

The Government-Sponsored Enterprises: Past and Future

BY RONEL ELUL

In September 2008, facing mounting losses and difficulty in rolling over their debt, Fannie Mae and Freddie Mac, also known as the government-sponsored enterprises, or GSEs, agreed to enter government conservatorship and have operated under government control ever since.

Their losses through 2012 have been estimated at \$300 billion. The role of the GSEs in the housing bubble and ensuing financial crisis has been a source of controversy. Did the GSEs precipitate the crisis? Or perhaps they merely amplified it? Can we quantify some of the benefits of the GSEs in more normal times and compare them with the losses during the crisis? Should the GSEs be phased out? Short of that, how should they be reformed?

To answer these questions, we present a brief history of the GSEs, summarize the benefits they provide to the housing market, and discuss how they lost market share during the boom and then recaptured it during the bust, leading to large losses. Finally, we discuss the advantages and disadvantages of the proposals that have been advanced to reform the GSEs.

A BRIEF HISTORY OF THE GSEs

To understand the role of the GSEs in the housing market, it is first helpful to understand that there are several steps involved when a homeowner takes out a mortgage to purchase a home or refinance an existing mortgage. First, a financial institution *originates* or issues the mortgage to a borrower and then either retains

the loan as an asset on its own books or sells it to another investor.¹ Loans that are sold are often bundled into mortgage-backed securities (MBS).² As part of this securitization process, the payments on the mortgages underlying these MBS may be guaranteed to encourage investors to purchase them.

¹ One incentive a lender may have to sell a loan is to conserve regulatory capital. Another reason may be to avoid the risk of holding a large portfolio of mortgage loans. See my 2005 *Business Review* article, "The Economics of Asset Securitization," for further detail.

² MBS are created by bundling or pooling many mortgages into securities that are sold to investors, who then have a claim on the cash flow from the principal and interest payments homeowners make on the underlying mortgages. These MBS are often further subdivided into securities known as *tranches*, based on priority in case of default or with respect to the allocation of principal and interest payments.

The Federal National Mortgage Association (Fannie Mae) was set up in the Great Depression as a government agency dedicated to purchasing Federal Housing Administration-insured loans from banks so that they could make more loans.³ Initially, Fannie Mae borrowed money to purchase mortgages guaranteed by the FHA and then held those mortgages on its own books. In 1958, Fannie Mae became a mixed-ownership corporation, with the federal government holding the preferred stock while private investors held the common stock. In 1968, Fannie Mae's role of purchasing FHA-insured loans was spun off into a new federal agency, the Government National Mortgage Association (Ginnie Mae), within the Department of Housing and Urban Development. By 1970, Fannie Mae had become fully privately owned and became able to buy loans issued by private lenders — that is, those not guaranteed by the government. Also in 1970, the Federal Home Loan Mortgage Corporation (Freddie Mac) was set up with a similar charter: to buy mortgages from savings and loans and banks and thereby expand the secondary mortgage market.

That same year, Ginnie Mae issued the first mortgage-backed security; underlying it were loans guaranteed by the FHA. Freddie Mac issued

³ The Federal Housing Administration (FHA), a government agency set up during the Great Depression, facilitates homeownership by guaranteeing mortgages made by the private sector. It played an important role in the adoption of long-term amortizing fixed-rate mortgages. Today, FHA insurance helps borrowers who have relatively small down payments or relatively weak credit histories qualify for mortgages.



Ronel Elul is a senior economic advisor and economist at the Federal Reserve Bank of Philadelphia. The views expressed in this article are not necessarily those of the Federal Reserve. This article and other Philadelphia Fed research and reports are available at www.philadelphiafed.org/research-and-data/publications.

its own MBS in 1971, while Fannie Mae did not begin issuing MBS until 1983. Since the loans they securitized were not FHA-insured, the GSEs themselves guaranteed the timely payment of interest and principal on these loans. Of course, in assessing the strength of this guarantee, investors in these MBS took into account the support they perceived that the GSEs would receive from the government. The securitization of mortgages not guaranteed by either the FHA or GSEs began in the early 1990s, although as we discuss below this market remained small until around 2003. Today about two-thirds of all U.S. mortgages outstanding are securitized, with almost all securitization now conducted through the GSEs or FHA.

The GSEs increased their market share until 2003, by which time they were guaranteeing nearly 50 percent of all new mortgages. From 2003 to 2006, they lost market share (see Figure 1), particularly to the rapidly growing private mortgage-backed securitization

sector, which attracted borrowers by offering them riskier loans and then bundling them into MBS. Many of these private securitizations included either subprime mortgages, made to borrowers with poor credit histories, or alt-A mortgages, made to borrowers with better credit histories but who posed other risks such as a lack of income documentation or an interest-only loan in which no principal payments needed to be made. By 2006, the GSEs' share had fallen to only 27 percent of all mortgage originations. Then the collapse of the housing market in 2007 was associated with a dramatic contraction in private securitization, and the GSEs regained their share of the market, in part by buying and guaranteeing riskier loans to resell in their MBS, as we will show. In September 2008, their losses mounting, they entered government conservatorship. With the private securitization market still essentially dormant, the GSEs continue to play a large role in housing markets, guaranteeing over 60 percent of new mortgages.

