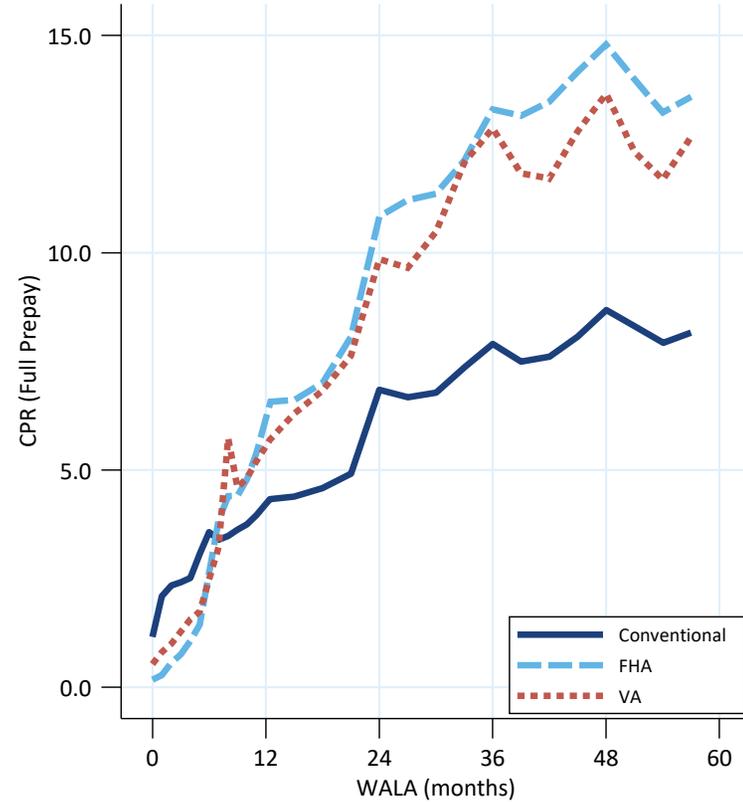
BUY SEASONED LOANS

Borrowers usually don't move right after buying a home



Discount loans only. Jan 2014 to Apr 2022 performance.
 Conventional, purchase, owner-occupied, FICO≥725, original LTV≤80.
 Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities.
 Speeds include turnover and cash-out refinancing. FHA/VA speeds exclude buyouts.

FHA & VA loans turnover faster than conventional



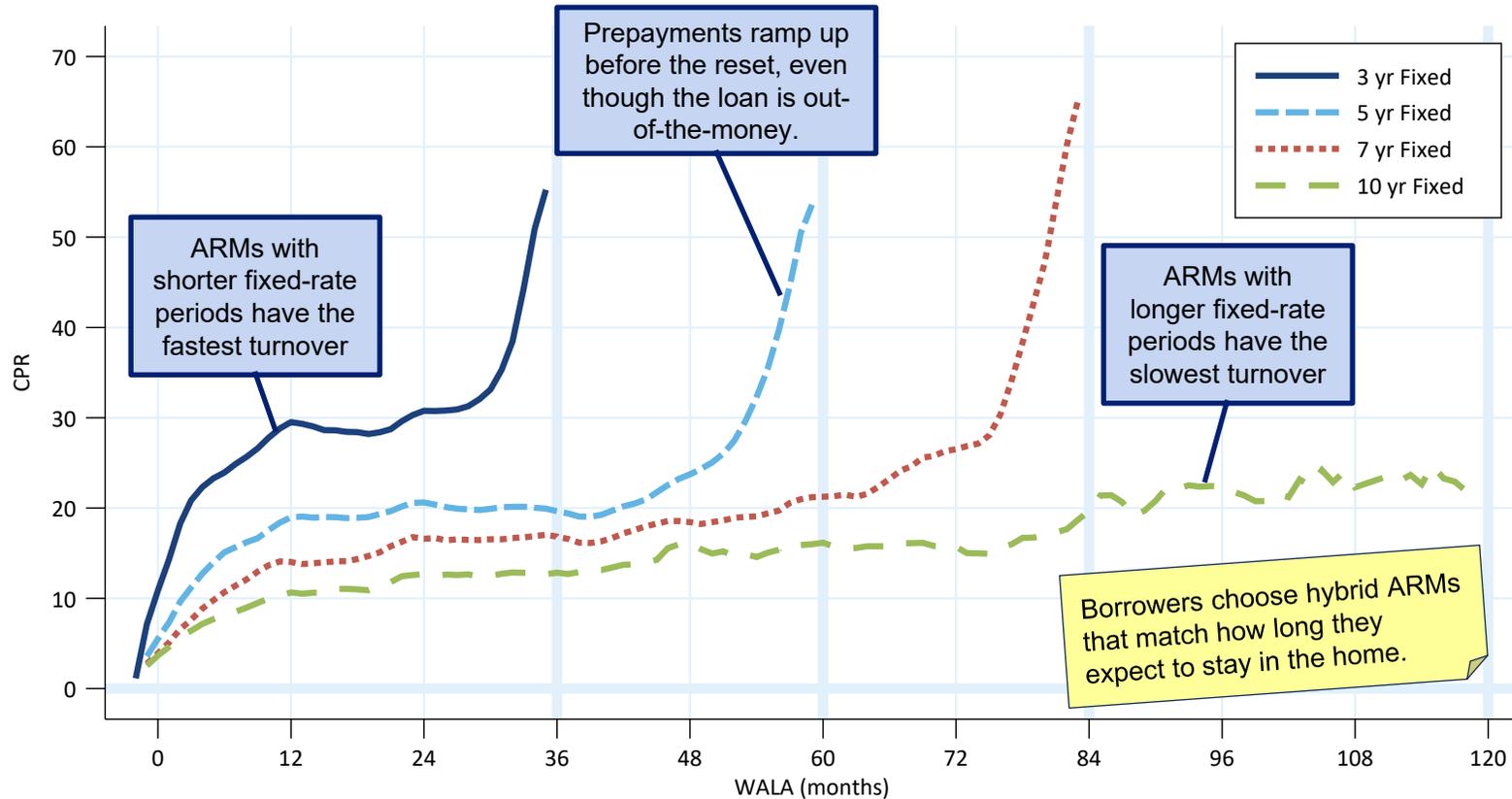
Discount loans only. Jan 2014 to Apr 2022 performance.
 Fixed 30-year, purchase, owner-occupied, FICO≥725, original LTV≤80.
 Source: Fannie Mae, Freddie Mac, Ginnie Mae, Amherst Pierpont Securities.
 Speeds include turnover and cash-out refinancing. FHA/VA speeds exclude buyouts.

Turnover starts slow

- Avoid seasoning ramp—buy seasoned loans.
- Prefer FHA and VA loans to conventional loans.

BUY HYBRID ARMS WITH SHORTER FIXED-RATE PERIODS

Hybrid ARM borrowers signal when they expect to move

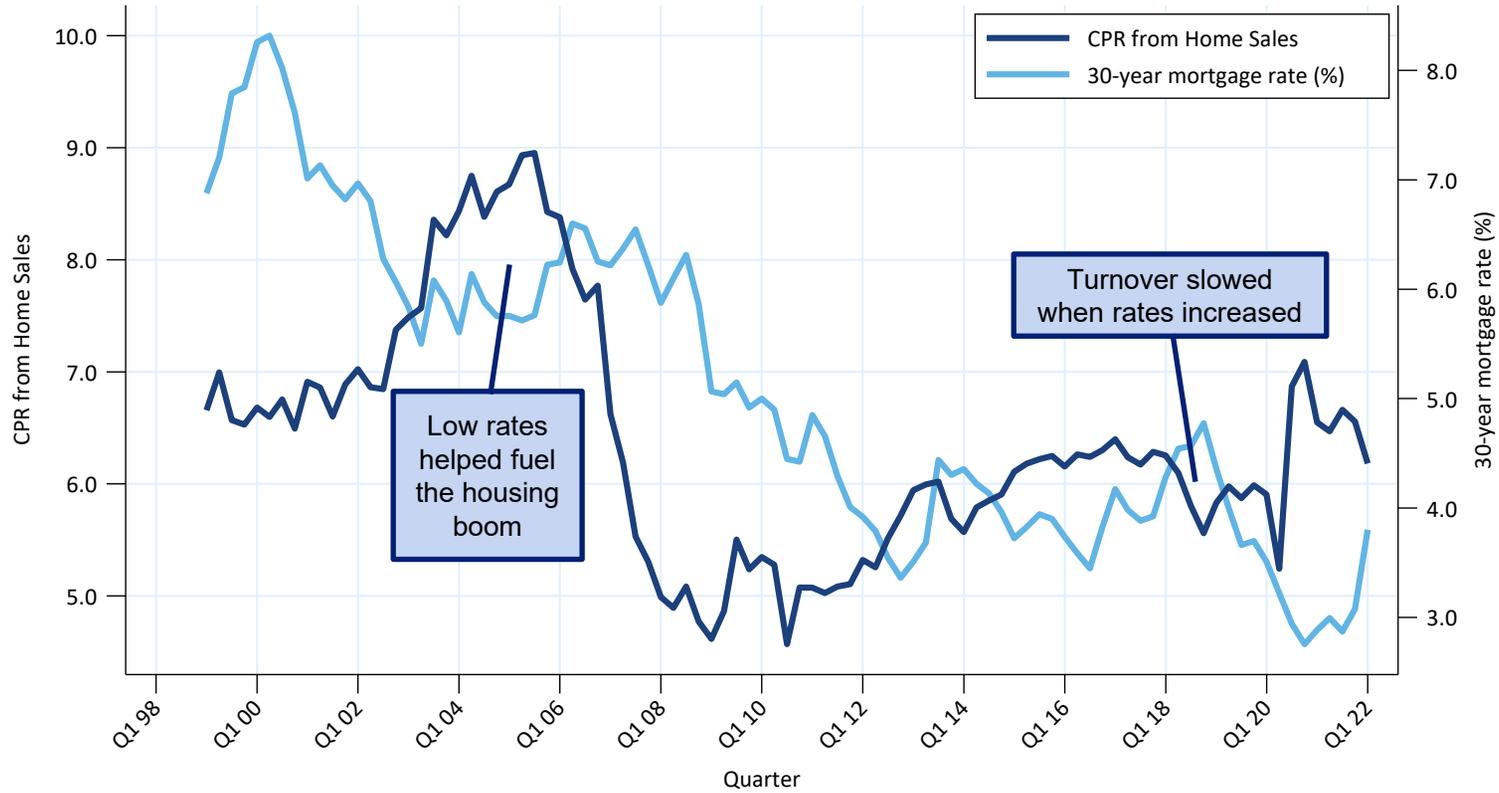


Discount pools, measured using pool WAC vs. WAC for new hybrid ARM production with same fixed-rate period. Pools are grouped by length of initial fixed-rate period, and include CMT, LIBOR, and SOFR indices with 6-month and 1-year reset frequencies. Performance from 1999 to 2022. Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities.

Get extension protection by buying hybrid ARMs with shorter fixed-rate periods

MORE PEOPLE MOVE WHEN INTEREST RATES ARE LOW

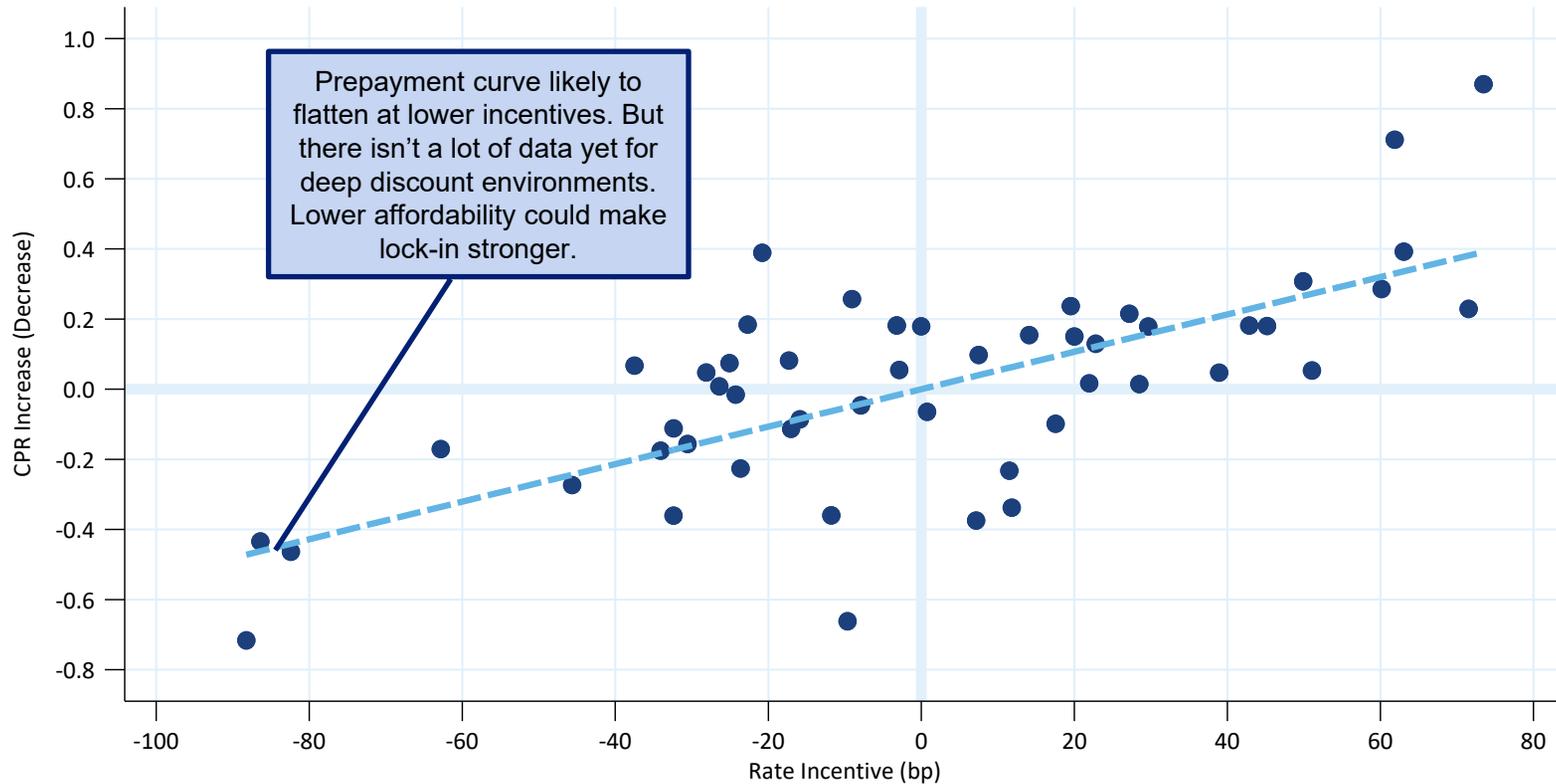
Low rates encourage borrowers to move



Housing turnover speed estimated using existing home sales and housing stock.
 Source: Freddie Mac, Bloomberg, NAR, US Census Bureau, Amherst Pierpont Securities

