Financing Housing through Government-Sponsored Enterprises

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Three government-sponsored enterprises (GSEs) play a central role in U.S. housing finance markets. Together, the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), and the Federal Home Loan Bank System (FHLB System) hold or insure nearly $3 trillion in primarily mortgage-related assets. The three housing GSEs were created to improve the availability of home mortgage financing by supplementing local funding with that from national capital markets. To help these institutions accomplish this goal, Congress provided them with several benefits not available to fully private firms.

At the time each housing GSE was created, the primary source of mortgage funding was local deposits; credit availability was thus closely linked to local deposit market and general economic conditions.[1] The housing GSEs improved the flow of credit to homebuyers by linking local and national credit markets. As financial markets have evolved, however, alternative mechanisms have arisen that enable retail lenders to tap national markets.[2] Therefore, the major contribution of the housing GSEs today is to transmit to homebuyers an interest rate subsidy that is made possible by the benefits the GSEs obtain from the federal government.

The federal government subsidizes housing finance in many ways, including through the housing GSEs. While these subsidies benefit mortgage borrowers, they also impose costs on other parts of the economy and may have unintended consequences. Many economists are skeptical of the overall merits of housing finance subsidies, but policymakers have clearly expressed a preference for them. This paper is primarily directed at examining the economic issues arising from the provision of such subsidies via the housing GSEs.[3]

The housing GSEs' special relationship with the federal government and the subsidy that goes with this relationship have sparked two general public policy debates. One of these essentially asks whether the housing GSEs are efficient mechanisms for subsidizing housing. This argument starts by noting the persistently high profits of the two for-profit housing GSEs, Fannie Mae and Freddie Mac. Questions have been raised about the extent to which these profits are due to the federal subsidy and whether it is appropriate that some of the subsidy is transferred to private shareholders. Those concerned about Fannie Mae's and Freddie Mac's high earnings have offered two radically different approaches to reduce them. Some have called for fully privatizing the housing GSEs or cutting all of their special links to the federal government (for example, see McKinley 1997). Others have called for creating new competitors that would also benefit from a special relationship with the federal government so as to transfer more of the subsidy to homeowners through increased competition.[4]

A second ongoing debate relates to the housing GSEs' safety and soundness and raises the question of whether implicit guarantees of their liabilities are the best way to subsidize them. These institutions' size in the financial markets, coupled with their special relationship with the federal government, raises concerns about the potential for moral hazard and the problems that would arise if a housing GSE became financially distressed or insolvent. The federal government has demonstrated its concern about these issues by creating two safety and soundness regulators that focus exclusively on the housing GSEs. Arguably, the moral hazard concerns could be addressed by severing the GSEs' special relationship with the federal government.[5] Alternatively, a variety of suggestions have been made to reform both existing regulations and the structure of the regulatory agencies.

Subsidizing housing does have the intended effect of increasing the investment in housing. But economic theory is clear that the housing subsidy must come at the expense of economic activities that are not subsidized.

This article begins with a review of the benefits and costs of subsidizing housing finance and then provides background information about the housing GSEs and their relationship to the federal government. The article then focuses on the two public policy debates described above: (1) whether policymakers should be concerned if the housing GSEs or their shareholders retain part of their subsidy and (2) improving the safety and soundness regulation of housing GSEs.[6]

The Economics of Housing Finance Subsidies

The federal government subsidizes housing in a variety of ways. The largest set of subsidies is provided through income tax deductions for mortgage interest and property taxes. The U.S. Office of Management and Budget (2001) estimates that the total revenue loss from housing-related income tax reductions totaled almost $114 billion in fiscal year 2000. Subsidies are also provided to reduce the cost of obtaining mortgages, both through mortgage insurance programs operated by HUD and Veterans Affairs and through the housing GSEs.

The economic effect of any subsidy is to lower the relative cost of the good being subsidized; this effect necessarily implies an increase in the relative cost of other goods. The reduction in the cost of housing leads to increased investment in housing, and the increased investment manifests itself both in higher home ownership rates and more expensive homes.

An increase in home ownership may provide social benefits, including greater neighborhood stability, increases in property values, and greater participation in community organizations.[7] These subsidies also increase the cost of homes for several reasons. First, the reduction in the relative cost of housing leads families to demand larger, more comfortable houses. Second, part of the housing subsidy is likely to be captured by those supplying housing-related services, such as home builders and real estate agents, who experience an increase in demand for their services.[8] Similarly, the demand for all types of housing will lead to rising demand for existing as well as new homes. The higher demand for existing homes will allow owners to increase the resale price of their homes.

The overall increase in investment in housing has been substantial. Mills (1987) estimates that the United States has 25 percent too much housing while Taylor (1998) finds that the unmeasured benefit to housing would have to top $220 billion per year to support the current allocation of resources.

Higher home-ownership rates, bigger and better houses, higher income for real estate service providers, and higher values for existing homes would all be unambiguously good if these benefits could be obtained at no cost. However, an unavoidable consequence of subsidizing housing is that it raises the cost of other types of consumption and investment. Individuals who are spending more on housing have less to spend on goods and services produced by other industries, such as entertainment, clothing, and dining. Also, individuals who perceive investment in housing as a substitute for other types of savings may invest less in financial assets such as stocks and bonds.

Part of the cost of subsidizing housing may also be paid in the form of less business investment and reduced international competitiveness. The higher demand for mortgage debt will reduce the supply of funds available to finance consumption and investment. If the United States had to finance all of its own investments, the result would be a reduction in total business investment. The impact of the increased mortgage debt is mitigated, however, by the United States' ability to tap foreign savings. The unavoidable cost of using foreign savings is that the United States runs a higher trade deficit in goods and services with the rest of the world.[9]

Thus, subsidizing housing does have the intended effect of increasing the investment in housing. But economic theory is clear that the housing subsidy must come at the expense of economic activities that are not subsidized. Exactly how the costs are apportioned throughout the economy is an open empirical question.