THE GSEs' IMPACT ON HOUSING MARKETS

A central motivation behind setting up the GSEs was to facilitate homeownership, particularly for low-income households. Underlying this goal is a belief that society benefits when more people own their homes.⁴

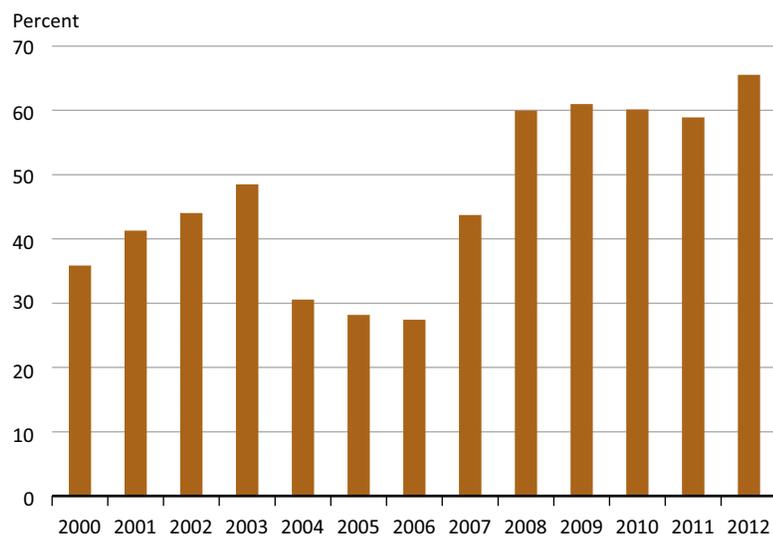
This goal explains both the preferential treatment the GSEs received — mainly implicit government support, which lowered their cost of borrowing, and exemption from state and federal taxes and from securities regulation — as well as the mandates that were placed on the GSEs to promote affordable housing. The GSEs have supported the housing market in various ways: by providing liquidity, facilitating lending to low-income homebuyers, and purchasing privately originated mortgage-backed securities for their own portfolios. As we will see, it is not clear that these efforts have always achieved their goals.

The GSEs' funding advantage: Who benefits? Because of the GSEs' quasi-governmental status, investors believed that the federal government would support the GSEs if they ran into difficulty. So investors were willing to lend to them at lower rates. In principle, much of this funding advantage could have been passed on to homeowners in the form of lower mortgage interest rates. But it is also possible that since the GSEs did not face much competition, some of this advantage accrued to other parties. For example, mortgage rates could have remained high, and the GSEs could instead have used the profit resulting from their low funding costs and the higher mortgage interest rates to pay their employees

⁴ It should be noted, however, that promoting homeownership may have social costs; for example, it may divert investment away from other, possibly more productive, uses. For an assessment of the economic costs and benefits of homeownership, see the 2010 *Business Review* article by Wenli Li and Fang Yang.

FIGURE 1

GSE MBS as Share of Total Originations



Source: Inside Mortgage Finance.

and management generously or to lobby government officials, or they could have passed it onto their shareholders in the form of higher dividends.

By comparing the yield on the GSEs' bonds with those of other highly rated financial institutions, Wayne Passmore, Shane Sherlund, and Gillian Burgess (2005) first determine that the GSEs' funding advantage was approximately 20 to 40 basis points, depending on the comparison group. Moreover, they conclude that while some of this funding advantage was passed on to homeowners in the form of lower interest rates, much was not. They find that interest rates on mortgages eligible to be purchased by the GSEs (known as "conforming" mortgages) averaged about 7 basis points below rates on mortgages with similar terms (such as loan-to-value ratios) but that were too large to be purchased by the GSEs (known as "jumbo" mortgages).⁵ It is also important to note that this lower cost was in essence a transfer from taxpayers, who were on the hook for this implicit guarantee, to homeowners. As we discuss next, however, these lower interest rates do not necessarily capture all of the benefits that the GSEs provided to the housing market.

The GSEs enhanced the secondary mortgage market. By virtue of their size, the GSEs have facilitated the standardization of the mortgage market. For example, through the development of automated underwriting procedures, the GSEs have established fairly clear criteria for which loans they will buy. For homeowners who can meet these standards, as well as for lenders, this standardization substantially reduces uncertainty. (As we will discuss, many of the reform proposals

⁵ The GSEs are restricted to purchasing mortgages below the conforming loan limit, which is set yearly by their regulator. Until mid-2007 this limit was the same across most of the United States.

try to maintain these benefits.)

In addition, this standardization enhances liquidity in the secondary mortgage market. James Vickery and Joshua Wright point out that the uniformity of the underwriting standards the GSE used, along with the safety that an implicit government guarantee provided to investors, was important in enabling the GSEs to trade in what is known as the *to-be-announced*, or TBA, market. A unique feature of the secondary market for GSE-guaranteed mortgages is that many MBS pools actually trade before the underlying

By virtue of their size, the GSEs have facilitated the standardization of the mortgage market.

mortgages are even originated. In this TBA market, the GSEs and the buyers of these securities agree on their general terms — the coupon rate, issuer, approximate face value, and price. However, the parties do not determine the precise mortgages that will be pooled until just before the settlement date, which can be several months after the initial trade. Vickery and Wright state that over 90 percent of all MBS trading takes place in the TBA market. Another reason that GSE MBS are able to trade in the TBA market is that they are exempt from Security and Exchange Commission registration requirements.⁶

