

Do the benefits exceed the costs? Are there viable alternatives?

A Microeconomic Analysis of Fannie Mae and Freddie Mac

BY ROBERT VAN ORDER

THE MOST IMPORTANT PUBLIC POLICY ISSUES RAISED BY government-sponsored enterprises (GSEs) like Fannie Mae and Freddie Mac (F and F) revolve around their charters and the perception of government support that goes with the charters, giving them “embedded options” not available to most other businesses. These options mostly take the form of conjectured guarantees and conjectures about conjectured guarantees. The options affect prices and provide incentives. They can be viewed as either subsidies or tools. Of course they are both. Public policy should be about making sure that the options are structured and regulated so that the benefits of GSEs exceed their costs.

My focus is on methodology and research questions rather than specific answers. I shall propose some simple models that are consistent with history but are mainly meant to be illuminating counterexamples rather than well-developed theories. I want to do two things: first, analyze what standard welfare economics has to say about policy and GSEs, and, second, analyze what existing data can and cannot support about the effects of GSEs. My conclusions are that welfare economics is ambiguous and that data are too shaky and empirical work is too sparse to support much of anything about the effects of F and F.

Robert Van Order is chief economist for Freddie Mac. This article represents the views of the author and not necessarily those of Freddie Mac. A preliminary version of this article was presented at an American Enterprise Institute conference in 1999. (See Robert Van Order, “Notes on the Economics of Fannie Mae and Freddie Mac,” in *Fannie Mae and Freddie Mac: Public Purposes and Private Interests*, vol. 1, edited by Peter J. Wallison, American Enterprise Institute, 1999.) Future issues of *Regulation* will carry alternative views about Fannie Mae and Freddie Mac.

There is little hard evidence on the magnitude of either costs or benefits.

Taking the economics of the question seriously limits the things that can be believed simultaneously. For instance, it is difficult to believe both that F and F convey distortionary subsidies to the mortgage markets, which makes mortgage rates too low, and that they stifle competition, which makes rates too high.

SOME HISTORY

THE STRUCTURE OF THE MORTGAGE MARKET HAS CHANGED dramatically in the last quarter century, primarily because of the rise of the secondary markets. This rise has come about largely because of standardization of pools of mortgages brought on by three secondary market agencies: the Federal National Mortgage Association (Fannie Mae), the Government National Mortgage Association (Ginnie Mae), and the Federal Home Loan Mortgage Corporation (Freddie Mac). Annual sales of mortgages to these three institutions have risen from \$69 billion in 1980 to about \$700 billion in 1999; they now own or are responsible for about

half of the outstanding stock of single-family mortgages. This growth has been accompanied by a decline in the market share of the traditional lenders, thrift institutions (e.g., savings and loans).

Fannie Mae, the oldest of the agencies, was established in the 1930s as a government-owned secondary market for newly created Federal Housing Administration (FHA) loans. For much of its history it operated like a national savings and loan, gathering funds by issuing its own debt and buying mortgages that were held in portfolio. This was a particularly useful function during credit crunches when deposit rate ceilings limited the ability of savings and loans to raise money. Fannie Mae was, in effect, the only

the United States are not the same as the reasons for its continuation. For instance, Fannie Mae was created because of the Great Depression, the collapse of housing markets, and the reluctance of lenders to invest in the new FHA loans; it was privatized in 1968 to get it off budget because of budget pressures from the Vietnam War. Deposit rate ceilings, which limited the ability of thrifts to raise money for mortgage loans, were a major factor in the rising importance of Fannie Mae in the 1960s and 1970s and in the creation of Freddie Mac in 1970, but deposit rate ceilings no longer exist. Similarly, the inability of thrifts to operate nationally was also important in the rise of the secondary markets, but national deposit markets and liberalized branching rules have limited the importance of this factor. None of these are important issues any more.