RULE OF THUMB—TURNOVER FALLS 0.75 CPR WHEN RATES INCREASE 100 BP

Turnover is correlated with interest rates

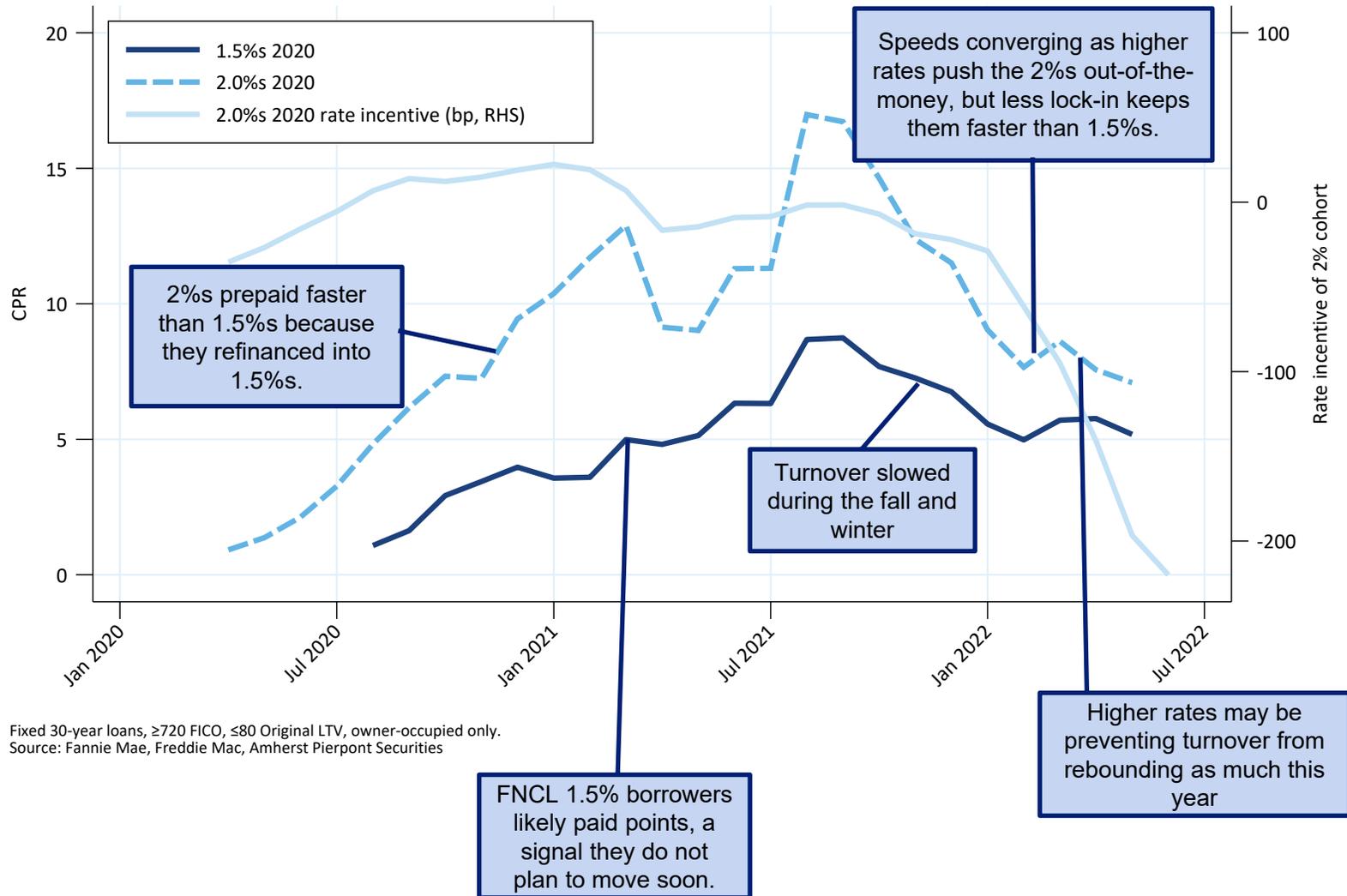


Data from Q1 2009 through Q1 2022, excluding Q2 2020 at start of COVID. Each point represents one quarter.
Rate incentive is the average incentive for outstanding 30-year loans each quarter.
Housing turnover speed estimated using existing home sales and housing stock.
Source: Freddie Mac, Bloomberg, NAR, US Census Bureau, Amherst Pierpont Securities

Discount pools priced closer to par offer extension protection but have more prepayment risk if rates fall.

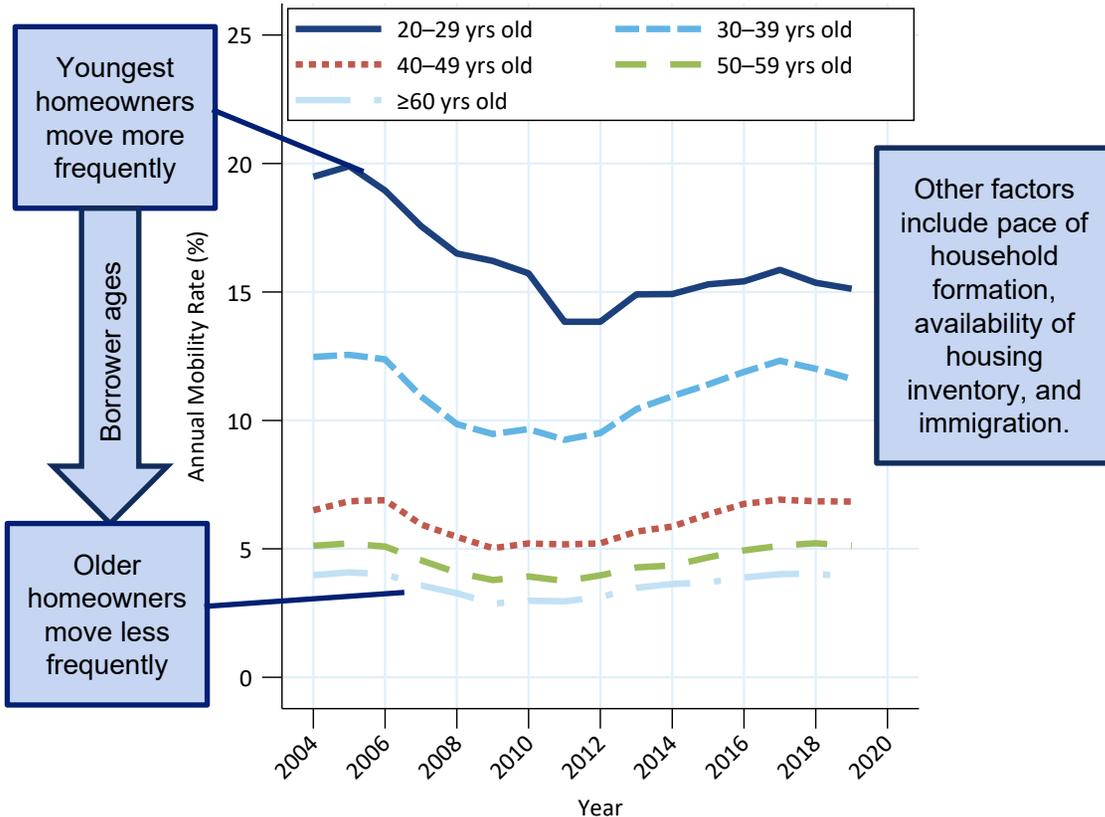
HIGHER COUPON COHORTS PREPAY FASTER AS PREMIUMS AND DISCOUNTS

Low coupon speeds are compressing since mortgage rates jumped



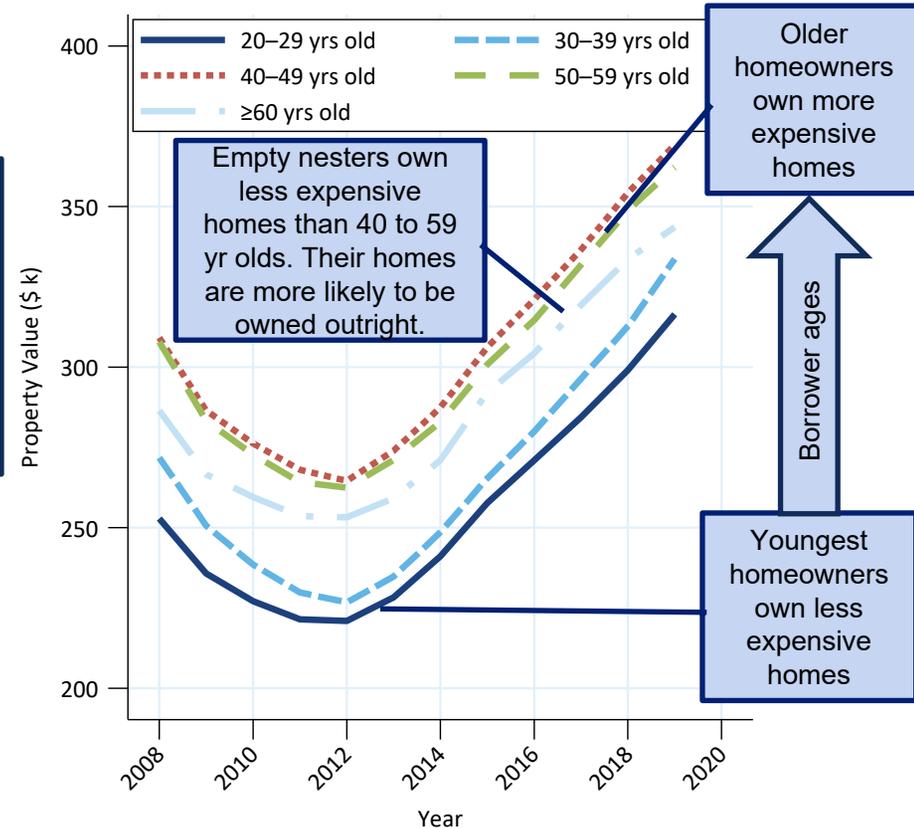
YOUNGER HOMEOWNERS OWN LESS EXPENSIVE HOMES AND MOVE MORE OFTEN

Mobility declines with age



Source: U.S. Census Bureau, American Community Survey PUMS data; Amherst Pierpont Sec Person-level data for owner-occupied tenure, persons ≥1-year old, excludes moves from out-

Home value increases with age

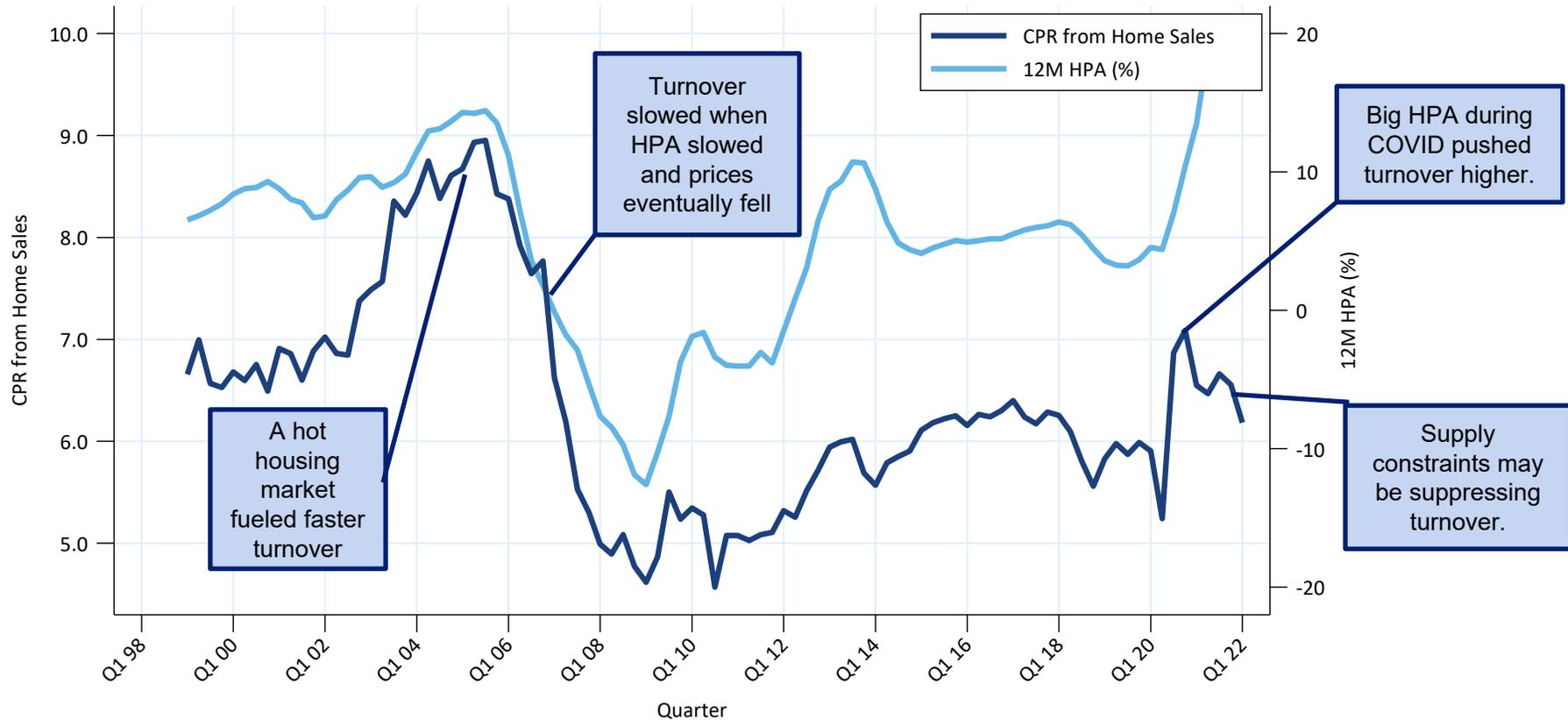


Source: U.S. Census Bureau, American Community Survey PUMS data; Amherst Pierpont Sec Person-level data for owner-occupied tenure, persons ≥1-year old, excludes moves from out-

Buy loans like low loan balance, low FICO, and FHA. These borrowers are more likely to be younger, in starter homes, and need to move sooner.