There are at least two benefits from TBA trading of GSE MBS. First, it makes it easier for lenders to hedge their *pipeline risk* — that is, the risk

⁶ In general, companies seeking to issue securities to the public must file a registration statement detailing the securities' characteristics and the risks the companies face. Were the GSEs not exempt from registration requirements, they would be unable to trade in the TBA market, as the individual mortgages backing the MBS are determined only after issuance.

they will be unable to sell the mortgages they originate. Second, it makes it less expensive for homeowners to lock in interest rates. By comparing interest rates on GSE-insured mortgages eligible to trade in the TBA market with those that are not, Vickery and Wright estimate that the overall effect of TBA trading is to lower interest rates on GSE-insured mortgages by 10 to 25 basis points.

In addition to the benefits that arise from TBA trading, the GSEs have provided a backstop for the mortgage market during times of stress.

For example, Vickery and Wright find that conforming interest rates fluctuated much less than jumbo ones during the financial crisis. Similarly, Andreas Fuster and Vickery show that the share of fixed-rate mortgages in the conforming mortgage market was stable during the financial crisis, while in the jumbo market the share of fixed-rate mortgages fell dramatically during this period. They attribute this difference to the fact that lenders who offered jumbo loans became more reluctant to originate fixed-rate mortgages during the crisis because of the likelihood that they might be forced to hold them to maturity and thus incur substantial interest rate risk.⁷ This was not the case for the conforming market, where the GSEs continued to securitize loans. More generally, Joe Peek and James Wilcox show that residential investment — for example, new home

⁷ *Interest rate risk* refers to the tendency of debt securities with fixed interest rates to fall in price when prevailing interest rates in the market rise. For more on interest rate risk, see www.sec.gov/investor/alerts/ib_interestraterisk.pdf.

construction and renovations — as a share of GDP became more stable as the GSEs securitized more mortgages. This stabilization occurred, they argue, because securitization made mortgage lending less dependent on banks and thus less sensitive to both regional and general fluctuations in the economy.

Congressional mandates to promote affordable housing. Starting in 1992, Congress required Fannie and Freddie to dedicate a certain fraction of their mortgage activity to low-income and underserved borrowers and markets. The GSEs were also permitted to meet these affordable housing goals by purchasing portions, or *tranches*, of securities containing privately securitized loans (mainly subprime and alt-A) that met these criteria. These goals were raised over time until 2008, when HUD determined that the collapse of the housing market had made meeting them infeasible.⁸

The adoption of these mandates raises important questions: First, to what extent did the GSEs' affordable housing goals actually expand the supply of credit to households who otherwise would not have received mortgages? Second, did these mandates lead the GSEs to take on more risk than they otherwise would have? That is, did these goals have a significant impact on GSE mortgage purchases and guarantees or on their purchases of mortgage-backed security tranches? And if so, did the purchases and guarantees induced by these goals contribute to their overall risk?

Neil Bhutta considers one goal, the underserved area goal, from the mid-1990s through 2003. A loan counted toward the goal if it was for an

owner-occupied home in a census tract where either (a) the median family income did not exceed 90 percent of the median for the whole metro area, or (b) at least 30 percent of the residents were minorities and the median family income did not exceed 120 percent of the median for the metro area. Bhutta compares loans just above and below these thresholds and finds that goal eligibility increased the likelihood that a mortgage was purchased by the GSEs by about 4 percent. This effect is statistically significant but economically very small, suggesting that these goals did not have an important influence on the types of loans that the GSEs directly purchased and thus probably did not increase their risk by very much.

As we have discussed, the GSEs were also able to meet their goals through purchases of privately securitized MBS tranches. So it is also important to determine the extent to which the housing goals influenced the development of this market. Andra Ghent and others study this question also by using the discrete cutoffs for goal-eligible loans. Examining the mortgages included in privately securitized MBS tranches, they do not find any clustering of loans around the eligibility cutoffs for GSE goals.⁹ They also do not find that the interest rates for loans just below the cutoffs were lower, which would indicate an attempt to increase the share of goal-eligible loans in these securities. They thus conclude that the GSE housing goals did not have a significant impact on subprime MBS originations.

To sum up, it would be fair to say

⁹ For example, if the underserved area goal discussed above had a significant impact on the subprime MBS market, then one would expect to see a disproportionate share of mortgages in these private MBS pools that were made to borrowers with incomes just below 90 percent of the area median, which is the cutoff for this goal. The authors do not observe this pattern, however.

that the existing evidence suggests the housing goals played a minor role, at most, in expanding the subprime mortgage market and, consequently, in increasing the risk that the GSEs took on.

THE GSEs DURING THE BOOM AND BUST

The GSEs lost market share during the housing boom. During the housing boom, the share of first mortgages originated that were GSE-guaranteed fell dramatically — from 49 percent in 2003 to only 27 percent by 2006. By contrast, the privately securitized share grew dramatically during this time (see Figure 1). There are several possible causes for this shift. First, banks found it more attractive to invest in non-GSE MBS — particularly in the tranches with the highest credit ratings — after the capital requirements for these securities were lowered in 2002. In addition, the GSEs were under increasing scrutiny following accounting scandals in the early 2000s and may have been less able to respond to the growth of the private sector.¹⁰ As discussed by Marsha Courchane, Rajeev Darolia, and Peter Zorn, the Federal Housing Administration also experienced a decline in market share through 2006, followed by a recovery beginning in 2007. They suggest that this decline was due, at least in part, to the rise and collapse of the subprime market.

