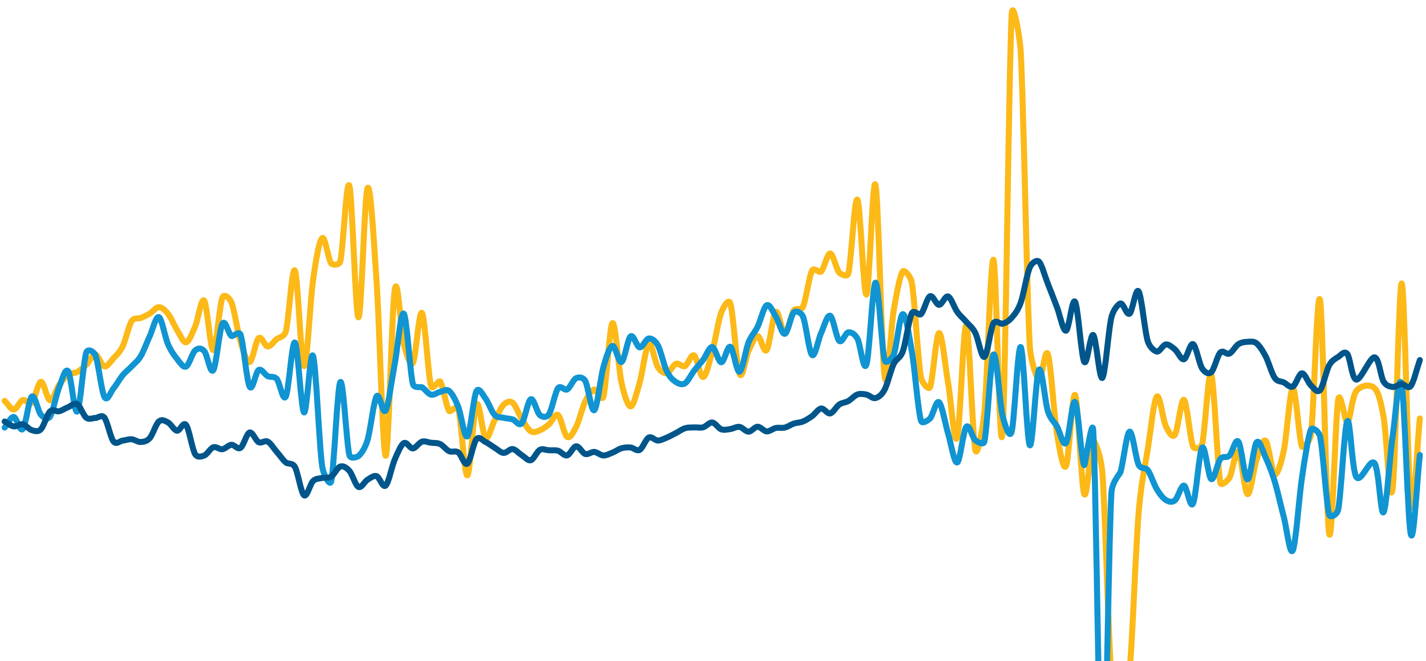
HOUSING FINANCE POLICY CENTER



HOUSING FINANCE AT A GLANCE

A MONTHLY CHARTBOOK

August 2022

URBAN INSTITUTE · ELEVATE · THE · DEBATE

ABOUT THE CHARTBOOK

The Housing Finance Policy Center's (HFPC) mission is to produce analyses and ideas that promote sound public policy, efficient markets, and access to economic opportunity in the area of housing finance. *At A Glance*, a monthly chartbook and data source for policymakers, academics, journalists, and others interested in the government's role in mortgage markets, is at the heart of this mission.

We welcome feedback from our readers on how we can make *At A Glance* a more useful publication. Please email any comments or questions to ataglance@urban.org.

To receive regular updates from the Housing Finance Policy Center, please visit here to sign up for our bi-weekly newsletter.

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CONTENTS

Overview

Credit Box

State of the Market

INTRODUCTION

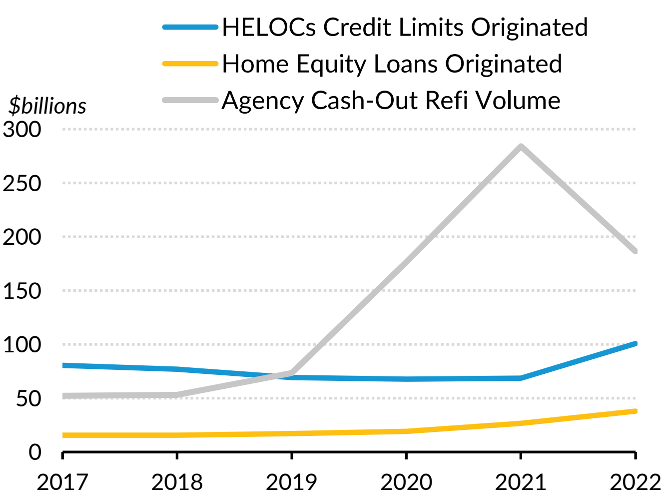
Home Equity Lending Seems Poised for a Comeback as Rates Rise

With interest rates rising to their highest level in 12 years, mortgage originations have slowed down considerably. As page 8 shows, total origination volume declined from $1.13 trillion in the first half of 2021 to $650 billion in the first half of 2022. This reflects substantial slowing of refinance activity, which was in full swing in 2020 and 21. Borrowers took advantage of generationally low rates to reduce their monthly payment and mortgage originator profitability skyrocketed because they couldn't keep up with demand.

Higher rates this year have also forced a sharp cutback in cash-out refinances, which had soared in the last 2 years as some homebuyers used the refinance opportunity to extract equity. As page 10 shows, combined agency cash-out refinance volume (i.e. Fannie Mae, Freddie Mac, FHA, and VA combined) reached a peak of around $66 billion per month in March 2021. In June 2022, this number stood at $15.7 billion.

With the economics of cash-out refinance worsening amidst higher rates, homeowners are showing increased willingness to use home equity lines of credit (HELOC) and home equity loans to tap equity. According to Equifax, HELOC and home equity loan originations have increased robustly in 2022. The figure below shows HELOC credit limits and home equity loans originated from Jan-May each year. $68.6 billion in HELOC credit limits and $26.6 billion in home equity loans were originated from Jan to May 2021. In the first five months of 2022, $100.8 billion in HELOC and $38.1 billion in home equity loans were originated, representing increases of nearly 50 percent from last year. These levels are also the highest since at least 2011.

Agency Cash Out, HELOC, and Home Equity Loan Originations – January to May



Source: Equifax, eMBS and Urban Institute calculations.
Note: Cash-out volumes for 2017 and 2018 exclude Fannie as it did not separate cash-outs prior to Aug 2018.

HELOCs and home equity loans differ from cash-out refinances in a couple of important ways. They are non-agency products typically held on bank portfolios or sold in private securitizations. Cash out refinances on the other hand are generally federally backed by Fannie, Freddie, FHA and VA. Accordingly, HELOC and home equity loans tend to have higher credit score requirements and more stringent underwriting compared to cash-out refinances. HELOCs in particular require pristine credit - about 45 percent of YTD 2022 HELOC originations had credit scores over 780.

Cash-out refinance volumes are likely to remain muted for the foreseeable future as most borrowers will be reluctant to give up their ultra-low rates. This suggests that demand for HELOCs and home equity loans will remain strong, especially given the supply shortage and substantial equity build-up for existing homeowners. We would also expect home equity credit availability to improve as mortgage lenders look for ways to approve more borrowers to keep volumes flowing. We have already seen credit scores for agency originations plummet since the rise in rates began (page 17.) While they are unlikely to be full substitutes for cash-out refinances, HELOCs and home equity lending volumes seem poised to grow in the near future.

INSIDE THIS ISSUE

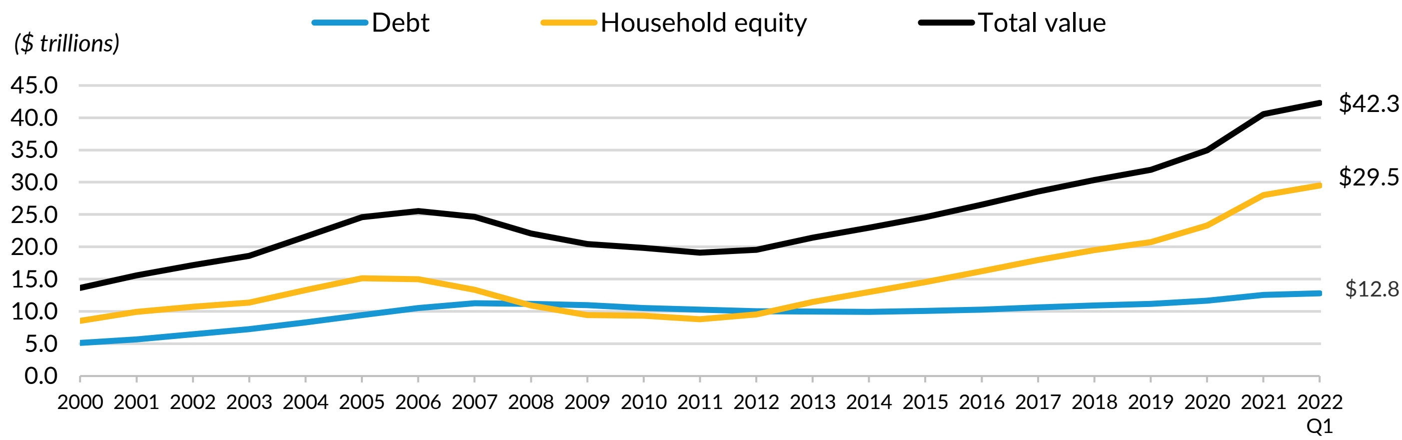
- Months' supply of housing increased to 3.3 in July 2022, up from a near record low of 1.7 in February 2022 as higher rates and lack of affordability continue to put downward pressure on home sales (Page 20).
- Housing affordability improved slightly in July 2022. With 20 percent down, the share of median income needed for the monthly mortgage payment stood at 30.1 percent in July, slightly lower than 31.3 percent in June. (Page 21) .
- Year over house price growth continues to remain robust at 17 percent in July 2022 although this represents a decline from 20.3 percent in April (Page 22).
- This issue includes our periodic special feature containing performance information from the Fannie Mae and Freddie Mac loan level credit databases (Pages 34 – 41).

OVERVIEW

MARKET SIZE OVERVIEW

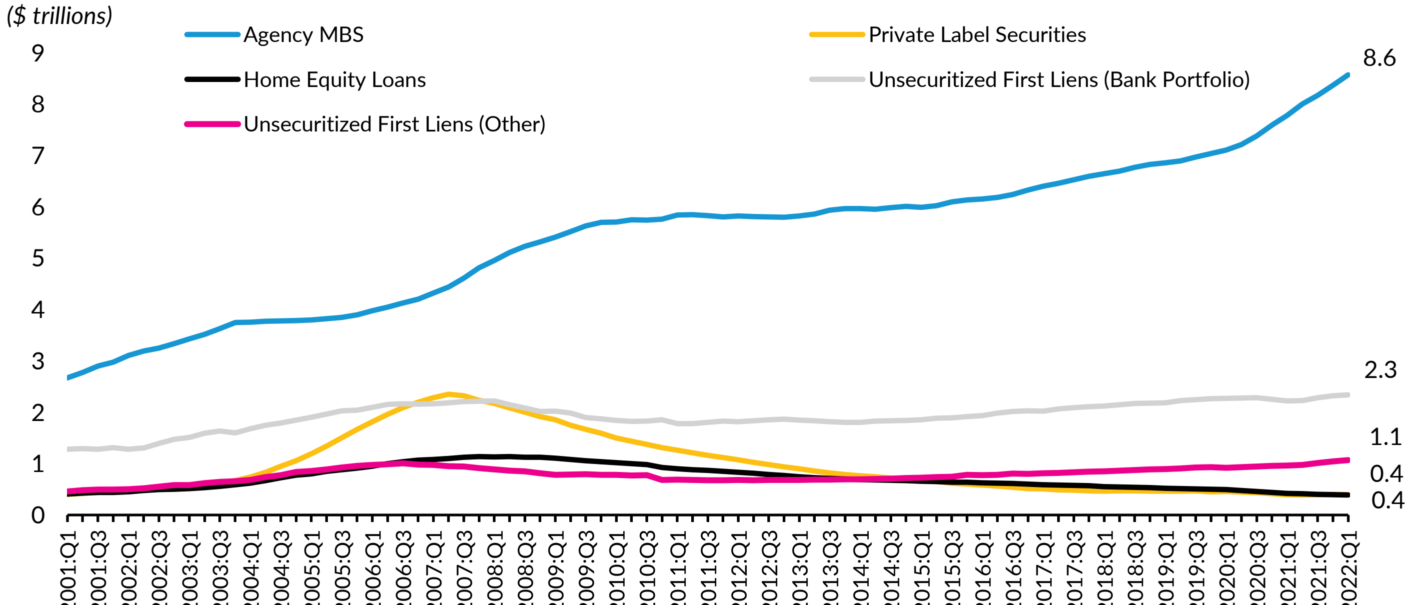
The Financial Accounts of the United States has indicated a gradually increasing total value of the housing market, driven primarily by growing home equity since 2012. Mortgage debt outstanding increased slightly from $12.5 trillion in Q4 2021 to $12.8 trillion in Q1 2022, while total household equity increased from $28.0 trillion to $29.5 trillion. The total value of the housing market reached $42.3 trillion in the first quarter of 2022, 65.7 percent higher than the pre-crisis peak in 2006. Agency MBS account for 67.1 percent of the total mortgage debt outstanding, private-label securities make up 3.1 percent, and home equity loans make up 3.1 percent. Unsecuritized first liens comprise the remaining 26.7 percent with banks making up 18.3 percent, credit unions 4.6 percent, and other non-depositories accounting for 3.7 percent of the total.

Value of the US Single Family Housing Market



Sources: Financial Accounts of the United States and Urban Institute. *Last updated June 2022.*
Note: Single family includes 1-4 family mortgages. The home equity number is grossed up from Fed totals to include the value of households and the non-financial business sector.

Composition of the US Single Family Mortgage Market



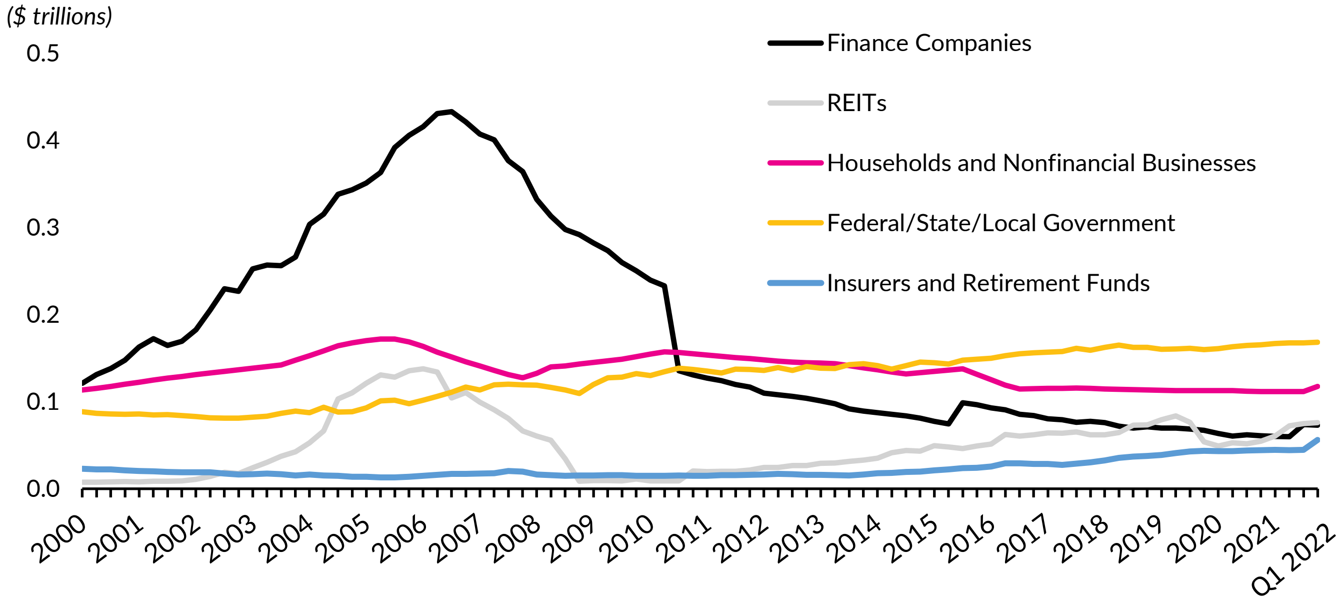
Sources: Financial Accounts of the United States and Urban Institute. *Last updated June 2022.*
Notes: Unsecuritized First Liens (Other) includes mortgages not held on bank balance sheets.

OVERVIEW

MARKET SIZE OVERVIEW

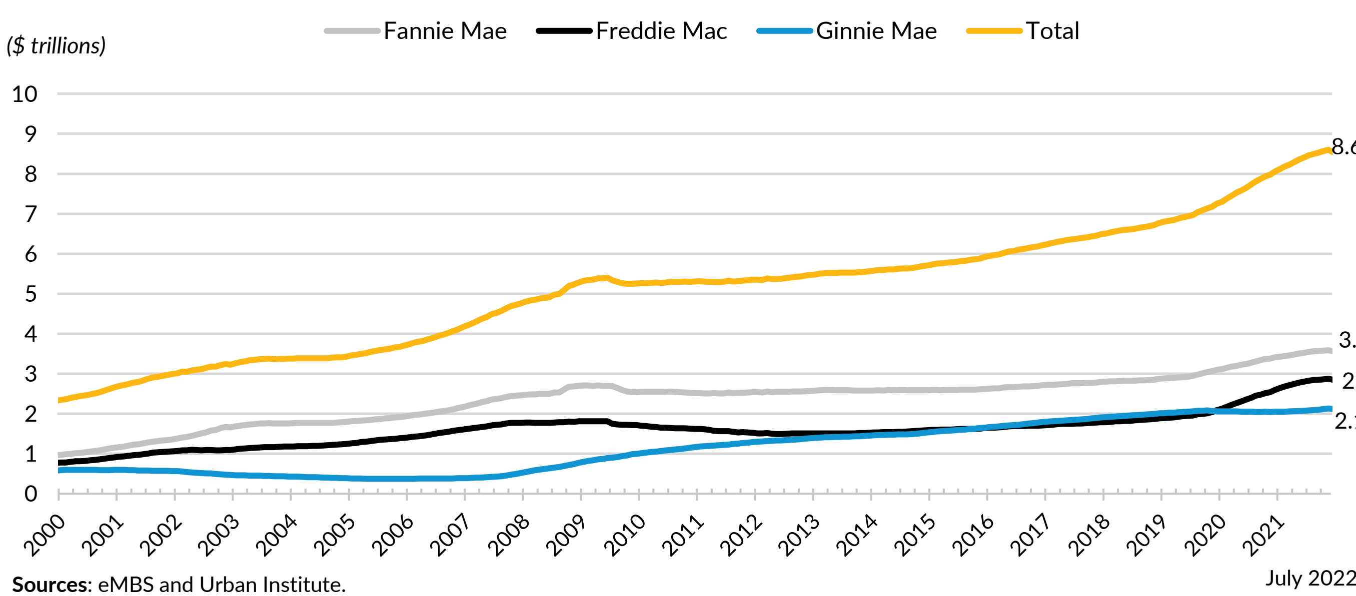
As of Q1 2022, unsecuritized first liens held outside banks and credit unions totaled $ 0.49 trillion. In this space, REITs, insurers and retirements funds have experienced particularly robust percentage increases over the last decade. In July 2022, outstanding securities in the agency market totaled $8.6 trillion, 41.8 percent of which was Fannie Mae, 33.4 percent Freddie Mac, and 24.8 percent Ginnie Mae.

Unsecuritized 1st Liens Held by Non-Depositories



Sources: Federal Reserve Financial Accounts of the United States and Urban Institute. *Last updated June 2022.*

Agency Mortgage-Backed Securities

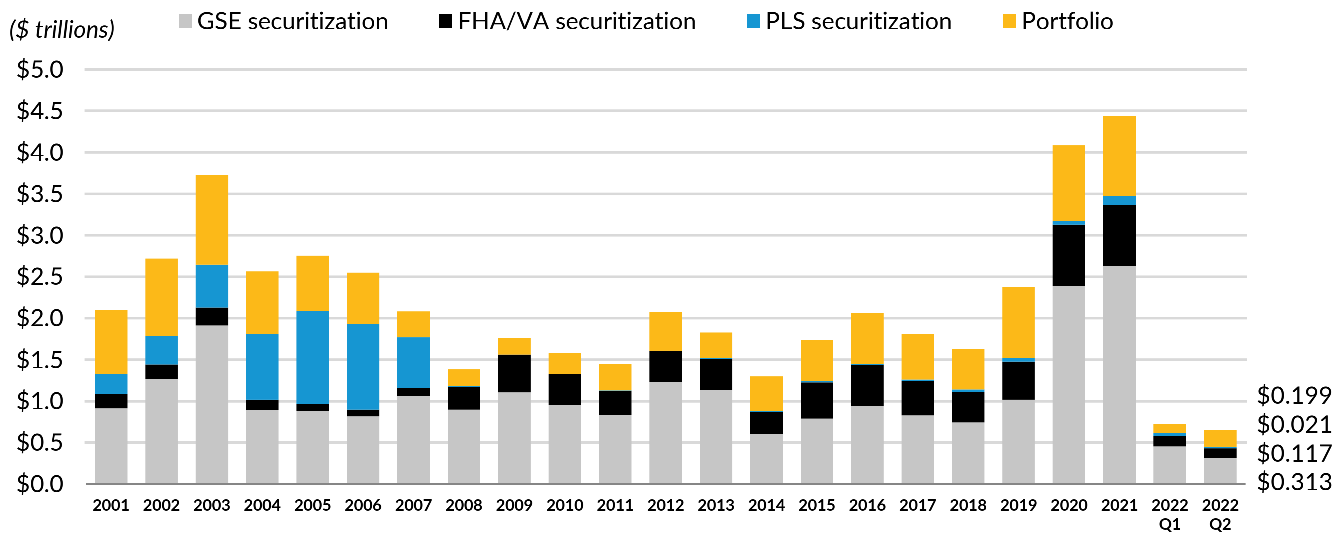


Sources: eMBS and Urban Institute.