Background on the Housing GSEs

The three housing GSEs are very large and important financial institutions. Fannie Mae and Freddie Mac are privately held, publicly traded firms that operate similarly: each provides credit guarantees on mortgage-backed securities or invests in mortgages and mortgage-related securities. As of year-end 2000, Fannie Mae and Freddie Mac together held $1.1 trillion in total assets and had net mortgage-backed securities outstanding totaling another $1.3 trillion.[10] The U.S. Congressional Budget Office (CBO) (2001) reports that, as of year-end 2000, Fannie Mae and Freddie Mac held or guaranteed 39 percent of all residential mortgages, 48 percent of all single-family conforming mortgages, and 71 percent of all fixed-rate conforming mortgages.[11] FHLB System institutions, which are cooperatively owned, primarily make "advances," or collateralized loans, to their member financial institutions—commercial banks, thrifts, credit unions, and insurance companies. FHLB advances were historically intended to fund residential mortgage lending.[12] As of December 31, 2000, the FHLB System had $654 billion in total assets, of which $450 billion constituted advances. Together, the three housing GSEs held nonmortgage investments totaling about $197 billion as of year-end 2000.

The housing GSEs grew rapidly during the 1990s. During that time, Fannie Mae and Freddie Mac especially seem to have repositioned their business models from creating guaranteed mortgage securities held by investors to managing a portfolio of

1. The FHLB System, created in 1932, is the oldest of the three housing GSEs. Fannie Mae was originally organized as a wholly owned government corporation in 1938. Finally, Freddie Mac was established in 1970 as part of the FHLB System.

   Prior to the establishment of the three housing GSEs, the regulation of deposit interest rates (Regulation Q) resulted in periodic credit crunches in the mortgage market whenever market interest rates climbed above the interest rate that thrifts and banks could pay on deposits.
2. For example, the securitization of all kinds of retail credit (such as credit card receivables and automobile loans) is commonplace. Also, small financial institutions can access liquidity through larger financial institutions that have direct access to the capital markets.
3. Recent papers by Calomiris (2001) and White (forthcoming) are also in this vein.
4. For example, Fernandez (2001) discusses proposed legislation that would help the Government National Mortgage Association (Ginnie Mae) compete more effectively with Fannie Mae and Freddie Mac. Ginnie Mae is a government-owned corporation that guarantees securities backed by loans guaranteed by the Departments of Housing and Urban Development (HUD) and Veterans Affairs. As of September 2000, Ginnie Mae had over $600 billion in mortgage-backed securities outstanding. Another proposal, offered by Stanton (2001), would involve the federal government's chartering numerous national mortgage associations that would compete directly with the housing GSEs.
5. However, one could also argue that the housing GSEs have become so important to financial markets that the federal government would take a special interest in the GSEs' financial stability even if they had no direct ties to the federal government.
6. The article does not consider individual reform proposals, each of which could justify a separate paper discussing their various ramifications.
7. See Rohe and Stewart (1996) for a review of the literature concerning the social benefits of homeownership.
8. The increase in demand will generally lead to both an increase in the quantity supplied and the price of the services.
9. Simple balance-of-payments accounting requires that the trade deficit equal the net savings flows into the United States, ignoring the relatively small role played by transfer payments. The measured trade deficit in official statistics generally does not equal the net savings flow, but this anomaly merely reflects problems in accurately measuring trade and savings flows.
10. This amount is a net figure because Fannie Mae and Freddie Mac often issue mortgage-backed securities and then ultimately repurchase and hold the securities in their own portfolios. As of year-end 2000, Fannie Mae had almost $1.1 trillion in mortgage securities outstanding but held $351 billion of these in its own portfolio. Freddie Mac had mortgage securities outstanding of $822 billion but held $246 billion of these in its retained portfolio.
11. "Residential mortgages" refers to both one-to-four-family and multifamily mortgages. "Conforming mortgage" refers to a residential mortgage loan of a particular size that is eligible for purchase by Fannie Mae and Freddie Mac. For single-family loans in 2000, the conforming loan limit was $252,700. For 2001, this amount was $275,000, and in 2002 it is $300,700.
12. Eligible collateral for FHLB System advances includes whole mortgages, mortgage-backed securities, Treasury and agency securities, and deposits with the FHLBs. The Gramm-Leach-Bliley Financial Modernization Act of 1999 also broadened the types of collateral eligible to secure advances for members with less than $500 million in total assets to include small farm, small agribusiness, and small business loans. See Stojanovic, Yeager, and Vaughan (2000) for a discussion of some of the issues raised by the broadening of the institutions eligible for advances and types of collateral accepted by the FHLBs.

whole mortgage loans and mortgage-backed securities.[13] This new approach entails managing both the credit and interest rate risk associated with mortgages. Wallison and Ely (2000) offer future projections of Fannie Mae's and Freddie Mac's retained mortgage portfolios and discuss the attendant risks.

The three housing GSEs are highly leveraged financial institutions that fund their portfolios primarily by issuing debt. As of December 31, 2000, the three housing GSEs' $1.7 trillion in outstanding debt is roughly the size of the municipal bond market ($1.6 trillion) and more than half the size of the $3 trillion of outstanding privately held Treasury debt. In year-end 2000 leverage ratios (total equity to total assets), the FHLB System was at 4.78 percent, Freddie Mac was at 3.23 percent, and Fannie Mae was at 3.09 percent.[14] At the same time, the thrift industry, with its mortgage-oriented focus, had a combined leverage ratio of 8.45 percent.

Fannie Mae and Freddie Mac are very profitable financial institutions. For 2000, return on equity (ROE) was 25.6 percent for Fannie Mae and 22.8 percent for Freddie Mac. In contrast, the combined ROE in 2000 for all FDIC-insured commercial banks was 14.0 percent.

The Housing GSEs' Relationship with the Federal Government

While the housing GSEs do not receive appropriated funds to carry out their public missions, Congress has bestowed numerous benefits upon them that result in lower costs. These benefits represent a subsidy because fully private firms would be willing to pay the federal government for similar privileges.