HOMEOWNERS MOVE MORE OFTEN WHEN HOME PRICES INCREASE

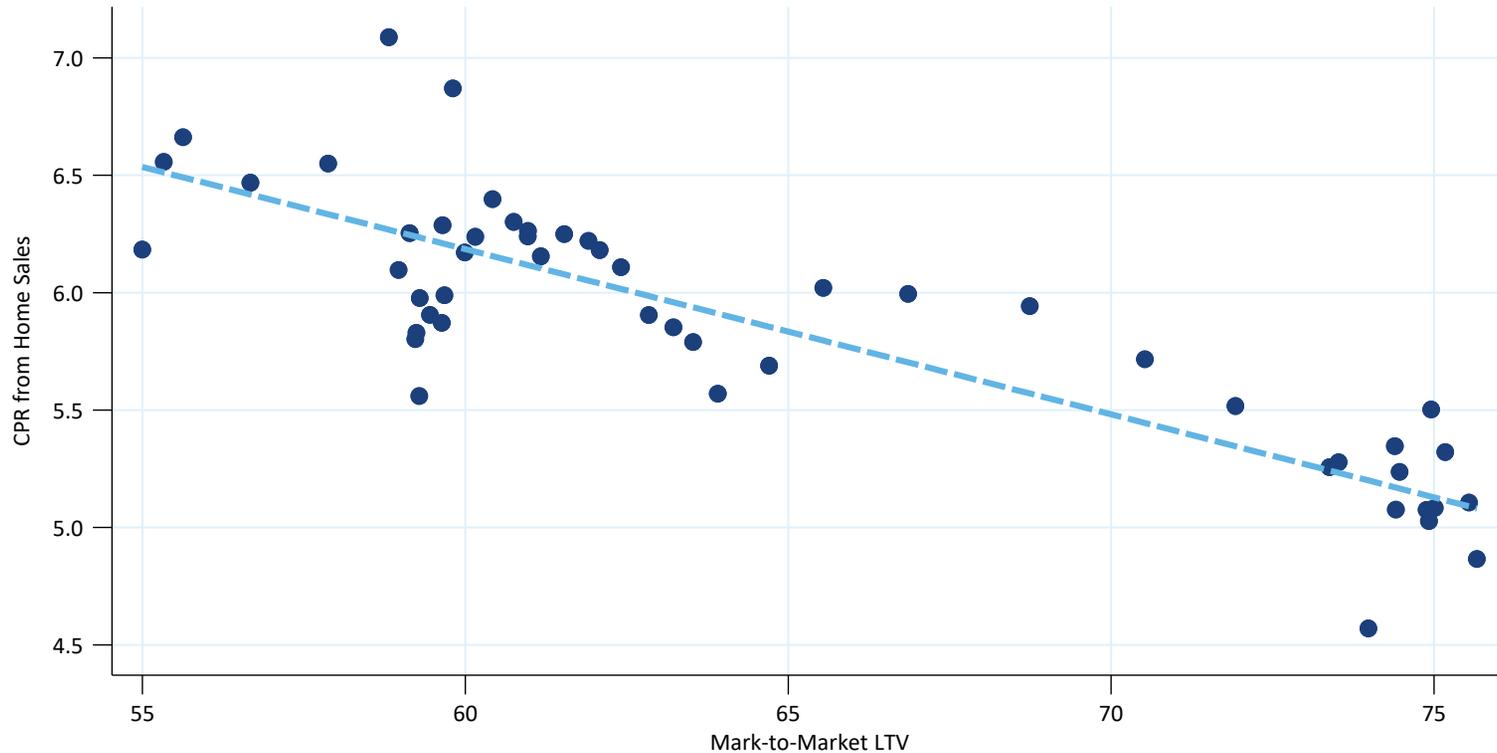
Borrowers rely on leverage and home price gains to buy larger homes



Housing turnover speed estimated using existing home sales and housing stock.
Source: S&P Case Shiller, NAR, US Census Bureau, Amherst Pierpont Securities

RULE OF THUMB—TURNOVER INCREASES 0.75 CPR WHEN EQUITY INCREASES 10 POINTS

More equity allows borrowers to move

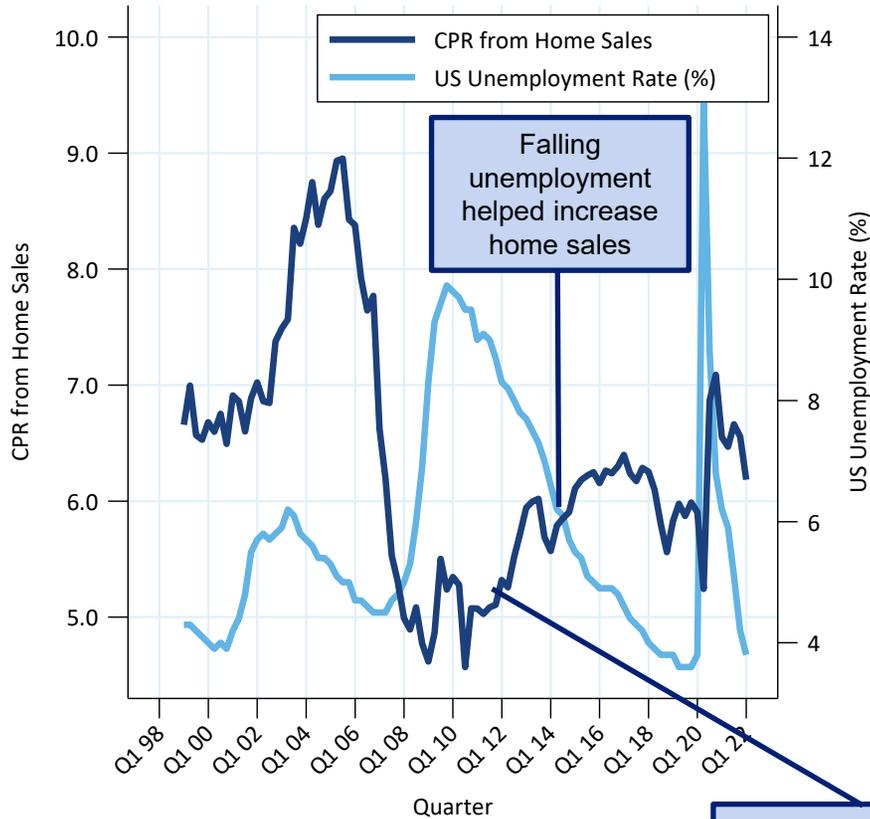


Data from Q1 2009 through Q1 2022, excluding Q2 2020 at start of COVID. Each point represents one quarter.
Mark-to-market LTV is the average MTM LTV for outstanding 30-year loans each quarter.
Housing turnover speed estimated using existing home sales and housing stock.
Source: S&P Case Shiller, NAR, US Census Bureau, Amherst Pierpont Securities

Look for collateral from states that have had, or are expected to have, high home price appreciation. Population growth, in-migration, strong economies, low unemployment.

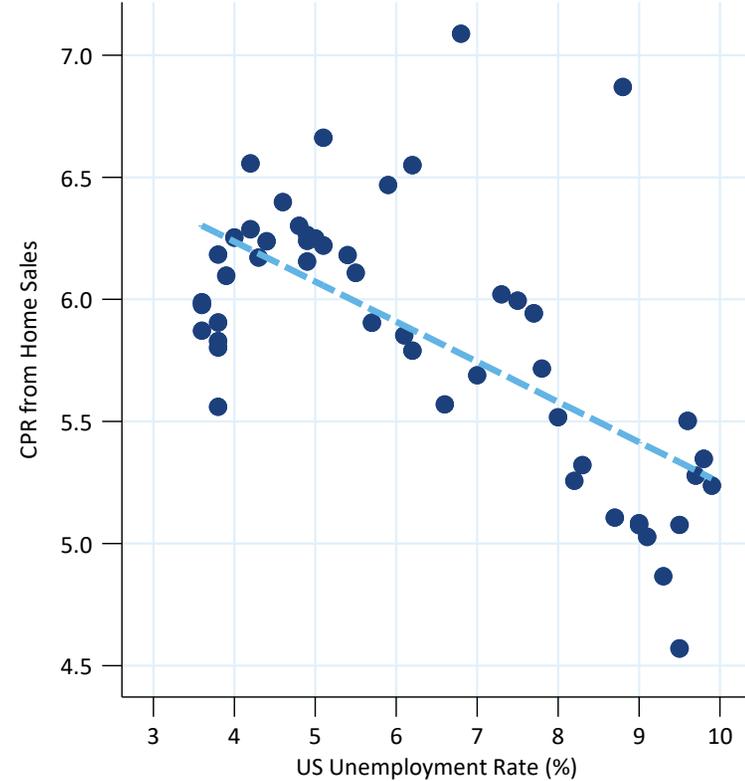
MORE PEOPLE MOVE WHEN THE ECONOMY IS STRONG

Turnover increases when unemployment is low



Housing turnover speed estimated using existing home sales and housing stock.
Source: BLS, NAR, US Census Bureau, Amherst Pierpont Securities

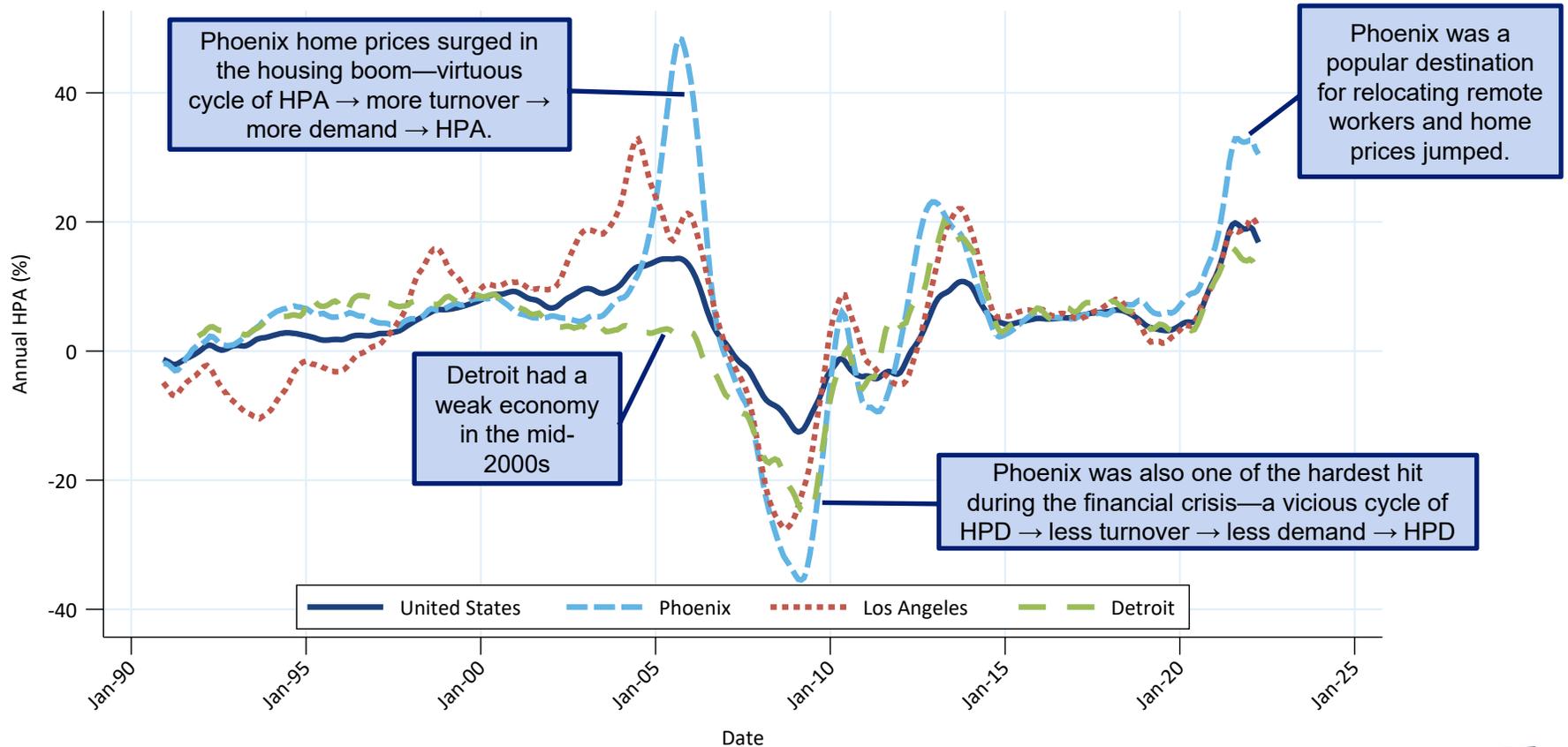
Some people can't or won't buy homes in a weak economy.
Fewer companies relocating employee.