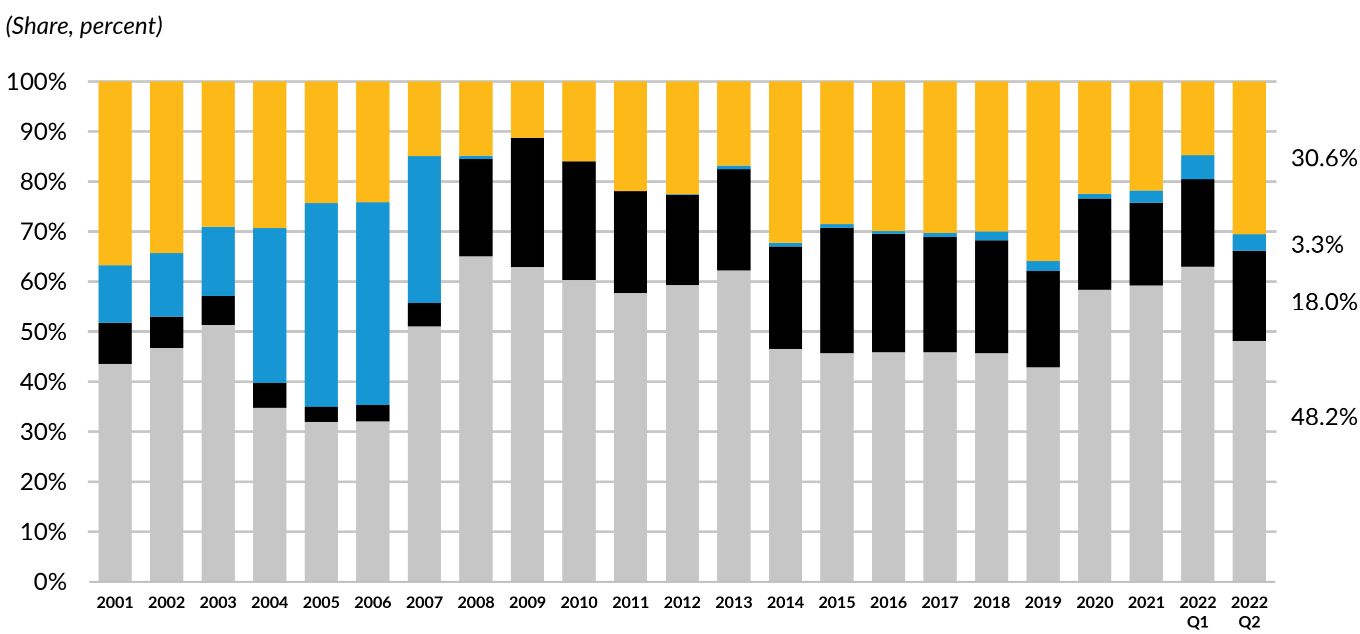
OVERVIEW
ORIGINATION VOLUME AND COMPOSITION

First Lien Origination Volume

Mortgage origination volume totaled $650 billion in Q2 2022, far lower than the $1.13 trillion total in Q2 2021. The share of portfolio originations was 30.6 percent in Q2 2022, a large increase compared to the 17.5 percent share in Q2 2021 and roughly consistent with the portfolio share in the pre-pandemic years. The GSE share was much lower in Q2 2022 at 48.2 percent, compared to 63.4 percent in Q2 2021. The markedly lower GSE share in Q2 2022 reflects substantial slowdown of the refinance wave, which was in full swing and boosted GSE purchases in Q2 2021. The FHA/VA share in Q2 2022 stood at 18.0 percent, up from 17.0 percent in Q2 2021. The PLS share was also higher in Q2 2022 at 3.3 percent, compared to 2.2 percent in Q2 2021.



Sources: Inside Mortgage Finance and Urban Institute. *Last updated July 2022.*



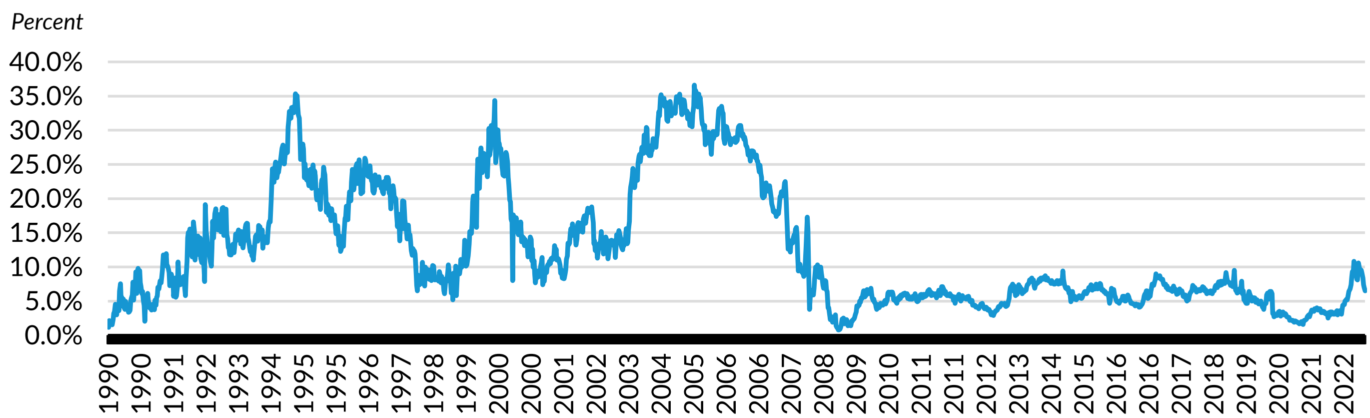
Sources: Inside Mortgage Finance and Urban Institute. *Last updated July 2022.*

OVERVIEW

PRODUCT COMPOSITION AND REFINANCE SHARE

Demand for ARMs typically increases when the spread between short-term and long-term rates widens. The wider this spread, the more money borrowers can save by choosing ARM over fixed. The adjustable-rate share of weekly mortgage applications varied widely in the 1990s and the early to mid-2000s, ranging from a low of 5 percent to a high of over 35 percent. From 2009 to early 2022, the ARM share remained very low, generally between 5 to 8 percent, as ultra-low rates persisted. However, with rates rising substantially in 2022 and affordability worsening, the ARM share increased from 3.4 percent in Jan 2022 to 10.6 percent in June. Although the highest level since 2008, it is well below the 2005 peak of 36.6 percent. Since June, the ARM share has decreased standing at 6.5 percent in August.

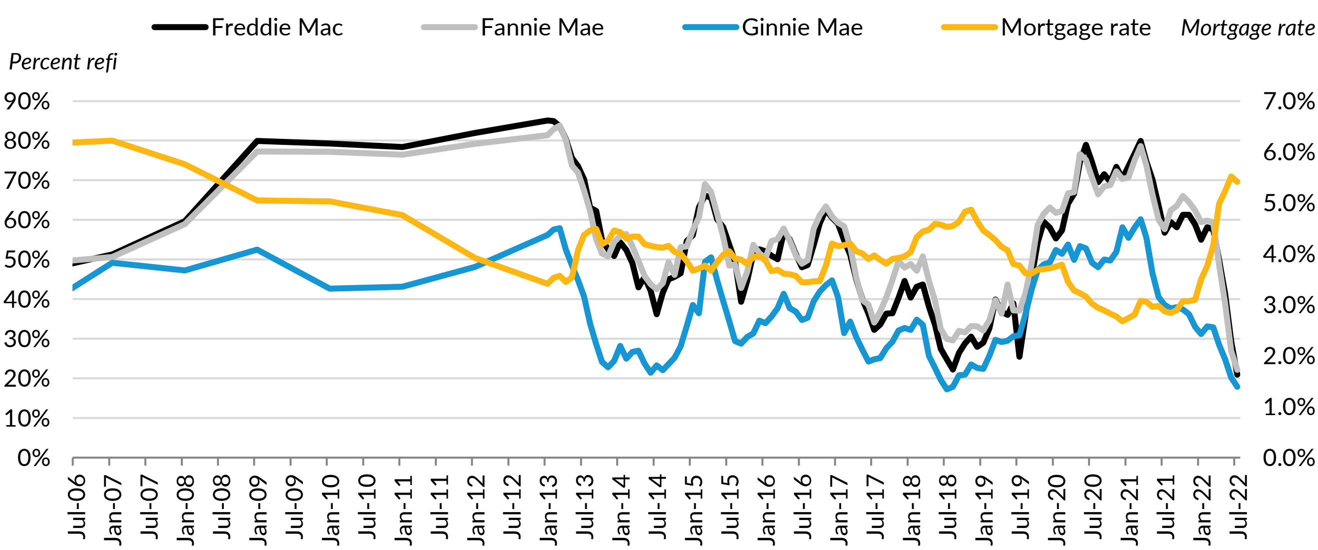
Adjustable-Rate Mortgage Share of Applications



Source: Mortgage Bankers Association (MBA) Weekly Mortgage Applications Survey.
Note: Includes purchase and refinance applications. Data updated through August 19, 2022.

From late 2018-though March 2021, while there was some month-to-month variation, the refi share generally increased for both the GSEs and for Ginnie Mae as interest rates dropped. Since April 2021, in reaction to higher interest rates, the refi share has dropped significantly. In July 2022, the GSE refi shares are in the 21 to 22 percent range; the Ginnie Mae refi share was 17.9 percent. The refinance share reflects mortgage rates from 6-8 weeks earlier.

Percent Refi at Issuance

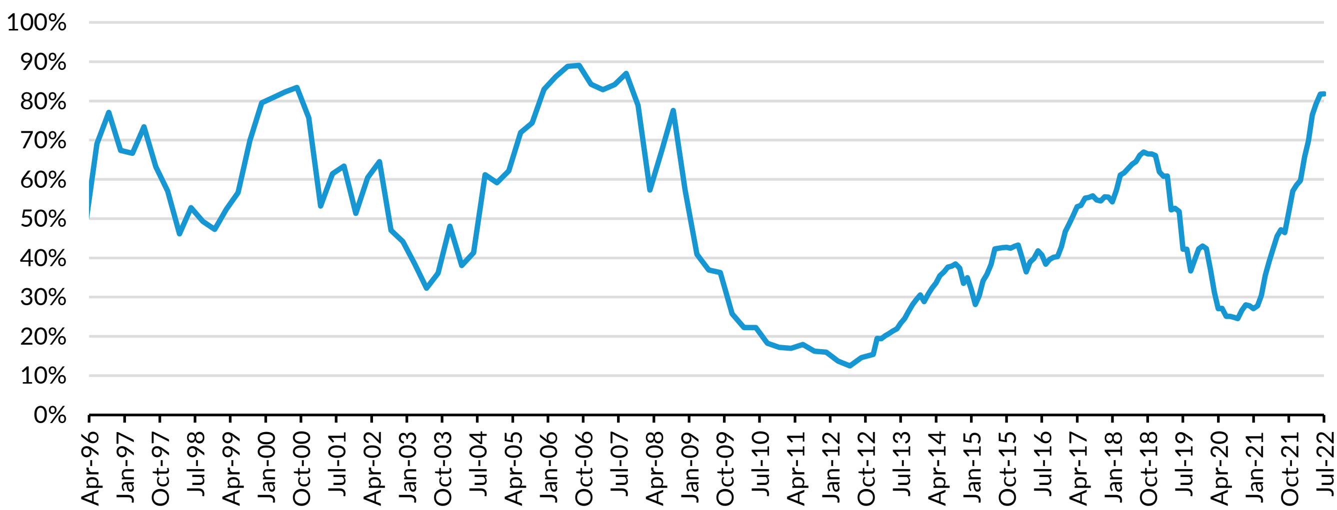


Sources: eMBS and Urban Institute.
Note: Based on at-issuance balance. Figure based on data from July 2022.

CASH-OUT REFINANCES

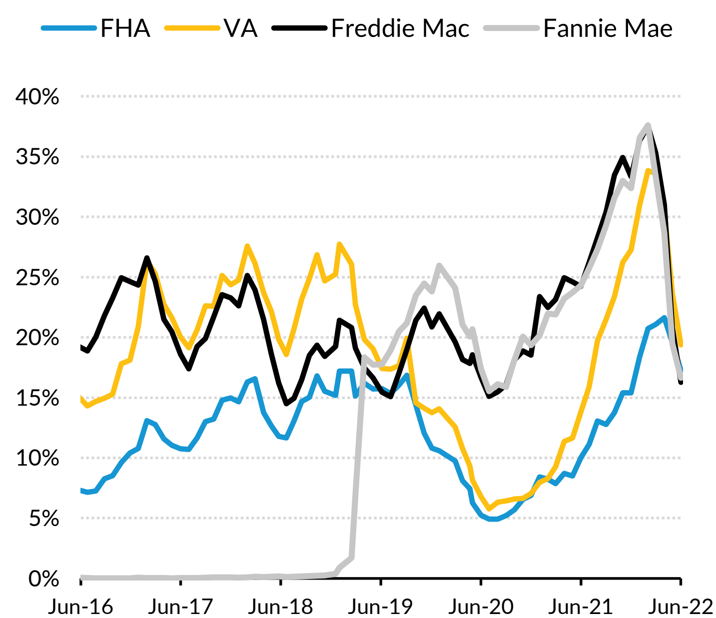
When mortgage rates are low, the share of cash-out refinances tends to be relatively smaller, as rate/term refinancing allows borrowers to save money by taking advantage of lower rates. But when rates are high, the cash-out refinance share is higher since the rate reduction incentive is gone and the only reason to refinance is to take out equity. The cash-out share of refinances generally declined in 2020, reaching 25 percent in September 2020 due to increased rate refinances amidst historically low rates. With rates rising dramatically and the bulk of rate-refinance activity behind us, the cash-out share increased to 81.8 percent as of July 2022. Despite the increase in the cash-out share, the absolute volume of cash-out refinances has come down sharply since the spring of 2021, when mortgage rates began to rise.

Cash-out Share of Conventional Refinances



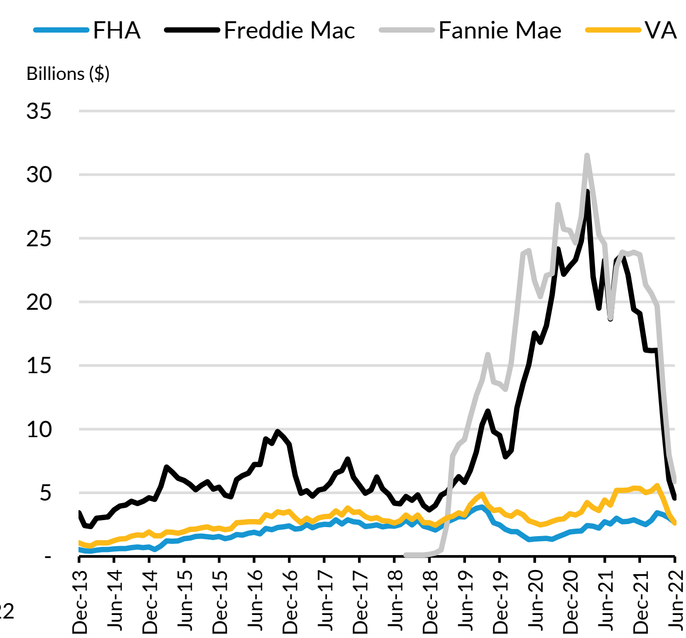
Sources: Freddie Mac, eMBS and Urban Institute.
Note: The cashout share for conventional market is calculated using Freddie Mac's quarterly refinance statistics from 1995 to 2013. Post 2013 it is calculated monthly using eMBS. Data as of July 2022.

Cash-out Refi Share of All Originations



Sources: eMBS and Urban Institute.
Note: Data as of June 2022.

Cash-out Refinance Volume by Agency



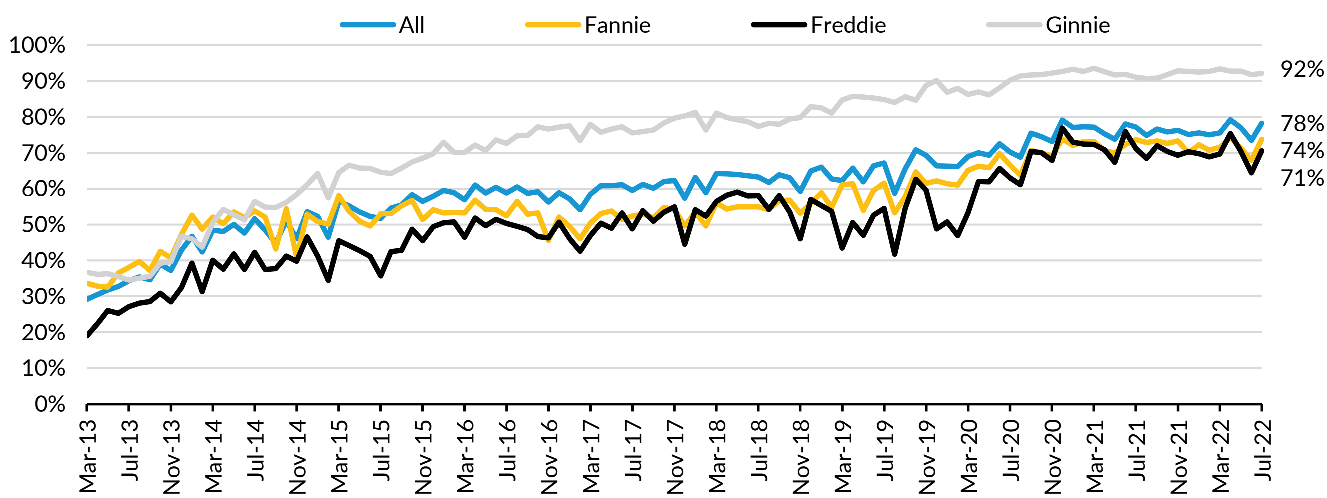
Sources: eMBS and Urban Institute
Note: Data as of June 2022.

OVERVIEW

AGENCY NONBANK ORIGINATION SHARE

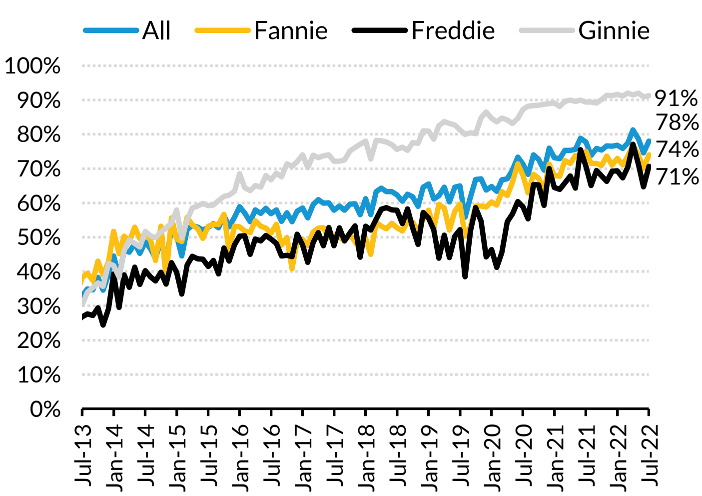
The nonbank share for agency originations has been rising steadily since 2013, standing at 78.2 percent in July 2022. The Ginnie Mae nonbank share has been consistently higher than the GSEs, standing at 92.2 percent in July 2022. Fannie and Freddie had nonbank shares of 70.5 percent and 73.8 percent respectively in July 2022. Fannie and Freddie had similar nonbank origination shares for purchase activity and refi activity in July 2022, while Ginnie had a slightly higher share for refi activity.

Nonbank Origination Share: All Loans



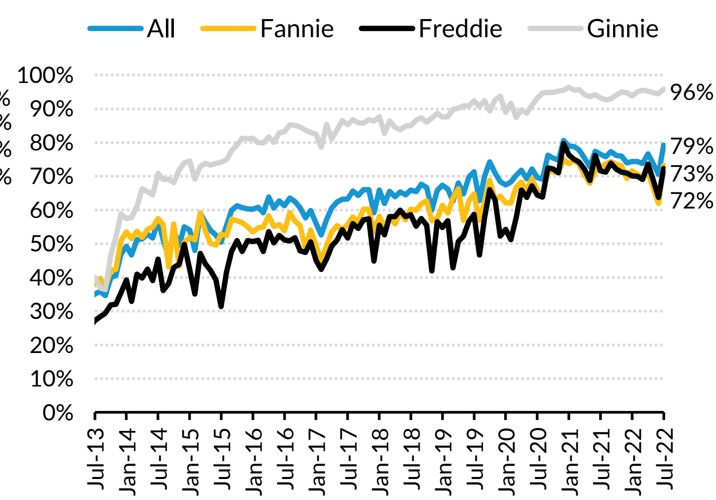
Sources: *eMBS and Urban Institute*.

Nonbank Origination Share: Purchase Loans



Sources: *eMBS and Urban Institute.*

Nonbank Origination Share: Refi Loans

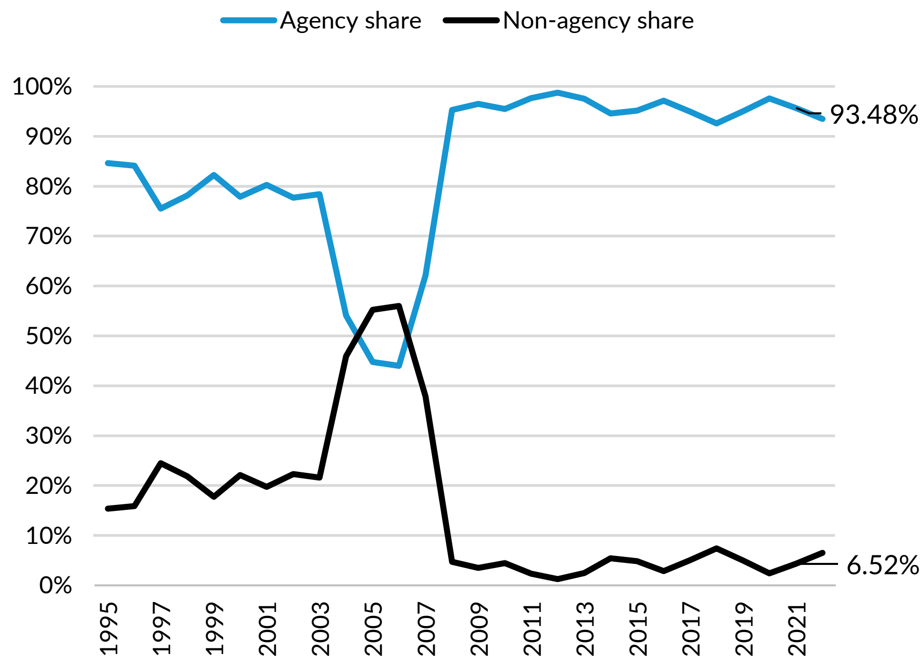


Sources: *eMBS and Urban Institute*.