The housing GSEs receive benefits through their federal charters that directly lower their operating costs. Most notably, the three GSEs are exempt from paying state and local corporate income taxes. Also, the three are not required to register their debt and mortgage-backed securities issues with the Securities and Exchange Commission.

More importantly in dollar terms, several explicit statutory and regulatory benefits serve to lower the housing GSEs funding costs by appearing to grant their securities an "implicit" federal guarantee.[15] Studies by the CBO (1996, 2001), the U.S. Department of the Treasury (Treasury) (1996), and the U.S. General Accounting Office (GAO) (1996) have identified these benefits.[16] First, the Treasury is authorized to lend $2.25 billion to both Fannie Mae and Freddie Mac and $4 billion to the FHLB System. Second, GSE securities are considered government securities under the Securities and Exchange Act of 1934. Third, GSE securities are lawful investments for federal fiduciary, trust, and public funds. Fourth, national banks can invest in GSE securities without limitation. Fifth, GSE securities are eligible for issuance and transfer through the Federal Reserve System's book-entry system. Finally, GSE securities are eligible collateral for public deposits and for loans from Federal Reserve Banks, and the Federal Reserve may buy and sell such securities in the course of open market operations. (The box on page 34 provides an overview of the relationship between the Federal Reserve System and the housing GSEs.)

The implicit guarantee is also a product of past government actions to assist troubled GSEs. During the late 1970s and early 1980s, Fannie Mae was insolvent on a market value basis and benefited from supervisory forbearance.[17] In the late 1980s, the Farm Credit System required a taxpayer bailout totaling $4 billion.[18] (The GAO 1990, 90–91, discusses these episodes.)

While the benefits outlined above are valuable to the housing GSEs, none require an annual appropriation of funds from the federal government.[19] Given that the federal government generally accounts only for actual outlays, payments associated with the implicit guarantee would appear on the budget only if one of the housing GSEs were unable to meet its obligations and received financial assistance from the government. In this respect, providing an implicit guarantee is like agreeing to co-sign a loan. A parent who co-signs a loan for an adult child is conveying a valuable benefit to the child in that the loan is made on terms that would not be available absent the parent's co-signing. The parent can provide this benefit without an actual outlay of funds provided the child pays on time, but if the borrower cannot pay, the guarantee may turn out to be very expensive.

Do the Housing GSEs Retain Part of the Federal Subsidy?

Fannie Mae and Freddie Mac are very profitable financial institutions.[20] For 2000, return on equity (ROE) was 25.6 percent for Fannie Mae and 22.8 percent for Freddie Mac.[21] In contrast, the combined ROE in 2000 for all FDIC-insured commercial banks was 14 percent. Such figures lend some credence to claims that these institutions are retaining part of their federal subsidy. Hermalin and

Jaffee (1996) suggest that the federal benefits (and associated subsidy) afforded Fannie Mae and Freddie Mac limit competition in the secondary conforming mortgage market by erecting barriers to entry.[22] While Fannie Mae's and Freddie Mac's financial performances are consistent with retaining part of the federal subsidy, they may also be consistent with exceptionally good management. Further research should be aimed at isolating any market power effects from efficiency effects in the profitability of Fannie Mae and Freddie Mac.

In response to a congressional request to examine the desirability and feasibility of privatizing Fannie Mae and Freddie Mac, the CBO (1996) and the Treasury (1996) provided an analysis of the net benefit of federal sponsorship to the two institutions. For 1995, both studies concluded that these net benefits totaled about $2 billion. The CBO (2001) refined and updated this analysis for all three housing GSEs. For 2000, this study estimated the gross subsidy to the three housing GSEs to be $13.6 billion and the net benefit $6.6 billion. The estimated benefit to shareholders of Fannie Mae and Freddie Mac was $2.3 billion and $1.6 billion, respectively.

Fannie Mae and Freddie Mac dispute the CBO's findings and argue that their institutions do not retain any subsidies and, in fact, create value for homebuyers. The different conclusions reached by the CBO and the housing GSEs arise from several disagreements about the appropriate methodology for estimating the net benefit to the GSEs.[23]

The accounting exercise conducted in CBO (2001) first involves estimating the gross subsidy accruing to the housing GSEs and then examining how this subsidy is distributed between conforming homebuyers and GSE shareholders. Under the CBO's approach, the gross subsidy to the housing GSEs consists of three parts: a subsidy from debt financing, a subsidy from issuing mortgage-backed securities, and a subsidy from regulatory and tax exemptions.[24] Estimation of the distribution of the housing GSEs' subsidy to homebuyers and shareholders relies on comparing interest rates on conforming loans to rates on similar jumbo mortgages.

13. For example, between 1990 and 2000, Fannie Mae's retained mortgage portfolio as a percentage of its mortgage-backed securities outstanding (and not held by the firm) increased from 40 to 86 percent.
14. These figures do not account for the credit guarantees provided by Fannie Mae and Freddie Mac for their mortgage-backed securities.
15. By law, GSE securities are required to include language indicating that they are not guaranteed by, or otherwise an obligation of, the federal government.
16. In addition to the benefits outlined in this paragraph, Ugoletti (1997) notes that two additional ties to the federal government distinguish GSEs from private corporations. First, Congress created GSEs to meet a public purpose, restricts their activities, has federal regulators to oversee them, and retains authority to dissolve them or modify their charter. Second, the president appoints some members to each GSE's board of directors.
17. Kane and Foster (1986) provide annual market value estimates for Fannie Mae between 1978 and 1985. They find that, during this period, the federal government provided implied annual credit support ranging from $600 million to $11 billion.
18. The Farm Credit System is a GSE consisting of a nationwide cooperative network of financial institutions (and their affiliates) that provides credit and related services to farmers, ranchers, rural homeowners, and agricultural-related businesses.
19. For example, the cost of the exemption from certain state and local taxes is borne by those governments.
20. Profitability figures for the FHLB System are less meaningful in this context. As cooperatives, FHLB institutions may distribute benefits to their owner-members through either more favorable product terms or dividends.
21. In its *2000 Annual Report*, Fannie Mae notes (page 4) that it has "14 years of steady earnings growth," and its financial statements show a return on average equity in excess of 25 percent for 1998, 1999, and 2000. Freddie Mac reports in the "Financial Highlights" section of its *2000 Annual Report* that its return on common equity exceeded "20 percent for the nineteenth consecutive year."
22. This argument is not necessarily inconsistent with a point made by Carlton, Gross, and Stillman (2002) that Fannie Mae and Freddie Mac lower the cost of conforming mortgages for homebuyers and thereby increase consumer welfare. Both claims can be true if the marginal subsidy to the two GSEs from funding or guaranteeing a mortgage exceeds any marginal subsidy to their competitors for the same activity. Fannie Mae and Freddie Mac could offer part of the subsidy in the form of lower mortgage interest rates, which their competitors could not profitably match unless they were more efficient. The result would be to give the two GSEs market power, allowing them to retain part of their federal subsidy while also providing lower mortgage interest rates to homebuyers.
23. The CBO also argues that it makes assumptions that are arguably more favorable to the housing GSEs but that the GSEs object only to assumptions they considered unfavorable. Thus, any fair restatement of its results would require, according to the CBO, a reconsideration of its assumptions that favored the GSEs' views.
24. Feldman (1998) notes that three approaches to estimating the value of the implicit guarantee have been offered. In addition to estimating the debt financing spread (for example, CBO 2001), some have valued a put option (for example, Schwartz and Van Order 1988) while others compared the difference between the market values of assets and liabilities to market capitalization (Kane and Foster 1986).