The main reason now for the important role of F and F is that they have been a low-cost way of raising money. That is primarily because of economies of raising money wholesale in the capital markets, economies in purchasing and servicing of large numbers of mortgages, and because

their charter gives them benefits that are comparable to those received by thrifts (more broadly depository institutions)—for example, from deposit insurance. However, depositories remain a major source of funds. The markets in which they raise money have become more efficient, they have increased access to fee rather than interest income from loans, they have information advantages because they originate loans and can select better loan customers than F and F, and they have a genuine full faith and credit guarantee from the government. Their market share has risen in the 1990s. Currently about 60 percent of conventional loan originations (half of conventional conforming) do not go to Fannie Mae and Freddie Mac.

MICROFOUNDATIONS

THE ANALYSIS OF GSES NEEDS A MICROECONOMIC FOUNDATION. My analysis is as follows.

The Industry The relevant industry for F and F is not the secondary market but the mortgage market as a whole. The distinction between the primary and secondary markets is largely irrelevant, economically. What matters is that there are different ways of getting money from capital markets as a whole to the mortgage market. There are two major routes for conventional mortgages: via depositories and via F and F. Both take advantage of some sort of federal backing. The fully “private” market is small and has been small for at least the past 60 years. The development of the mortgage market over the past 25 years has largely been characterized by one type of federally sponsored institution (GSES) taking some of the market share of another (the depositories).

The competitive structure might best be characterized as “dueling charters” (a variant of a description used by

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deregulated and nationwide savings and loan.

In 1968 Fannie Mae was moved off budget and set up as a shareholder-owned GSE, which in the 1970s switched its focus toward conventional (non-government-insured) loans. Ginnie Mae was created in 1968 to handle Fannie Mae’s policy-related tasks and to provide a secondary market for government-insured loans. It developed the first mortgage-backed security in 1970. It is on the federal budget as a part of the U.S. Department of Housing and Urban Development (HUD). Freddie Mac was created in 1970 to be a secondary market for the savings and loans. Like Fannie Mae it is a GSE. It initiated the first MBS program for conventional loans in 1971.

Because Ginnie Mae is on budget its securities have a full faith and credit federal guarantee. Because Freddie Mac and Fannie Mae are private corporations neither has an explicit guarantee, but both have a nebulous, “conjectured” guarantee, a perception by the financial markets that the government stands behind their debt, which allows them to borrow (or sell mortgage-backed securities) at interest rates lower than they would otherwise. Both are regulated by HUD for their public-purpose missions and by the Office of Federal Housing Enterprise Oversight (OFHEO) for safety and soundness. F and F are now quite similar and compete in the conventional mortgage market as buyers of mortgages and in the securities markets as sellers of mortgage-backed securities and issuers of debt. Their main constraint in the conventional market is that they cannot buy loans above the “conforming loan limit,” which is \$252,700 for a single-family mortgage in 2000 and which is adjusted each year by an index of house prices. About 20 percent of the conventional market (in dollars) is above the conforming loan limit.

The reasons for starting up the secondary market in

Michael Lea (see “Dueling Guarantees” in *Secondary Mortgage Markets*). That is, there are two major charters in the industry: one for depositories and one for GSEs. Both involve embedded options, and both have offsetting restrictions on lines of business, capital regulation, and mission regulation. Both types of charter promote different ways of connecting mortgage markets with the financial markets. Historically the competitive balance between the charters has been determined primarily by cyclical movements in thrift capital levels and by the balance between the economies F and F have in raising money (and their lower other costs) with the advantages local depositories have in selecting the best loans. Banks are no more “private” than GSEs.

There is competition. The F and F share of originations in the conventional market was high in the early 1990s when the savings and loans were in trouble, but it has fallen since. It was more than 60 percent in 1993, but it fell to less than 30 percent for a while in 1994 and has fluctuated since, mostly around 40 percent (about half of conventional conforming). I do not claim that price equals marginal cost; rather I do not believe that the difference between price and marginal cost in the mortgage market is different from that in most other industries. Economic theory says little more than that in an industry like the mortgage industry price will be somewhere between the monopoly price and marginal cost, and there has not been empirical work that can tell us much about which end of the spectrum is closer to the truth.