Data from Q1 2009 through Q1 2022, excluding Q2 2020 at start of COVID.
Each point represents one quarter.
Housing turnover speed estimated using existing home sales and housing stock.
Source: BLS, NAR, US Census Bureau, Amherst Pierpont Securities

HOME PRICE APPRECIATION VARIES REGIONALLY

Three metro areas show very different home price history

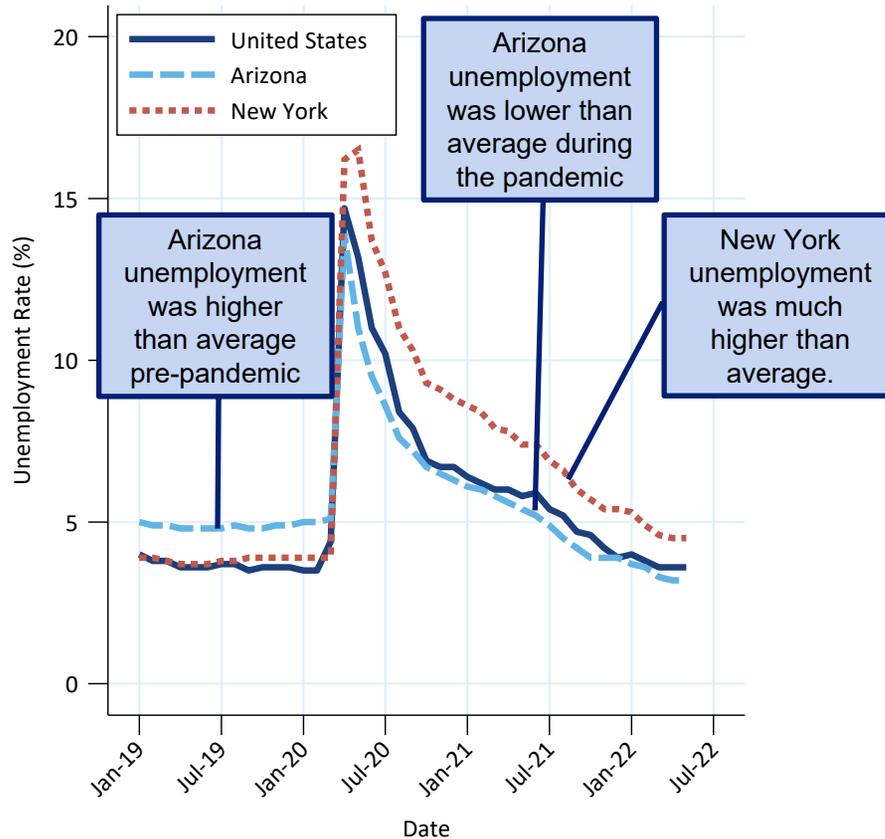


Source: S&P Case-Shiller; Amherst Pierpont Securities

Look for collateral from states with growing populations or strict zoning laws that restrict housing supply.

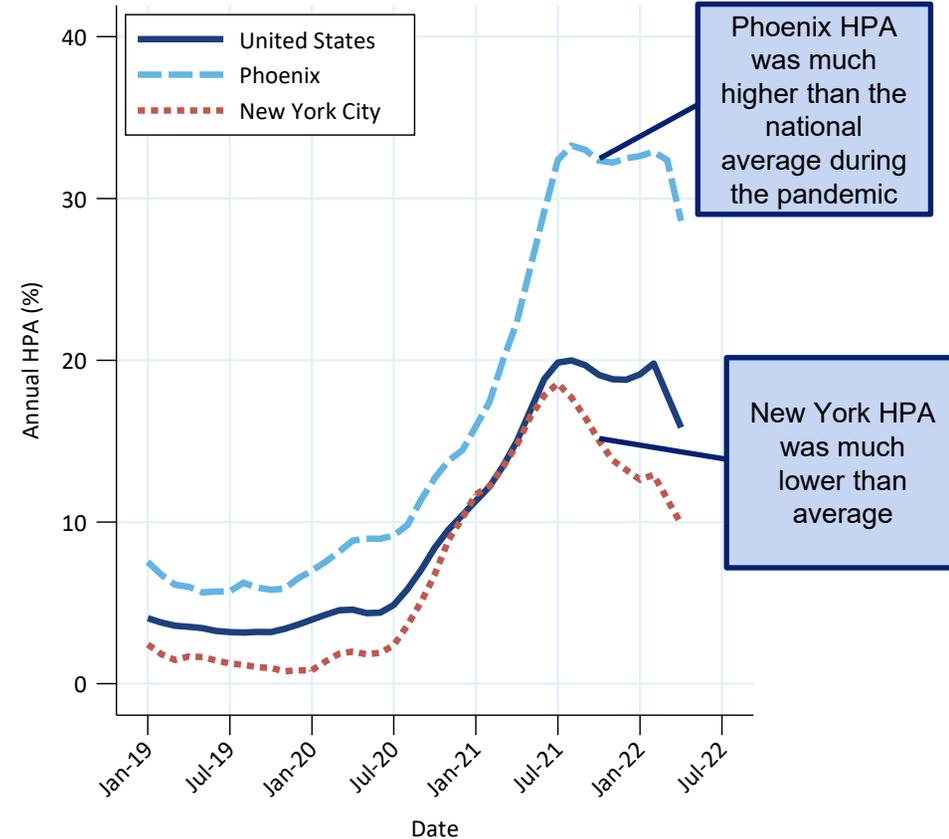
HOME PRICES TYPICALLY INCREASE WHERE PEOPLE ARE EMPLOYED

Arizona lost fewer jobs than average



Source: S&P Case-Shiller; Amherst Pierpont Securities

Arizona HPA was higher than average



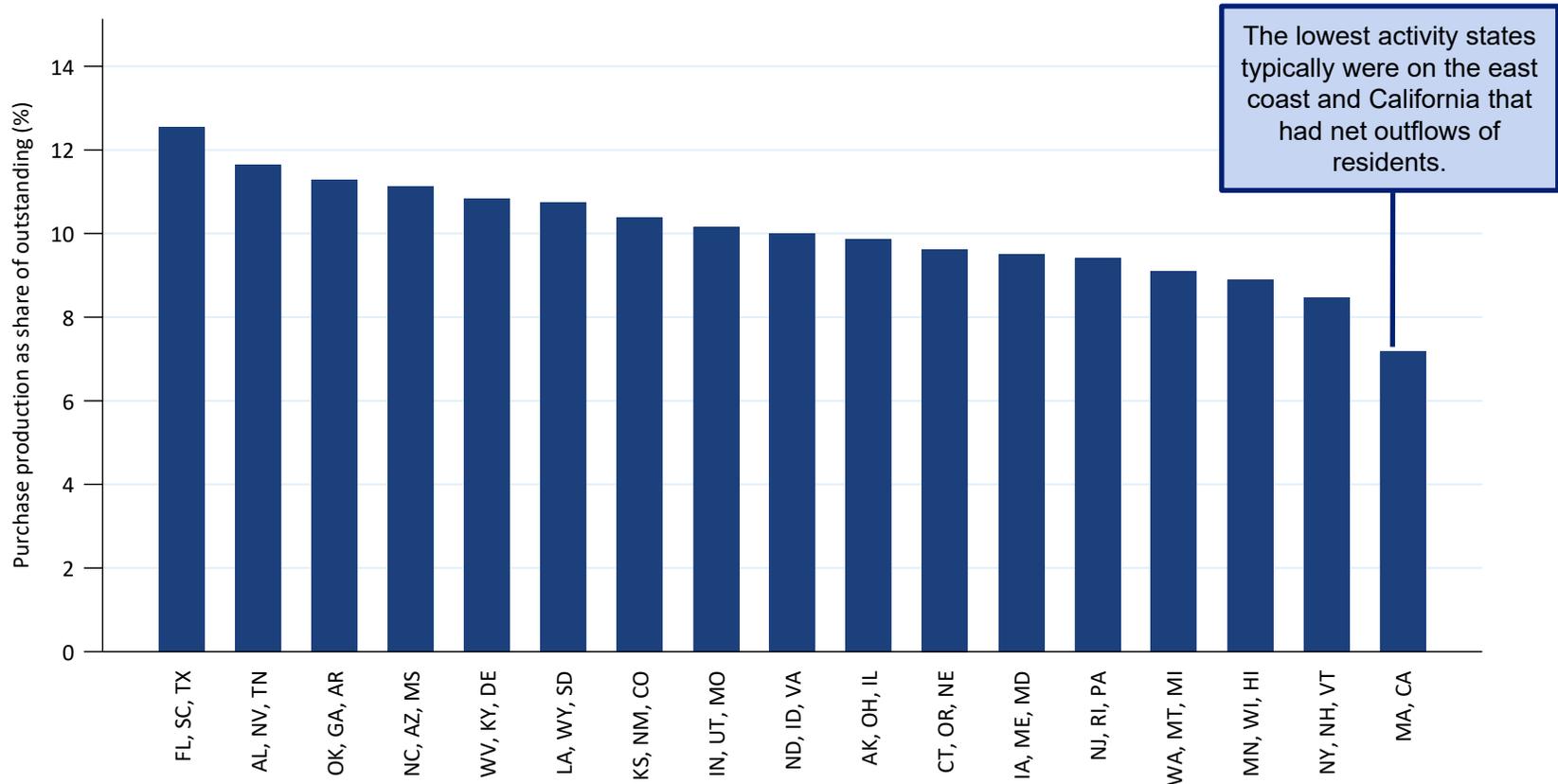
Source: S&P Case-Shiller; Amherst Pierpont Securities

Remote work has boosted the desirability of living in Florida and Texas, which don't have state income taxes.

Look for collateral from states with low unemployment.

PURCHASE ACTIVITY VARIES A LOT FROM STATE TO STATE

Florida, South Carolina, and Texas led the pack in 2021 and early 2022

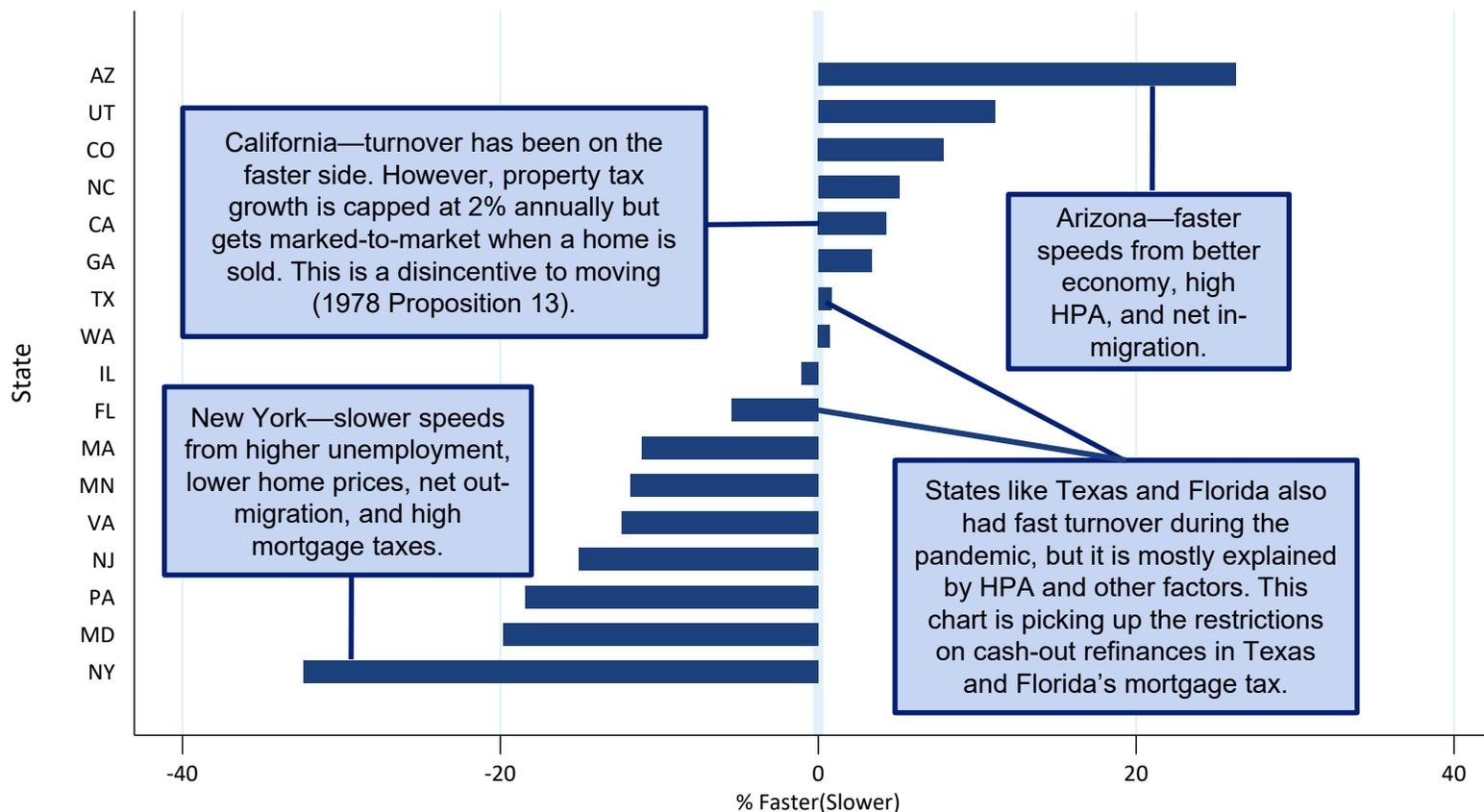


Source: Fannie Mae, Freddie Mac, Ginnie Mae, Amherst Pierpont Securities

Buy pools from states with heavy purchase loan origination. More buying implies more selling and prepayments.

DESIRABLE STATES HAD HIGH TURNOVER IN 2020 AND 2021

Turnover was much faster in states like Arizona



California—turnover has been on the faster side. However, property tax growth is capped at 2% annually but gets marked-to-market when a home is sold. This is a disincentive to moving (1978 Proposition 13).

Arizona—faster speeds from better economy, high HPA, and net in-migration.

New York—slower speeds from higher unemployment, lower home prices, net out-migration, and high mortgage taxes.

States like Texas and Florida also had fast turnover during the pandemic, but it is mostly explained by HPA and other factors. This chart is picking up the restrictions on cash-out refinances in Texas and Florida’s mortgage tax.