BOX

The Federal Reserve and the Housing GSEs

The Federal Reserve System's interest in the housing GSEs arises directly from these institutions' large-scale issuance of debt and mortgage-backed securities. Indeed, the risk associated with these instruments touches three of the Fed's key responsibilities: monetary policy, bank supervision and regulation, and payment system stability and efficiency.

Monetary Policy

The Federal Reserve's primary monetary policy tool is open-market operations, which involve the purchase or sale of fixed-income securities. As of year-end 2000, the Federal Reserve System's Open Market Account (SOMA) held $512 billion in Treasury securities representing nearly all security holdings. At that time, the SOMA also held $130 million in GSE debt securities, but that amount has slowly dwindled over time. Nevertheless, the Federal Reserve accepts GSE securities (both debt and mortgage-backed) as part of the repurchase agreements they enter into as part of open-market operations.[1] In fact, according to Federal Reserve Bank of New York (2001), the $43.4 billion in repurchase agreements on the books as of year-end 2000 was approximately collateralized by Treasury securities (40 percent), GSE debt securities (30 percent), and GSE mortgage-backed securities (30 percent).

The question of whether the Federal Reserve should begin purchasing significant quantities of GSE debt securities or accepting them (on an ongoing basis) as collateral for repurchase transactions has arisen because of the declining issuance of new Treasury securities. Specifically, as new issuance and the level of privately held marketable Treasury debt recedes, the liquidity of these markets may suffer. The Federal Reserve is currently studying alternative asset classes and selection criteria that could be appropriate for the SOMA (see Federal Reserve Bank of New York 2001, 3).

Bank Supervision

The Federal Reserve supervises and regulates all U.S. bank holding companies as well as state member commercial banks and foreign banks operating in the United States. Federal regulations limit these institutions' holdings of the debt securities of any one firm to 10 percent of the institution's total equity. However, investment in GSE securities is exempt from this limitation. This issue was highlighted in former Treasury Undersecretary Gary Gensler's (2000) testimony to Congress as an illustration of the systemic risk posed by the housing GSEs.

As of year-end 2000, over half of all U.S. banks held GSE debt securities exceeding their total equity capital. While these amounts are aggregated across all GSEs, the three housing GSEs undoubtedly dominate these figures because they account for 96 percent of all GSE debt outstanding.[2] Further, even though the three housing GSEs are separate firms, their fortunes are highly correlated because their exposures are so similar (that is, residential real estate). Significant concentrations of credit exposure to the housing GSEs (over 100 percent of total equity capital) is most notable for small banks (under $500 million in total assets) (see the table). However, nine of the eighty largest banks (all with total assets greater than $10 billion) held GSE debt exceeding their capital as of year-end 2000.

TABLE

Capital Exposure to GSE Debt by Bank Size

	GSE debt as a percent of total capital									
	0–10%		10–50%		50–100%		> 100%			
Bank size	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number of banks	Percent of banks
Less than $500 million	839	11.09	1,088	14.38	1,699	22.45	3,941	52.08	7,567	91.70
$500 million–$10 billion	120	19.83	162	26.78	140	23.14	183	30.25	605	7.33
More than $10 billion	37	46.25	29	36.25	5	6.25	9	11.25	80	0.97
Total	996	12.07	1,279	15.50	1,844	22.35	4,133	50.08	8,252	100.00

Note: Data as of December 31, 2000

Source: December 31, 2000, Bank Consolidated Reports of Condition and Income

Payment System Stability

Like the Treasury, the housing GSEs use the Federal Reserve as their fiscal agent. This statutory benefit allows them to use the Federal Reserve's national book-entry system, which facilitates the issuance, safekeeping, transfer, and settlement of securities. The housing GSEs pay for this service and would not pose any substantial risk to the payment system to the extent that the Federal Reserve does not extend them daylight credit.

In carrying out the aforementioned functions, the Federal Reserve also helps stabilize the financial system and contain systemic risk in financial markets. As discussed by Gensler (2000), the housing GSEs do pose these kinds of risks. Indeed, as the housing GSEs continue to grow, their securities are held by a wider array of investors—and in increasing quantities. For example, the lack of a limitation on GSE security holdings by federal depository institution regulation has served to increase the demand for these obligations. Moreover, foreign investors (including foreign central banks) hold substantial volumes of GSE securities.[3] The classification of GSE securities as government securities for purposes of the Securities and Exchange Act of 1934 has also allowed them to make up a significant portion of the assets held by fixed-income government securities funds.[4] Finally, the housing GSEs have also begun marketing their debt directly to individual investors via their respective Web sites. In short, while the default risk associated with GSE securities is small, if a problem occurs, its ramifications could be widespread: Individual and institutional investors both in the United States and abroad would be affected.