Benefits of the GSE Charter Whether (and the extent to which) F and F get a subsidy has been a source of controversy. It is clear that they borrow at lower rates than they would if they had the same portfolio but a different (and nondepository) charter. Recent “stand alone” ratings by Standard and Poor’s put both companies in the (low) double A (AA) range on their own, but they borrow at less than triple A (AAA) rates. This difference looks like a subsidy. It is off budget, not all of it can be considered a net benefit, and it is not just a guarantee fee in the sense of measuring the expected costs to taxpayers of a bailout (e.g., it includes other charter benefits, like scale economies, and scarcity of the charter, which are benefits but do not increase probability of bankruptcy and may decrease it). Nonetheless, in terms of economics it acts like a subsidy, and it affects resource allocation like a subsidy. But words can be confusing; so I choose to call it a “benefit” and distinguish between the gross benefit, which equals the spread just discussed, and the net benefit, which is what actually affects resource allocation. This distinction is discussed below.

The size of the gross benefit should be straightforward to measure; it is relatively easy to look up interest rate spreads for comparable debt. Use of Bloomberg data like those used

in a 1996 U.S. Department of the Treasury study (*Government Sponsorship of the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation*) results in a spread between GSE and AA interest rates for comparable debt that ranges from about 15 to 36 basis points (bp) since 1992. (A basis point is equal to a hundredth of a percentage point.) For A the range has been 20 to 75 bp. A reasonable range, then, is something like 20 to 40 or 50 bp, currently on the low side of the range, rather than the higher levels quoted in the Treasury study and a study by the Congressional Budget Office (CBO) (*Assessing the Public Costs and Benefits of Fannie Mae and Freddie Mac*). The reason Treasury’s study had higher spreads is primarily that it looked at single A rate spreads

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(rather than AA minus) and spreads have fallen since then.

Offsetting some of the benefits of the GSE charter are costs of constraints from the charter, which should be netted out. On the other hand there are other advantages such as exemptions from state and local (but not federal or property) income taxes and Securities and Exchange Commission registration. These are probably worth on the order of a few basis points but are dominated by variations in borrowing spreads.

Similar calculations can, in principle, be made for depositories by comparing the cost of their (uninsured) debt with the cost of deposits. The calculations are difficult because the debt of most depositories is unrated, but it is doubtful that much of the industry is close to A or AA. Few banks have ratings of AA or better (none are AAA now); most are in the A to BBB range. Most thrift institutions that are rated are BBB or worse, and the unrated part of the industry is probably worse than these ratings. Deposit insurance premiums should be netted out, when they are paid (most depositories currently do not pay premiums). For instance, if the deposit insurance premium is 20 bp and the GSE benefit is 30 bp, then the benefit to depositories is greater than the benefit to GSEs if depositories would have to pay 50 bp or more than current deposit rates absent deposit insurance. Bloomberg data suggest that, as a crude benchmark, spreads between GSE debt and BBB tend to be between 40 and 100 bp (from 1992 through 1998). At the end of 1998 it was high at a bit over 100. Spreads from Treasuries have run between 50 and 160.

These calculations, like those in the CBO, Treasury, and other studies, focus on debt costs. Equity does not receive many direct benefits from either charter (e.g., GSEs do not pay state income taxes). The main benefit is that

equity investors benefit indirectly from lower debt costs. Both depositories and GSEs are mainly debt financed, so equity costs are a small part of the overall costs of funds. Nonetheless, debt-to-equity ratios for the two charters are not the same, and the interactions of different ratios with the tax treatment of equity and debt (debt is tax-favored relative to equity) may also have implications for cost differences across charters.

Incentives GSEs and depositories can be expected to take account of their charter benefits when they make decisions. A value-maximizing firm with a completely unconstrained guarantee will tend to take on as much risk as it can in order to exploit the guarantee. But guarantees are never unconstrained. If it is possible for the institution to be shut down or for management and shareholders to lose control of the company, it will have incentives to control risk so as to maintain access to future benefits. Thus, although a guarantee might produce incentives to take excessive risk, GSEs also have a franchise that induces them to be conservative.

Of course both F and F take on some risk. Their franchise is worthless if all they do is hold the equivalent of match-funded Treasuries. The major risk of risk-taking comes from the extent to which GSEs have the option to take on more risk (gamble for resurrection) if they do get into trouble, the franchise depreciates in value, and the regulators do not catch on fast enough. Theory suggests that F and F will balance franchise and guarantee considerations, but it provides little insight into how much risk they will take. The consistently high returns for both institutions over the past decade do not suggest a lot of risk-taking, but Fannie Mae's experience with losses from interest rate risk in the early 1980s suggests that large bets are possible.