In Table 1 we examine the evolution of mortgage underwriting standards over time across the various market segments. In particular, we compare characteristics of loans in GSE-guaranteed MBS with those in privately securitized MBS and to

⁸ For more on the GSE goals and how they changed over time, see the FHFA's Mortgage Market Note 10-2. Also note that other federal policies that do not involve the GSEs also encourage low-income homeownership, such as the Community Reinvestment Act, which imposes mandates on commercial banks and thrifts.

¹⁰ For example, on December 21, 2004, the Office of Federal Housing Enterprise Oversight pointed to earnings restatements resulting from Fannie Mae's accounting problems in designating it "significantly undercapitalized"; this subjected Fannie Mae to greater oversight.

loans retained by banks in their own portfolios. Observe that during the boom years of 2003 to 2006, the GSEs did not appear to dramatically reduce their underwriting standards, whereas those mortgages that were sold as part of private securitizations were far riskier: They had lower FICO scores and higher combined loan-to-value (LTV) ratios.¹¹

In a paper with Viral Acharya, I examine the dynamics of the GSEs and the private sector during the housing boom and its aftermath and identify the following factors that contributed to the decline in the GSE share. First, we show that as house prices rose, private lenders were able to lend larger amounts than the GSEs were permitted to guarantee, including cash-out refinancings to homeowners who wanted to take advantage of their homes' rise in value by replacing their GSE-guaranteed mortgages with jumbo mortgages. In addition, as can be seen in Table 1, borrowers who took out privately securitized loans from 2003 to 2006 were much more likely to take out second ("piggyback") mortgages at the time of origination than were those with GSE-insured mortgages. This made these loans more attractive to borrowers seeking high-LTV mortgages, because the GSEs typically required such borrowers to take out relatively expensive private mortgage insurance.¹² This strategy may also have benefited from the fact that, until 2006, some credit rating agencies gave little weight to the presence of second

¹¹ A FICO score is a credit score developed by Fair Isaac and Company that rates a consumer's loan default risk based on his or her credit bureau file, with higher scores being predictive of lower rates of default. LTV denotes the ratio between the mortgage balance and the value of the property securing that mortgage; higher LTV ratios are associated with higher default rates because, for instance, the homeowner has less of his or her own money at stake. See Elul and others (2010), which quantifies the relationship among credit scores, LTV ratios, and mortgage default.

TABLE 1

**Risk Profiles of Underlying Loans:
GSE MBS vs. Others**

		FICO <660	LTV >80%	Piggyback	CLTV >80%	PMI
2003	GSE	12%	12%	8%	23%	14%
	Private Securitized	10	10	11	25	9
	Portfolio	20	16	12	32	12
2004	GSE	15	12	14	30	15
	Private Securitized	26	15	21	42	12
	Portfolio	24	15	17	38	9
2005	GSE	15	12	17	34	13
	Private Securitized	34	17	25	49	8
	Portfolio	19	14	22	43	5
2006	GSE	17	15	19	40	14
	Private Securitized	41	19	27	54	4
	Portfolio	19	22	18	44	5
2007	GSE	20	23	15	45	26
	Private Securitized	26	16	24	47	7
	Portfolio	27	30	16	50	9

Sources: Statistics on FICO, LTV, and PMI are from the Lender Processing Services (LPS) data set. The figures for Piggyback and CLTV are from the merged LPS-Federal Reserve Bank of New York/Equifax Consumer Credit Panel data set used by Bond et al. (2012).

Notes: Values represent the percentage of total mortgages originated in that year and sector with these characteristics. FICO: Fair Isaac and Company consumer credit score. LTV: first mortgage loan-to-value ratio. Piggyback: second mortgages. CLTV: combined first and second mortgage loan-to-value ratio. PMI: private mortgage insurance.

mortgages in assessing the risk of private securitization.¹³ It also explains why the first-mortgage LTVs were relatively low for borrowers with privately securitized mortgages, whereas their combined LTVs were much higher. Finally, the private securitization

¹² Under their federal charters, the GSEs cannot purchase a mortgage with an LTV above 80 percent unless either (a) the portion above 80 percent is insured by a qualified mortgage insurer, (b) the seller agrees to repurchase or replace the loan in case of default, or (c) the institution that sells the loan retains at least a 10 percent stake. In practice, the GSEs typically require private mortgage insurance if the loan exceeds 80 percent of the value.

sector also expanded into areas with many subprime borrowers and was also more likely to serve borrowers who had never had a prior mortgage.

The GSEs amassed large portfolios. While the GSEs lost market share in mortgage originations, they amassed large portfolios of privately securitized MBS. These portfolios peaked at around \$1.6 trillion in 2003

¹³ For example, until it introduced a new model on July 1, 2006, Standard & Poor's ignored the presence of second mortgages when rating subprime MBS as long as fewer than 30 percent of the underlying borrowers had second mortgages. See Michael Kling (2006).

and remained at that level through 2008.¹⁴ The GSEs generally purchased the least risky, AAA-rated tranches of MBS containing subprime or alt-A mortgages — loans that they were reluctant to purchase and guarantee directly. Notwithstanding their initially high ratings, many of these tranches later defaulted or were downgraded, leading to large losses.