OVERVIEW
SECURITIZATION VOLUME AND COMPOSITION

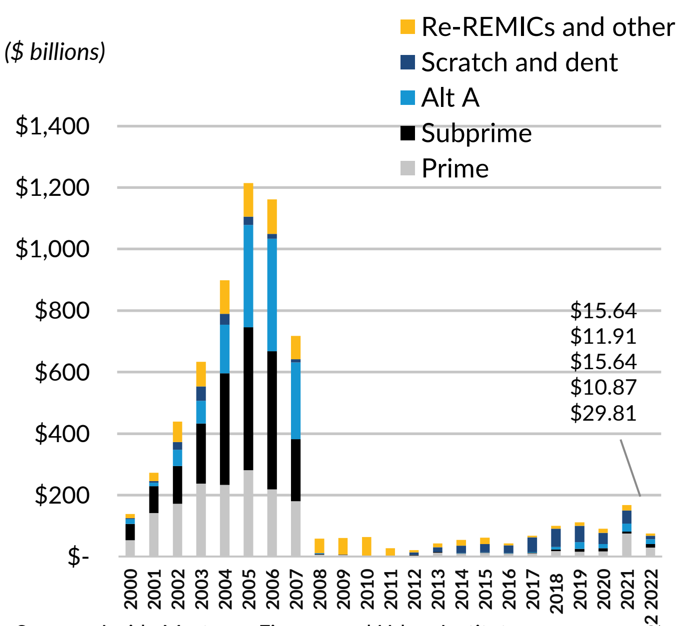
Agency/Non-Agency Share of Residential MBS Issuance

The non-agency share of mortgage securitizations increased gradually from 1.83 percent in 2012 to 5.0 percent in 2019. In 2020, the non-agency share dropped to 2.44 percent, reflecting increased agency refinances and less non-agency production due to COVID-19. The market recovered in 2021 with the nonagency share rising to 4.32 percent. 2021 was the largest year of non-agency securitization since 2008. In the Jan-June 2022 period, the nonagency share was 6.52 percent. Non-agency issuance reached $33.15 billion in Q2 2022, a decrease relative to the $44.97 billion in Q2 2021 but a significant increase from the $15.96 billion in the same period in 2020. Non-agency securitization totaled to $8.08 billion in June 2022. These numbers remain small compared to pre-housing market crisis levels.



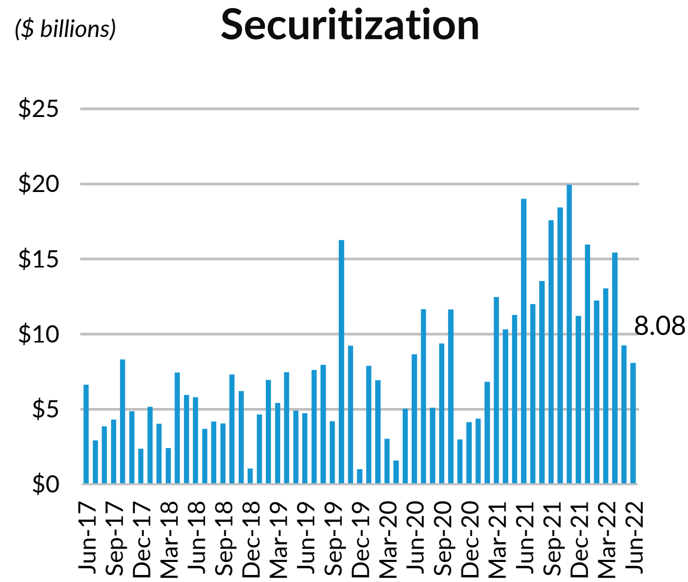
Sources: Inside Mortgage Finance and Urban Institute.
Note: Based on data from June 2022. Monthly non-agency volume is subject to revision.

Non-Agency MBS Issuance



Sources: Inside Mortgage Finance and Urban Institute.
Note: Data in 2022 is through Q2.

Monthly Non-Agency Securitization



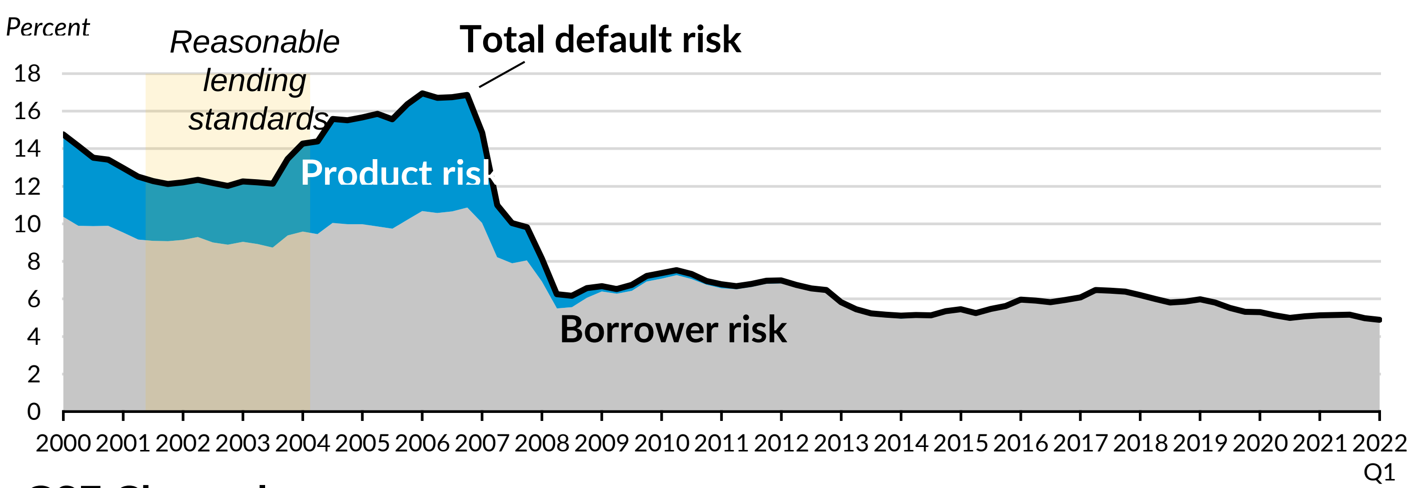
Sources: Inside Mortgage Finance and Urban Institute.

CREDIT BOX

HOUSING CREDIT AVAILABILITY INDEX

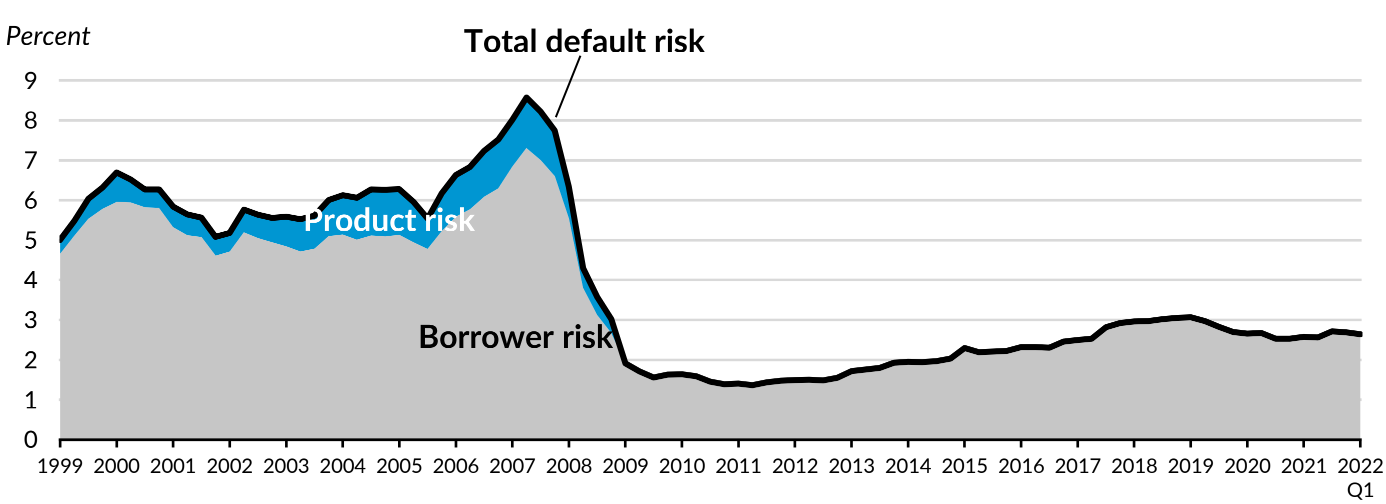
The Urban Institute's Housing Credit Availability Index (HCAI) assesses lenders' tolerance for both borrower risk and product risk, calculating the share of owner-occupied purchase loans that are likely to go 90+ days delinquent over the life of the loan. The HCAI stood at 4.9 percent in Q1 2022, slightly down from 5.0 in Q4 2021. Note that we updated the methodology as of Q2 2020, see new methodology here. The slight credit loosening from Q1 2021 to Q3 2021 was primarily led by increased borrower default risk in the government channel. The slight tightening starting in Q4 2021 reflected a small decrease in the Ginnie Mae share and a very modest tightening in the GSE channel. More information about the HCAI is available here.

All Channels



GSE Channel

The trend toward greater credit availability in the GSE channel began in Q2 2011. From Q2 2011 to Q1 2020, the total risk taken by the GSE channel doubled, from 1.4 percent to 2.7 percent. This is still very modest by pre-crisis standards. However, accelerated tightening throughout 2020 induced by market conditions due to COVID-19 drove down credit risk to 2.5 percent in Q4 2020. The increase in Q1 2021, to 2.58 percent, marked the first expansion of credit availability in the GSE channel since Q1 2019. In Q1 2022, credit availability stood at 2.64 percent, down from 2.70 percent in Q4 2021.



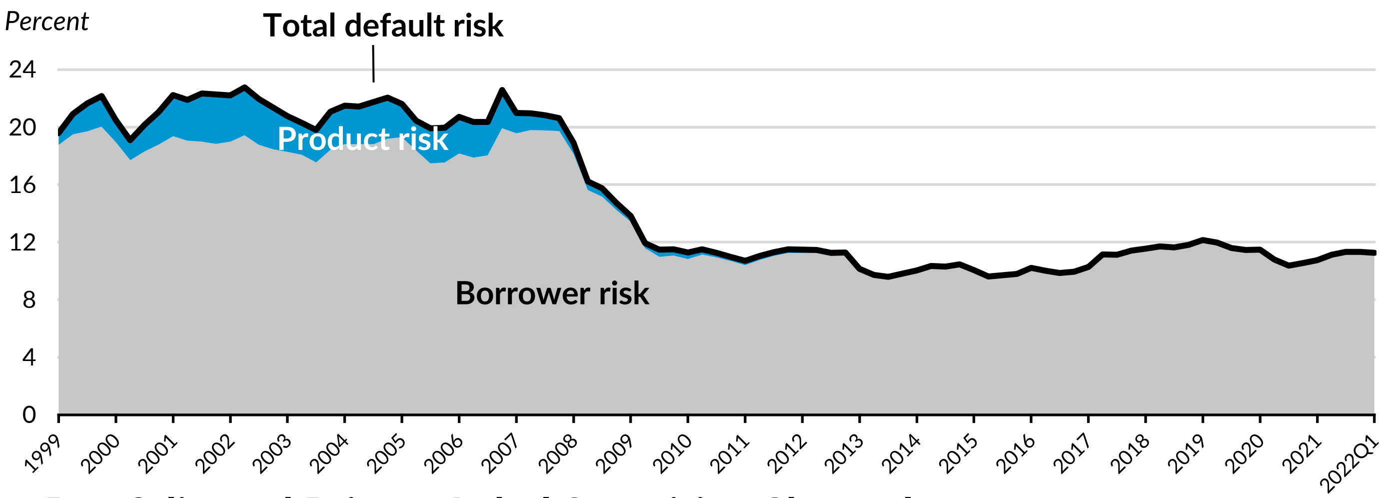
Sources: eMBS, CoreLogic, HMDA, IMF, and Urban Institute.
Note: Default is defined as 90 days or more delinquent at any point. *Last updated July 2022.*

CREDIT BOX

HOUSING CREDIT AVAILABILITY INDEX

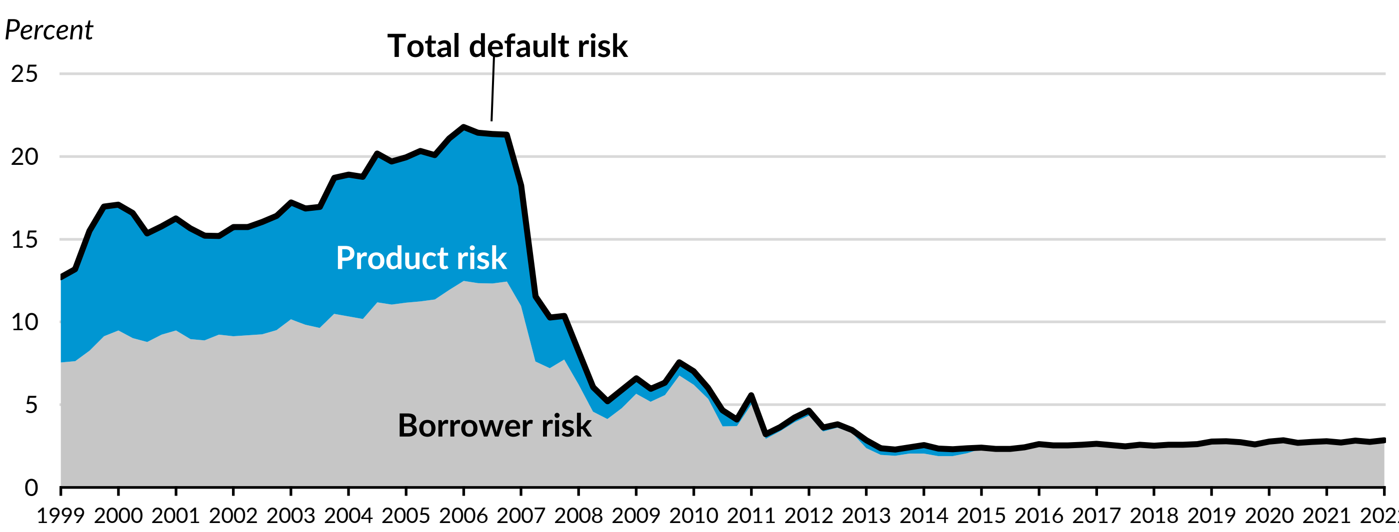
Government Channel

The total default risk the government loan channel is willing to take bottomed out at 9.6 percent in Q3 2013. It fluctuated in a narrow range above that number for three years. In the eleven quarters from Q4 2016 to Q1 2019, the risk in the government channel increased significantly from 9.9 to 12.1 percent but has since receded. After declining to 10.4 percent in Q3 2020 due to the pandemic, the government channel has since increased risk to 11.3 percent in Q1 2022; still far below the pre-bubble level of 19 – 23 percent.



Portfolio and Private Label Securities Channels

The portfolio and private-label securities (PP) channel took on more product risk than the government and GSE channels during the last housing bubble. After the 2008 crisis, the channel's product and borrower risks dropped sharply. The numbers have stabilized since 2013, with product risk well below 0.5 percent and total risk largely in the range of 2.3-3.0 percent; it was 2.9 percent in Q1 2022, up marginally from 2.8 percent in Q4 2021, but a shadow of what it once was.



Sources: eMBS, CoreLogic, HMDA, IMF, and Urban Institute.
Note: Default is defined as 90 days or more delinquent at any point. *Last updated July 2022.*

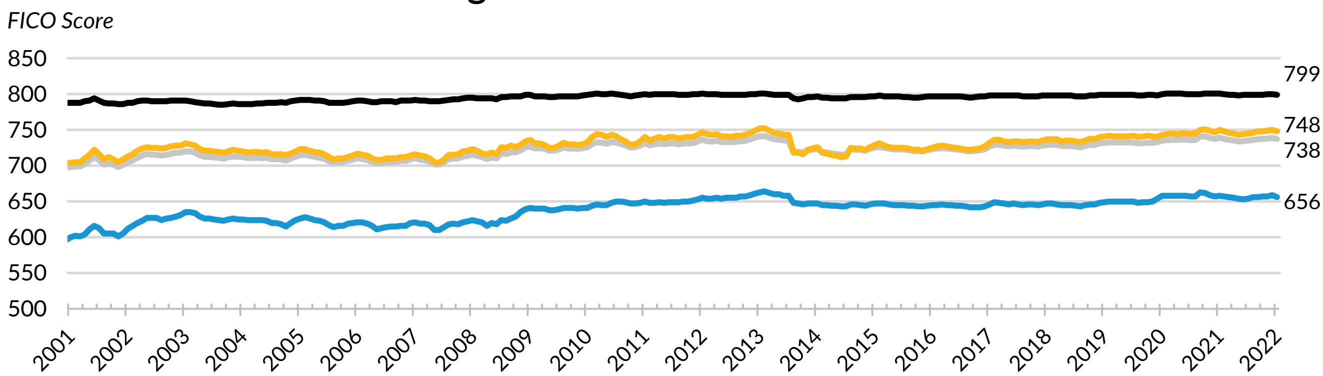
CREDIT BOX

CREDIT AVAILABILITY FOR PURCHASE LOANS

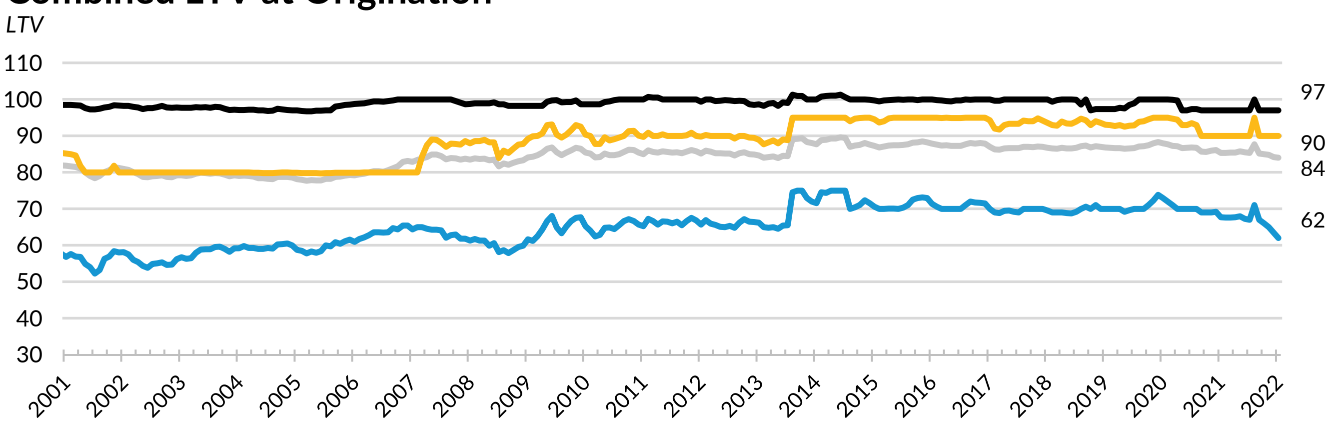
Access to credit remains tight by historical standards, especially for lower FICO borrowers. The median FICO for current purchase loans is about 26 points higher than the pre-housing crisis level of around 722. The 10th percentile, which represents the lower bound of creditworthiness to qualify for a mortgage, was 656 in June 2022, which is still high compared to low-600s pre-bubble. The median LTV at origination of 90 percent also remains high, reflecting the rise of FHA and VA lending. Origination DTIs trended lower over the course of 2020 and early 2021, reflecting the sharp decline in mortgage rates; this has reversed, with a concurrent rise in DTIs.

Mean | 90th percentile | 10th percentile | Median

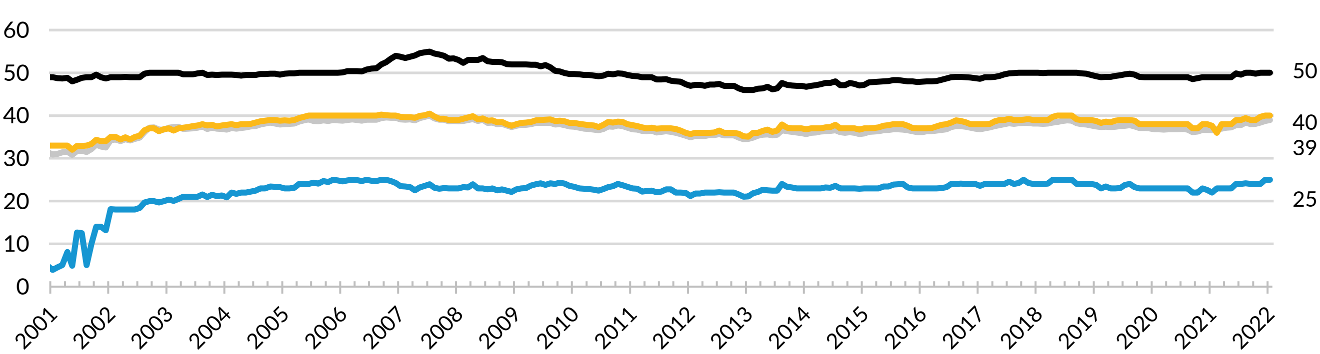
Borrower FICO Score at Origination



Combined LTV at Origination



DTI at Origination



Sources: Black Knight, eMBS, HMDA, SIFMA, CoreLogic and Urban Institute.

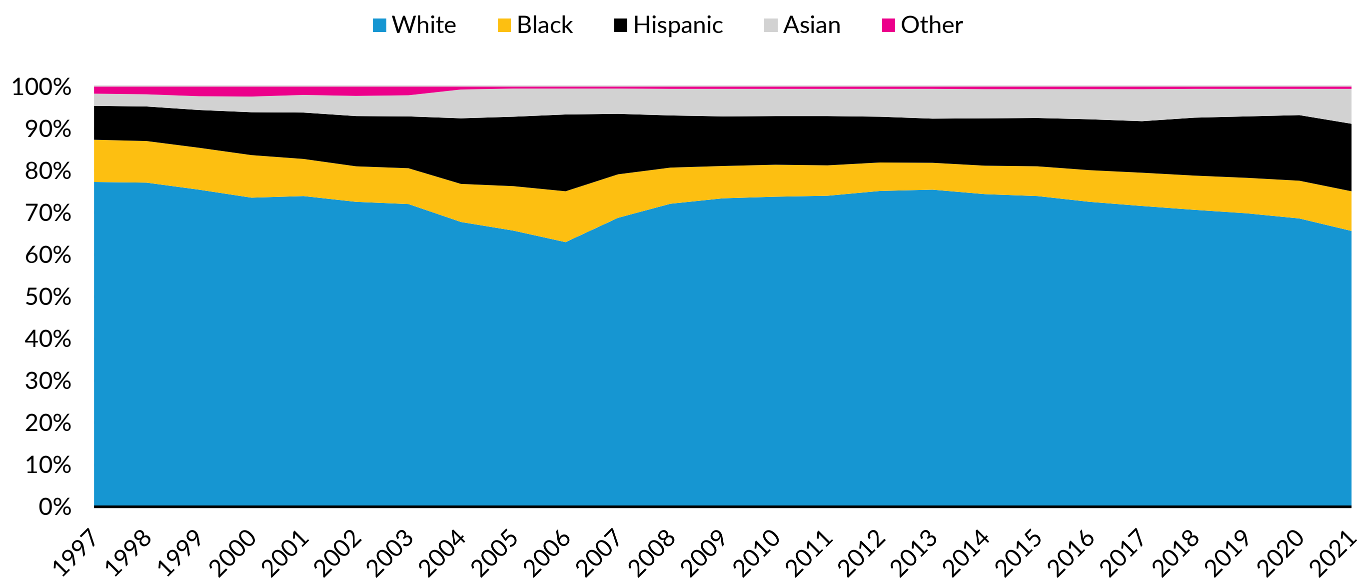
Note: Includes owner-occupied purchase loans only. DTI data prior to April 2018 is from CoreLogic; after that date, it is from Black Knight. A back-update to the Black Knight historical series was made in September 2021 for data starting from 2001 onward. Data as of June 2022.