1. In 1999, the Federal Reserve began accepting GSE mortgage-backed securities as collateral for repurchase agreements in anticipation of the century date change (January 1, 2000). This provision was originally set to expire on April 30, 2000, but was extended to year-end 2000. The guidelines for the conduct of the Federal Reserve's open-market operations in GSE security issues can be found in Appendix B of Federal Reserve Bank of New York (2001).
2. These estimates are based on data provided by the Bond Market Association (2001) for Fannie Mae, Freddie Mac, the FHLBs, and the Farm Credit System. Data for Farmer Mac is from their 2000 annual report.
3. Baker (2001) states that some seventy central banks hold about $100 billion in GSE debt.
4. The Securities and Exchange Act of 1934 defines government securities as including "securities issued or guaranteed by principal and interest by any corporation the securities of which are designated, by statute specifically naming such corporation, to constitute exempt securities within the meaning of the laws administered by the [Securities and Exchange] Commission." Thus, the fact that the housing GSEs are exempt from SEC filing requirements by their respective charter acts results in their securities being treated as government securities.

The difference between the benefits accrued by the housing GSEs and the amount that homeowners save on GSE-financed mortgages represents the net benefit accruing to the GSEs' shareholders.

Estimating federal subsidies to the housing GSEs. In CBO (2001), the subsidy from debt financing was based on an assumed funding mix (20 percent short-term debt and 80 percent long-term debt) for the housing GSEs and their respective yield advantage relative to fully private firms. Looking at the average spreads for each housing GSE over the 1995–99 period, the study finds that Fannie Mae and Freddie Mac long-term debt securities traded 49 basis points below comparable corporate debt while FHLB securities traded at 44 basis points below.[25] The CBO assumed that the spread on short-term debt was 15 basis points. These spreads were then multiplied by the increase in debt outstanding during the current year and the amount of new debt estimated to have been issued to finance the replacement of maturing mortgages in that year. That measure of the subsidy flow in the current year is then projected forward with an assumed life of seven years and capitalized at a discount rate equal to the housing GSEs' borrowing cost.

25. The annual estimates of the housing GSEs' funding advantage range from 43 to 60 basis points for Fannie Mae and Freddie Mac and 37 to 51 basis points for the FHLBs. The analysis uses bonds from sixty-three A-rated and eight AA-rated bond issuers and matches 364 bonds issued by financial firms to 298 Fannie Mae and Freddie Mac issues and 379 financial bond issues to 869 FHLB issues.

The study focused exclusively on newly issued, noncallable debt securities with maturities greater than one year. The approach matched newly issued securities to reduce any liquidity premiums inherent in the spreads.

Fannie Mae (2001), Freddie Mac (2001), Toevs (2001), and Pearce and Miller (2001) express several concerns about the CBO's method of calculating the funding subsidy (see also congressional testimony by Howard 2001 and Delk 2001). First, all four papers argue that the basis of comparison should be only AA-rated, nonfinancial firms because Standard and Poor's recently rated both Fannie Mae and Freddie Mac as AA– in terms of their risk to the government. However, Beers and others (2001), in describing Standard and Poor's basis for assigning those ratings to GSEs, note that the rating incorporates "whatever government support or intervention the entity typically enjoys in the normal course of business." The one government benefit that is excluded is "any extraordinary government assistance that might be expected in the event of a crisis."

The housing GSEs receive a large part of their federal subsidy through the market's perception of an implicit guarantee of their debt. It is well understood that such guarantees create an incentive to increase risk taking.

While the appropriate point of comparison for the housing GSEs' funding advantage may be somewhat subjective, a recent paper by Ambrose and Warga (2001) provides a useful context for future estimates.[26] The authors analyze the spreads on newly issued housing GSE and financial firms' bonds over comparable-maturity Treasury securities, adjusting for several variables, including issue size, credit rating category for private issuers, and GSE indicators. Ambrose and Warga find average spreads over the 1995–99 period (relative to Fannie Mae issues) to be 29 basis points on AA-rated bonds, 46 basis points on A-rated bonds, and 83 basis points on BBB issues.[27]

Second, the four papers argue that the amount of long-term debt in the CBO's estimated funding mix is significantly overstated because it focuses on the effective duration of the GSEs' debt (achieved through swap agreements) rather than original duration. Based on original duration, long-term debt makes up about 50 to 60 percent of Fannie Mae's and Freddie Mac's funding mix. However, Crippen (2001), on behalf of the CBO, notes that long- and short-term debt whose maturity is synthetically extended are equivalent in function and thus that total funding advantages should be approximately equal.

Third, Fannie Mae (2001) and Toevs (2001) argue that, because insured depositories issue so much less debt, comparisons with them overstate the GSEs' funding advantage. Bank senior debt is the highest-cost and smallest component of a bank's funding base and is subordinate to depositors, the FDIC, and the FHLB System. The primary reason that GSE yield spreads are compared to those of financial firms is their similarity in capital structure—that is, both are relatively highly leveraged. Nevertheless, additional research examining the determinants of credit spreads for financial and nonfinancial firms relative to the housing GSEs would be useful for understanding the extent of any bias.

Fourth, Fannie Mae (2001) Freddie Mac (2001), and Pearce and Miller (2001) contend that the yields on housing GSE debt reflect not just credit risk but also the liquidity arising from innovative and efficient funding operations. While this argument may be true, much if not all of this enhanced liquidity arises from the housing GSEs' relationship with the federal government. For example, demand for housing GSE obligations is materially increased (and the financing cost to the housing GSEs decreased) because the obligations are treated as government securities for purposes of the Securities and Exchange Act. Additional research on credit spreads identifying the credit, GSE liquidity, and general liquidity components may help clarify this issue.