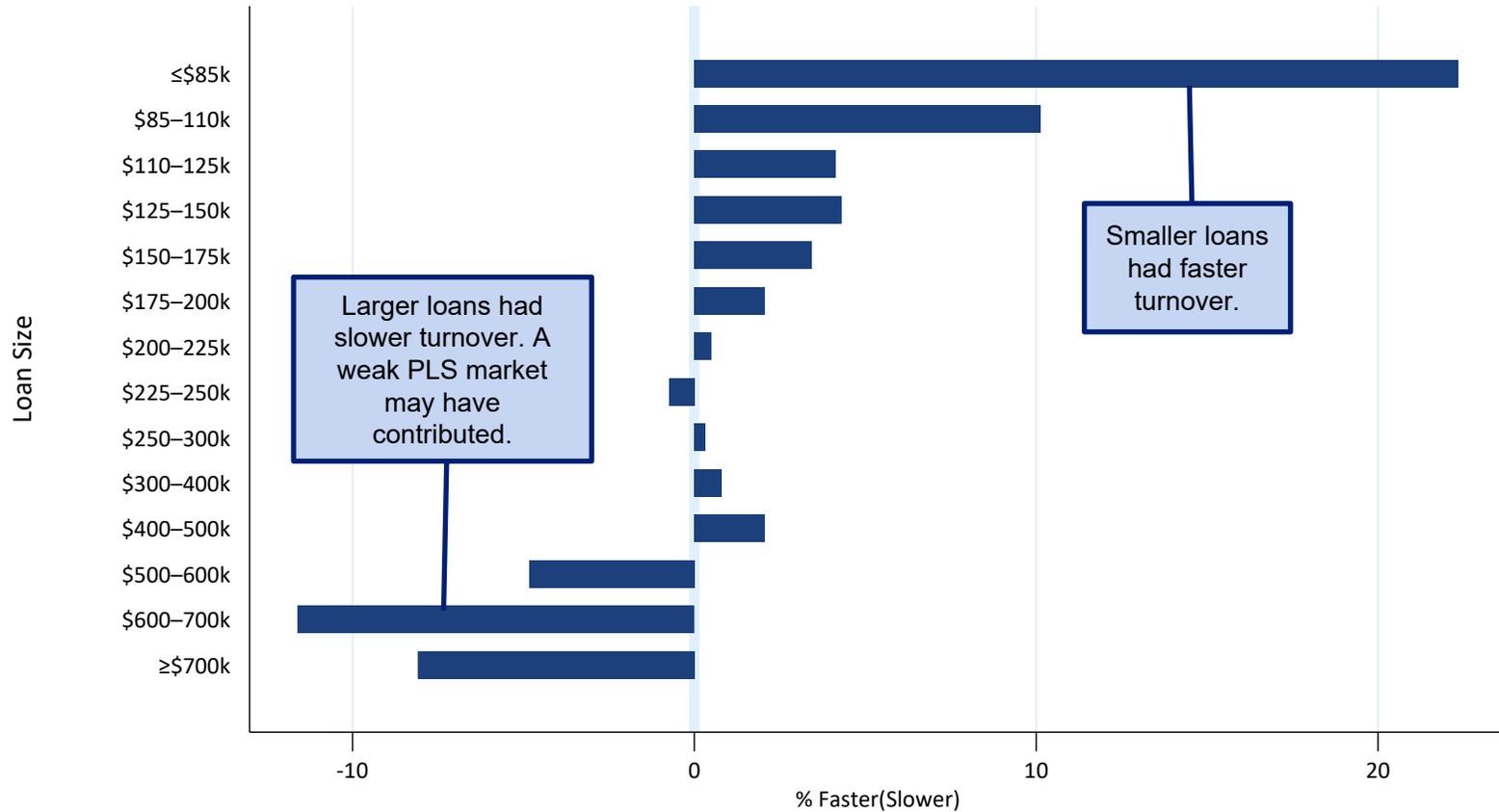
Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities
 Data from January 2020 to January 2022 for out-of-the-money loans only.
 “% Faster (Slower)” measures the effect of state on discount speeds after controlling for other collateral attributes.

Mortgage taxes and real estate transfer taxes are a disincentive to moving.

Look for collateral in states people are migrating to.

BUY SMALLER LOANS FOR EXTENSION PROTECTION

Low loan balance pools prepaid faster than average



Larger loans had slower turnover. A weak PLS market may have contributed.

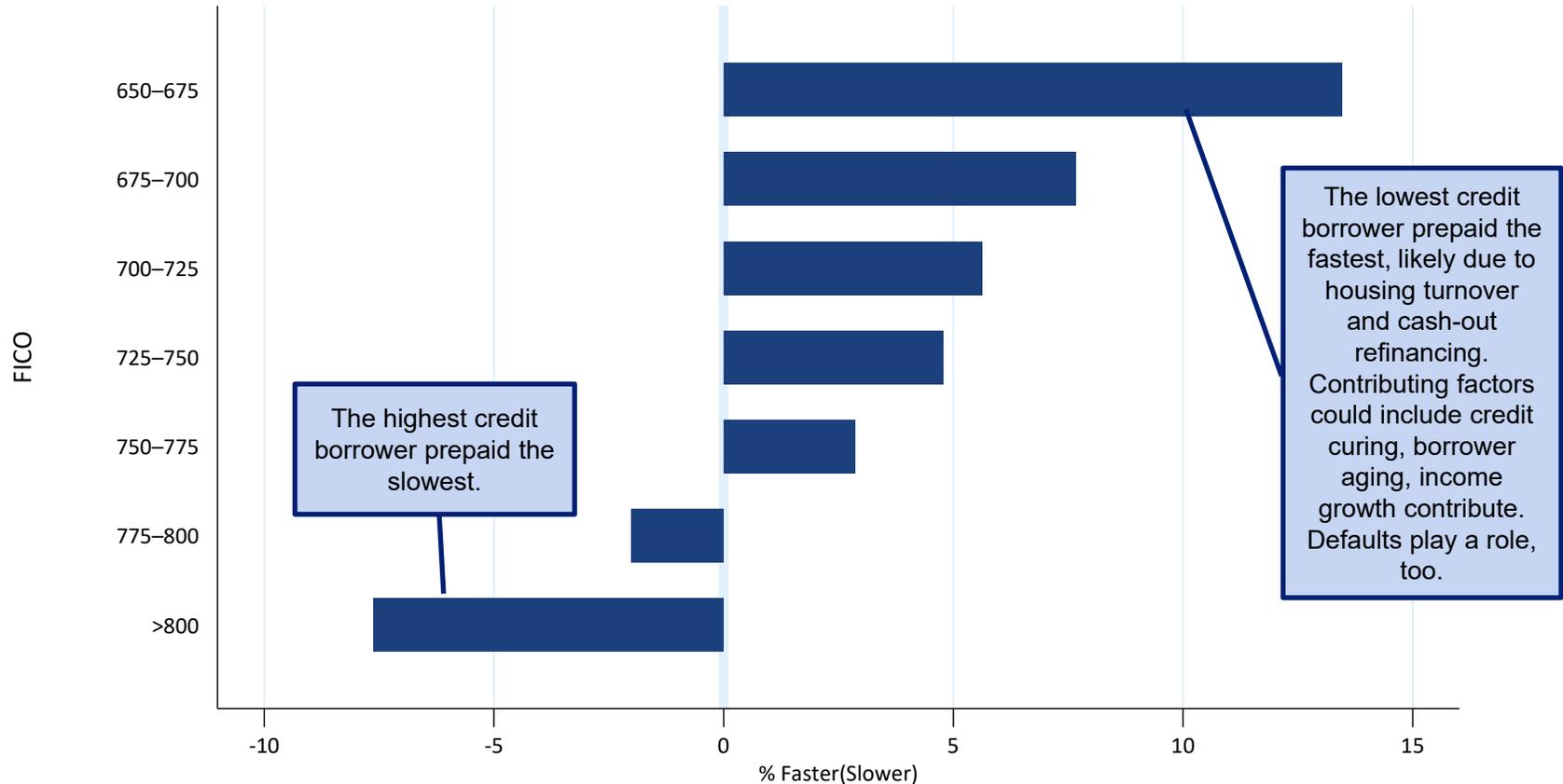
Smaller loans had faster turnover.

Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities
 Data from January 2020 to January 2022 for out-of-the-money loans only.
 “% Faster (Slower)” measures the effect of loan size on discount speeds after controlling for other collateral attributes.

Buy low loan balance pools.

LOW FICO LOANS HAVE FASTER DISCOUNT SPEEDS

Lower credit scores contribute to faster prepayment speeds

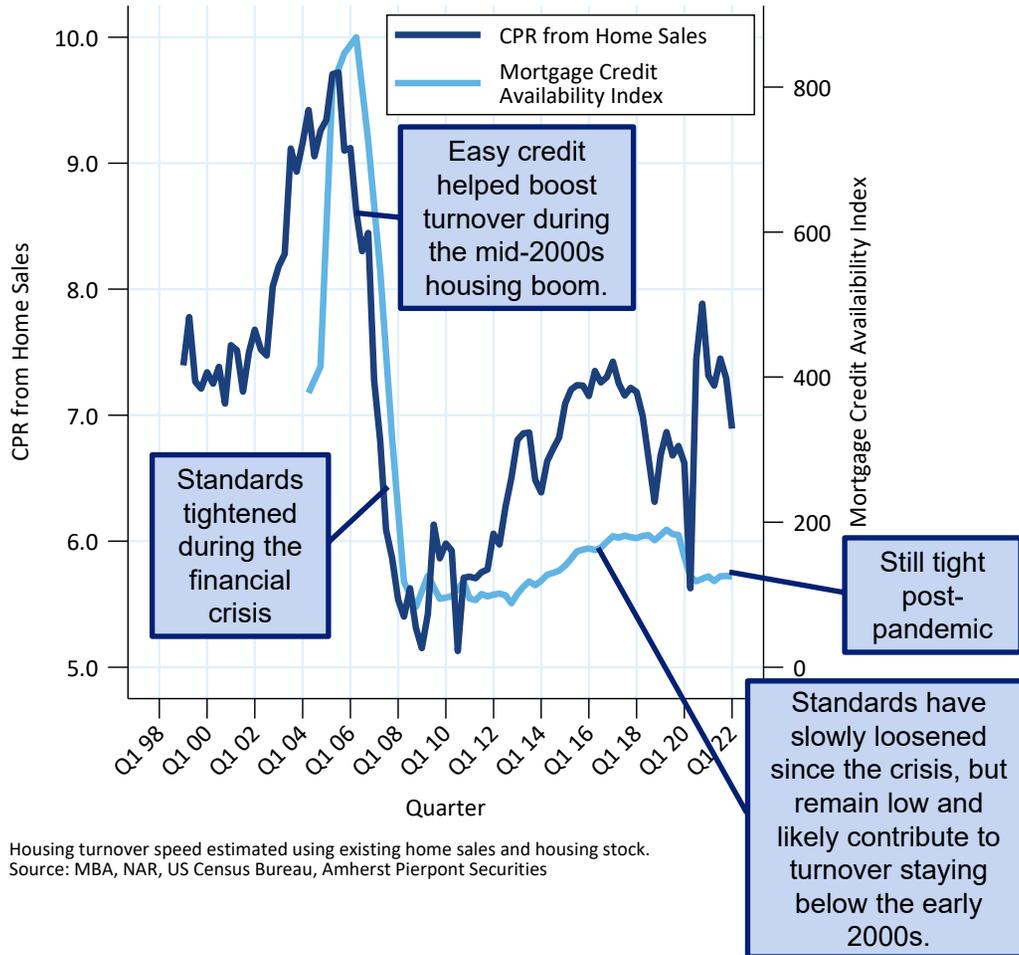


Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities
 Data from January 2020 to January 2022 for out-of-the-money loans only.
 “% Faster (Slower)” measures the effect of state on discount speeds after controlling for other collateral attributes.