OVERVIEW

RACIAL & ETHNIC COMPOSITION

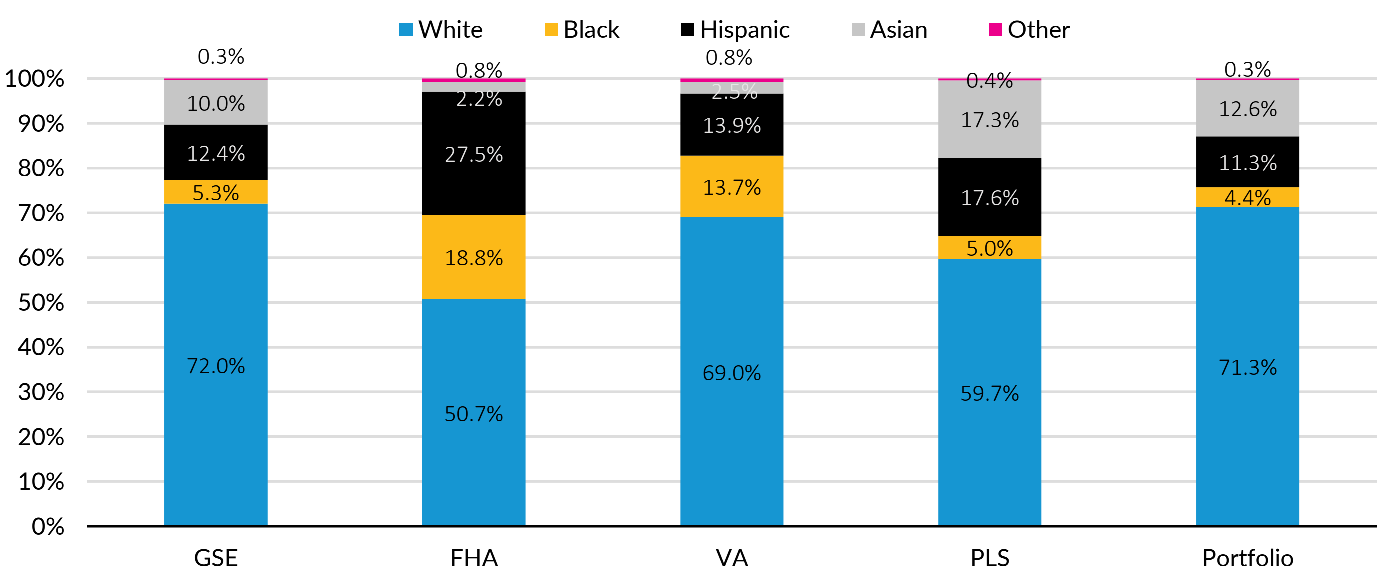
Across all channels, the share of purchase lending to minorities reached a peak of 37.0% in 2006. Following the Great Recession and amidst a period of very tight credit, the minority share of purchase lending declined to a low of 24.5% in 2013. Since then, it has slowly recovered – it stood at 34.3% in 2021, up from 31.4% in 2020. The share of purchase lending to Black borrowers varied widely by channel in 2021. 18.8 percent of FHA loans were originated to Black borrowers compared with 13.7 percent of VA loans, 5.3 percent for GSEs and 4.4 percent of portfolio loans. Similarly, 27.5 percent of FHA purchase loans were originated to Hispanic borrowers in 2021 compared to 13.9 percent of VA loans, 12.4 percent for GSEs, and 11.3 percent of portfolio loans.

2021 Purchase Loan Shares by Race



Source: 1997 to 2021 Home Mortgage Disclosure Act (HMDA).
Note: Includes purchase loans only. Shares based on loan counts

2021 Purchase Loan Channel Shares by Race

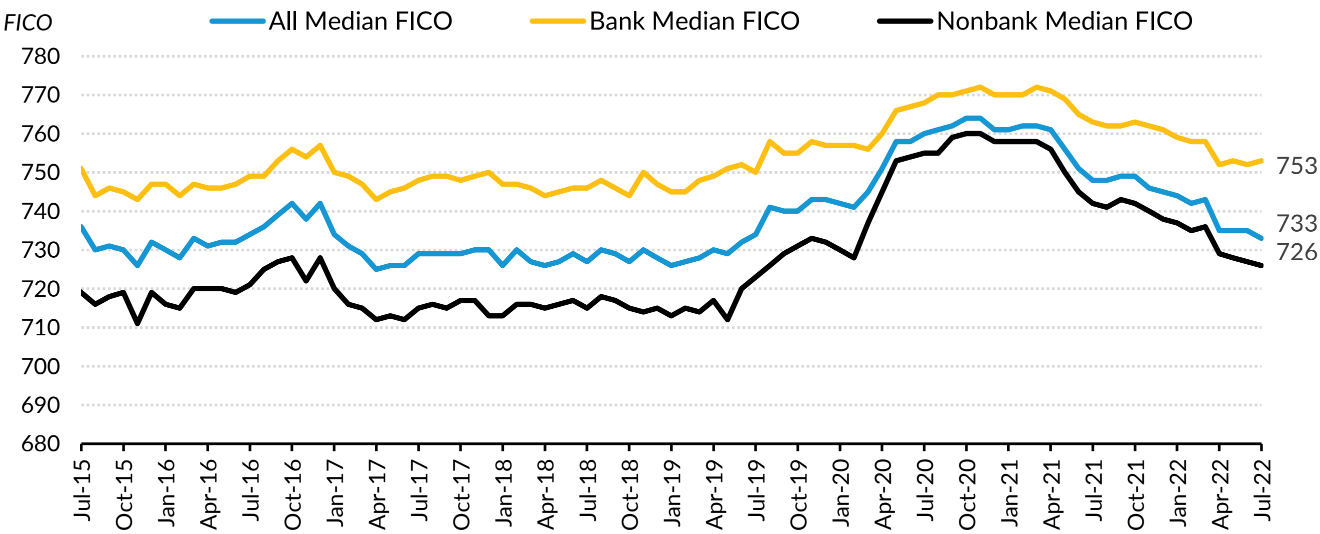


Source: 1997 to 2021 Home Mortgage Disclosure Act (HMDA).
Note: Includes purchase loans only. Shares based on loan counts

AGENCY NONBANK CREDIT BOX

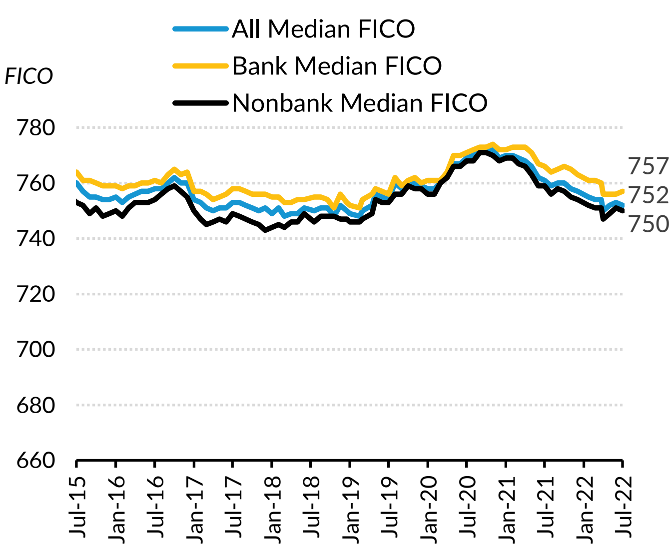
In the GSE space, FICO scores for banks and nonbanks dipped in 2021 and 2022. The difference between the two stood at 7 points in July 2022, compared to the 23 point gap between bank and nonbank FICOs in the Ginnie space. FICO scores for banks and nonbanks in both GSE and Ginnie Mae segments increased during the Q1 2019 to Q1 2021 period, due to increased refi activity; with refi activity now waning, originators, particularly nonbank originators, have been aggressively competing for new business, and are now more accommodating to borrowers with lower credit scores. Note that there has been a sharp cut-back in FHA lending by banks post-2008. As pointed out on page 11, banks now comprise only about 8 percent of Ginnie Mae originations.

Agency FICO: Bank vs. Nonbank



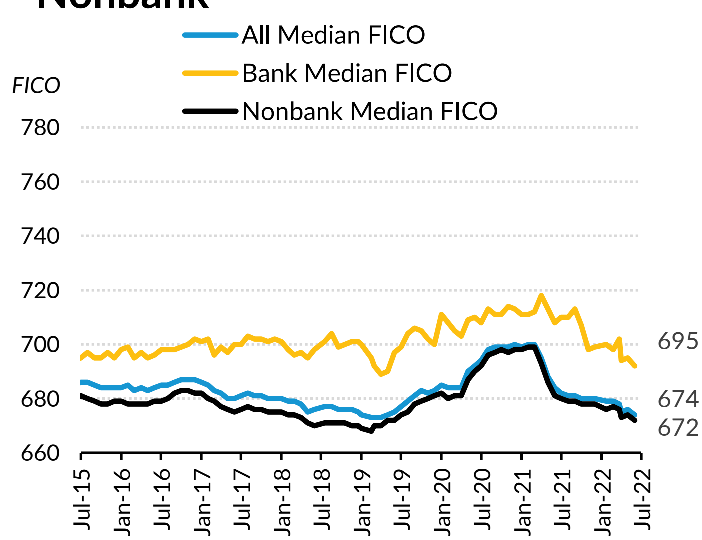
Sources: *eMBS and Urban Institute.*

GSE FICO: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*

Ginnie Mae FICO: Bank vs. Nonbank



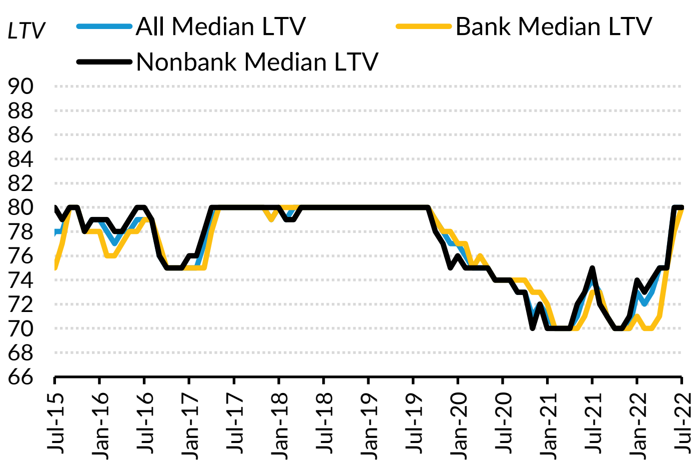
Sources: *eMBS and Urban Institute.*

CREDIT BOX

AGENCY NONBANK CREDIT BOX

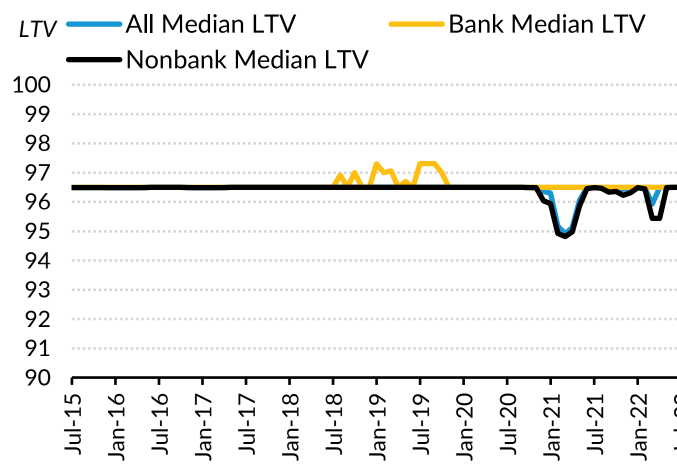
Non-banks are more expansive in their lending than their bank counterparts, as indicated by higher DTIs in both GSE and Ginnie Mae markets. From early 2017 to early 2019, there was a sustained increase in DTIs, which has reversed beginning in the spring of 2019. This is true for both Ginnie Mae and the GSEs, for banks and nonbanks. As interest rates in 2017 and 2018 increased, DTIs rose, because borrower payments were driven up relative to incomes. As rates fell during most of 2019 and 2020, DTIs fell as borrower payments declined relative to incomes. Since March 2021, DTIs have increased, reflecting the rise in rates and steep house price increases, both of which force households to borrow more in relation to income.

GSE LTV: Bank vs. Nonbank



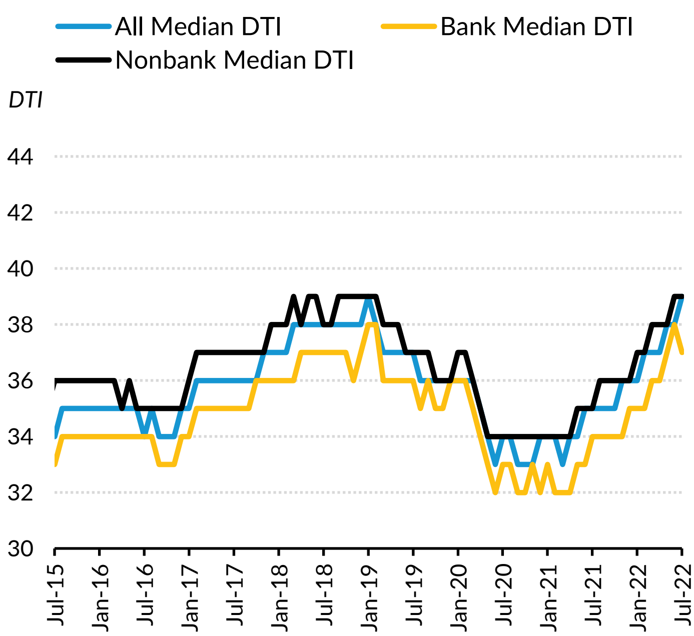
Sources: *eMBS and Urban Institute.*

Ginnie Mae LTV: Bank vs. Nonbank



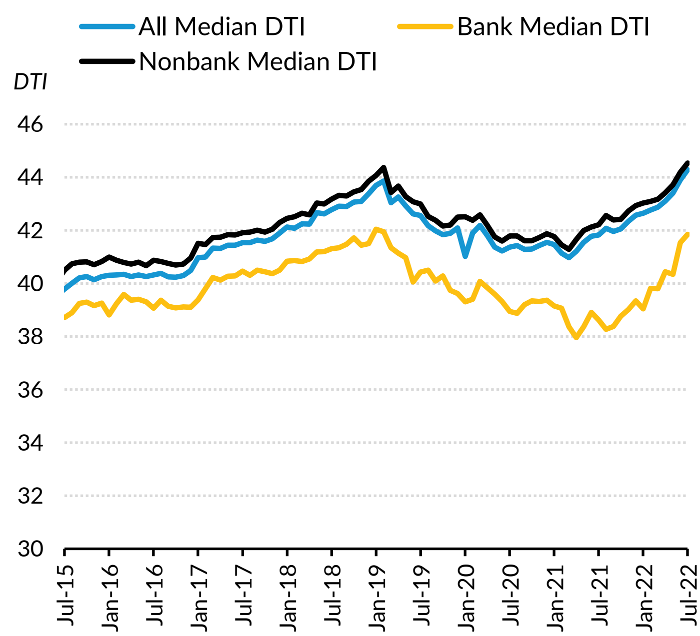
Sources: *eMBS and Urban Institute.*

GSE DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*

Ginnie Mae DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*

STATE OF THE MARKET

MORTGAGE ORIGINATION PROJECTIONS

Fannie Mae, Freddie Mac and the MBA estimate 2022 origination volume to be between $2.34 and $2.84 trillion, down from $4.44 to $4.84 trillion in 2021, representing declines of 2.00 to 2.10 trillion. The very robust origination volume in 2020 and 2021 is due to very strong refinance activity. All three groups expect the 2022 refinance share to be 27 to 29 percentage points lower than in 2021.

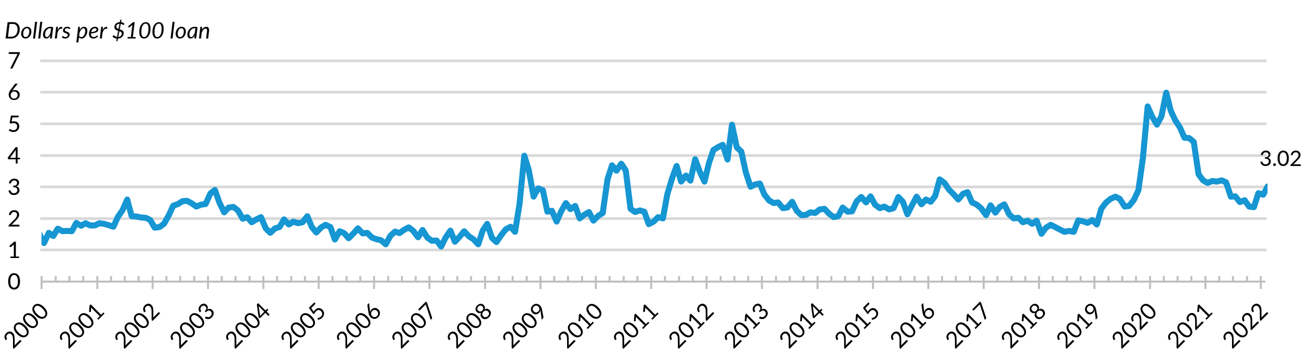
Total Originations and Refinance Shares

Period	Originations ($ billions)			Refi Share (percent)		
	Total, FNMA estimate	Total, FHLMC estimate	Total, MBA estimate	FNMA estimate	FHLMC estimate	MBA estimate
2020 Q1	736	751	563	61	60	54
2020 Q2	1069	1090	928	67	68	63
2020 Q3	1287	1279	1076	63	62	61
2020 Q4	1282	1321	1261	65	66	67
2021 Q1	1239	1305	1094	70	71	69
2021 Q2	1123	1230	1050	55	58	54
2021 Q3	1103	1195	954	53	54	52
2021 Q4	1012	1026	893	52	54	50
2017	1826	1810	1760	36	37	35
2018	1766	1700	1677	30	32	28
2019	2462	2432	2253	46	46	44
2020	4374	4441	4108	64	64	64
2021	4469	4838	4436	58	58	62
2022	2473	2842	2344	30	31	33
2023	2289	2346	2244	23	20	27

Sources: Fannie Mae, Freddie Mac, Mortgage Bankers Association and Urban Institute.
Note: Shaded boxes indicate forecasted figures. All figures are estimates for total single-family market. Regarding interest rates, the yearly averages for 2017, 2018, 2019, 2020, and 2021 were 4.0, 4.6, 3.9, 3.0, and 3.0 percent. For 2022, the respective projections for Fannie, Freddie, and MBA are 4.8, 4.6, and 5.0 percent. Freddie Mac forecasts are now released quarterly, last updated July 2022.

Originator Profitability and Unmeasured Costs

In June 2022, Originator Profitability and Unmeasured Costs (OPUC) stood at $3.02 per $100 loan, down considerably from $5.99 per $100 loan in 2020. Increased profitability in 2020 and early 2021 reflects lender capacity constraints amidst strong refi demand. Reduced profitability in 2022 reflects slower refinance activity, forcing originators to compete more aggressively on price. OPUC, formulated and calculated by the Federal Reserve Bank of New York, is a good relative measure of originator profitability. OPUC uses the sales price of a mortgage in the secondary market (less par) and adds two sources of profitability; retained servicing (both base and excess servicing, net of g-fees), and points paid by the borrower. OPUC is generally high when interest rates are low, as originators are capacity constrained due to refinance demand and have no incentive to reduce rates. Conversely, when interest rates are higher and refi activity low, competition forces originators to lower rates, driving profitability down.

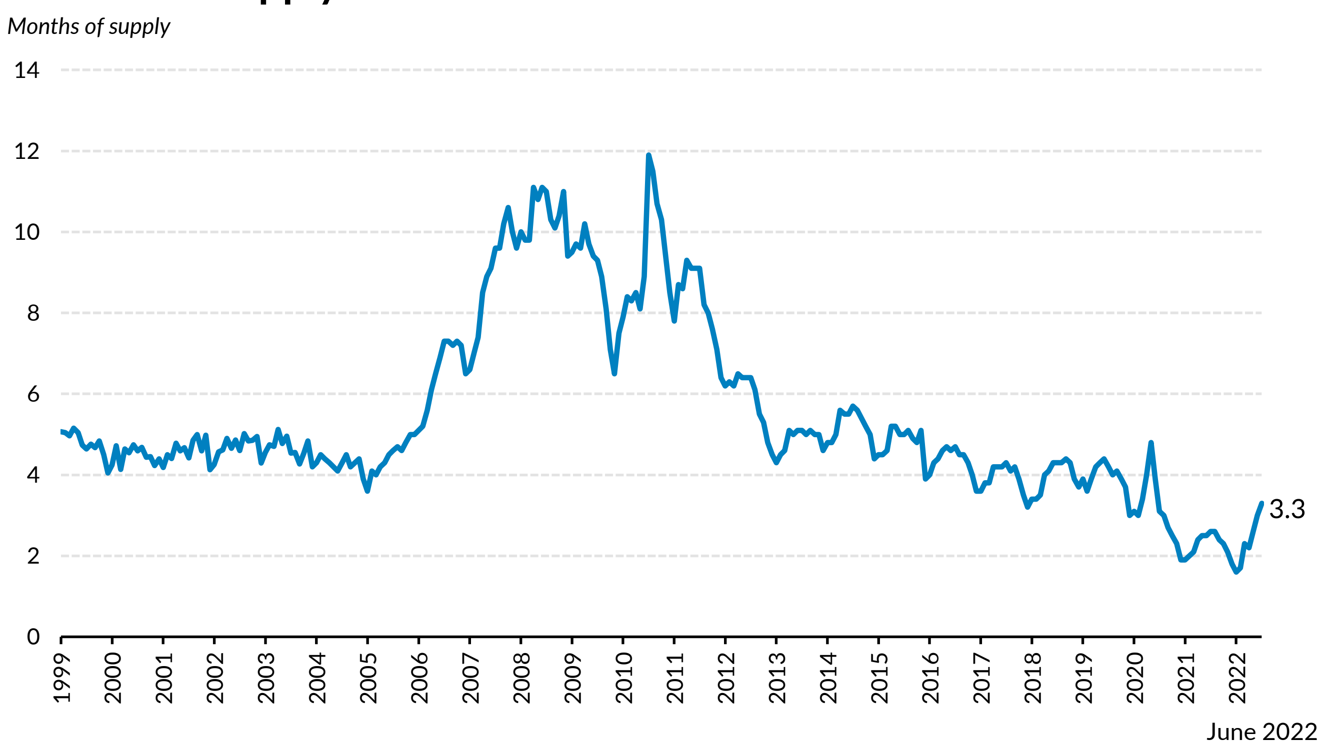


Sources: Federal Reserve Bank of New York, updated monthly and available at this link: http://www.ny.frb.org/research/epr/2013/1113fust.html and Urban Institute. Last updated June 2022.
Note: OPUC is a is a monthly (4-week moving) average as discussed in Fuster et al. (2013).