Why Have GSEs? GSEs are a compromise between government agencies, like Ginnie Mae, and fully private businesses. The justification for such hybrids must be that there is some policy goal that can be accomplished better with private sector incentives (e.g., profit maximization and cost minimization). The main policy problem is balancing these efficiencies with incentives to exploit embedded options. The major rationales for GSEs are as follows:

Demonstration Effects Information has a public good component. Investors in projects that provide information will bear the burden of failure but will be imitated by competitors if successful. Because of their size, F and F can capture much of the benefit of their investments in a way that smaller depositories cannot, and there is an external benefit to other firms from finding out what works—for example, the structure of mortgage-backed securities, mortgage derivatives, and new (e.g., low income) markets. It might be argued that this effect will fade over time; although recent developments in automated underwriting by F and F, which are being imitated in the rest of the industry, suggest this is not entirely true.

Homeownership Externalities It has been argued that homeownership provides external benefits in the form of better citizens. There are other tools (like the tax code) that promote homeownership. Nonetheless, F and F could be beneficial, particularly if benefits are targeted to particular, underserved, groups for whom the homeownership externality is greatest and who might be hard to target with other (e. g., tax benefits) policies.

Keeping Markets Open Financial markets sometimes collapse—sometimes in big ways, as in the 1930s in the United States and in 1998 in Asia, and sometimes in smaller ways, as in 1998 in the United States. These collapses provide false price signals by changing spreads among various borrowing rates and allocating capital less efficiently. GSEs have a stake in market stability and can improve markets by being a lender of last resort. The ability to borrow large amounts quickly makes this easier, and the information that comes from being an important actor in the market can make stabilization profitable even in the short run.

A More Efficient Way of Supporting Mortgage Markets than Depositories. If subsidies conveyed by deposit insurance are expensive, F and F may be a cheaper alternative, or easier to regulate, or both (as opposed to more than 10,000 depositories).

All of these rationales are controversial, and all are quite difficult to quantify. Although there are numerous anecdotes, there has been no hard empirical evidence that sheds much light, for better or worse, on the magnitude of these effects.

MODELING FANNIE AND FREDDIE AND THEIR MARKET

GSEs CAN BE THOUGHT OF AS HAVING EXTENDED BALANCE sheets with two implicit assets: G, the conjectured guarantee, which gives them lower borrowing rates; and F, the franchise. Otherwise they have a collection of assets, liabilities, and shareholder equity that is constrained by their charter. In the simplest case G is the present value of lower borrowing costs for the current book of business, and F is the present value of lower borrowing costs for future books of business. But more broadly, F is the ability to get all future benefits of the charter as well as the usual franchise elements accruing to all firms that act as ongoing businesses.

Modeling F and F's decisionmaking comes from modeling their optimization subject to regulatory structure and closure rules. This will give implications for their risk exposure (from the trade-off between G and F) and their supply of funds. The value of G + F will show up in the stock price and contribute to market value exceeding book. However, it is difficult to go backward to infer the value of G + F from the excess of market over book and even more difficult to separate G from F. One can derive a supply curve for depositories in a similar way.

Welfare Effects Welfare effects of GSEs inevitably involve second-best considerations because the rationale for GSEs requires market imperfections in the first place. The criticism by economists of guarantees has generally been that they distort prices and resource allocation by diverting funds toward resources affected by the holder of the guarantee (in this case housing) and away from other types of uses (in this case other investment). Proponents argue, however, that GSEs produce external benefits, such as stabilizing the market and promoting homeownership.

Dueling Charter Models of Mortgage Markets I shall begin with a specific second-best model that trades on the relative charter benefits for F and F versus depositories (taken from the fourth rationale above). I shall then discuss a model in which there are externalities.