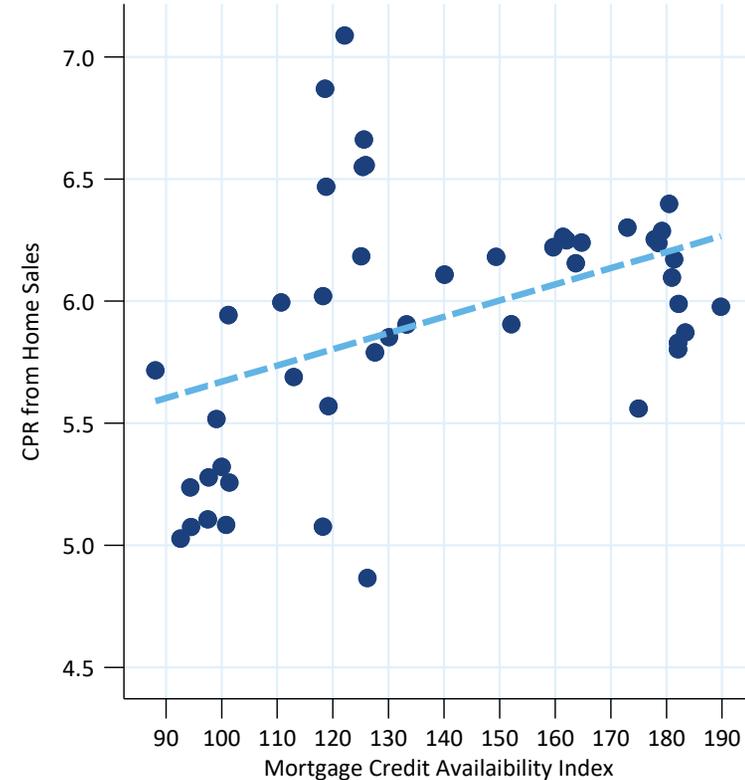
Buy low FICO pools

LENDERS COULD WIDEN THE CREDIT BOX TO BOOST TURNOVER AND VOLUMES

Credit availability is tighter than the mid-2000s



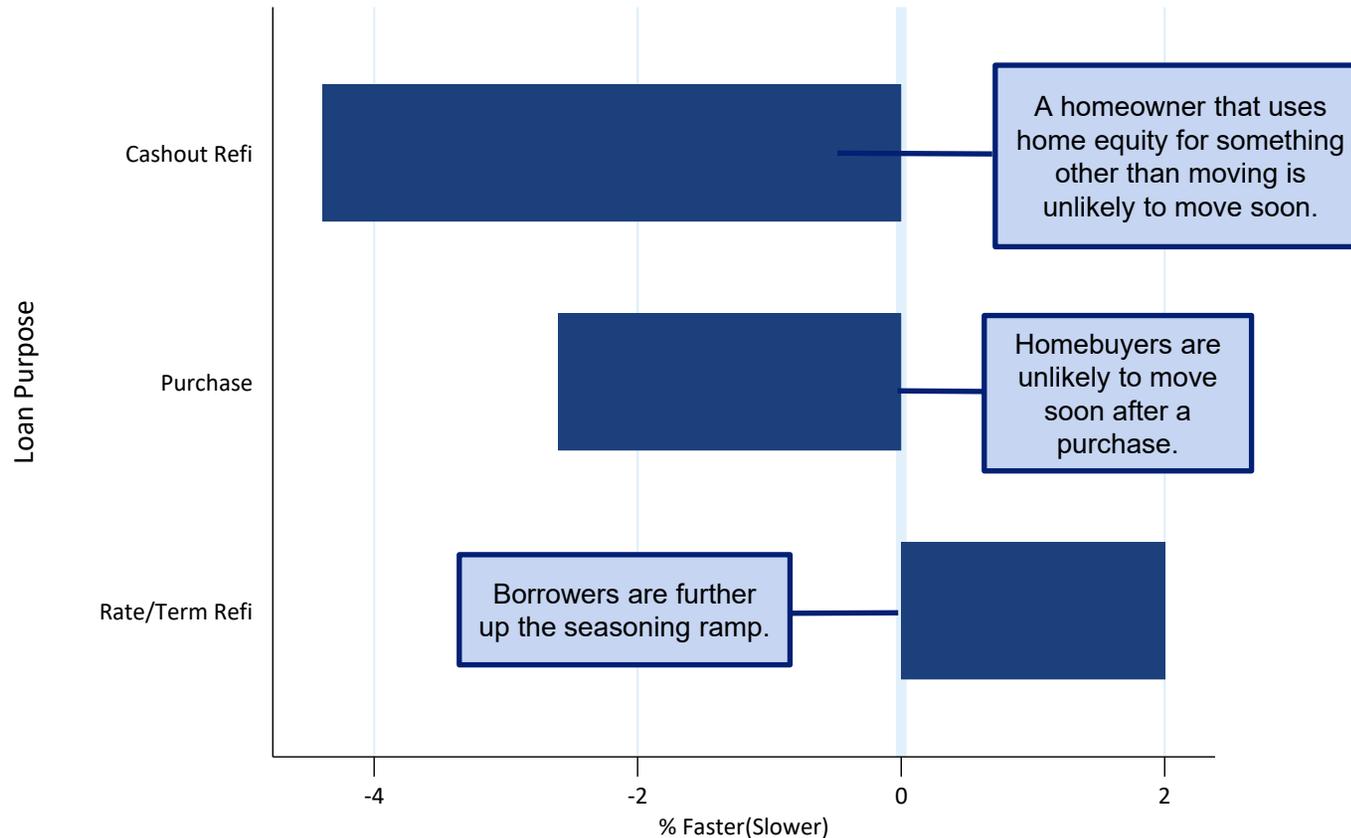
Looser credit lifts housing turnover



Lenders could widen the credit box—increase production of lower FICO, higher LTV with insurance, and hybrid ARMs. These typically turnover faster.

RATE/TERM REFINANCES HAVE FASTER DISCOUNT SPEEDS

Unreported seasoning boosts speeds of rate/term refinances

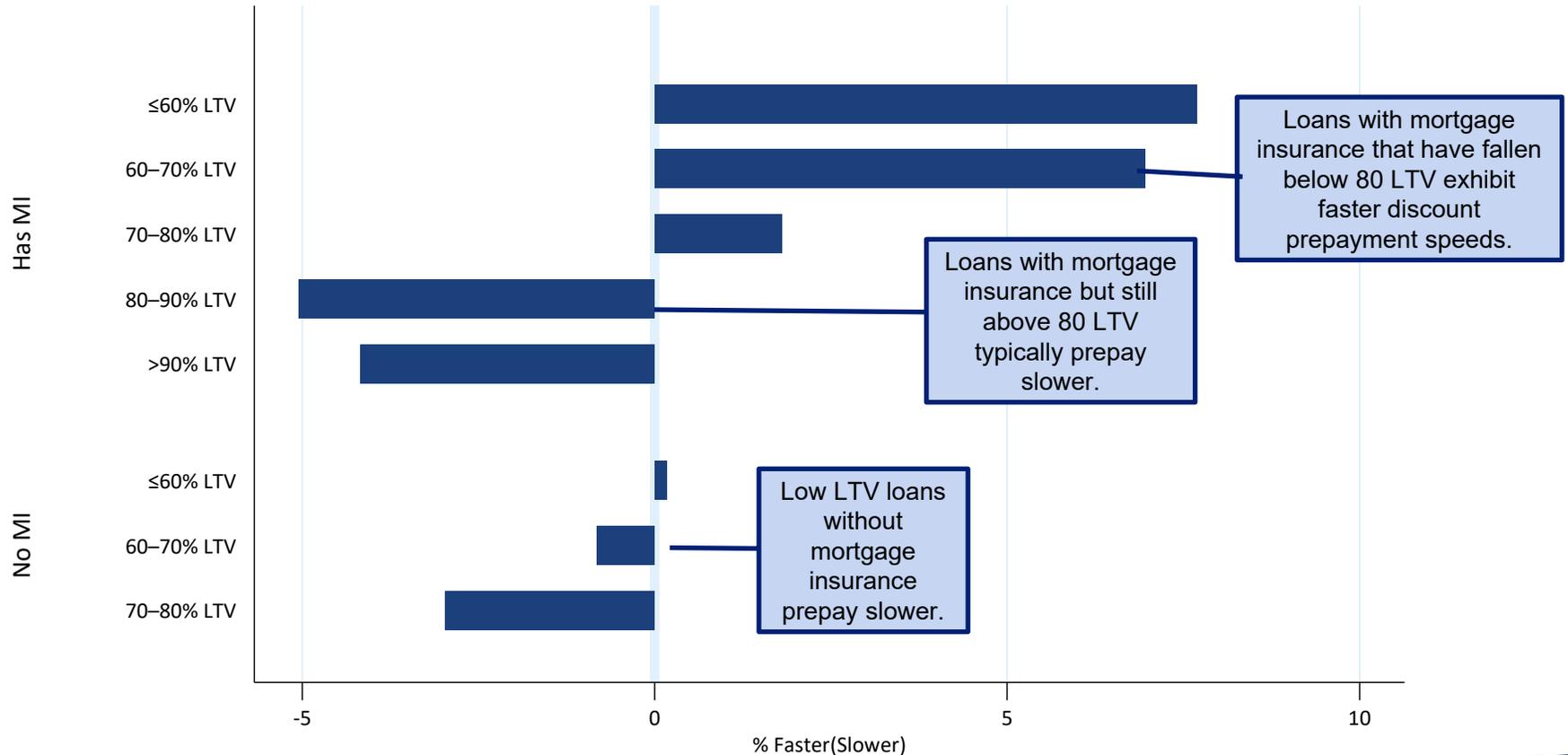


Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities
Data from January 2020 to January 2022 for out-of-the-money loans only.
"% Faster (Slower)" measures the effect of loan purpose on discount speeds after controlling for other collateral attributes.

Buy rate/term refinances to take advantage of the unreported seasoning.

HIGH ORIGINAL LTV LOANS PREPAY FASTER TO CANCEL MORTGAGE INSURANCE

The combination of LTV and mortgage insurance can push discount speeds faster



Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities
 Data from January 2020 to January 2022 for out-of-the-money loans only.
 "% Faster (Slower)" measures the effect of LTV & MI on discount speeds after controlling for other collateral attributes.

Buy conventional loans with mortgage insurance in locations with high past or expected HPA. And FHA loans may refinance into conventional to cancel mortgage insurance.

ASSUMABLE LOANS CAN SLOW TURNOVER IF HOME PRICES STAGNATE

The homebuyer assumes the payment obligation and schedule of an existing loan, which does not prepay.

Loan Type	Percent of Market	Comments
FHA	12.6%	A loan assumption works best when the seller has little equity in the property. Too much equity means the buyer would likely need a 2 nd lien after assuming the 1 st lien. Assumptions work best in low HPA environments.
VA	10.3%	Only viable for sales to VA-eligible buyers.
Conventional ARMs	0.6%	The home buyer may not want a hybrid ARM or want a different fixed-rate period. Some ARMs are not assumable during the fixed-rate period.

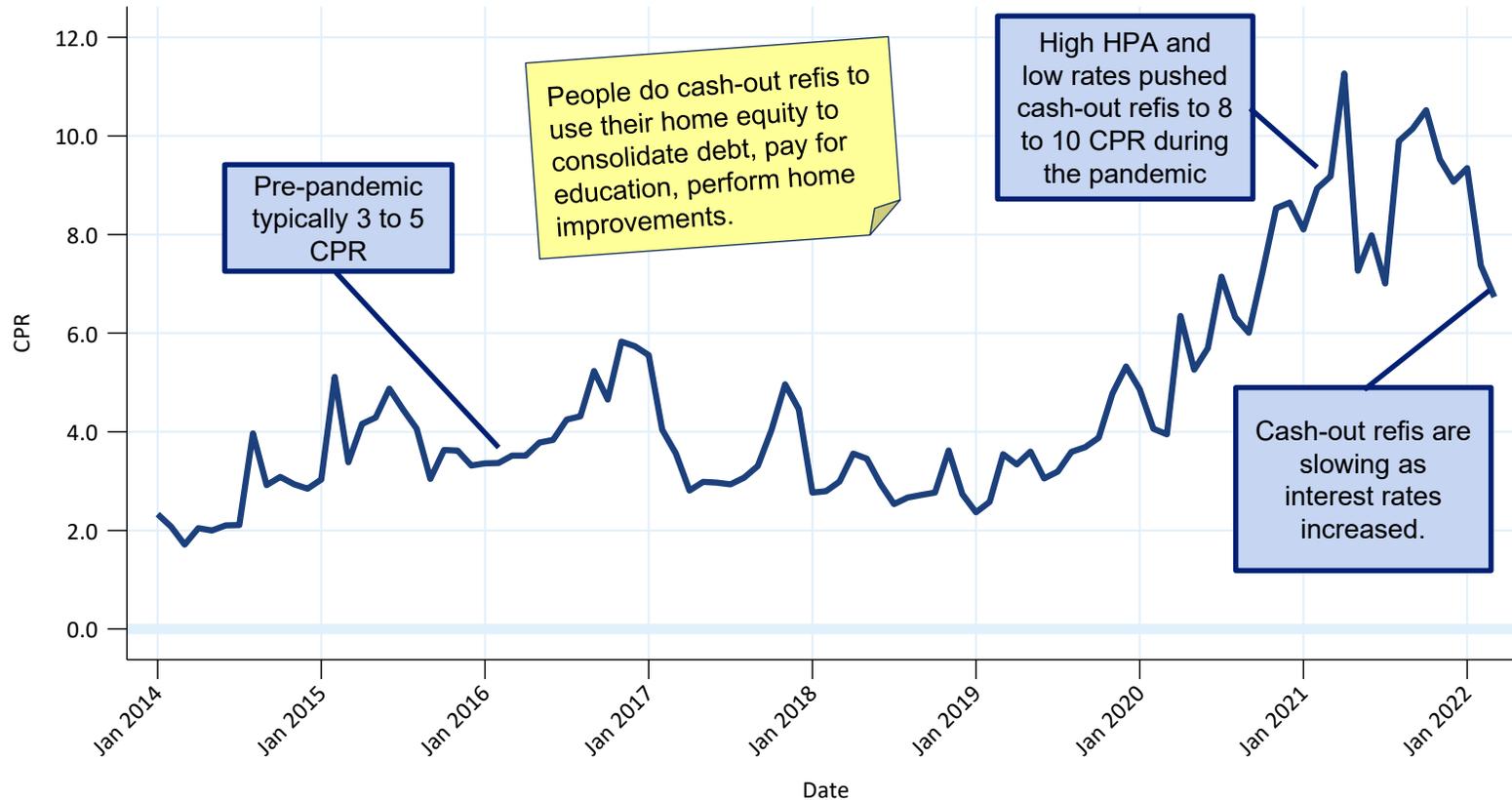
Assumptions let the buyer retain the below market rate loan. Be cautious of FHA loans with little equity if home prices stagnate. Assumptions may be more common in states like New York with high mortgage taxes.

OVERVIEW

- Prepayment speeds matter for discount MBS
- Housing Turnover
- Cash-out refinancing
- Defaults
- Curtailments

CASH-OUT REFINANCING INCREASED DURING THE PANDEMIC

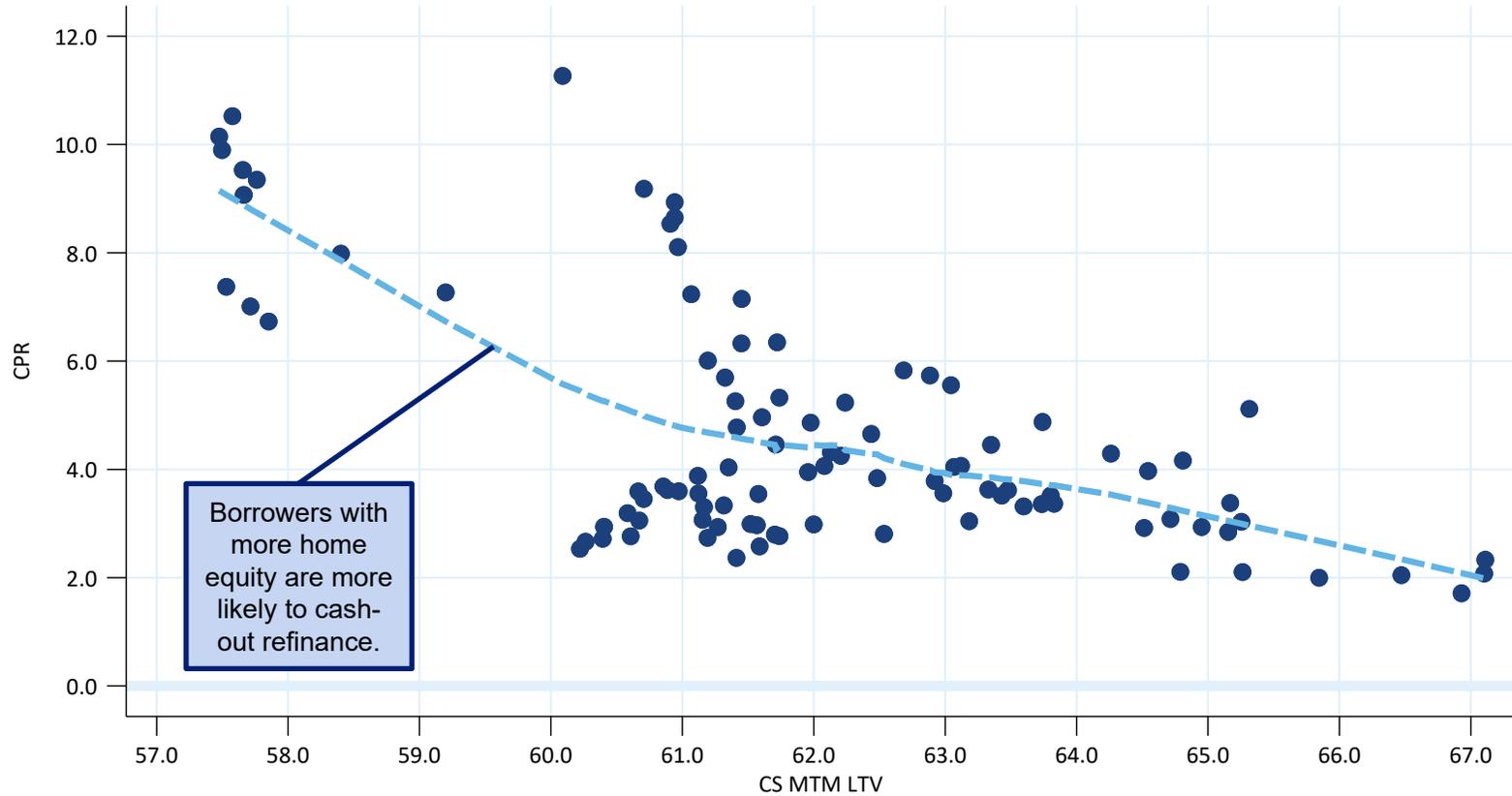
Cash-out refinances contributed 8 to 10 CPR during the pandemic