STATE OF THE MARKET
HOUSING SUPPLY

Months of supply in July 2022 increased to 3.3, up from a near record low of 1.7 in February 2022. While months of supply remains low by historical standards, higher interest rates have slowed demand, leading to the small increase in inventory levels. . Fannie Mae, the MBA, and the NAHB forecast 2022 housing starts to be between 1.54 and 1.58 million units, below 2021 levels. Fannie Mae, Freddie Mac, the MBA , and the NAHB predict total home sales of 5.31 to 6.36 million units in 2022; these estimates all reflect declines from their 2021 sales volume calculations.

Months of Supply



Source: National Association of Realtors and Urban Institute. Data as of June 2022.

Housing Starts and Home Sales

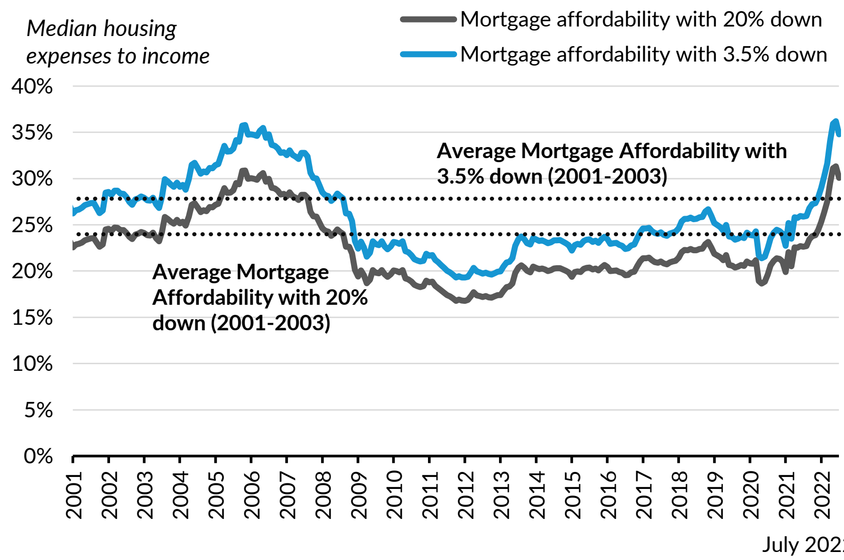
	Housing Starts, thousands			Home Sales. thousands			
Year	Total, FNMA estimate	Total, MBA estimate	Total, NAHB estimate	Total, FNMA estimate	Total, FHLMC estimate	Total, MBA estimate	Total, NAHB estimate*
2017	1203	1208	1205	6123	6120	6158	5520
2018	1250	1250	1247	5957	5960	5956	5350
2019	1290	1295	1292	6023	6000	6016	5432
2020	1380	1397	1395	6462	6500	6506	5890
2021	1601	1605	1605	6891	6900	6898	6188
2022	1546	1575	1535	5816	6000	6355	5311
2023	1311	1537	1460	5154	5400	6275	5280

Sources: Mortgage Bankers Association, Fannie Mae, Freddie Mac, National Association of Home Builders and Urban Institute.
Note: Shaded boxes indicate forecasted figures; column labels indicate source of estimate. Freddie Mac home sales are now updated quarterly instead of monthly, with the last update in July 2022. *NAHB home sales estimate is for single-family structures only, it excludes condos and co-ops. Other figures include all single-family sales.

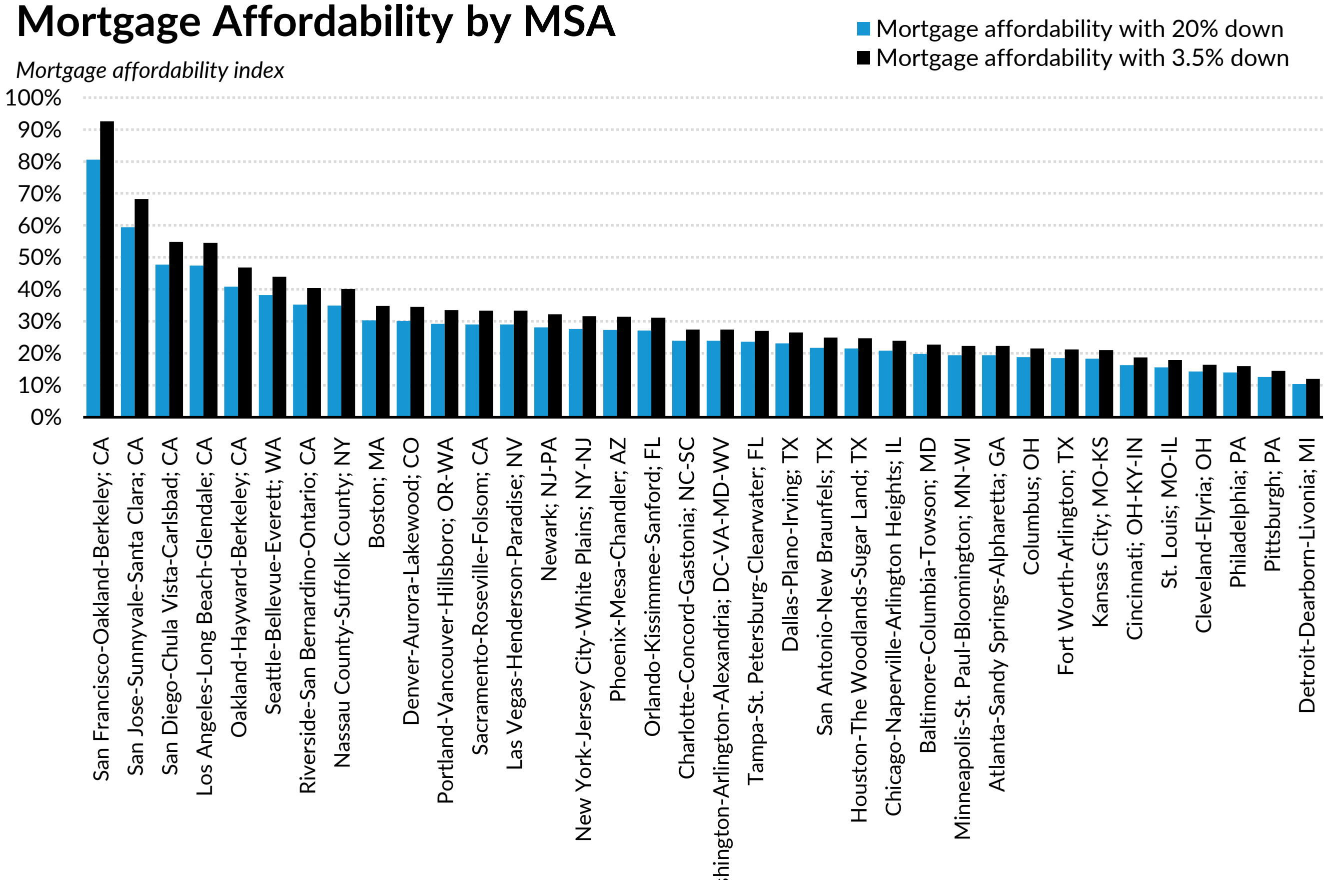
HOUSING AFFORDABILITY

National Mortgage Affordability Over Time

With the rise in interest rates, and rapid increases in home prices, affordability continues to worsen. As of July 2022, with a 20 percent down payment, the share of median income needed for the monthly mortgage payment stood at 30.1 percent, slightly lower than the 30.9 percent at the peak of the housing bubble in November 2005; with 3.5 percent down it is 34.8 percent, again slightly below the 35.8 percent prior peak in November 2005. These numbers represent a sharp worsening in affordability over the past year. As shown in the bottom picture, mortgage affordability varies widely by MSA.



Mortgage Affordability by MSA

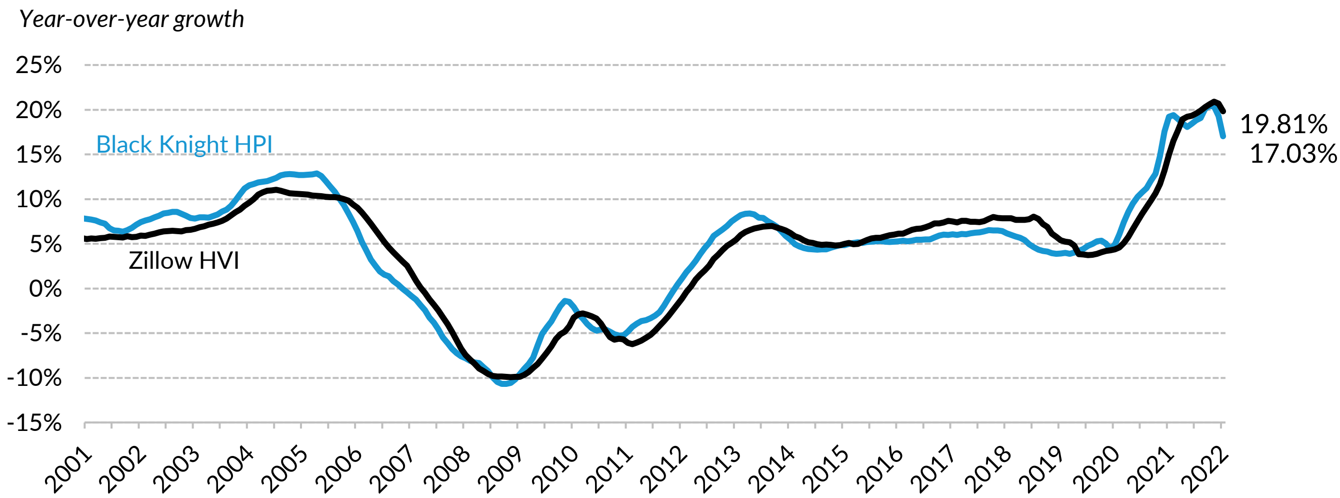


Sources: National Association of Realtors, US Census Bureau, Current Population Survey, American Community Survey, Moody's Analytics, Freddie Mac Primary Mortgage Market Survey, and the Urban Institute.
Note: Mortgage affordability is the share of median family income devoted to the monthly principal, interest, taxes, and insurance payment required to buy the median home at the Freddie Mac prevailing rate *2018* for a 30-year fixed-rate mortgage and property tax and insurance at 1.75 percent of the housing value. Data for the bottom chart as of Q3 2020.

STATE OF THE MARKET
HOME PRICE INDICES

National Year-Over-Year HPI Growth

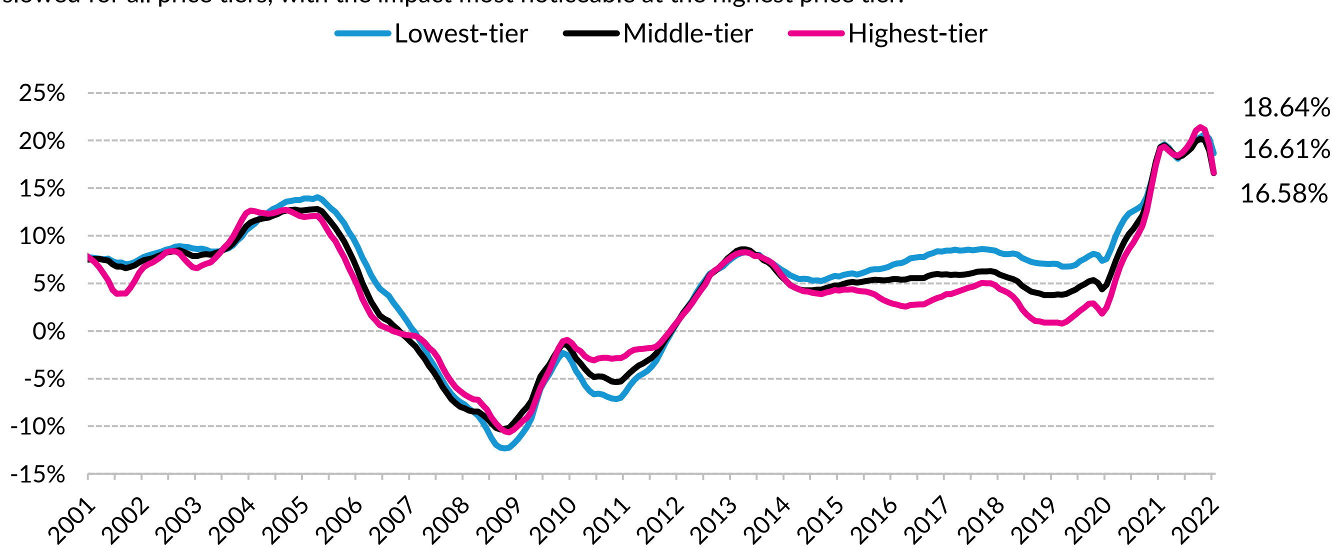
According to Black Knight's updated repeat sales index, year-over-year home price appreciation decreased to 17.03 percent in June 2022, compared to 19.29 percent the previous month. Year-over-year home price appreciation as measured by Zillow's hedonic index was 19.81 percent in June 2022, down from 20.67 percent in May. With the sharp rise in both home prices and interest rates, affordability is constrained.



Sources: Black Knight, Zillow, and Urban Institute. **Note:** Black Knight modified the methodology behind their HPI in February 2021, resulting in changes to historic price estimates. Data as of June 2022.

National Year-Over-Year HPI Growth by Price Tier

House price growth escalated dramatically in the second half of 2020 into 2021 and continues to remain elevated in 2022 across all price tiers. Before the pandemic, lower-priced homes appreciated more than higher-priced homes. With higher-priced homes experiencing steep appreciation in 2020 and 2021, year-over-year growth in the highest-tier had surpassed middle and lowest tiers by Feb 2022. With rates rising sharply in 2022, the rate of appreciation has slowed for all price tiers, with the impact most noticeable at the highest price tier.

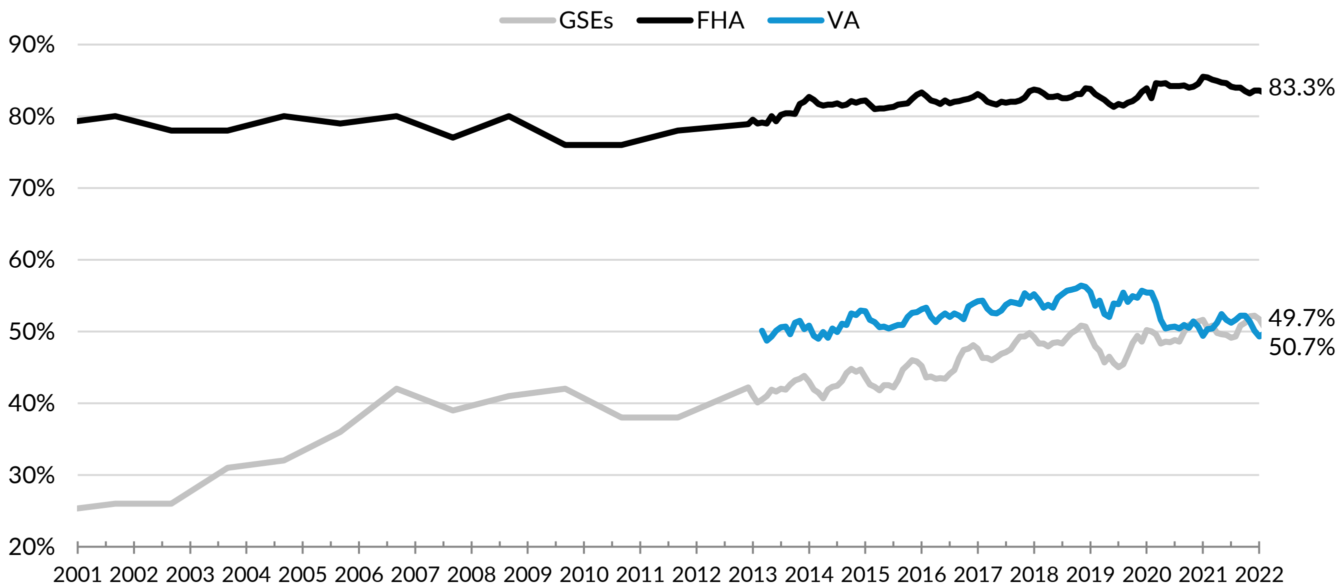


Sources: Black Knight and Urban Institute. **Note:** Black Knight modified the methodology behind their HPI in February 2021, resulting in changes to historic price estimates. Data as of June 2022.

FIRST-TIME HOMEBUYERS

First-Time Homebuyer Share

In June 2022, the FTHB share for FHA, which has always been more focused on first time homebuyers, was 83.3 percent. The FTHB share of GSE lending in June was 50.7 percent; the VA share was a very similar 49.7 percent. The bottom table shows that based on mortgages originated in July 2022, the average FTHB was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, and have a higher LTV, thus paying a higher interest rate.



June 2022

Sources: eMBS, Federal Housing Administration (FHA), and Urban Institute.
Note: All series measure the first-time homebuyer share of purchase loans for principal residences.

Comparison of First-Time and Repeat Homebuyers, GSE and FHA Originations

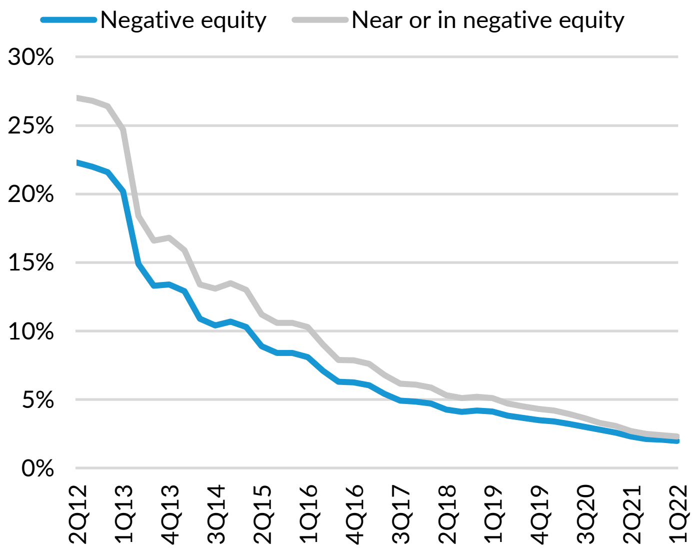
	GSEs		FHA		GSEs and FHA	
Characteristics	First-time	Repeat	First-time	Repeat	First-time	Repeat
Loan Amount ($)	334,758	354,123	273,813	294,030	319,888	357,176
Credit Score	747	756	670	667	722	743
LTV (%)	87	78	95	93	90	82
DTI (%)	36	37	44	45	39	39
Loan Rate (%)	4.46	4.35	4.44	4.37	4.42	4.30

Sources: eMBS and Urban Institute.
Note: Based on owner-occupied purchase mortgages originated in June 2022.

DELINQUENCIES AND LOSS MITIGATION ACTIVITY

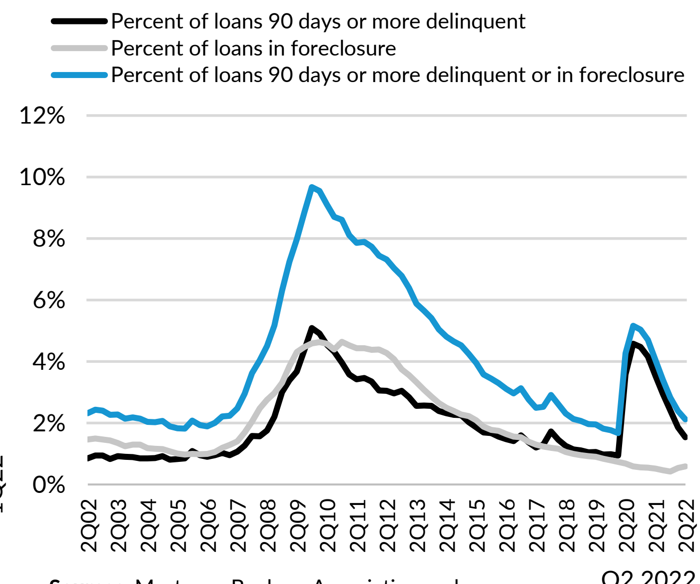
Loans in and near negative equity continued to decline in Q1 2022; 1.98 percent now have negative equity, an additional 0.30 percent have less then 5 percent equity. Due to the effects of COVID-19, the share of loans that are 90 days or more delinquent or in foreclosure remained high but declined again by 27 basis points, from 2.39 percent in Q1 2022 to 2.12 percent in Q2 2022. This number includes loans where borrowers have missed their payments, including loans in COVID-19 forbearance. The bottom chart shows the share of loans in forbearance according to the MBA Weekly Forbearance and Call Volume Survey, launched in March 2020. After peaking at 8.55 percent in early June 2020, the total forbearance rate has declined to 2.06 percent as of October 31st, 2021, the final week of the call survey. The MBA has since moved to conducting a monthly survey with the most recent forbearance rate dropping to 0.74% as of July 31, 2022. GSE loans have consistently had the lowest forbearance rates, standing at 0.34 percent at the end of July. The most recent forbearance rate for Ginnie Mae loans was 1.26 percent; other (e.g., portfolio and PLS) loans had the highest forbearance rate at 1.34 percent.