Finally, Freddie Mac (2001) and Pearce and Miller (2001) are critical of the CBO's capitalization of the funding subsidy in the year of debt issuance, noting that it can provide anomalous results. For example, if the GSEs' portfolios are contracting faster than the projected rollover amounts, the CBO's method may compute negative subsidies. The CBO (2001) states that its approach is consistent with the objectives of generally accepted federal accounting principles and budgetary practices. Toevs (2001) also notes that the CBO's assumed average life of mortgages (seven years, used for computing the present value of future benefits) is overstated based on the housing GSEs' current portfolio.

The CBO's analysis incorporates 30 basis points in subsidy per dollar of mortgage-backed securities issued by Fannie Mae and Freddie Mac. Theoretically, this subsidy arises from a difference in the yield between comparable GSE-issued and privately issued mortgage-backed securities. The CBO assumes that 25 basis points of this subsidy reflects the jumbo/conforming interest rate differential (discussed below) while the remaining 5 points represents a net benefit to Fannie Mae and Freddie Mac associated with higher credit guarantees.[28] Like

the debt securities, the gross subsidy to the mortgage-backed securities is assumed to be capitalized in the year of the issue.

Fannie Mae (2001) and Toevs (2001) argue that there is no subsidy to the housing GSEs associated with the guarantees they provide on mortgage-backed securities. Indeed, these papers recognize only the estimated 25 basis point benefit to homebuyers. The papers also criticize the CBO's method of calculating the 5 basis point net benefit as not being analytically rigorous.

The approach advocated by Fannie Mae (2001) and Toevs (2001) ignores the advantages that Fannie Mae and Freddie Mac have in issuing mortgage-backed securities. These include not having to obtain costly credit enhancements and holding less equity capital than would be required of fully private firms. The CBO ascribed a 30 basis point advantage to these GSEs that ultimately represents a difference in the yield between GSE mortgage-backed securities and those issued by fully private firms. However, direct comparisons are difficult to make because of differences in issuer quality, security structures, and underlying collateral. The CBO's deductive approach ultimately subtracts the 25 basis points estimated to be passed onto homebuyers, resulting in a 5 basis point net subsidy. While the accuracy of the net subsidy point estimate is open to further academic debate, it is certainly inappropriate to dismiss the gross benefits that Fannie Mae and Freddie Mac receive when issuing these securities while counting the benefits to homeowners.

The CBO also estimates the value of the housing GSEs' exemption from state and local income taxes, the exemption from SEC registration requirements, and the lower cost of obtaining credit ratings for their debt and mortgage-backed securities issues. This estimate was obtained by applying appropriate corporate tax rates to the housing GSEs' net income and registration and examination fees to their annual new debt flows. Toevs (2001) argues that this approach overstates the housing GSEs tax benefits because (1) any state and local taxes paid would be deductible from income for purposes of federal taxation and (2) the housing GSEs would operate in such a way as to avoid some of this additional taxation.

Benefits to homeowners. As mentioned earlier, the CBO estimates the distribution of the subsidy by Fannie Mae and Freddie Mac by comparing interest rates on conforming loans to rates on similar jumbo mortgages. For survey data on individual mortgage loans, the contract interest rate is statistically filtered so as to hold other factors constant, such as loan size, loan-to-value ratio, lender type, and whether the home represents new construction. The CBO study estimates that, on a quarterly basis over the 1995–2000 period, the average conforming jumbo interest rate differential was 22 basis points.[29] The CBO also estimates that the influence of the FHLBs serves to lower jumbo mortgage rates by 3 basis points. Therefore, CBO estimates that the three housing GSEs combined reduce interest rates on conforming mortgages by 25 basis points. This figure is then multiplied by the dollar value of all GSE-related mortgages originated during the year and capitalized based on an average mortgage life of seven years and a discount rate equal to the average thirty-year fixed mortgage interest rate.

Fannie Mae (2001), Freddie Mac (2001), Toevs (2001), and Pearce and Miller (2001) contend that all eligible borrowers enjoy the benefit of lower conforming mortgage interest rates. Whether all eligible borrowers should be included in the analysis and what other costs should be included depends on which question is being asked. If the question is whether the GSEs retain part of the subsidy, as is the case in the analysis by the CBO (1996, 2001) or the Treasury (1996), the reduced costs to other mortgage borrowers should not be included because this reduction is obtained at no cost to the GSEs.[30] Alternatively, if the question is what the overall social benefit of the housing GSEs is, the reduced rates are relevant, but so are the costs of diverting funding from other purposes to housing.[31] The one case where the benefits of reduced rates should be included, but the costs of diverting funding excluded,

26. This study extends work the authors did for the CBO (2001).
27. Ambrose and Warga also find that spreads on FHLB System issues are statistically the same as those from Fannie Mae but that Freddie Mac's carry a 5 basis point premium.
28. The Treasury (1996) had previously estimated the retained subsidy for mortgage-backed securities at 5 basis points.
29. Previous analysis conducted by Cotterman and Pearce (1996) and Hendershott and Shilling (1989) found the jumbo/conforming interest rate differential to be about 30 basis points. Passmore, Sparks, and Ingpen (2001) estimate this differential to be 18 to 23 basis points. These authors note, however, that these spreads can change markedly over time and that analysts should have little confidence in any single point estimate.
30. This question would be relevant, for example, to a policy debate over whether the housing GSEs' special privileges should be auctioned to the highest bidder rather than merely given to the existing GSEs.
31. This question would be relevant if the issue were whether the government should subsidize housing.

is the question of whether the GSEs are an efficient mechanism for subsidizing housing.[32]

Freddie Mac (2001) and Pearce and Miller (2001) also argue that the 25 basis point differential is understated and that the benefits to homebuyers provided by the housing GSEs are greater than the CBO has estimated. They point to potential problems with the data sample employed in the CBO's statistical analysis.

Calomiris (2001) discusses some additional benefits that the housing GSEs may provide as a result of their dominant positions in housing finance. While his essay dismisses these benefits, at least three of Calomiris's points may deserve further research attention. First, the housing GSEs may enhance efficiency to the extent that there are economies of scale associated with their operations. Second, the housing GSEs may spur innovation by acting as a focal point for new technology standards, such as automated underwriting. Third, the GSEs may provide stability to the mortgage market by continually acting as a large secondary mortgage market maker irrespective of market conditions.