Cashout refinance speeds estimated comparing cashout issuance volume to outstanding pool balance
Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities

CASH-OUT REFINANCES ARE MORE COMMON WHEN BORROWERS HAVE EQUITY

Cash-out refis pickup when borrowers fall below 65 LTV



Cashout refinance speeds estimated comparing cashout issuance volume to outstanding pool balance
Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities

CASH-OUT VOLUME ALSO CHANGES WITH INTEREST RATES

Cash-out volume increase when rates are low



Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities

Money saved by rolling credit card debt into mortgage

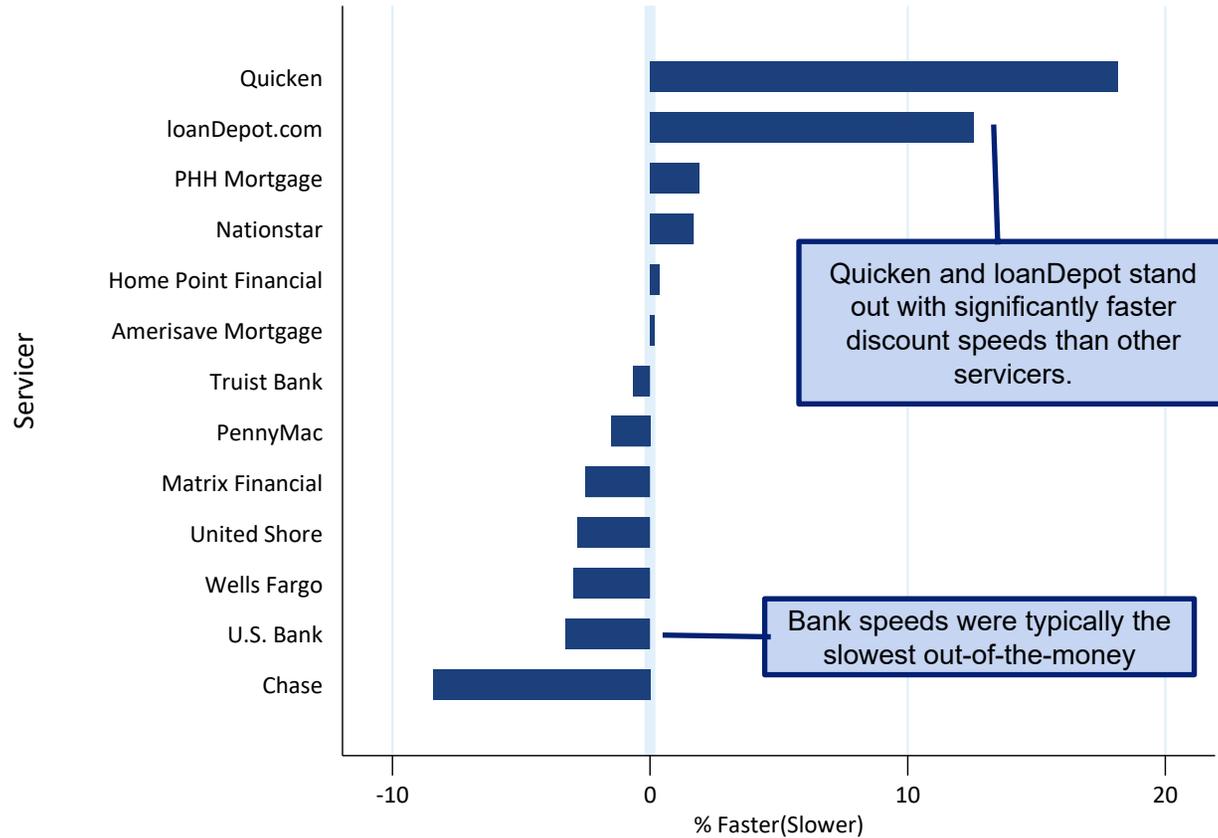
Rate Increase (bp)	Equity Taken out					
	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000
-50	\$121	\$170	\$219	\$268	\$317	\$366
0	\$78	\$125	\$173	\$221	\$268	\$316
50	\$32	\$79	\$125	\$171	\$217	\$264
100	(\$15)	\$30	\$75	\$120	\$165	\$210
150	(\$63)	(\$19)	\$24	\$67	\$111	\$154
200	(\$113)	(\$71)	(\$29)	\$13	\$55	\$97
250	(\$164)	(\$123)	(\$83)	(\$43)	(\$2)	\$38
300	(\$216)	(\$177)	(\$139)	(\$100)	(\$61)	(\$22)

Assumes a \$160,000 loan on a \$200,000 property. The property appreciates 30% to \$260,000. The table shows the monthly payment savings (or **increase**) for various amounts of credit card debt consolidation assuming the mortgage rate increases. The credit card is charging 16.5% annual interest.

Consolidating high-rate credit card debt may make sense even if the mortgage rate increases.

A SERVICER CAN INFLUENCE DISCOUNT PREPAYMENT SPEEDS

Quicken and loanDepot's discount speeds were higher than peers in 2020/21



Quicken and loanDepot stand out with significantly faster discount speeds than other servicers.

Bank speeds were typically the slowest out-of-the-money

Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities
 Data from January 2020 to January 2022 for out-of-the-money loans only.
 “% Faster (Slower)” measures the effect of servicer on discount speeds after controlling for other collateral attributes.

FASTER DISCOUNT SPEEDS FROM SERVICERS WITH STRONG CASH-OUT BUSINESSES

Quicken and loanDepot have strong cash-out businesses

Quicken and loanDepot did a larger share of cash-out production than their peers, likely explaining faster discount speeds.

Servicer	% Faster/Slower	Relative Cashout Volume	Relative Purchase Volume
Quicken	30.3	7.9	-4.4
loanDepot.com	12.4	6.7	13.6
Nationstar	4.3	3.8	0.6
PHH Mortgage	2.3	3.3	1.9
Home Point	1.8	4.2	11.5
Amerisave	1.1	22.1	-9.1
PennyMac	0.3	-0.0	6.9
United Shore	-1.8	0.4	5.7
Matrix Financial	-2.3	0.2	-4.2
Truist Bank	-4.8	-0.0	-5.9
Wells Fargo	-5.7	-1.4	-7.5
U.S. Bank	-5.9	-0.0	-1.6
Chase	-8.9	-0.1	-4.2

Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities

On the other hand, banks had slower-than-average discount speeds and also less cash-out origination than their peers.

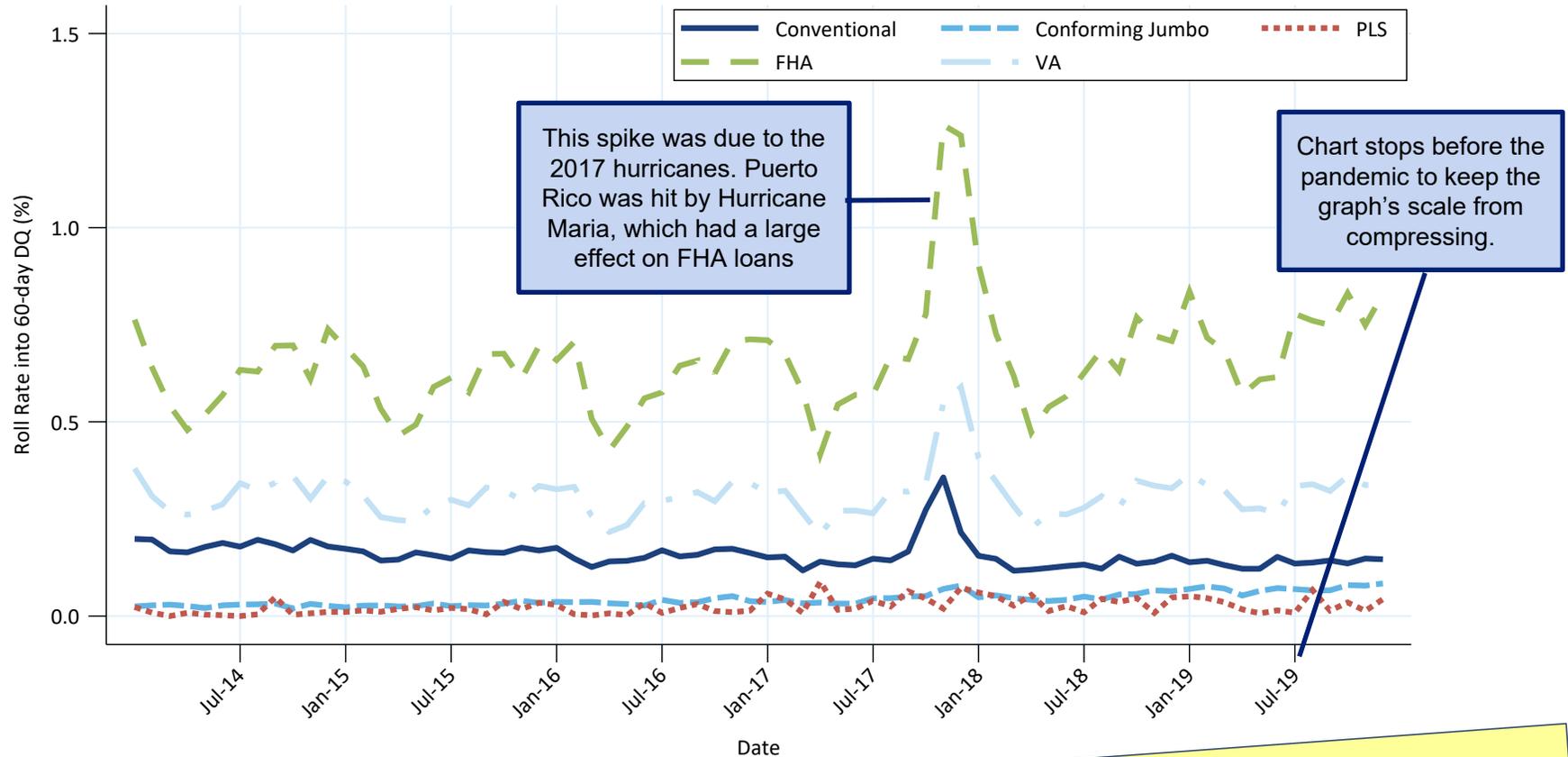
To maximize cash-out speeds, look for pools with low mark-to-market LTVs, higher note rates, and serviced by servicers like Quicken and loanDepot.

OVERVIEW

- Prepayment speeds matter for discount MBS
- Housing Turnover
- Cash-out refinancing
- Defaults
- Curtailments

SOME BORROWERS FAIL TO PAY THEIR MORTGAGE

Different borrowers, like FHA, are more pre-disposed to default

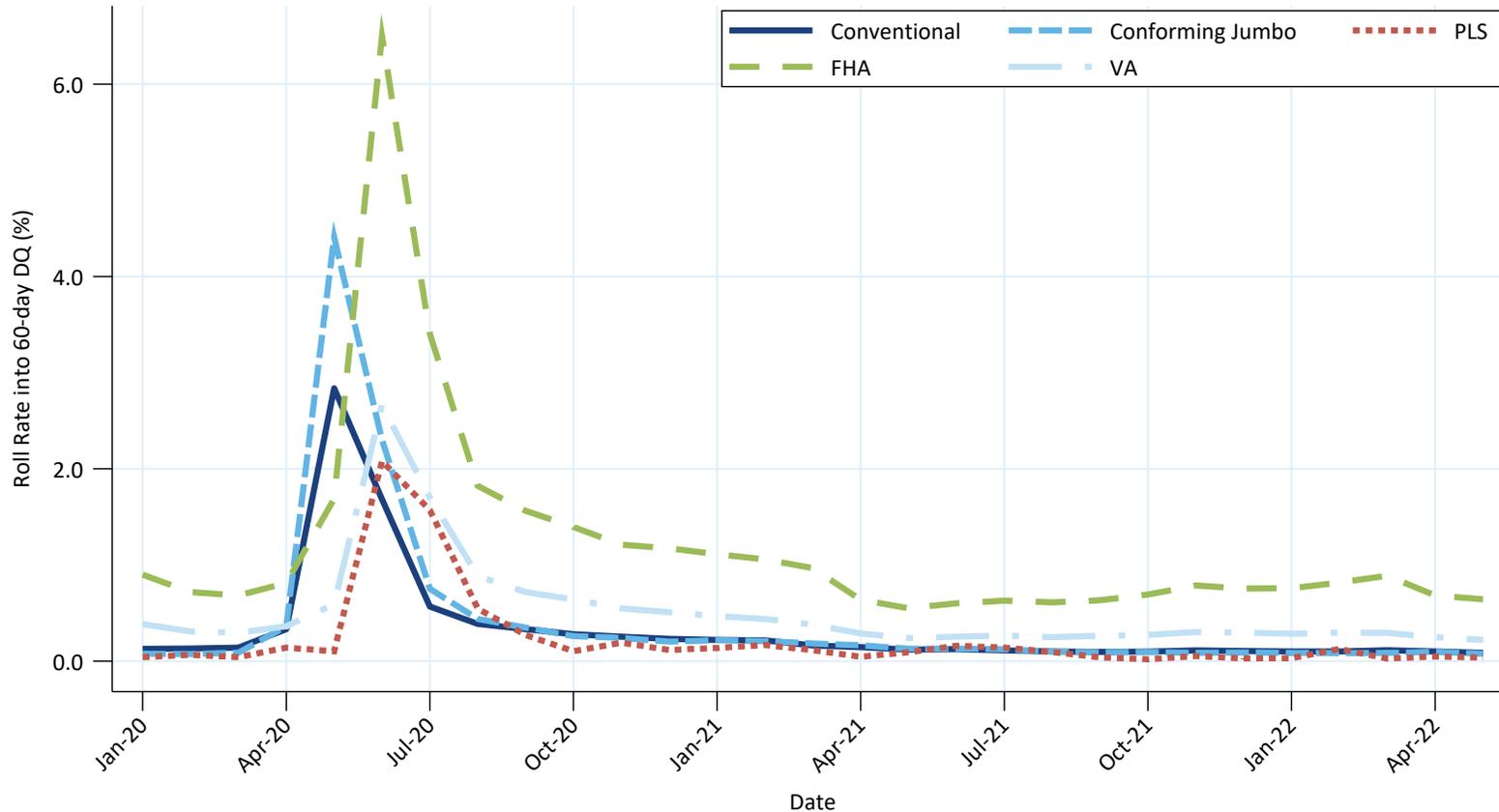


Source: Fannie Mae, Freddie Mac, Ginnie Mae, CoreLogic, Amherst Pierpont Securities

A greater chance of default from low FICO and FHA borrowers. But whether defaults turn into prepayments (or losses, in private-label securities) depends on the economy.