Model 1 The first model focuses on comparison with depositories. There are no externalities, the private demand for mortgage funds fully reflects social benefits of mortgages and the housing they finance, and general equilibrium effects are ignored. It is assumed that supply curves are flat and reflect normal profits. I begin with a fully private supply curve, which in this case I assume reflects marginal social as well as private costs. Total social benefits and costs are given by the areas under the demand and supply curves, respectively. Equilibrium is at point B in Model 1. It is a social optimum because marginal social costs equal marginal social benefits.

Now introduce depositories, which are assumed (e.g., because of regulatory costs) to have social costs greater than those of the fully private market, but they are assumed to have a borrowing cost advantage from their charter equal to EC, so that the actual supply curve in the

market is one with the points C and G on it, whereas the unsubsidized supply curve, which depicts social costs of depositories, has the points A and E on it. In this model the depositories dominate the fully private market because of their lower costs. The excess of total social costs above total social benefits, or deadweight loss, from the depositories is the area inside the triangle AEC.

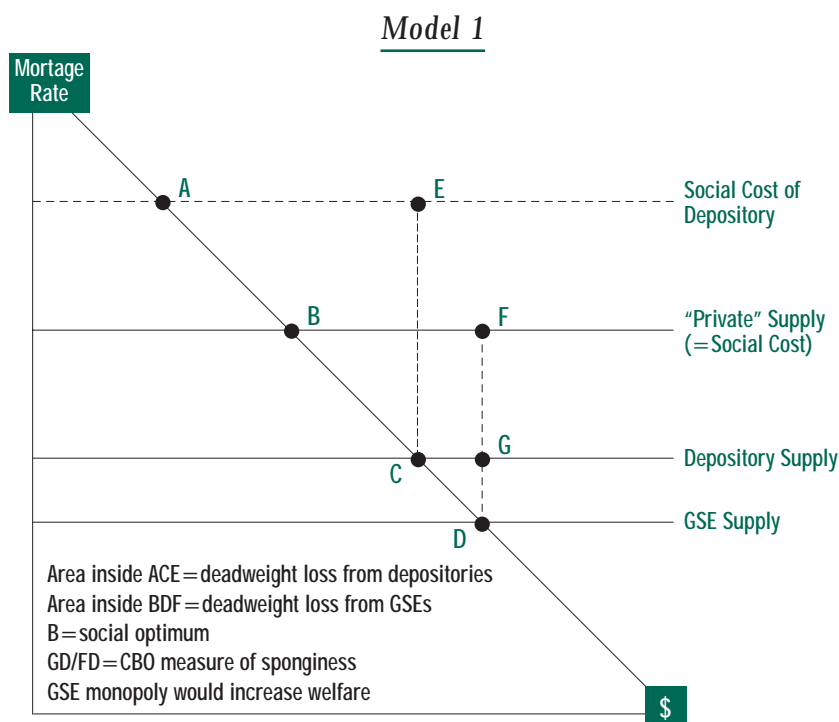
Now introduce GSEs with the same social costs as the private, nondepository, suppliers but with a charter benefit such that they have lower private costs than either depositories or the private suppliers. Assume that they are competitive, so that they have a supply curve like depositories (including normal profits), but it is the lowest of the curves, with the point D on it. In this model the market is segmented. There is no “private” market, and the conventional market is divided between the conforming market (mortgages of less than \$252,700 in 2000), which goes to GSEs, and the nonconforming market (mortgages of more than \$252,700 in 2000), which goes to the depositories.

The deadweight loss in the conforming market is now the area inside the triangle BFD. This can be either bigger or smaller than the deadweight loss from the entirely depository based system, depending on the size of the gross benefit (the Treasury-CBO type of estimate) to GSEs relative to the gross benefit (net of deposit insurance premiums) to depositories (in the example above, whether or not depositories could attract deposits at 50 bp or less absent insurance). Intuitively, in this model GSEs have lower production costs than depositories, which tends to be welfare increasing, but they lower already distorted mortgage rates, which is welfare reducing.

The gross benefit to GSEs can be broken up into two parts: FG, which is what is necessary to get them into the industry, by being competitive with depositories; and GD, which is the net benefit and equals the extent to which they lower mortgage rates, and in this model that equals the difference between the conforming and nonconforming rates.