As we discuss, concern regarding the risk of their portfolios certainly played a role in pushing the GSEs into conservatorship. So why did they maintain such large portfolios? One possible reason is that they appeared to be very profitable, as the GSEs were able to issue short-term bonds at low interest rates and use the proceeds to buy AAA-rated tranches of MBS paying high interest rates. According to Dwight Jaffee, the spread between the return they earned on these investments and their funding costs could exceed 100 basis points; by contrast, the spread on their guarantee business was typically only 25 basis points. Furthermore, the required capital for holding the portfolios was sufficiently low that it did not offset the high returns. Nor, as we shall see, was the capital adequate to cover their risks.¹⁵

Another reason for the growth of the portfolios may be that the GSEs were permitted to use them to meet their housing goals, and the portfolios did indeed contain many mortgages that qualified toward meeting these goals.¹⁶ We have already presented

¹⁴ One reason they did not grow after 2003 was that the GSEs were under increased scrutiny following their accounting scandals in the early 2000s.

¹⁵ While the capital requirements for banks were similar in many respects to those for the GSEs, only banks were subject to a leverage ratio requirement (of 3 percent at the time). Indeed, the GSEs had higher leverage than most banks. For more on bank capital regulation, see my 2013 *Business Review* article. And for further discussion of GSE leverage ratios, see Acharya and coauthors (2011).

evidence that suggests that the GSE housing goals did not encourage the growth of the subprime MBS market. One might also ask whether the GSEs' large purchases of these MBS encouraged the private sector to make riskier loans than they otherwise would have. Manuel Adelino and his coauthors suggest that the answer is no. They use the fact that many privately securitized pools had tranches designed to cater specifically to the GSEs by including only loans below the conforming loan limit. They then show that the default rate on GSE-eligible MBS tranches was lower than on similar ineligible tranches. This suggests that, if anything, the GSEs looked for safer loans in which to invest. Taken together, this evidence suggests that the GSEs' primary motivation for investing in privately securitized MBS was profit, not housing goals, and that they did not significantly contribute to the development of risky lending practices in this sector.

The GSEs guaranteed risky loans in 2007 and regained much of their market share. Sometime in 2006, the private securitization market peaked and originations began to decline, particularly for subprime borrowers. This trend accelerated in the first half of 2007 and by the middle of 2007 was evident even for prime MBS.¹⁷ In addition, house prices peaked in 2006, after rising for many years. Finally, the share of homeowners who were past due on their mortgages also began to increase in mid-2006 (reaching 10 percent in 2010). As the private sector pulled back, the GSEs expanded and regained market share, guaranteeing 44 percent of all originations in 2007.¹⁸ We will argue that, in doing so, the GSEs purchased and guaranteed loans that were riskier in some dimensions

¹⁶ See Scott Frame (2008).

¹⁷ See the 2013 Mortgage Market Statistical Annual I.

than in the past and may thus have amplified the housing crisis.

In part, they did this by agreeing to guarantee loans with high LTVs; 25 percent of all the loans the GSEs purchased in 2007 had first-mortgage LTVs above 80 percent; the comparable figure for 2006 was only 15 percent. Also, many of these loans were refinancings of existing mortgages,¹⁹ which suggests that this was an attempt to regain market share and not simply a response to high house prices that made it difficult for buyers to come up with larger down payments. These high-LTV loans later led to large losses, as they were made when house prices were close to their peak. Furthermore, unlike the private securitization market in earlier years, in which the combined LTV was often shared between first and second lienholders, borrowers for the GSE-guaranteed loans originated in 2007 were less likely to have second mortgages. Part of the reason was that the GSEs relied more on private mortgage insurance. In addition, banks may have become more reluctant to originate second mortgages in 2007 amid signs that the housing boom was ending. The GSEs also began guaranteeing more loans to riskier borrowers. The share of their loans made to borrowers with credit scores below 660 rose to 20 percent in 2007, from 17 percent in 2006 and just 12 percent in 2003.²⁰

These borrowers were also subsequently much more likely to default, and thus these loans made an outside contribution to the GSE losses. By November 2012, 7 percent of loans the GSEs had guaranteed in 2007

¹⁸ Total mortgage originations fell from roughly \$3 trillion in 2006 to \$2.4 trillion in 2007. Moreover, the dollar amount of originations not guaranteed by the GSEs, FHA, or Veterans Administration fell 35 percent during this period.

¹⁹ Lender Processing Services data set.

²⁰ See Table I.

were either delinquent or already in default, compared with 4 percent of GSE-guaranteed loans originated from 2003 to 2006. However, compared with privately securitized loans, they were still much safer: The default rate on the 2007 vintage for the latter is 16 percent.²¹

Finally, in my paper with Acharya, we show more directly that this expansion in the GSEs' market share led them to guarantee loans that were riskier than those they had insured in the past. We study the performance of loans that the GSEs guaranteed in 2007, specifically by comparing those borrowers who had previously taken out privately securitized loans with those borrowers whose previous loans were GSE-insured. We find that the former were nearly twice as likely to default after just two years.²²

Summarizing, although the decline in lending standards that led to the housing crisis originated in the private securitization market, the GSEs amplified the crisis as they sought to recapture market share when house prices began to tumble.