Negative Equity Share



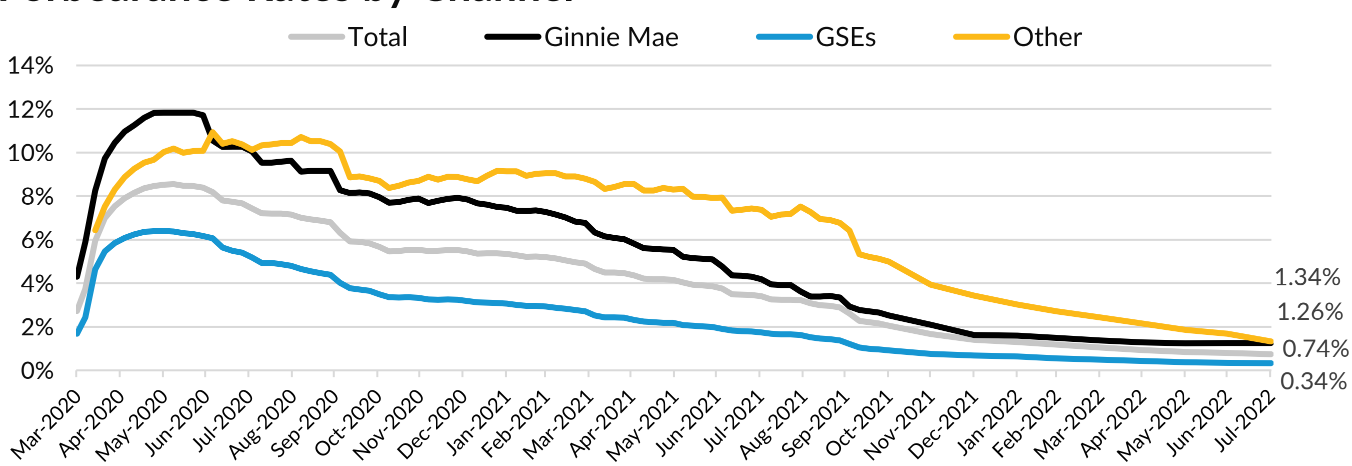
Sources: CoreLogic and Urban Institute.
Note: Loans with negative equity refer to loans above 100 percent LTV. Loans near negative equity refer to loans above 95 percent LTV. *Last updated June 2022.*

Loans in Serious Delinquency/Foreclosure



Sources: Mortgage Bankers Association and Urban Institute. *Last updated August 2022.*

Forbearance Rates by Channel

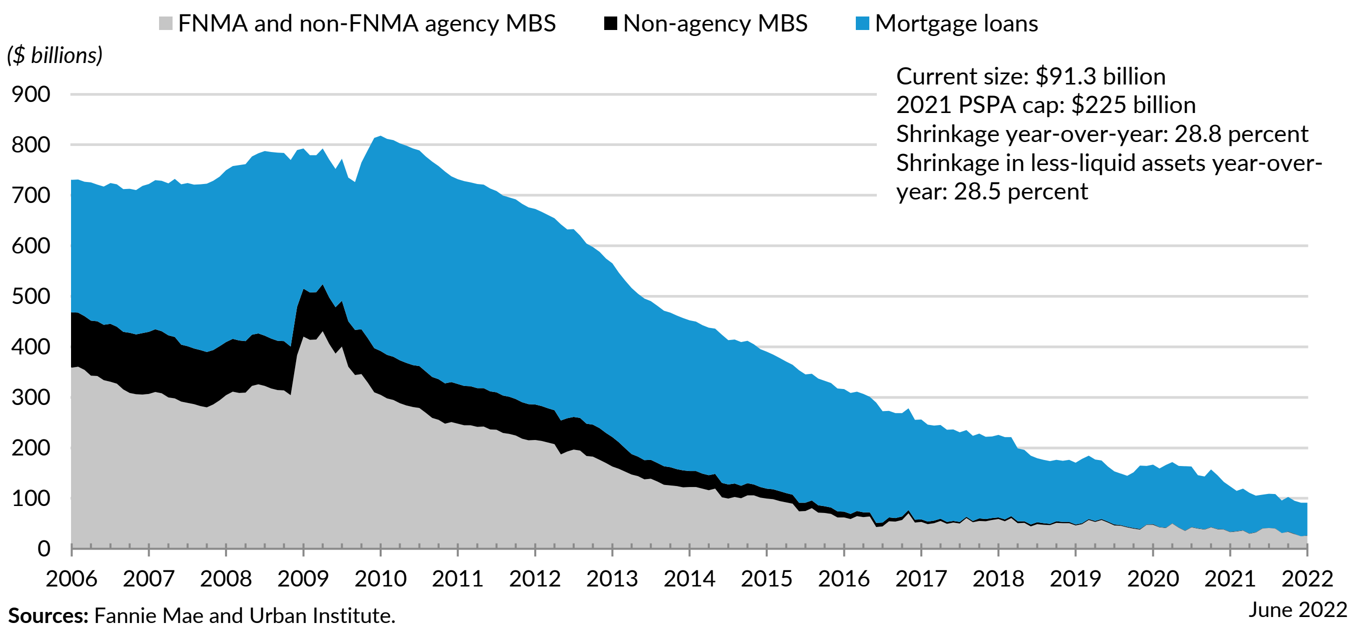


Source: MBA Weekly Forbearance and Call Volume Survey. *Forbearance rates as of July 31st, 2022.*

GSE PORTFOLIO WIND-DOWN

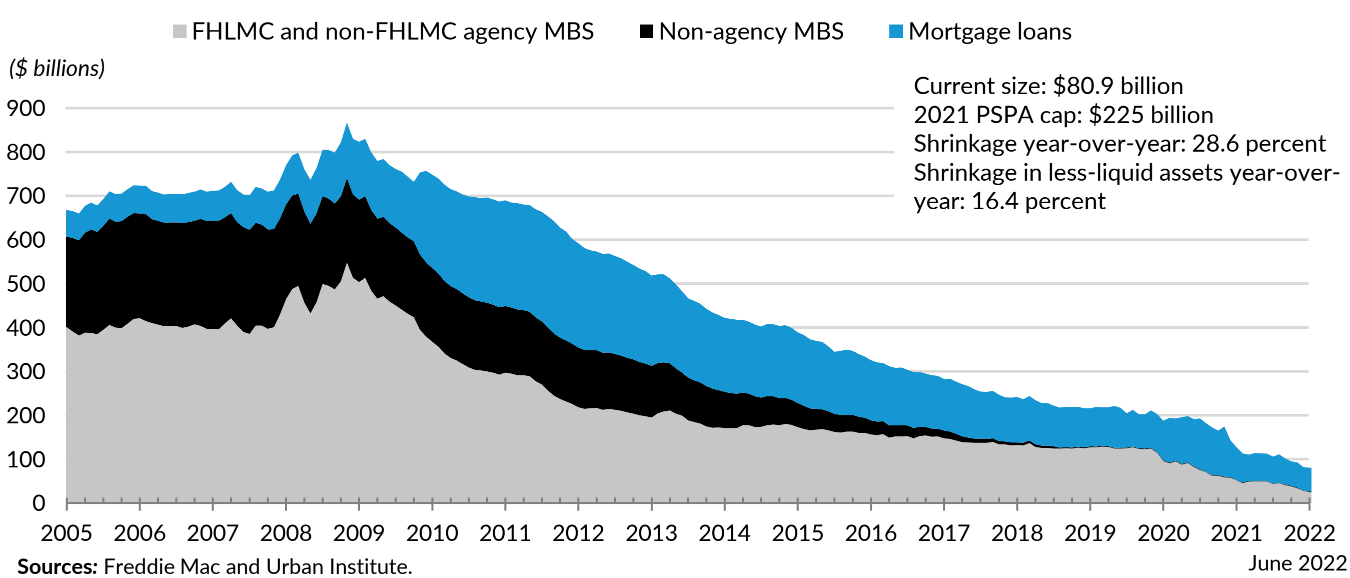
The Fannie Mae and Freddie Mac portfolios remain well below the $225 billion cap mandated in January 2021 by the new Preferred Stock Purchase Agreements (PSPAs). From June 2021 to June 2022, the Fannie portfolio contracted year-over-year by 28.8 percent, and the Freddie portfolio contracted by 28.6 percent. Within the portfolio, both Fannie Mae and Freddie Mac contracted their less-liquid assets (mortgage loans, non-agency MBS), by 28.5 percent and 16.4 percent, respectively, over the same 12 month period.

Fannie Mae Mortgage-Related Investment Portfolio Composition



Sources: Fannie Mae and Urban Institute.

Freddie Mac Mortgage-Related Investment Portfolio Composition



Sources: Freddie Mac and Urban Institute.

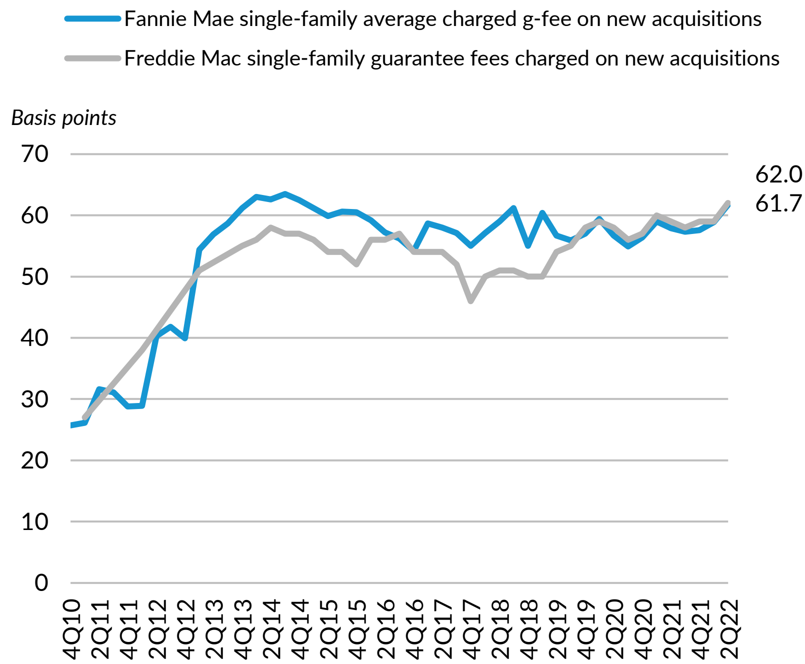
Note: Effective March 2021, Freddie Mac doesn't provide FHLMC/non-FHLMC breakout of agency MBS. The above charts were updated in May 2021 to reflect this.

GSES UNDER CONSERVATORSHIP

EFFECTIVE GUARANTEE FEES

Guarantee Fees Charged on New Acquisitions

Fannie Mae and Freddie Mac's average g-fees charged have largely converged since the first quarter of 2020. Fannie Mae's average g-fees charged on new acquisitions increased from 58.9 bps in Q1 2022 to 61.7 bps in Q2 2022. Freddie's increased from 59.0 bps in Q1 2022 to 62.0 in Q2 2022. The gap between the two g-fees was 0.3 bps in Q2 2022. Today's g-fees are markedly higher than g-fee levels in 2011 and 2012, and have contributed to the GSEs' earnings; the bottom table shows Fannie Mae LLPAs, which are expressed as upfront charges.



Sources: Fannie Mae, Freddie Mae and Urban Institute.
Last updated August 2022.

Fannie Mae Upfront Loan-Level Price Adjustments (LLPAs)

	LTV (%)								
Credit Score	≤60	60.01 – 70	70.01 – 75	75.01 – 80	80.01 – 85	85.01 – 90	90.01 – 95	95.01 – 97	>97
> 740	0.00	0.25	0.25	0.50	0.25	0.25	0.25	0.75	0.75
720 – 739	0.00	0.25	0.50	0.75	0.50	0.50	0.50	1.00	1.00
700 – 719	0.00	0.50	1.00	1.25	1.00	1.00	1.00	1.50	1.50
680 – 699	0.00	0.50	1.25	1.75	1.50	1.25	1.25	1.50	1.50
660 – 679	0.00	1.00	2.25	2.75	2.75	2.25	2.25	2.25	2.25
640 – 659	0.50	1.25	2.75	3.00	3.25	2.75	2.75	2.75	2.75
620 – 639	0.50	1.50	3.00	3.00	3.25	3.25	3.25	3.50	3.50
< 620	0.50	1.50	3.00	3.00	3.25	3.25	3.25	3.75	3.75
Product Feature (Cumulative)									
Investment Property	2.125	2.125	2.125	3.375	4.125	4.125	4.125	4.125	4.125

Sources: Fannie Mae and Urban Institute.
Last updated March of 2021.

GSE RISK-SHARING TRANSACTIONS

Fannie Mae and Freddie Mac have been laying off back-end credit risk through CAS and STACR deals and reinsurance transactions. They have also done front-end transactions with originators and reinsurers and experimented with deep mortgage insurance coverage. Historically, the GSEs have transferred a majority of their credit risk to private markets. Fannie Mae's CAS issuances since inception total $2.09 trillion; Freddie's STACR totals $2.58 trillion. After the COVID-19 induced spread widening in March 2020, and the reproposed capital rules released by FHFA shortly thereafter, Fannie Mae did not issue any deals from Mar 2020 to Sep 2021, while Freddie Mac continued to issue. With the changes in the Capital Rule, now finalized, and the more positive attitude toward CRT at FHFA, Fannie Mae resumed CAS issuance in October 2021.

Fannie Mae – Connecticut Avenue Securities (CAS)

Date	*Transaction*	*Reference Pool Size ($ m)*	*Amount Issued ($m)*	*% of Reference Pool Covered*
2013	CAS 2013 deals	$26,756	$675	2.5
2014	CAS 2014 deals	$227, 234	$5,849	2.6
2015	CAS 2015 deals	$187,126	$5,463	2.9
2016	CAS 2016 deals	$236,459	$7,392	3.1
2017	CAS 2017 deals	$264,697	$8,707	3.3
2018	CAS 2018 deals	$205,900	$7,314	3.6
2019	CAS 2019 deals	$291,400	$8,071	2.8
2020	CAS 2020 deals	$210,000	$3,130	1.5
2021	CAS 2021 deals	$142,202	$3,095	2.2
January 2022	CAS 2022 – R01	$53,747	$1,506	2.8
February 2022	CAS 2022 – R02	$44,278	$1,241	2.8
March 2022	CAS 2022 – R03	$44,382	$1,242	2.8
April 2022	CAS 2022 – R04	$36,440	$1,142	3.1
May 2022	CAS 2022 – R05	$39,341	$952	2.4
June 2022	CAS 2022 – R06	$25,539	$754	3.0
June 2022	CAS 2022 – R07	$31,176	$866	2.8
August 2022	CAS 2022 – R08	$20,733	$626	3.2
Total		**$2,085,410**	**$58,027**	**2.8**

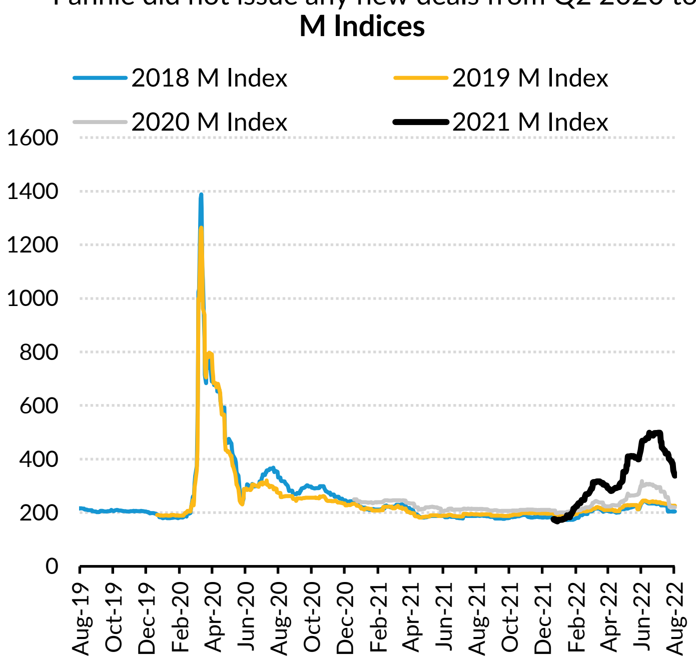
Freddie Mac – Structured Agency Credit Risk (STACR)

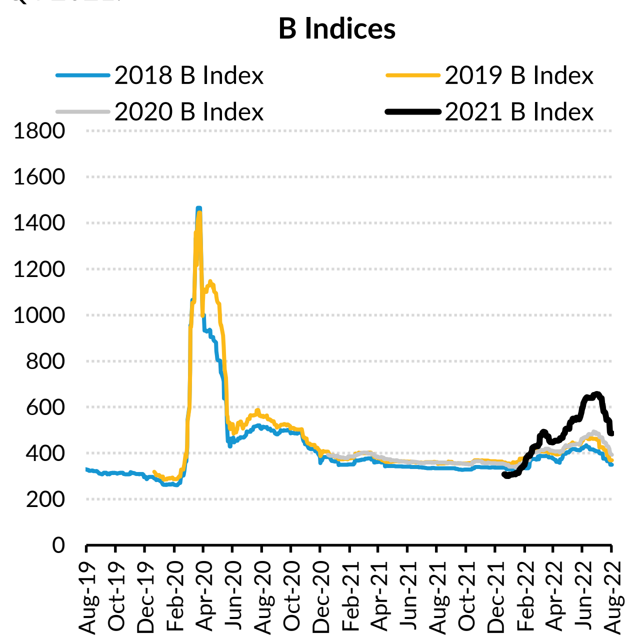
Date	*Transaction*	*Reference Pool Size ($ m)*	*Amount Issued ($m)*	*% of Reference Pool Covered*
2013	STACR 2013 deals	$57,912	$1,130	2.0
2014	STACR 2014 deals	$147,120	$4,916	3.3
2015	STACR 2015 deals	$209,521	$6,658	3.2
2016	STACR 2016 deals	$183,421	$5,541	2.8
2017	STACR 2017 deals	$248, 821	$5,663	2.3
2018	STACR 2018 deals	$216,581	$6,055	2.8
2019	STACR 2019 deals	$271,105	$5,947	2.2
2020	STACR 2020 deals	$403,591	$10,372	2.6
2021	STACR 2021 deals	$574,706	$11,024	1.9
January 2022	STACR Series 2022 – DNA1	$33,573	$1,353	4.0
February 2022	STACR Series 2022 – DNA2	$44,961	$1,919	4.3
March 2022	STACR Series 2022 – HQA1	$45,831	$1,816	4.0
April 2022	STACR Series 2022 – DNA3	$42,886	$1,842	4.3
May 2022	STACR Series 2022 – DNA4	$35,369	$1.519	4.3
June 2022	STACR Series 2022 – DNA5	$33,545	$1,422	4.2
July 2022	STACR Series 2022 – HQA2	$19,741	$627	3.2
August 2022	STACR Series 2022 – HQA3	$15,433	$540	3.5
Total		**$2,584,119**	**$68,344**	**2.6**

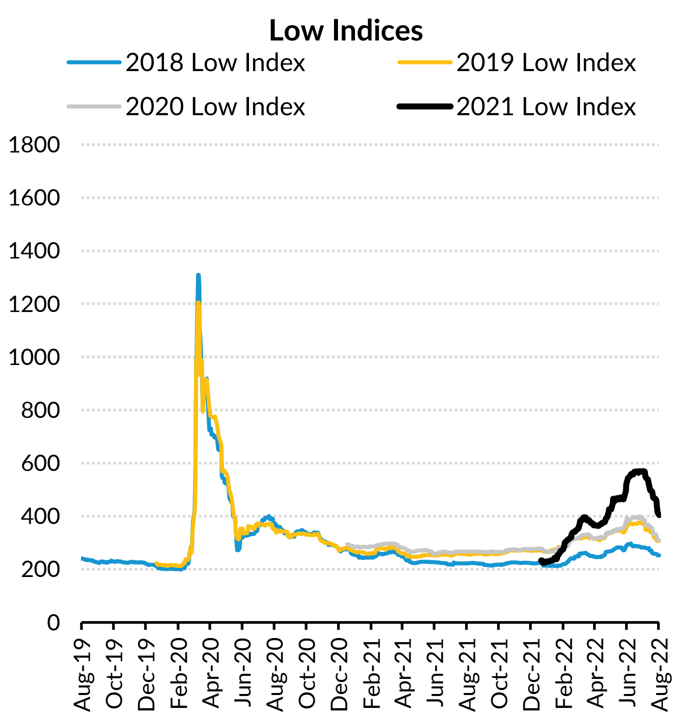
Sources: Fannie Mae, Freddie Mac and Urban Institute. **Note**: Classes A-H, M-1H, M-2H, and B-H are reference tranches only. These classes are not issued or sold. The risk is retained by Fannie Mae and Freddie Mac. "CE" = credit enhancement.

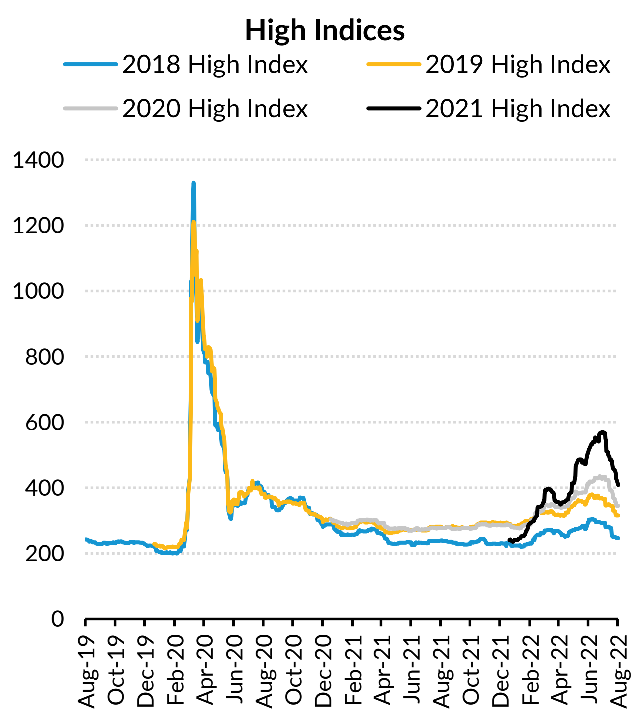
GSE RISK-SHARING INDICES

The figures below show the spreads on 2018, 2019, 2020 and 2021 indices, as priced by dealers. Note the substantial spread widening in March 2020. This reflected expectations of higher defaults and potential credit losses owing to COVID-19, as well as forced selling. Since then, spreads have narrowed significantly. Note the widening from Feb-July 2022 – this reflects slower prepayment expectations and longer exposure to default risk in the face of higher rates. The widening was more pronounced for 2021 indices due to less embedded housing price appreciation. Spreads tightened in August 2022 as investors believed that the extension risk was overblown. 2020 and 2021 indices are heavily Freddie Mac as Fannie did not issue any new deals from Q2 2020 to Q4 2021.







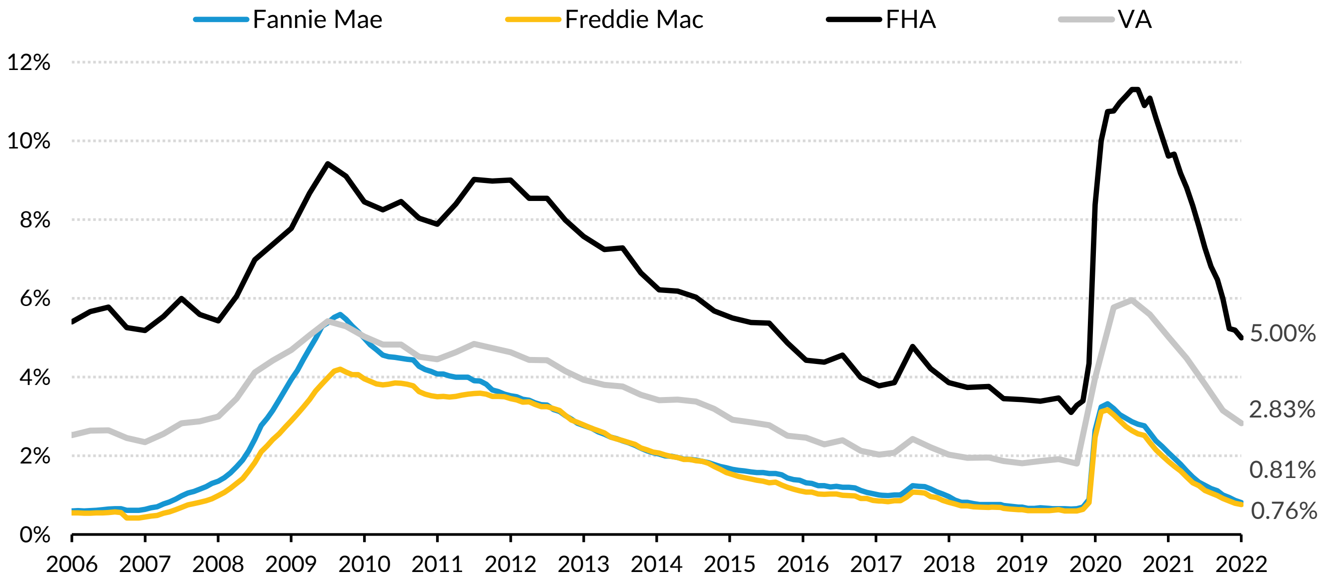


Sources: Vista Data Services and Urban Institute.
Note: Data as of August 15, 2022.