Concerns about the housing GSEs' safety and soundness have led to a debate on potential reforms to existing regulation and regulatory structures; a legislative proposal in 2000 covered many of the major topics.

What Are the Issues in Reforming Housing GSE Regulation?

The federal government has taken actions to ensure both the safety and soundness and mission compliance of the three housing GSEs. HUD and an independent agency within HUD, the Office of Federal Housing Enterprise Oversight (OFHEO), regulate Fannie Mae and Freddie Mac. HUD regulates the mission-related activities of Fannie Mae and Freddie Mac, while the OFHEO focuses on ensuring their safety and soundness.[33] The Federal Housing Finance Board (Finance Board) is the sole regulator of the twelve FHLBs. The OFHEO and the Finance Board conduct examinations, set capital adequacy standards, and enforce safety and soundness regulations.

While the OFHEO and the Finance Board are in many ways similar to bank regulators, the GAO (2001) points out that the powers granted to these entities are inferior to those of federal bank supervisors in a variety of ways. One difference, emphasized by Carnell (2001), is that neither the OFHEO nor the courts have unambiguous authority to appoint a receiver in the event that either Fannie Mae or Freddie Mac becomes financially distressed.[34] Previous studies by the GAO (1997a, 1998a) uncovered additional shortcomings in the housing GSEs' oversight structure.[35]

While a number of reform proposals have been offered, provisions in the Housing Finance Regulatory Improvement Act of 2000 (H.R. 3703) addressed most of the major issues that have been raised in this debate. The bill was jointly introduced by Richard Baker and James Leach on February 29, 2000. Title I of this proposed legislation focused on improving the supervision of the housing GSEs and reducing any systemic risk they may pose to the financial system. To that end, the bill sought to establish a Housing Finance Oversight Board. This new regulatory body would have succeeded HUD, OFHEO, and the Finance Board to consolidate the mission and safety and soundness regulation for the three housing GSEs. The bill outlined several measures to reduce the potential for systemic risk posed by the housing GSEs. These included

- requiring an annual review of the housing GSEs by a nationally recognized statistical rating organization to assess the financial condition on a stand-alone basis;
- allowing the new regulator to make changes to certain statutory parameters dictated for the housing GSEs' risk-based capital stress tests;
- giving the new regulatory body authority to appoint a receiver in the event that one of the housing GSEs became "critically undercapitalized";
- repealing each of the housing GSEs' lines of credit at the Treasury; and
- revoking the "superlien," which currently gives the FHLB System priority over all other creditors in the event of a member's liquidation.

A series of congressional hearings held in 2000 to discuss H.R. 3703 were attended by all interested parties, including the housing GSEs, their regulators, the Treasury, and various consumer groups. Most of the hearings, while informative, broke little new ground. However, Gary Gensler, then Undersecretary of the Treasury for Domestic Finance, provided some important testimony concerning the bill. Gensler (2000) describes why the housing GSEs

pose a systemic risk for the financial system and offers support for certain provisions of H.R. 3703 intended to reduce this risk.

The subcommittee never voted on H.R. 3703. However, Fannie Mae and Freddie Mac voluntarily decided to address some of the safety and soundness concerns that had been expressed. On October 19, 2000, the two GSEs, Congressmen Richard Baker and Paul Kanjorski, and a bipartisan group of members of Congress announced a package of voluntary initiatives to increase public disclosure and enhance the safety and soundness of the two GSEs. Specifically, each institution agreed to

- issue subordinated debt,
- meet certain liquidity standards,
- enhance its disclosure of interest rate and credit risk,
- obtain and disclose annual credit ratings, and
- self-implement a risk-based capital standard on an interim basis.[36]

The extent to which these voluntary initiatives achieve their stated objectives is the subject of a companion article, "Fannie Mae's and Freddie Mac's Voluntary Initiatives: Lessons from Banking," that appears in this issue of *Economic Review*.

Federal Subsidies' Impact on the GSEs' Safety and Soundness

The housing GSEs receive a large part of their federal subsidy through the market's perception of an implicit guarantee of their debt. It is well understood that such guarantees create an incentive to increase risk taking. However, subsidies themselves can reduce this tendency by providing a firm with charter value. This section describes these incentives and how they are related to a financial institution's health.

Many studies of deposit insurance have examined the effect of both explicit and implicit guarantees on depository institution risk-taking behavior. Moral hazard arises from deposit insurance because the presence of a guarantee reduces the sensitivity of the supply of funds to an institution's riskiness, and, in turn, increases the incentive of equityholders to have their institution hold a more risky portfolio because they reap the benefits without having to compensate creditors for their increased risk.[37] As the FDIC (1983, xiii) notes, "the problem is that deposit insurance may come to exert a perverse effect—furthering rather than containing financial instability."[38]

Federal deposit insurance has limits on de jure coverage ($100,000 since 1980), but coverage has often exceeded that level in practice. Former FDIC Chairman William Isaac (1983, ix) once stated that "although insurance coverage is limited to $100,000, in practice we have for years been providing implicit 100 percent protection for depositors and other creditors at most banks, particularly the large ones." Isaac further notes that a side effect of this approach has been to "erode marketplace discipline and provide larger banks a substantial competitive advantage" because of the implicit coverage. The following year, market expectations of 100 percent protection were reinforced by the handling of the collapse of Continental Illinois, in which