GSE losses in the financial crisis. The GSEs experienced large losses in the wake of the collapse of the housing market. Their write-downs on their portfolio holdings totaled \$57 billion by the end of 2012. In addition, their losses on loans that they had guaranteed ended up being far larger — reaching \$235 billion by 2012. To gauge the magnitude of these losses, it is useful to compare them with the benefits that the GSEs may provide, in particular in the form of lower interest rates.²³

²¹ These figures are from the Lender Processing Services (LPS) data set. For further detail on this data set, see Elul and coauthors (2010).

²² These statistics are from the merged Equifax-LPS data set used in Bond et al. (2012).

²³ Recall, however, that lower mortgage rates might not constitute an unambiguous benefit to society.

As discussed earlier, various studies have provided differing estimates of the impact of the GSEs on mortgage interest rates. For example, Vickery and Wright determined that TBA trading lowers mortgage rates by up to 25 basis points. At the start of the financial crisis, there was roughly \$4.5 trillion in GSE MBS outstanding, with an average interest rate of 6 percent.²⁴

Although the decline in lending standards that led to the housing crisis originated in the private securitization market, the GSEs amplified the crisis as they sought to recapture market share when house prices began to tumble.

So, on the basis of their estimate, the GSE benefit for these borrowers was roughly \$11 billion per year. Even assuming that these borrowers had kept these mortgages for 30 years, the present value of these savings would have totaled only \$150 billion, or just half of the GSE losses in the crisis. Of course, this comparison does not account for the less tangible benefits the GSEs provided, such as supporting the mortgage market in times of crisis, or the benefits they may have provided to past and future borrowers.

As discussed earlier, many of the loans that the GSEs guaranteed in 2007 were particularly risky. Furthermore, their risk was exacerbated because the GSEs tended to lend the entire balance and relied on private mortgage insurance to cover losses in excess of 80 percent LTV in case of default. However, several of these insurers shut down because of high losses, and the ability of the remainder to pay these claims was called into question.

Even though the GSEs' portfolios

²⁴ See the 2013 Mortgage Market Statistical Annual II and LPS data set.

ended up being responsible for only a small fraction of their losses — the lion's share was due to guarantees — Diana Hancock and Wayne Passmore suggest portfolio losses played a disproportionate role in the collapse of the GSEs because of the portfolios' size, opacity, and financing by short-term borrowing that needed to be rolled over quarterly. In particular, in

July 2008, financial markets became concerned that the GSEs would not be able to roll over their debt; as a result, the Federal Reserve and U.S. Treasury increased their support for the GSEs.

Another factor that exacerbated the losses was weak oversight by the Office of Federal Housing Enterprise Oversight (OFHEO), which did not clamp down on the risky behavior described above and in July 2008 was replaced by the newly created Federal Housing Finance Agency (FHFA), which had stronger regulatory powers.²⁵ In September of that year, the FHFA determined that the GSEs could not “continue to operate safely and soundly” and announced they would enter conservatorship.²⁶

²⁵ The FHFA also replaced the Federal Housing Finance Board as the regulator of the 12 regional Federal Home Loan Banks, which lend to local lenders to finance housing and other economic activity. The OFHEO had been subject to criticism since at least 2002, in the wake of the GSE accounting scandals. For further detail on early efforts to strengthen the GSEs' regulator, see Frame and White (2004).

²⁶ Statement of James B. Lockhart, then director of the FHFA, on September 7, 2008, www.treasury.gov/press-center/press-releases/Documents/fhfa_statement_090708hp1128.pdf.

REFORMING THE GSEs

There have been many proposals that suggest how to reform or replace the GSEs. Although, as we shall see, they differ along many lines, most suggest curtailing the GSEs' portfolios. One reason is that amassing large portfolios does not appear to be central to the GSEs' role in housing markets. Moreover, as noted above, their portfolios were an important contributor to their entering conservatorship.

As early as 2004, Alan Greenspan, then chairman of the Federal Reserve, had suggested that their portfolios be limited to \$200 billion each, about a quarter of what they had held at the time. Legislation passed the following year did mention reducing the portfolios as a goal but set no explicit limits or timetable, an outcome widely seen as a victory for the GSEs. Greenspan had also proposed raising their capital ratios to match those required of large banks, which arguably would also have helped prevent their collapse.

Current reform proposals fall into three classes that reflect the extent of government involvement they envision: public, fully private, and hybrid.