GSES UNDER CONSERVATORSHIP
SERIOUS DELINQUENCY RATES

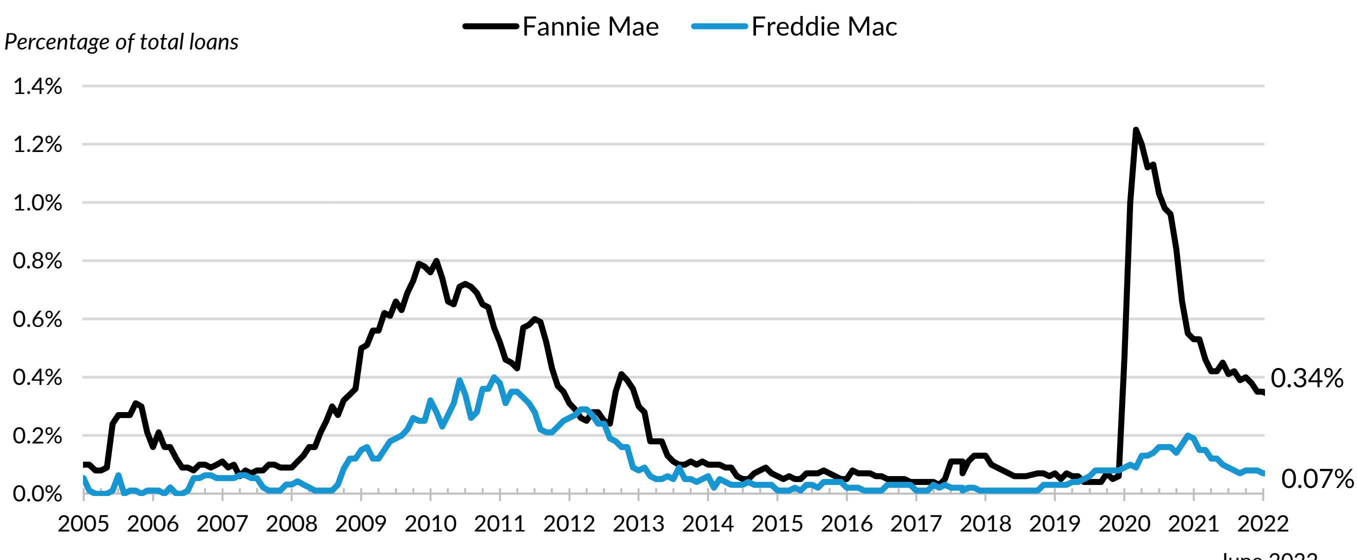
Serious delinquency rates for single-family GSE loans decreased in June 2022, to 0.81 percent for Fannie Mae and 0.76 percent for Freddie Mac. Serious delinquency rates for FHA loans also decreased in June 2022, to 5.00 percent. In Q2 2022, VA serious delinquency rates declined to 2.83 percent. Note that loans that are in forbearance are counted as delinquent for the purpose of measuring delinquency rates. Fannie multifamily delinquencies in May decreased marginally to 0.34 percent, while Freddie multifamily delinquencies remained at 0.07 percent.

Serious Delinquency Rates–Single-Family Loans



Sources: Fannie Mae, Freddie Mac, Federal Housing Administration, MBA Delinquency Survey and Urban Institute.
Note: Serious delinquency is defined as 90 days or more past due or in the foreclosure process. Not seasonally adjusted. VA delinquencies are reported on a quarterly basis, last updated for Q1 2022. GSE and FHA delinquencies are reported monthly, last updated for June 2022.

Serious Delinquency Rates–Multifamily GSE Loans



Sources: Fannie Mae, Freddie Mac and Urban Institute.
Note: Multifamily serious delinquency rate is the unpaid balance of loans 60 days or more past due, divided by the total unpaid balance.

AGENCY GROSS AND NET ISSUANCE

Agency gross issuance was $1,214.6 billion YTD in July 2022, a 44.4 percent decrease from YTD 2021. This reflects a 64.5 percent YTD decline in refinance activity and a 5.3 percent YTD decline in purchase activity. Net issuance (new securities issued less the decline in outstanding securities due to principal pay-downs or prepayments) totaled $301.9 billion in YTD July 2022, a 31.9% percent decrease compared to YTD July 2021.

Agency Gross Issuance

Issuance Year	GSEs	Ginnie Mae	Total
2001	$885.1	$171.5	$1,056.6
2002	$1,238.9	$169.0	$1,407.9
2003	$1,874.9	$213.1	$2,088.0
2004	$872.6	$119.2	$991.9
2005	$894.0	$81.4	$975.3
2006	$853.0	$76.7	$929.7
2007	$1,066.2	$94.9	$1,161.1
2008	$911.4	$267.6	$1,179.0
2009	$1,280.0	$451.3	$1,731.3
2010	$1,003.5	$390.7	$1,394.3
2011	$879.3	$315.3	$1,194.7
2012	$1,288.8	$405.0	$1,693.8
2013	$1,176.6	$393.6	$1,570.1
2014	$650.9	$296.3	$947.2
2015	$845.7	$436.3	$1,282.0
2016	$991.6	$508.2	$1,499.8
2017	$877.3	$455.6	$1,332.9
2018	$795.0	$400.6	$1,195.3
2019	$1,042.6	$508.6	$1,551.2
2020	$2,407.5	$775.4	$3,182.9
2021	$2,650.8	$855.3	$3,506.1
2022	$870.0	$344.6	$1,214.6
2022 % Change Over 2021	-47.5%	-34.4%	-44.4%
2022 Annualized	$1,491.4	$590.9	$2,082.1

Agency Net Issuance

Issuance Year	GSEs	Ginnie Mae	Total
2001	$368.40	-$9.90	$358.50
2002	$357.20	-$51.20	$306.10
2003	$334.90	-$77.60	$257.30
2004	$82.50	-$40.10	$42.40
2005	$174.20	-$42.20	$132.00
2006	$313.60	$0.20	$313.80
2007	$514.90	$30.90	$545.70
2008	$314.80	$196.40	$511.30
2009	$250.60	$257.40	$508.00
2010	-$303.20	$198.30	-$105.00
2011	-$128.40	$149.60	$21.20
2012	-$42.40	$119.10	$76.80
2013	$69.10	$87.90	$157.00
2014	$30.5	$61.6	$92.1
2015	$75.1	$97.3	$172.5
2016	$127.4	$125.8	$253.1
2017	$168.5	$131.3	$299.7
2018	$149.4	$112.0	$261.5
2019	$197.8	$95.7	$293.5
2020	$632.8	$19.9	$652.7
2021	$753.5	$5.6	$759.1
2022	$238.1	$63.8	$301.9
2022 % Change Over 2021	-47.6%	669.3.0%	-31.9%
2022 Annualized	$408.1	$109.3	$517.5

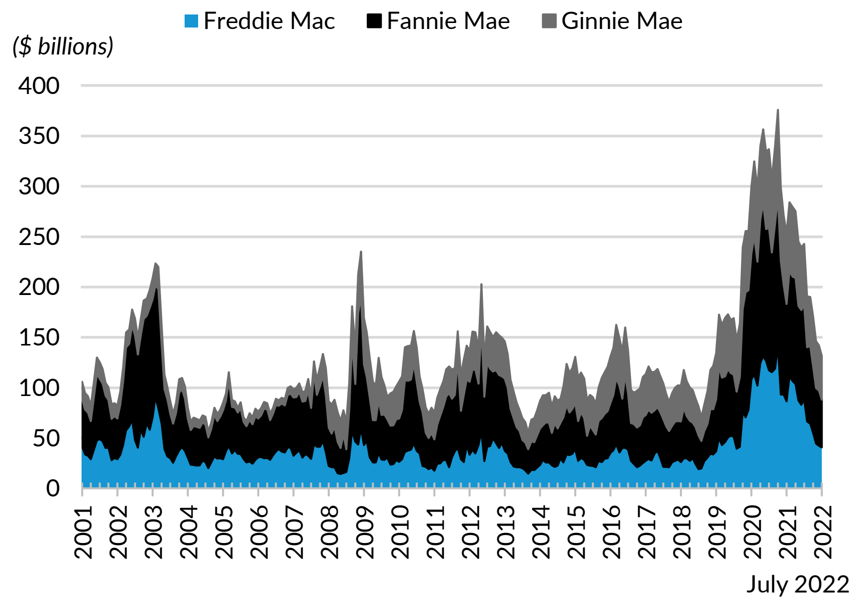
Sources: eMBS and Urban Institute.
Note: Dollar amounts are in billions. Data as of July 2022.

AGENCY ISSUANCE

AGENCY GROSS ISSUANCE & FED PURCHASES

Monthly Gross Issuance

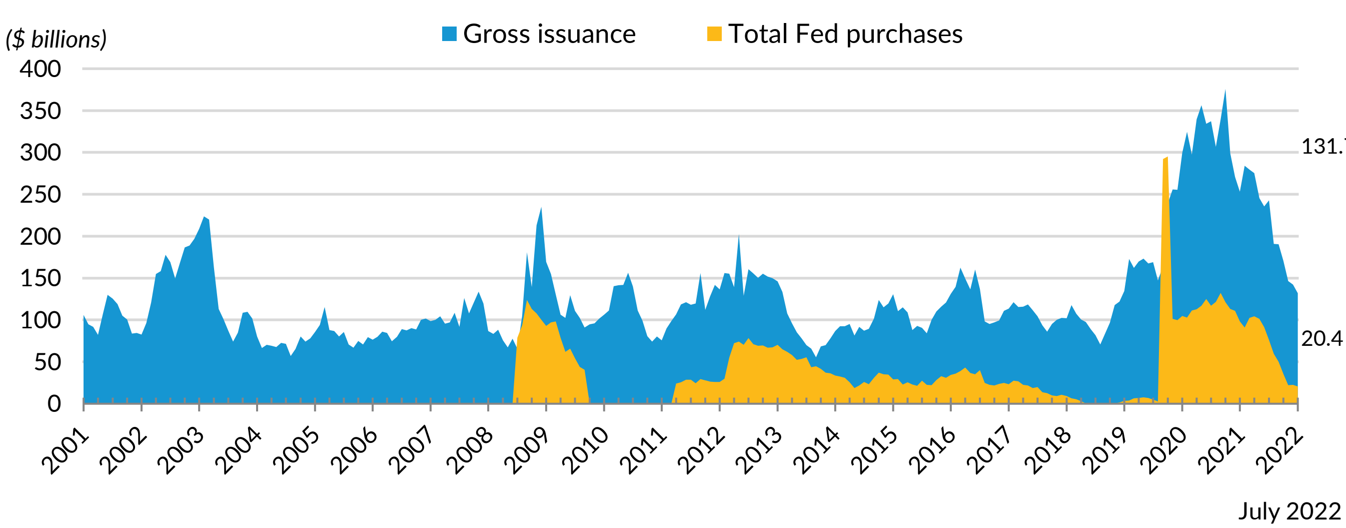
While FHA, VA and GSE lending have dominated the mortgage market since the 2008 housing crisis, there has been a change in the mix. The Ginnie Mae share of new issuances has risen from a pre-crisis level of 10-12 percent to 34.8 percent in February 2020, reflecting gains in both purchase and refinance shares. The Ginnie share then declined to a low of 20.4 percent in November 2020, reflecting the more robust ramp up in GSE refinances relative to Ginnie Mae refinances. As the refi share has waned, the Ginnie share has risen to 33.2 percent in July 2022.



Source: eMBS and Urban Institute Calculations

Fed Absorption of Agency Gross Issuance

Agency MBS on Fed balance sheet totaled $2.73 trillion in July 2022 and July purchases totaled $20.4 billion, representing 15.5 percent of monthly gross issuance. The Fed is slowly running of their portfolio. Beginning in June 2022, the Fed allowed up to $17.5 billion to run off each month; the cap on runoffs will increase to $35 billion per month in September 2022. The Federal Reserve's portfolio was a critical policy tool during the pandemic. In March of 2020, the Fed announced they would buy mortgages in an amount necessary to support smooth functioning markets; March and April of 2020 were the largest two months of mortgage purchases ever. Once the market stabilized, the Fed began to purchase $40 billion net of MBS each month; this buying plus runoff replacements equated to purchases of $100 to $125 billion per month. In November 2021, the Fed began to reduce purchases, with these purchases ending in March 2022.

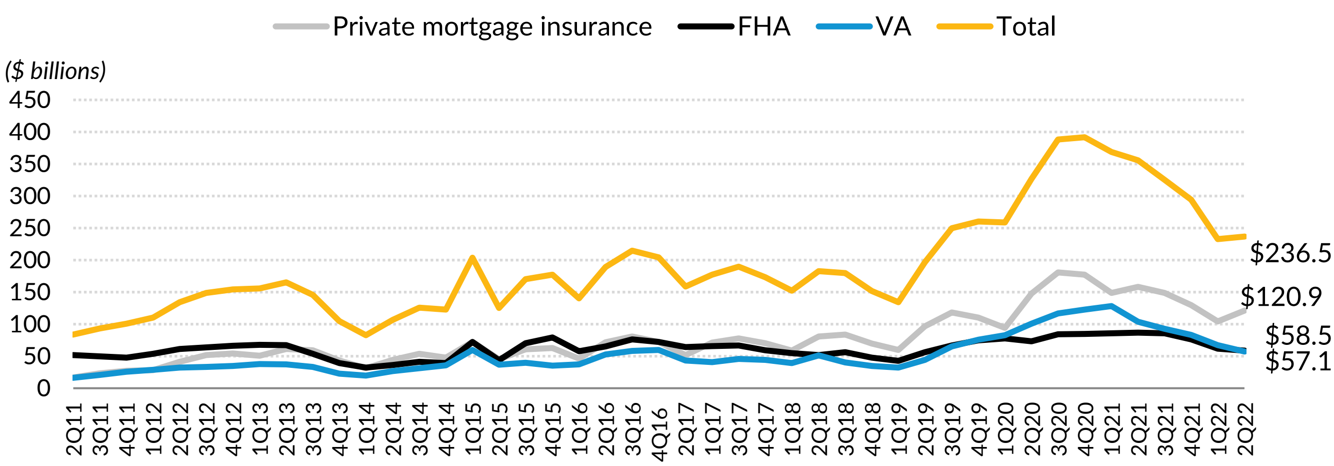


Sources: eMBS, Federal Reserve Bank of New York and Urban Institute.

MORTGAGE INSURANCE ACTIVITY

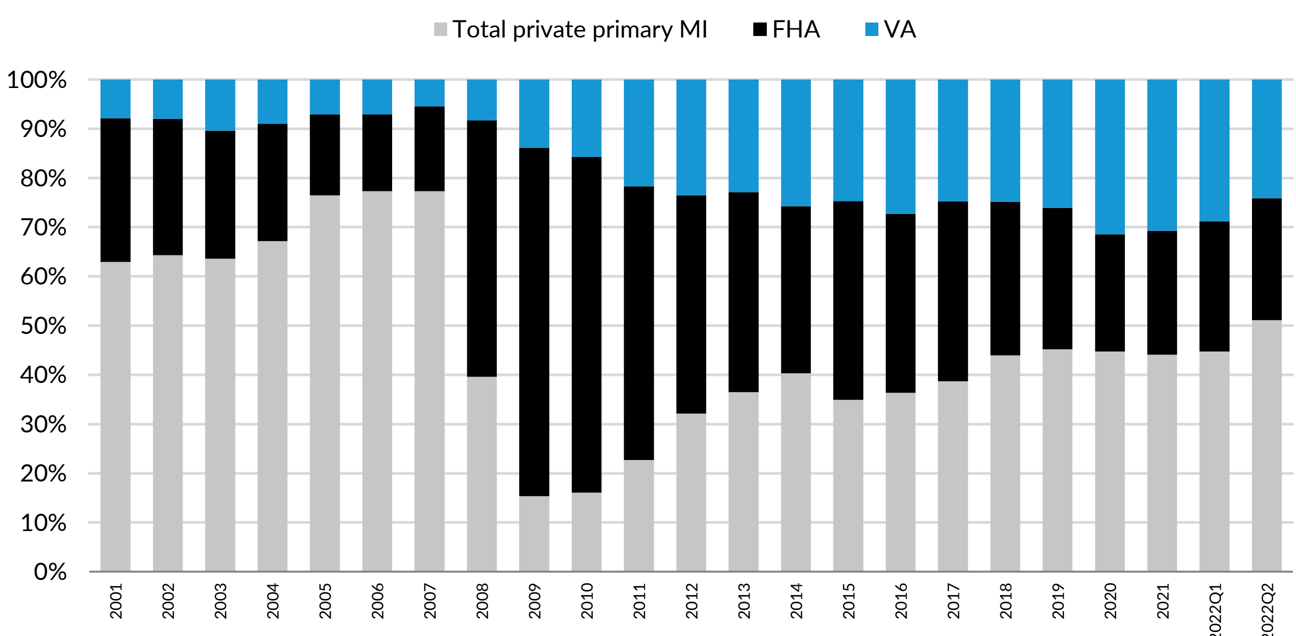
MI Activity

In the second quarter of 2022, private mortgage insurance written decreased by $37.2 billion, FHA decreased by $28.4 billion, and VA decreased by $46.7 billion relative to Q2 2021. Over the same period (i.e. from Q2 2021 to Q2 2022), the private mortgage insurers share increased from 45.3 to 51.1 percent, FHA's share slightly decreased from 24.9 to 24.7 percent, and VA's share decreased from 29.8 to 24.2 percent.



Sources: Inside Mortgage Finance and Urban Institute. *Last updated August 2022.*

MI Market Share



Sources: Inside Mortgage Finance and Urban Institute. *Last updated August 2022.*

MORTGAGE INSURANCE ACTIVITY

FHA premiums rose significantly in the years following the housing crash, with annual premiums rising from 50 to 135 basis points between 2008 to 2013 as FHA worked to shore up its finances. In January 2015, President Obama announced a 50 bps cut in annual insurance premiums, making FHA mortgages more attractive than GSE mortgages for the overwhelming majority of borrowers putting down less than 5%. The April 2016 reduction in PMI rates for borrowers with higher FICO scores and April 2018 reduction for lower FICO borrowers has partially offset that. As shown in the bottom table, a borrower putting 3.5 percent down with a FICO of less than 720 will find FHA financing to be more financially attractive, borrowers with FICOs of 720 and above will find GSE execution with PMI to be more attractive.

FHA MI Premiums for Typical Purchase Loan

Case number date	Upfront mortgage insurance premium (UFMIP) paid	Annual mortgage insurance premium (MIP)
1/1/2001 - 7/13/2008	150	50
7/14/2008 - 4/5/2010*	175	55
4/5/2010 - 10/3/2010	225	55
10/4/2010 - 4/17/2011	100	90
4/18/2011 - 4/8/2012	100	115
4/9/2012 - 6/10/2012	175	125
6/11/2012 - 3/31/2013[a]	175	125
4/1/2013 – 1/25/2015[b]	175	135
Beginning 1/26/2015[c]	175	85

Sources: Ginnie Mae and Urban Institute.
Note: A typical purchase loan has an LTV over 95 and a loan term longer than 15 years. Mortgage insurance premiums are listed in basis points.
* For a short period in 2008 the FHA used a risk based FICO/LTV matrix for MI.
[a] Applies to purchase loans less than or equal to $625,500. Those over that amount have an annual premium of 150 bps.
[b] Applies to purchase loans less than or equal to $625,500. Those over that amount have an annual premium of 155 bps.
[c] Applies to purchase loans less than or equal to $625,500. Those over that amount have an annual premium of 105 bps.

Initial Monthly Payment Comparison: FHA vs. PMI

Assumptions	
Property Value	$250,000
Loan Amount	$241,250
LTV	96.5
Base Rate	
Conforming	5.43
FHA	5.13

FICO	620 - 639	640 - 659	660 - 679	680 - 699	700 - 719	720 - 739	740 - 759	760 +
FHA MI Premiums								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PMI								
GSE LLPA*	3.50	2.75	2.25	1.50	1.50	1.00	0.75	0.75
PMI Annual MIP	1.86	1.65	1.54	1.21	0.99	0.87	0.70	0.58
Monthly Payment								
FHA	$1,554	$1,554	$1,554	$1,554	$1,554	$1,554	$1,554	$1,554
PMI	$1,794	$1,729	$1,692	$1,602	$1,558	$1,519	$1,477	$1,453
PMI Advantage	-$240	-$175	-$138	-$49	-$4	$35	$76	$101

Sources: Enact Mortgage Insurance, Ginnie Mae, and Urban Institute. FHA rate from MBA Weekly Applications Survey. Conforming rate from Freddie Mac Primary Mortgage Market Survey.
Note: Rates as of August 18, 2022.
Mortgage insurance premiums listed in percentage points. Grey shade indicates FHA monthly payment is more favorable, while blue indicates PMI is more favorable. The PMI monthly payment calculation does not include special programs like Fannie Mae's HomeReady and Freddie Mac's Home Possible (HP), both offer more favorable rates for low- to moderate-income borrowers.
LLPA= Loan Level Price Adjustment, described in detail on page 25.

FANNIE MAE COMPOSITION

Since 2008, the composition of loans purchased by Fannie Mae has shifted towards borrowers with higher FICO scores. For example, 62.9 percent of loans originated from 2018 to Q1 2022 were for borrowers with FICO scores above 750, compared to 44.3 percent of borrowers from 2005-2008 and 36.7 percent from 1999-2004.

Balance on 30-year, Fixed-rate, Full-doc, Amortizing Loans

Origination Year	Origination FICO	LTV				Total
		≤70	70 to 80	80 to 90	>90	
1999-2004	≤700	9.3%	15.0%	4.5%	4.5%	33.3%
	700 to 750	9.2%	14.2%	3.4%	3.2%	30.0%
	>750	15.6%	16.1%	2.7%	2.3%	36.7%
	Total	34.1%	45.3%	10.7%	10.0%	100.0%
2005-2008	≤700	10.6%	13.0%	3.7%	2.4%	29.7%
	700 to 750	8.5%	12.7%	3.0%	1.8%	26.0%
	>750	17.0%	21.5%	3.6%	2.2%	44.3%
	Total	36.1%	47.2%	10.3%	6.4%	100.0%
2009-2010	≤700	3.6%	2.9%	0.3%	0.2%	6.9%
	700 to 750	8.2%	10.8%	1.7%	0.8%	21.5%
	>750	32.4%	33.5%	4.0%	1.7%	71.6%
	Total	44.1%	47.2%	6.0%	2.7%	100.0%
2011-2017	≤700	3.5%	5.0%	1.3%	2.1%	12.0%
	700 to 750	5.6%	10.0%	3.2%	5.0%	23.8%
	>750	20.1%	28.0%	7.4%	8.8%	64.2%
	Total	29.2%	42.9%	12.0%	15.9%	100.0%
2018-1Q22	≤700	4.2%	3.9%	1.4%	2.3%	11.7%
	700 to 750	6.8%	8.9%	3.6%	6.1%	25.4%
	>750	23.7%	22.5%	7.4%	9.3%	62.9%
	Total	34.7%	35.2%	12.4%	17.7%	100.0%
Total		34.0%	41.3%	11.2%	13.5%	100.0%

Sources: Fannie Mae and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q1 2022. The percentages are weighted by origination balance. The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

FANNIE MAE DEFAULT RATE

While the composition of Fannie Mae loans originated from 2005-2008 were similar to that of 2004 and earlier vintage years, 2005-2008 loans experienced a much higher default rate due to the sharp drop in home values in the Great Recession. Post-2009 originations have pristine credit characteristics and a more favorable home price environment, contributing to very low default rates. Even so, delinquencies on new origination, which jumped in 2020 and 2021 due to COVID-19, have declined meaningfully.