Model 2 Model 1 is very much a second-best model, with no particular reason for intervening in mortgage markets in the first place. Suppose that at least one of the first three rationales above is valid for GSEs, and it (or they) can be represented by GSEs having a lower social cost than their private cost (similar social benefits could hold for depositories, but I assume GSEs still have lower costs). This is depicted in Model 2, which is the same as Model 1, but with the lower social costs of GSEs given by the line with KHI and J on it. In this model the GSE market supply curve is given by the same one as before (with D on it). The social optimum, where marginal social benefits equal marginal social costs, is at H.

As the curves are drawn in the figure, neither the fully private market solution (which pro-



die ‘Optimal Mechanisms?’ by Charles Calomiris). One possibility is that F and F crowd out depositories who then move their subsidy into other markets (e.g., business loans). If that were the case, then even if F and F helped lower social costs in mortgage markets, it would be at the expense of increasing costs in other markets. That might have been true when there were deposit rate ceilings and depositories did not have access to the off-balance-sheet activities they have now. In that case they had a more or less fixed supply of funds that was bound to be allocated somewhere. More generally, however, the size of the effect depends on the elasticity of the supply of funds faced by the industry as a whole. For instance, a good approximation now is that depositories face a flat supply of funds, explicitly through deposits, and implicitly through off-balance-sheet activity, in which case they exploit each line of business up to the point where marginal benefits equal marginal costs independently of the other lines. In that case being forced out of one line of business has no effect on other lines.

Another general equilibrium effect is that subsidies are likely to be financed by distortionary taxes, which affect other resources (e.g., the trade-off between work and leisure). If the effect of F and F is to lower the contingent liability faced by the government from deposit insurance, then there is a net benefit from a decrease in distortionary taxation. General equilibrium effects are more likely to come about because of effects on interest rates in general.

Regulatory Choices The welfare aspects of F and F are indeed complicated and need to be considered in the context of their market and the distortions within their market. The above analysis suggests genuine ambiguity about what should be done. For instance, if you cannot change the status of depositories, is it better or worse to cut the benefits to GSEs (or in the limit, privatize them), and are excess profits bad if they diminish risk-taking? So far there has been no significant empirical work that can serve as a guide for public policy.

In lieu of such work I am led to the following line of argument:

Congress created GSEs because whatever goal Congress had in mind can be accomplished better by a profit-oriented institution than by a government agency. To induce GSEs to do what they want Congress restricts their charters but also gives them benefits that lead to embedded options and provide incentives that affect prices and resource allocation.

The benefits of a GSE are supposed to come from the efficiency that comes from maximizing profits by responding to market signals rather than by risk-taking to exploit options. Some conflict is inevitable, particularly if a GSE gets into trouble. Hence, on pure efficiency grounds safety and soundness regulation is needed. The case that embedded options are currently large in value is difficult to make. You cannot simultaneously believe that F and F are earning large monopoly profits year after year and that they are exposing taxpayers to large risks, although you can simul-

taneously believe that they might expose taxpayers to risks in the future.

The case for regulation to promote competition is weaker. In the first place, if the relevant industry is the mortgage industry as a whole, the conjectured level of competition becomes larger than if the market is assumed to be a duopoly in the secondary market. Second, if F and F distort resource allocation by allocating too much capital to housing, then more competition further distorts resource allocation. Furthermore, monopoly power provides incentives to take less risk in order to keep the franchise. You can worry about competitiveness if you believe Model 2, but then you have to acknowledge GSE benefits. If you want more competition you probably believe that benefits received by GSEs have been socially beneficial.

I have focused on efficiency. For reasons discussed above I see no real equity issue. You cannot believe both that the stock market is efficient and that current shareholders make excess profits systematically.

In summary, I think the main focus of regulation should be on safety and soundness, with an eye on keeping embedded options under control and equal in (net) value across charters. These options are not trivial, and depositories and GSEs have in the past gotten into trouble from them. But for the most part the risks in mortgage markets (mainly interest rate risk and credit risk) are quantifiable and controllable. I think that was the main intention of the 1992 regulatory legislation that established OFHEO and defined mission goals for F and F, and it is consistent with recent approaches to bank regulation, which focus on capital adequacy and controlling risk, rather than micromanaging.

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