32. This question would be relevant, for example, if the policy issue were whether to subsidize housing through the GSEs or by providing direct subsidies to home owners. However, the computations would change substantially if the relevant policy issue were how best to subsidize the purchases of homes by low- and moderate-income families. With this policy question, the reduced rate on mortgages to higher-income families should be excluded from the analysis whether the rate is provided directly through the GSEs or indirectly through their effect on other lenders.
33. HUD's mission regulation is exemplified by its "housing goals" for these two GSEs, which are intended to increase the availability of mortgages to low- and moderate-income borrowers.
34. Carnell (2001, 15) notes that the U.S. Bankruptcy Code "does not permit a federal instrumentality to become a debtor in a bankruptcy proceeding."
35. Besides the studies discussed below, the GAO (1998b) discusses shortcomings in the mission regulation of Fannie Mae and Freddie Mac. The GAO (1997b) outlines the issues associated with consolidating housing GSE oversight (both mission and safety and soundness) within a single agency.
36. Subordinated debt is the lowest-priority claim in the event a firm enters bankruptcy or is put in receivership. That is, the other creditors of the firm are entitled to have their claims fully paid before the subordinated creditors receive any payment.
37. Empirical evidence concerning moral hazard is mixed. Some studies find little evidence of moral hazard (for example, Benston, Carhill, and Olasov 1991), while other studies do find evidence (for example, Hovakimian and Kane 2000 and Brewer, Mondschean, and Strahan 1997). Additional support for the existence of moral hazard is provided by surveys of deposit insurance such the FDIC (1983) and Flood (1992). Hellman, Murdock, and Stiglitz (2000) provide a recent theoretical analysis of the issue.
38. The agency went on to state, "Put somewhat differently, comprehensive government insurance of liabilities is inconsistent with deregulation of the institutions responsible for those liabilities."

all creditors of the bank and its parent holding company were protected. Moreover, after the rescue of Continental Illinois, the Comptroller of the Currency testified before Congress that the largest banks were "too big to fail."[39]

The most visible problems with federal deposit insurance occurred during the late 1980s and early 1990s when losses at failed savings and loans (S&Ls) were of a sufficient magnitude to require taxpayers to provide assistance to the insurance fund. In large part, these losses resulted from thrifts' funding long-term mortgages that paid a low, fixed rate with short-term deposits whose rates were deregulated at a time when short-term rates had increased dramatically (see National Commission 1993). However, Moysich (1997) also points to regulatory differences between banks and thrifts as a cause of the larger thrift losses. He notes that "legislation for S&Ls was driven by the public policy goal of encouraging home ownership" and that, for a variety of reasons, S&Ls' "examination, supervision and enforcement practices were traditionally weaker than those of the federal banking agencies."

Given that deposit insurance creates an incentive for banks to take excessive risk, what is striking about the period from mid-1940s to the early 1970s is the small size of the losses to the deposit insurer.[40] One explanation for these small losses is that depository institutions also had a strong countervailing incentive to retain their charter in order to earn economic profits in future years. Indeed, the expected future profits associated with a bank charter during this period were enhanced by a variety of limits on competition, such as deposit rate ceilings and entry restrictions.[41]

The experience of the banking industry provides some straightforward lessons for the housing GSEs. First, the provision of subsidies in the form of implicit guarantees may increase risk taking, especially if an institution is distressed. Further, these guarantees do not need to be de jure because creditors' incentive to monitor and price risk will decline as long as the probability of a government bailout is not zero. Second, risk-reducing incentives related to charter value will be useful if an institution is healthy but are greatly reduced by financial distress.

Conclusions

Fannie Mae, Freddie Mac, and the FHLBs are large financial institutions that play a key role in our nation's housing finance system. They receive a variety of federal subsidies to help promote home ownership. As with any government subsidy, these institutions' subsidies are open to two questions: Should the government subsidize this activity? Are the subsidies being provided in the most efficient manner possible?

Subsidies to the housing GSEs are only part of a larger set provided to finance housing. The subsidies may provide certain social benefits in the form of increased neighborhood stability and participation although empirical evidence of such benefits is limited. Housing finance subsidies provide private benefits to a well-defined set of individuals, including homebuyers, homeowners, and those providing housing-related services, but such benefits necessarily impose costs on other parts of the economy. These costs are diffuse, making it difficult to measure their impact on any one part of the economy.

Given that the subsidies will continue to be provided, two issues arise about providing them through the GSEs. First, providing the subsidy through a GSE, rather than directly to home buyers, raises the potential for the GSE to retain part of the subsidy. The CBO (2001) estimated that for 2000 the housing GSEs passed along only about half their cost savings to homebuyers. Fannie Mae and Freddie Mac dispute the CBO's findings and offer analysis showing that they do not retain any subsidies and in fact create value for homebuyers. The second issue concerns providing a subsidy in the form of implicit guarantees of the housing GSEs' debt rather than providing a direct subsidy to the GSE. A subsidy in the form of an implicit guarantee creates the appearance of something for nothing: a lower-cost funding for the housing GSEs at no cost to the taxpayers. However, as with co-signing a loan, a seemingly costless guarantee

39. These banks were not literally beyond failure—shareholders could still lose their investment and the senior management could be fired. Rather, the banks were perceived to be too big to be resolved with losses to any depositors. See Black and others (1997) for an examination of market perceptions after the comptroller's statement.

FDICIA restricted the FDIC's ability to protect deposits in excess of the de jure limits. However, Wall (1993) notes that the act's systemic risk exception may be interpreted by investors as leaving the too-big-to-fail policy intact.

40. According to the FDIC (2000, 86), annual outlays for bank failures were less than $2 million per year from 1948 to 1972. After adjusting for inflation, this figure is less than $20 million per year.

41. Empirical evidence on charter value is limited. Keeley (1990) claims to have found evidence for it, but Saunders and Wilson (2001) argue that one of Keeley's tests is biased. Other studies providing empirical evidence of charter value are Demsetz, Saidenberg, and Strahan (1996) and De Nicoló (2000).

can turn out to be very costly. Moreover, providing an implicit guarantee to cover debt obligations may increase risk-taking incentives if the GSE becomes financially distressed. Thus, the provision of the guarantee needs to be accompanied with costly government supervision.

Concerns about the housing GSEs' safety and soundness have led to a debate on potential reforms to existing regulation and regulatory structures; a legislative proposal in 2000 covered many of the major topics. In response to these concerns, Fannie Mae and Freddie Mac announced a series of voluntary initiatives intended to enhance their risk disclosures and safety and soundness. The article on page 45 in this issue of the *Economic Review* examines these initiatives in detail.

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