Public models. The public proposals favor maintaining the government's role in securitizing mortgages, with an explicit government guarantee. One prominent example is described by Hancock and Passmore. They argue that mortgage securitization is inherently fragile and subject to "runs" in which investors become concerned about risks and become unwilling to supply further funding to the market. There are several reasons for this fragility. First, mortgages are paid back over a long time, but banks tend to fund these long-lived assets with short-term liabilities such as demand deposits that can be withdrawn at any time. In addition, since a steep fall in the housing market such as we saw in the aftermath of the last recession is so strongly correlated with a decline

in the rest of the economy, it would be very difficult for a private party to credibly insure against the risk of a decline in the housing market because a private insurer might also founder in the ensuing economic contraction.²⁷ Thus, they conclude, only the government can stem runs by credibly insuring against the risk of a steep and sustained fall in house prices. Moreover, they point out that without this government insurance, mortgage lending might well end up being concentrated in the largest institutions, with the risk effectively shifted to the Federal Deposit Insurance Corporation (FDIC), since investors would believe that only these too-big-to-fail institutions would be safe. Finally, maintaining a formal government role would allow the GSEs to be restructured in a way that would leverage their expertise and technology, and the TBA market could be preserved.²⁸

Private models. Fully private models have also been proposed. One of these, advanced by Jeb Hensarling of the House Financial Services Committee, would wind down the GSEs and set up a privately owned National Mortgage Market Utility that would maintain some of the benefits that the GSEs provided, such as a standardized securitization structure, but would be prohibited from originating, securitizing, or guaranteeing mortgages or mortgage-backed securities. Note that this proposal makes it explicit that there would be *no* government guarantee. The advantages over a public model include: Taxpayers would be protected (at least in theory). There would be less scope for political interference

²⁷ Indeed, this is precisely what happened to several private mortgage insurers during the financial crisis.

²⁸ Recall that the GSEs' exemption from SEC registration requirements facilitated TBA trading; fully private issuers, however, would not be exempt.

such as housing goals. And without a government guarantee, investors in mortgage markets would be less likely to take the kind of risks the GSEs did such as amassing large portfolios of subprime mortgage-backed securities. Recall, however, that as Hancock and Passmore point out, the risk might shift to the FDIC, and the potential for runs would remain.

Hybrid approaches. Between these extremes lie the hybrid proposals. They generally have some sort of government backstop, but with the private sector absorbing a share of the losses. They all propose winding down the GSEs. One advantage of the hybrid plans is that they maintain a government guarantee, which can help preserve liquidity in the mortgage market, particularly in times of crisis. On the other hand, they also conceive of a role for the private sector, the idea being that private institutions are better run and less subject to political pressure or that it would reduce the risk of moral hazard.

Most hybrid proposals envision the private sector absorbing the first losses and the government providing insurance after that, in the "tail events." For example, the Corker-Warner Senate bill has private entities covering the first 10 percent of losses before the government-provided catastrophic coverage would kick in.²⁹ A paper by Toni Dechario and others envisions a similar structure but also proposes that a nonprofit cooperative owned by banks that participate in the mortgage market carry out securitization for its members. This approach has several advantages: Having a single entity carrying out securitization would make it easier to set up a structure to continue TBA trading. Individual lenders' mar-

²⁹ Corker-Warner Housing Finance Reform and Taxpayer Protection Act (s.1217), www.gpo.gov/fdsys/pkg/BILLS-113s1217is/pdf/BILLS-113s1217is.pdf.

ket power would be checked, putting small banks on a more even footing. Members would have an incentive to monitor one another. And insuring against tail risk would be simplified, since the cooperative would buy insurance for its members.

Two other papers propose different hybrid structures. David Scharfstein and Adi Sunderam's paper puts more emphasis on the private market than do other hybrid proposals. The private market would provide credit and guarantee most loans except in times of crisis. During normal economic times, the government guarantor would be limited to 5 percent to 10 percent of the total market. If a crisis were declared, however, the government guarantor would be allowed to expand its market share in order to stabilize the mortgage market. The rationale behind this structure is that, as we have seen, the primary benefit the GSEs provide is during crises, so it makes sense to limit the guarantee to when it is needed. The main disadvantage is that it would be difficult to determine when a crisis is occurring, and the formal declaration would be politically fraught.

Acharya and others (2011) propose a different structure: a public-private partnership that would share risk. A private insurer would guarantee 25 percent of losses. At the same time, the government would provide capital to reinsure the remaining 75 percent of the risk. That is, for every dollar lost, the private sector would cover 25 cents and the government 75 cents. The advantage of this approach is that it would allow the price of the insurance to be set by the private market, which may be better at pricing the guarantee; the government has a history of underpricing it, which creates incentives to take risks.

CONCLUSIONS

One of the significant events of the financial crisis was the collapse of the GSEs in 2008. While the GSEs were not at the forefront of the housing bubble, they had also modestly lowered their lending standards from 2003 to 2006. Nevertheless, their market share shrank in favor of private securitization. And as the housing market was collapsing in 2007 and private securitizers withdrew, the GSEs dramatically increased their market share and risk,

which led to elevated default rates. In addition, they amassed large portfolios of privately securitized MBS, which also led to significant losses and played an important role in their collapse. The GSEs' risk-taking, in both the sphere of their guarantee activity and in their portfolios, appears to have been driven primarily by a desire for profit. Evidence suggests that their affordable housing goals played only a small role, at most.

Several proposals aim to reform or replace the GSEs. Many of them envision a continued role for the government in providing a backstop in times of stress, though all of them argue against allowing the GSEs to maintain large portfolios.

What is still not well understood is the interaction between government intervention in the mortgage market and the private sector — both during the bubble years and as the housing market started to collapse — and whether this interaction may have increased incentives for all parties to take risks. 