MORE FHA LOANS MISSED PAYMENTS DURING THE PANDEMIC

FHA loan roll rates exceeded 6% in June 2020



Source: Fannie Mae, Freddie Mac, Ginnie Mae, CoreLogic, Amherst Pierpont Securities

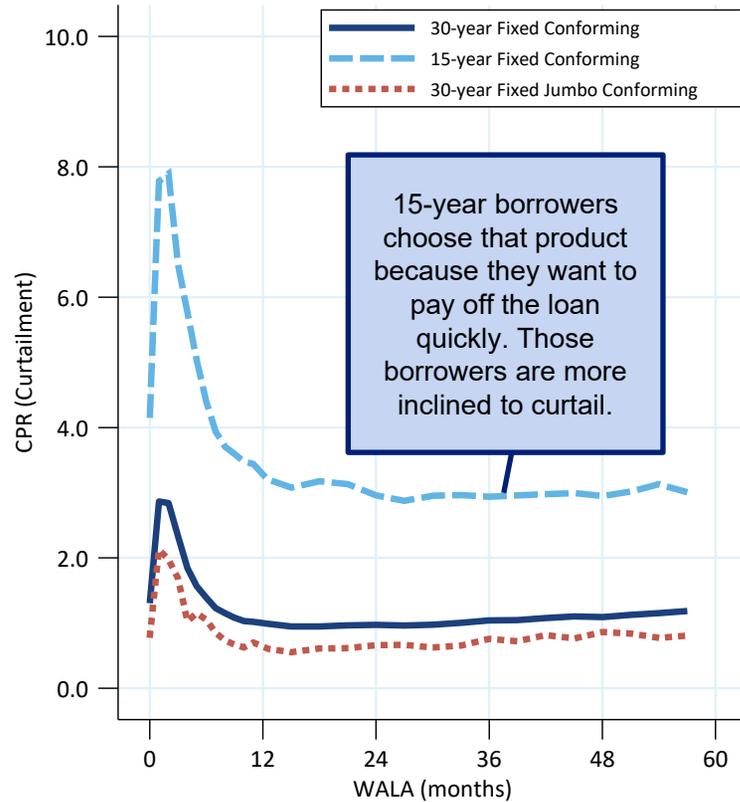
Ginnie Mae MBS could benefit from high FHA defaults in a bad economy when interest rates are high.

OVERVIEW

- Prepayment speeds matter for discount MBS
- Housing Turnover
- Cash-out refinancing
- Defaults
- Curtailments

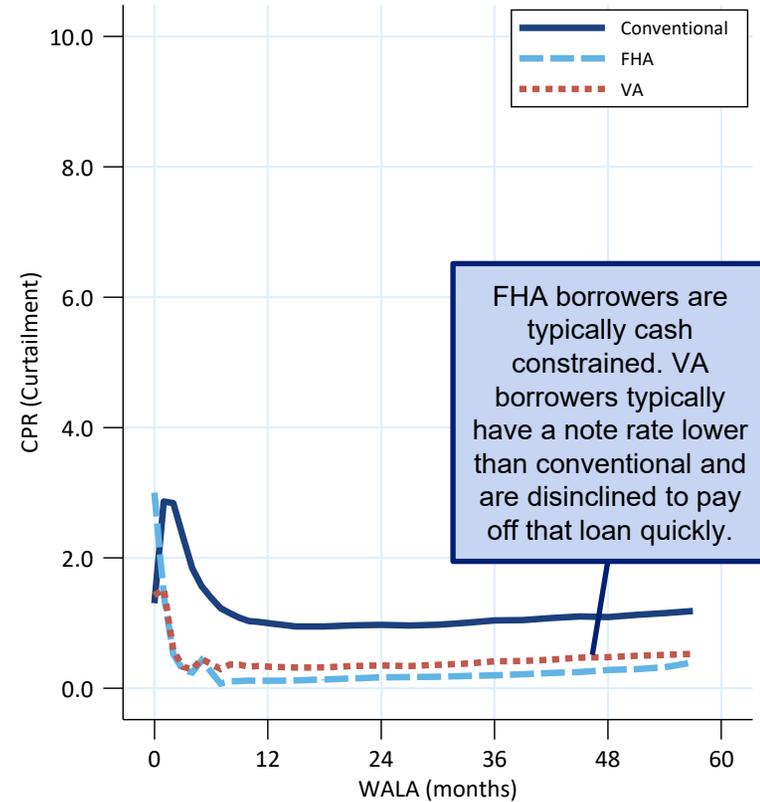
CONVENTIONAL 15-YEAR LOANS HAVE MORE CURTAILMENTS

Borrowers with 15-year loans curtail more quickly



Discount loans only. Jan 2014 to Apr 2022 performance.
 Conventional, purchase, owner-occupied, FICO \geq 725, original LTV \leq 80.
 Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities.

FHA and VA loans curtail more slowly

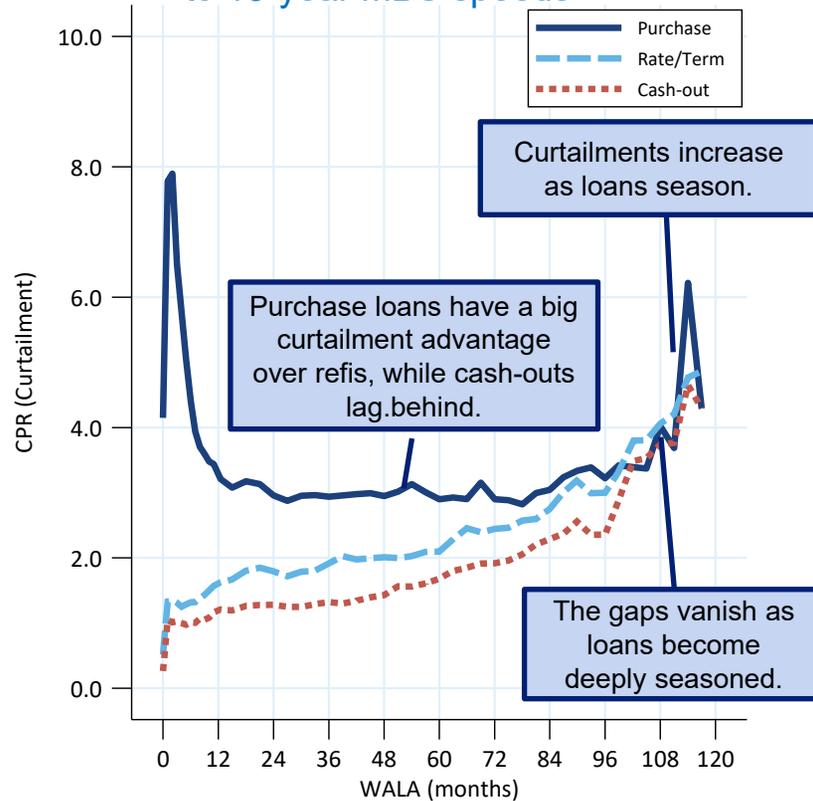


Discount loans only. Jan 2014 to Apr 2022 performance.
 Fixed 30-year, purchase, owner-occupied, FICO \geq 725, original LTV \leq 80.
 Source: Fannie Mae, Freddie Mac, Ginnie Mae, Amherst Pierpont Securities.

Faster curtailments in conventional 15-year MBS enhance the extension protection in that product.

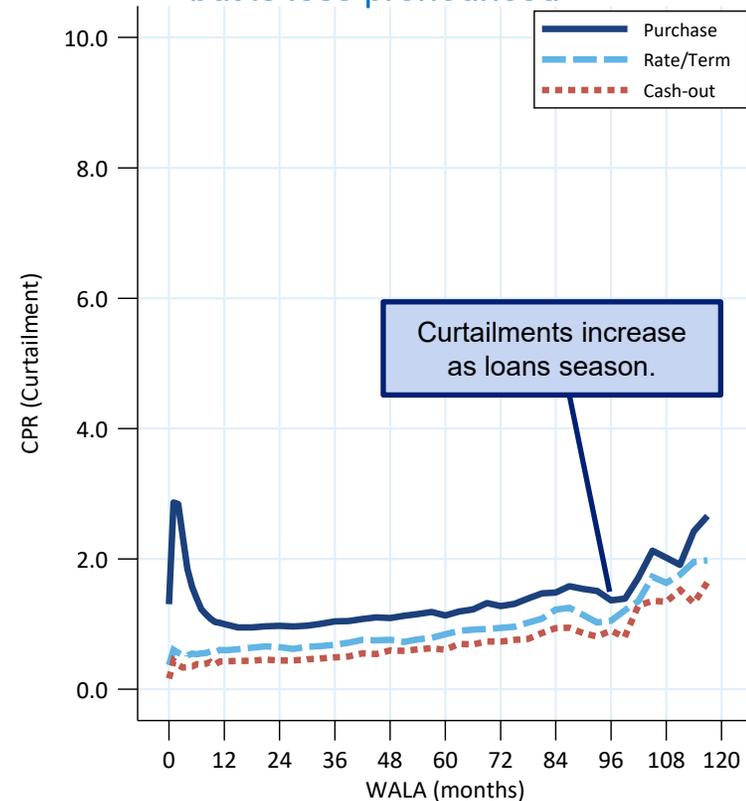
PURCHASE BORROWERS CURTAIL MORE THAN REFINANCE BORROWERS

Purchase loan curtailments could add over 1 CPR to 15-year MBS speeds



Discount loans only. Jan 2014 to Apr 2022 performance.
 Owner-occupied, FICO \geq 725, original LTV \leq 80.
 Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities.

The curtailment difference exists in 30-year MBS but is less pronounced



Discount loans only. Jan 2014 to Apr 2022 performance.
 Owner-occupied, FICO \geq 725, original LTV \leq 80.
 Source: Fannie Mae, Freddie Mac, Amherst Pierpont Securities.

Buy 15-year purchase loans for the faster curtailments. Seasoned loans also benefit from faster curtailments.

DISCLAIMER

Copyright ©2022 Amherst Pierpont Securities LLC and its affiliates (“Amherst Pierpont”). All rights reserved. Amherst Pierpont is a member of FINRA and SIPC. This material is intended for limited distribution to the recipient and is not publicly available. Any unauthorized use or disclosure is prohibited.

This material is intended for discussion purposes only and is not meant to be, nor shall it be construed, as an offer or commitment by Amherst Pierpont or any of its affiliates to enter into any transaction. Should Amherst Pierpont subsequently seek to enter into any transaction, any such transaction would be subject to the conditions stated in the documentation therefore at that time.

In connection with recipient’s decision to enter into any transaction, or to purchase or sell securities or other financial instruments, the recipient is advised to undertake an independent review of this material, and the potential legal, tax, regulatory and accounting implications of any transaction described herein to determine whether such a structure would be suitable for such recipient’s particular situations. Amherst Pierpont is not providing any investment, legal, accounting, tax, financial or other advice to the recipient, nor is it acting as an advisor or fiduciary in respect of the recipient. This presentation is not intended to form the basis of an investment decision and contains insufficient information to make an investment decision. Amherst Pierpont accepts no responsibility or liability as to any reliance placed, or investment decision made, on the basis of such information by the recipient. Any illustrations contained herein are provided as examples only.

In making this material available, Amherst Pierpont (i) is not making any predictions or projections, (ii) intends that any recipient to which Amherst Pierpont has provided this material is an “institutional investor” (as defined under applicable law and regulation, including FINRA Rule 4512) and (iii) intends that this material will not be disseminated, in whole or part, to any third party by the recipient without Amherst Pierpont’s prior written consent.

This material (i) has been prepared for information purposes only and does not constitute a solicitation or an offer to buy or sell any securities, related investments or other financial instruments, (ii) is neither research, a “research report” as commonly understood under the securities laws and regulations promulgated thereunder nor the product of a research department, (iii) has not been prepared in accordance with legal requirements designed to promote the independence of investment research, and is not subject to any prohibition on dealing ahead of the dissemination of investment research.

Amherst Pierpont (i) makes no representation or warranties as to the appropriateness or reliance for use in any transaction or as to the permissibility or legality of any financial instrument in any jurisdiction, (ii) believes the information in this material to be reliable, but has not independently verified such information, parts of which may have been obtained from third party sources, and makes no guaranty or representation, express or implied, with regard to the accuracy or completeness of such information, and (iii) does not undertake, and disclaims any duty to undertake, to update or to revise the information contained in this material. Unless otherwise stated, the views, opinions, forecasts, valuations, or estimates contained in this material are those solely as of the date of publication of this material, and are subject to change without notice.