Default Rate on 30-year, Fixed-rate, Full-doc, Amortizing Loans

Origination Year	Origination FICO	LTV				Total
		≤70	70 to 80	80 to 90	>90	
1999-2004	≤700	4.0%	4.8%	6.3%	7.3%	5.1%
	700 to 750	1.3%	2.0%	3.0%	3.1%	2.0%
	>750	0.5%	0.9%	1.6%	1.8%	0.8%
	Total	1.6%	2.5%	4.0%	4.7%	2.6%
2005-2008	≤700	17.5%	21.4%	27.0%	27.4%	21.2%
	700 to 750	7.3%	11.4%	15.6%	15.2%	10.8%
	>750	2.2%	4.5%	8.1%	8.7%	4.2%
	Total	7.9%	11.0%	17.1%	17.5%	11.0%
2009-2011	≤700	5.2%	6.7%	6.1%	7.4%	5.9%
	700 to 750	1.5%	2.7%	3.1%	3.7%	2.3%
	>750	0.4%	0.8%	1.3%	1.7%	0.7%
	Total	1.0%	1.6%	2.0%	2.7%	1.4%
2011-2017	≤700	5.0%	5.6%	6.5%	8.6%	6.1%
	700 to 750	2.3%	2.6%	2.9%	3.8%	2.8%
	>750	0.8%	0.9%	1.1%	1.6%	1.0%
	Total	1.6%	1.8%	2.2%	3.2%	2.0%
2018-1Q22	≤700	2.7%	3.7%	4.5%	6.5%	4.0%
	700 to 750	1.2%	1.8%	2.3%	3.2%	2.0%
	>750	0.4%	0.6%	0.9%	1.4%	0.7%
	Total	0.8%	1.2%	1.7%	2.6%	1.4%
Total		1.9%	2.8%	3.6%	3.8%	2.7%

Sources: Fannie Mae and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q1 2022, with performance information on these loans also through Q1 2022. Default is defined as more than six months delinquent or disposed of via short sales, third-party sales, deeds-in-lieu of foreclosure, or real estate owned (REO acquisitions). The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

FREDDIE MAC COMPOSITION

Since 2008, the composition of loans purchased by Freddie Mac has shifted towards borrowers with higher FICO scores. For example, 59.5 percent of loans originated from 2018 to Q4 2021 were for borrowers with FICO scores above 750, compared to 42.0 percent of borrowers from 2005-2008 and 34.2 percent from 1999-2004.

Balance on 30-year, Fixed-rate, Full-doc, Amortizing Loans

Origination Year	Origination FICO	LTV				Total
		≤70	70 to 80	80 to 90	>90	
1999-2004	≤700	8.7%	16.7%	4.5%	4.5%	34.3%
	700 to 750	9.9%	16.1%	2.8%	2.6%	31.5%
	>750	15.1%	15.7%	1.9%	1.5%	34.2%
	Total	33.7%	48.5%	9.2%	8.5%	100.0%
2005-2008	≤700	9.5%	14.0%	3.3%	3.1%	29.9%
	700 to 750	9.0%	14.5%	2.5%	2.0%	28.1%
	>750	17.6%	19.8%	2.7%	1.9%	42.0%
	Total	36.1%	48.3%	8.5%	7.1%	100.0%
2009-2010	≤700	3.8%	3.2%	0.3%	0.2%	7.6%
	700 to 750	9.3%	11.8%	1.7%	0.9%	23.7%
	>750	32.8%	31.0%	3.6%	1.4%	68.8%
	Total	46.0%	46.0%	5.5%	2.5%	100.0%
2011-2017	≤700	3.9%	5.0%	1.5%	2.0%	12.4%
	700 to 750	6.9%	12.2%	3.6%	5.3%	28.0%
	>750	18.5%	26.8%	6.6%	7.7%	59.6%
	Total	29.3%	44.0%	11.6%	15.1%	100.0%
2018-4Q21	≤700	5.0%	4.0%	1.5%	1.9%	12.4%
	700 to 750	8.1%	10.1%	4.1%	5.7%	28.0%
	>750	21.0%	22.4%	7.7%	8.4%	59.5%
	Total	34.1%	36.5%	13.4%	16.0%	100.0%
Total		34.1%	42.6%	11.0%	12.3%	100.0%

Sources: Freddie Mac and Urban Institute.
Note: Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2021. The percentages are weighted by origination balance. The analysis included only mortgages with original terms of 241-420 months.

FREDDIE MAC DEFAULT RATE

While the composition of Freddie Mac loans originated from 2005-2008 were similar to that of 2004 and earlier vintage years, 2005-2008 loans experienced a much higher default rate due to the sharp drop in home values in the recession. 2009 and later originations have pristine credit characteristics and a more favorable home price environment, contributing to very low default rates. Even so, delinquencies on new origination, which jumped in 2020 and 2021 due to COVID-19, have declined meaningfully.

Default Rate on 30-year, Fixed-rate, Full-doc, Amortizing Loans

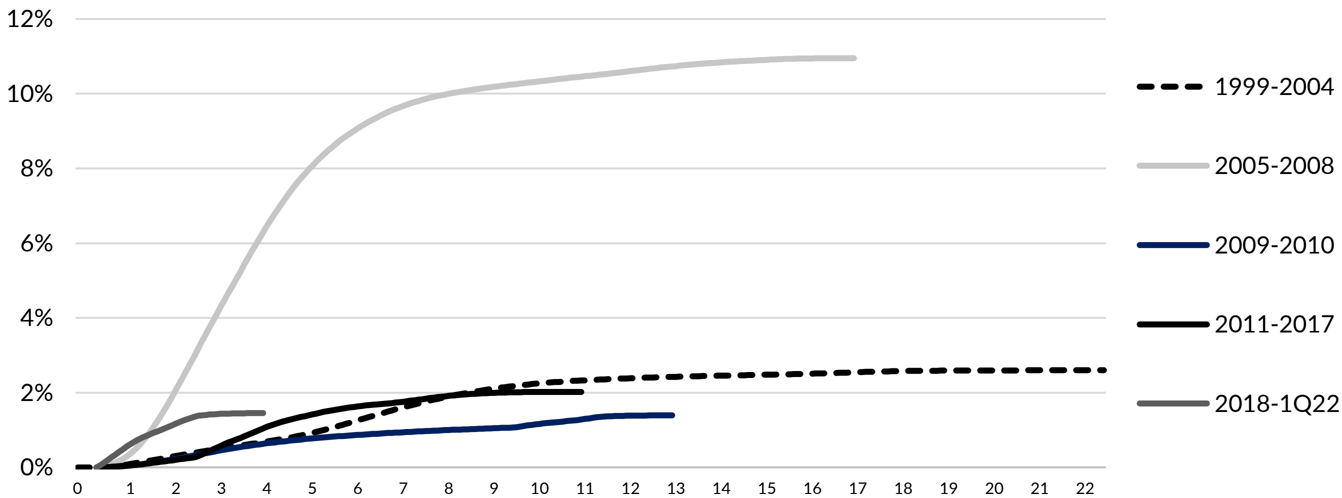
Origination Year	Origination FICO	LTV				Total
		≤70	70 to 80	80 to 90	>90	
1999-2004	≤700	3.4%	4.6%	7.0%	7.4%	5.0%
	700 to 750	1.2%	1.9%	3.1%	3.2%	1.9%
	>750	0.4%	0.9%	1.7%	2.1%	0.8%
	Total	1.4%	2.5%	4.7%	5.2%	2.6%
2005-2008	≤700	15.5%	20.5%	25.5%	27.7%	20.2%
	700 to 750	6.8%	11.4%	15.4%	15.6%	10.6%
	>750	2.2%	5.1%	8.1%	9.3%	4.3%
	Total	6.9%	11.5%	17.1%	19.2%	10.8%
2009-2011	≤700	4.7%	6.5%	6.3%	6.6%	5.5%
	700 to 750	1.4%	2.6%	2.8%	3.4%	2.2%
	>750	0.4%	0.9%	1.3%	1.5%	0.7%
	Total	0.9%	1.7%	2.0%	2.7%	1.4%
2011-2017	≤700	4.8%	5.1%	6.0%	7.2%	5.5%
	700 to 750	2.4%	2.5%	2.9%	3.7%	2.8%
	>750	0.9%	1.0%	1.3%	1.7%	1.1%
	Total	1.8%	1.9%	2.4%	3.2%	2.1%
2018-4Q21	≤700	1.8%	2.8%	3.6%	4.9%	2.8%
	700 to 750	0.9%	1.4%	1.8%	2.6%	1.6%
	>750	0.3%	0.6%	0.7%	1.2%	0.6%
	Total	0.7%	1.1%	1.4%	2.1%	1.1%
Total		1.9%	3.1%	3.6%	4.0%	2.8%

Sources: Freddie Mae and Urban Institute.
Note: Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2021, with performance information on these bans through Q4 2021. Default is defined as six months delinquent or disposed of via short sales, third-party sales, deeds-in-lieu of foreclosure, or real estate owned (REO acquisitions). The analysis included only mortgages with original terms of 241-420 months.

DEFAULT RATE BY VINTAGE

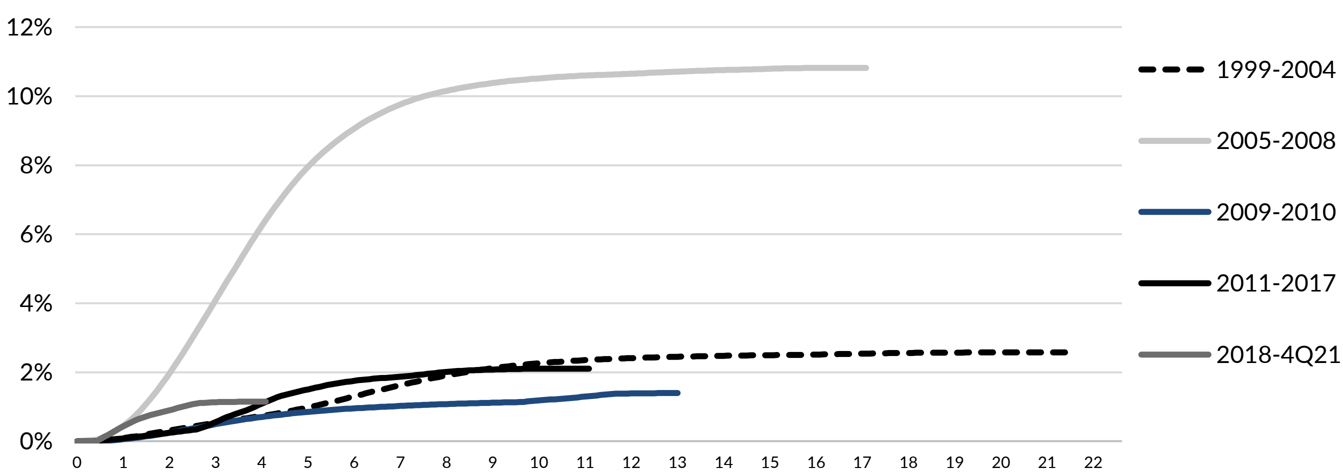
As a result of pristine books of business and a strong housing market, the effect of COVID-19 on GSE delinquencies is a fraction of what it was in the Great Financial Crisis. These charts show cumulative D180 (default) rates as of the end of Q1 2022 for Fannie and Q4 2021 for Freddie. For Fannie Mae and Freddie Mac's 1999-2004 vintages, cumulative defaults total around 2.6 percent, while cumulative defaults for the 2005-2008 vintages are around 10.8 percent for Freddie originations and 11.0 percent for Fannie originations. While the D180+ rate for the 2018 and later originations are running above 1999-2003 levels, most of these loans are either in or exiting COVID-19 forbearance. Given the array of options available for borrowers existing forbearance, we expect relatively few of these D180+ borrowers will land in foreclosure.

Fannie Mae Cumulative Default Rate by Vintage Year



Sources: Fannie Mae and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months. A default is defined as a delinquency of 180 days or more, a deed-in-lieu, short sale, foreclosure sale or REO sale.

Freddie Mac Cumulative Default Rate by Vintage Year



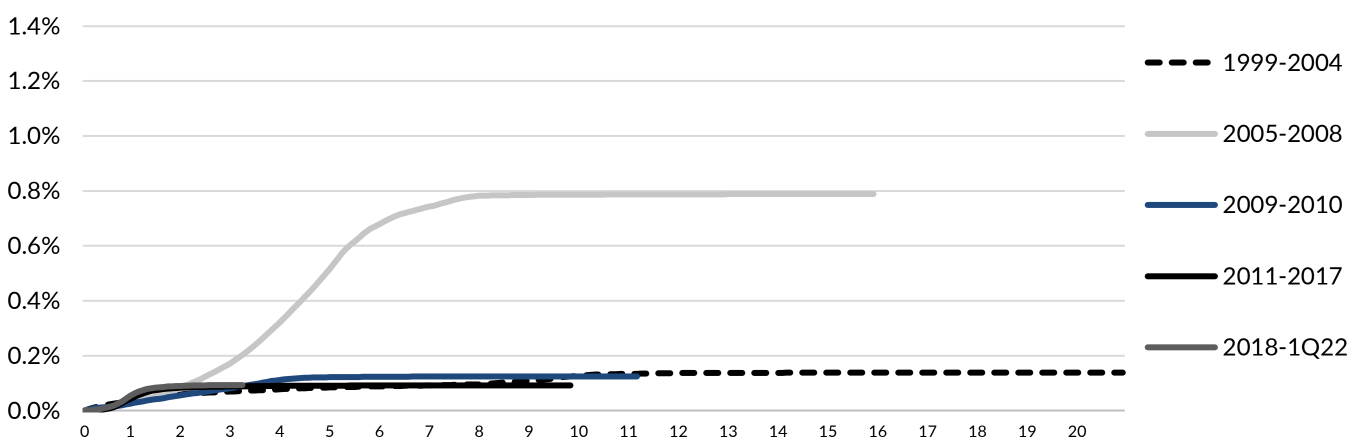
Sources: Freddie Mac and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months. A default is defined as a delinquency of 180 days or more, a deed-in-lieu, short sale, foreclosure sale or REO sale.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

REPURCHASE RATE BY VINTAGE

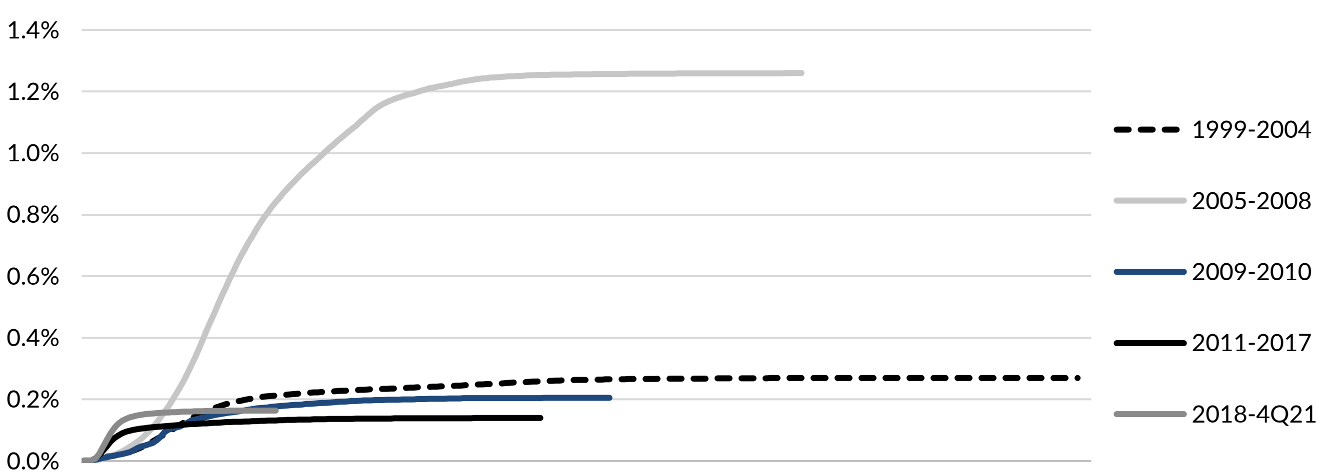
These figures show the cumulative percentage of fixed-rate, full documentation, amortizing 30-year loans of a given vintage that Fannie and Freddie have put back to lenders due to reps and warrants violations. Bubble era vintages were significantly more likely to be put back than either pre- or post-bubble vintages. Note that put-backs are generally quite small, with the exception of the 2005-2008 vintages. These numbers exclude loans put back through global settlements, which are not done at the loan level. Moreover, lenders' attitudes are formed by the total share of put-backs on their books. The database used in this analysis, while very characteristic of new production, excludes many loans that are likely to be put back, including limited documentation loans, non-traditional products (such as interest-only loans), and loans with pool insurance policies.

Fannie Mae Repurchase Rate by Vintage Year



Sources: Fannie Mae and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months.

Freddie Mac Repurchase Rate by Vintage Year



Sources: Freddie Mac and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months.

LOSS SEVERITY

Both Fannie Mae and Freddie Mac's credit data include the status of loans after they experience a credit event (default). A credit event is defined as a delinquency of 180 days or more, a deed-in-lieu, short sale, foreclosure sale or REO sale. We look at each loan that has experienced a credit event and categorize it based on present status—for Fannie Mae loans (top table) 16.16 percent are current, 21.96 percent are prepaid, 11.04 percent are still in the pipeline (not current, not prepaid, not liquidated) and 50.84 percent have already liquidated (deed-in-lieu, short sale, foreclosure sale, REO sale). Freddie Mac's results (bottom table) are very similar. The right side of both tables shows the severity of all loans that have liquidated, broken down by LTV buckets: total Fannie and Freddie severities are around 35-36 percent.

Fannie Mae - Liquidation Rates and Severities for D180+ loans

Origination Year	Paths for D180+ Loans (% of total count)				Severity for Already Liquidated Loans			
	Paths With No Eventual Loss		Paths With Eventual Loss					
	Current	Prepay	Still in the Pipeline	% Already Liquidated Loans	<=60	60-80	>80	Total
1999-2004	7.05%	25.16%	3.09%	64.69%	21.6%	35.8%	23.8%	30.2%
2005-2008	6.54%	16.37%	2.65%	74.45%	30.9%	43.8%	31.2%	39.3%
2009-2010	16.93%	25.69%	10.56%	46.82%	20.1%	31.8%	17.7%	27.9%
2011-2017	36.87%	27.03%	26.00%	10.11%	6.8%	17.7%	7.9%	12.2%
2018-1Q22	38.79%	24.44%	35.58%	1.19%	1.9%	4.7%	3.5%	3.7%
Total	16.16%	21.96%	11.04%	50.84%	27.4%	40.7%	27.2%	35.5%

Freddie Mac - Liquidation Rates and Severities for D180+ loans

Origination Year	Paths for D180+ Loans (% of total count)				Severity for Already Liquidated Loans			
	Paths With No Eventual Loss		Paths With Eventual Loss					
	Current	Prepay	Still In The Pipeline	% Already Liquidated Loans	<=60	60-80	>80	Total
1999-2004	4.91%	23.77%	3.07%	68.26%	22.1%	34.8%	26.0%	30.9%
2005-2008	4.41%	13.73%	2.45%	79.42%	30.0%	43.0%	31.8%	39.2%
2009-2010	12.50%	20.91%	8.07%	58.53%	17.1%	29.7%	25.9%	27.0%
2011-2017	30.94%	23.25%	21.38%	24.43%	6.0%	16.0%	21.0%	19.3%
2018-4Q21	39.20%	23.94%	35.95%	0.91%	4.4%	11.1%	6.8%	8.1%
Total	13.29%	19.15%	9.63%	57.93%	26.2%	40.1%	27.9%	35.0%

Sources: Fannie Mae, Freddie Mac, and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q2 2022, with performance information on these loans also through Q1 2022. Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2021, with performance information on these loans through Q4 2021. The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

LOSS SEVERITY BY CHANNEL

The table below shows the severity of Fannie and Freddie loans that have liquidated, broken down by liquidation channel and vintage year. Foreclosure alternatives, including short sales, note sales, and third party sales have higher defaulted unpaid principal balance (UPB) and much lower loss severities than REO sales. For example, for all Fannie Mae originations, foreclosure alternatives had a mean defaulted UPB of $177,901 and a loss severity of 21.7% percent, versus a mean defaulted UPB of $145,599 and a loss severity of 47.0 percent for REO sales.

Fannie Mae - Loss Severity for Already Liquidated Loans

Origination Year	Number of Loans			Mean defaulted UPB ($)			Severity		
	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives
1999-2004	235,566	157,102	78,464	111,531	105,650	123,307	30.25%	39.01%	15.22%
2005-2008	389,520	219,878	169,642	185,732	172,714	202,604	39.30%	52.19%	25.05%
2009-2010	26,988	14,471	12,517	172,412	162,932	183,371	27.94%	39.19%	16.39%
2011-2017	23,032	10,493	12,539	164,120	150,445	175,564	12.18%	20.03%	6.55%
2018-1Q22	1,889	632	1,257	202,095	165,084	220,704	3.72%	6.25%	2.77%
Total	676,995	402,576	274,419	158,693	145,599	177,901	35.51%	46.99%	21.74%

Freddie Mac - Loss Severity for Already Liquidated Loans

Origination Year	Number of Loans			Mean defaulted UPB ($)			Severity		
	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives
1999-2004	169,507	94,680	74,827	112,481	105,691	121,074	30.93%	41.76%	18.97%
2005-2008	390,893	170,222	220,671	182,265	164,222	196,183	39.15%	54.42%	29.30%
2009-2010	44,414	15,249	29,165	191,480	172,283	201,518	26.99%	43.12%	19.78%
2011-2017	52,429	13,145	39,284	176,145	152,297	184,124	19.33%	36.40%	14.61%
2018-4Q21	953	228	725	189,421	153,231	200,802	8.09%	13.63%	6.77%
Total	658,196	293,524	364,672	164,438	145,218	179,908	35.01%	49.87%	25.35%

Sources: Fannie Mae, Freddie Mac and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q1 2022. Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2021, with performance information on these loans through Q4 2021. The analysis included only mortgages with original terms of 241-420 months. Because the 2018 and later liquidated loan counts are a small sample, results may not be representative.

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