REFERENCES

- Acharya, Viral V., and Ronel Elul. "GSEs Versus Banks: The Quest for Market Share and a Race to the Bottom," forthcoming manuscript, 2015.
- Acharya, Viral V., Matthew Richardson, Stijn van Nieuwerburgh, and Lawrence J. White. *Guaranteed to Fail: Fannie Mae, Freddie Mac, and the Debacle of Mortgage Finance*, Princeton: Princeton University Press, 2011.
- Adelino, Manuel, W. Scott Frame, and Kristopher Gerardi. "The Role of Large Investors in Debt Markets: Fannie Mae, Freddie Mac, and Subprime MBS," manuscript (May 2013).
- Bond, Philip, Ronel Elul, Sharon Garyntal, and David Musto. "Does Junior Inherit? Refinancing and the Blocking Power of Second Mortgages," Federal Reserve Bank of Philadelphia Working Paper 13-3 (2012).
- Bhutta, Neil. "GSE Activity and Mortgage Supply in Lower-Income and Minority Neighborhoods: The Effect of the Affordable Housing Goals," *Journal of Real Estate Finance and Economics*, 45:1 (2012), pp. 238-261.
- Courchane, Marsha, Rajeev Darolia, and Peter Zorn. "Industry Changes in the Market for Mortgage Loans," *Connecticut Law Review*, 41:4 (May 2009), pp. 1,143-1,175.
- Dechario, Toni, Patricia Mosser, Joseph Tracy, James Vickery, and Joshua Wright. "A Private Lender Cooperative Model for Residential Mortgage Finance," Federal Reserve Bank of New York *Staff Report*, 466 (August 2010).
- Elul, Ronel. "The Promise and Challenges of Bank Capital Reform," Federal Reserve Bank of Philadelphia *Business Review* (Third Quarter 2013).
- Elul, Ronel. "The Economics of Asset Securitization," Federal Reserve Bank of Philadelphia *Business Review* (Third Quarter 2005).
- Elul, Ronel, Nicholas S. Souleles, Souphala Chomsisengphet, Dennis Glennon, and Robert Hunt. "What 'Triggers' Mortgage Default?" *American Economic Review Papers and Proceedings*, 100:2 (May 2010), pp. 490-494.
- Federal Housing Finance Administration. "The Housing Goals of Fannie Mae and Freddie Mac in the Context of the Mortgage Market: 1996-2009," Mortgage Market Note 10:2 (February 1, 2010), www.fhfa.gov/PolicyProgramsResearch/Research/PaperDocuments/20100201_MMNote_10-2_508.pdf.
- Frame, W. Scott. "The 2008 Federal Intervention to Stabilize Fannie Mae and Freddie Mac," *Journal of Applied Finance*, 18:2 (2008), pp. 124-136.
- Frame, W. Scott, and Lawrence J. White. "Regulating Housing GSEs: Thoughts on Institutional Structure and Authorities," Federal Reserve Bank of Atlanta *Economic Review* (Second Quarter 2004).
- Fuster, Andreas, and James Vickery. "Securitization and the Fixed-Rate Mortgage," Federal Reserve Bank of New York *Staff Report* 594 (January 2013).
- Ghent, Andra C., Rubén Hernández-Murillo, and Michael T. Owyang. "Did Affordable Housing Legislation Contribute to the Subprime Securities Boom?" Federal Reserve Bank of St. Louis Working Paper 2012-005B (2012).
- Hancock, Diana, and Wayne Passmore. "Catastrophic Mortgage Insurance and the Reform of Fannie Mae and Freddie Mac," in Martin Neil Bailey, ed., *The Future of Housing Finance*, Washington, D.C.: Brookings Institution Press, 2011, pp. 111-145.
- Jaffee, Dwight M. "The Role of the GSEs and Housing Policy in the Financial Crisis," Washington, D.C.: Financial Crisis Inquiry Commission, (February 2010), http://fcic-static.law.stanford.edu/cdn_media/fcic-testimony/2010-0227-Jaffee.pdf.
- Kling, Michael J. "Tougher Rating Criteria May Impact Issuers," *MortgageOrb*, 2:1 (July 2006), www.mortgageorb.com/e107_plugins/content/content.php?content.1261.
- Li, Wenli, and Fang Yang. "American Dream or American Obsession? The Economic Benefits and Costs of Homeownership," Federal Reserve Bank of Philadelphia *Business Review* (Third Quarter 2010).
- Mortgage Market Statistical Annual I. Bethesda, MD: Inside Mortgage Finance Publications, 2013, p. 17.
- Mortgage Market Statistical Annual II. Bethesda, MD: Inside Mortgage Finance Publications, 2013, p. 5.
- Passmore, Wayne, Shane M. Sherlund, and Gillian Burgess. "The Effect of Housing Government-Sponsored Enterprises on Mortgage Rates," *Real Estate Economics* (2005), pp. 427-263.
- Peek, Joe, and James A. Wilcox. "Housing, Credit Constraints, and Macro Stability: The Secondary Mortgage Market and Reduced Cyclicity of Residential Investment," *American Economic Review* (2006), pp. 135-140.
- Scharfstein, David S., and Adi Sunderam. "The Economics of Housing Finance Reform," in Martin Neil Bailey, ed., *The Future of Housing Finance*, Washington, D.C.: Brookings Institution Press, 2011, pp. 146-198.
- Vickery, James, and Joshua Wright. "TBA Trading and Liquidity in the Agency MBS Market," Federal Reserve Bank of New York *Economic Policy Review* (May 2013).