

## Valuing the GSEs' Government Support

### Summary

*The best available estimate of the federal cost of the GSE bailout is about \$290 billion—the fair value estimate provided by CBO at the time. By any measure, that cost greatly exceeds the amounts the GSEs have remitted to the Treasury. With regard to the ongoing value of the Treasury backstop provided by the Senior Preferred Stock Purchase Agreements with Treasury, model estimates suggest that the expected payments to Treasury through the sweep of all profits are roughly equal to the value of that protection. On the question of whether privatizing the GSEs would make money for taxpayers or cost them money, it seems unlikely that it could generate significant revenue unless some form of continuing government support were included in the deal. That conclusion rests on the observation that the main potential sources of value to private investors would come from underpriced guarantees or protection for monopoly or duopoly power. Nevertheless, a reform plan that includes privatization of the GSEs could have enormous indirect benefits, including increased fiscal transparency, decreased taxpayer cost and risk, greater product innovation, and more efficient pricing and resource allocation. For these reasons, and because of the distortions in the way budgetary costs may be measured, a well-executed privatization could be a net win for taxpayers even if its budgetary cost is positive.*

### Introduction

The purpose of this note is to suggest answers to several fundamental questions about value of the federal government's support for the GSEs:

- What was the cost to taxpayers of the federal bailout?
- Has that cost been recovered by Treasury?
- What is the ongoing value of the Treasury backstop?
- Would privatization cost money or make money for taxpayers?

These issues are important for a number of reasons, most directly, to be able to evaluate the fiscal effects of proposals for restructuring the secondary mortgage market. More broadly, they highlight conceptual issues about how the costs of federal credit guarantees should be measured, particularly for budgetary purposes, and the hazards of mismeasurement.

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A decade after the start of the financial crisis, the U.S. secondary mortgage market remains largely governmental. Fannie Mae and Freddie Mac dominate the market for conforming mortgages while the FHA and other federal agencies absorb most of the credit risk on riskier mortgage loans. It is generally agreed that role of the private sector in the conforming market should be substantially enlarged. However, there is less consensus on exactly how a transition should be accomplished or what the endpoint should look like.

Any path towards greater private sector participation in the secondary mortgage market is likely to involve massive transfers of risk and resources between the public and private sectors. Privatization could involve sales of some or all of the balance sheet assets of Fannie and Freddie. It is also likely to entail new forms of explicit or implicit government guarantees. Unbiased valuations (and the adoption of a budgetary treatment that reflects those true costs) are essential for transparency, objective policy evaluation, and taxpayer protection.

Despite the centrality of valuation in evaluating mortgage market policies, relatively little has been written on the topic. The exception is a series of papers by the Congressional Budget Office and a publication from the Federal Reserve Bank of Atlanta by Larry Wall.<sup>1</sup> A technical impediment to evaluating costs is the complexity of valuing government guarantees on highly levered financial institutions. However, valuation techniques do exist and they are applied to obtain some of the results described here. More fundamentally, there has not been conceptual agreement on the meaning of “cost.”

## What was the cost of the federal bailout and has that cost been repaid?

It is useful to start with a brief synopsis of the explicit federal support that was provided by Congress through the Housing and Economic Recovery Act of 2008 (HERA) and subsequent administrative policy changes that have since altered the relationship between Treasury and the GSEs. In response to increasing investor concerns about the solvency of Fannie Mae and Freddie Mac and the

<sup>1</sup> See CBO (2010), CBO (2016) and references therein. Wall (2014) has a related discussion on the whether the government has recouped its losses but he does not consider the up-front cost of the protection provided.

prospect of a collapse in supply of mortgage credit if those institutions were allowed to fail, HERA placed the GSEs into federal conservatorship, effectively transferring control of those too-big-to-fail entities to the government. The creation of Senior Preferred Stock Purchase Agreements (henceforth “PS”) was the mechanism established to ensure solvency by transferring cash from Treasury to the GSEs.

Under the PS agreements, Treasury was committed to purchasing senior preferred stock in amounts that prevent the GSEs’ net worth from turning negative. In return, the Treasury would receive a 10% dividend on its PS holdings. HERA placed caps on total PS purchases by Treasury of \$455 billion, of which \$258 billion in reserve capacity is left today (\$118 billion of remaining capacity for Fannie and \$140 billion remaining capacity for Freddie).

Because the GSEs’ free cash flows were insufficient to cover the 10% PS dividend rate, dividend payments were partly or fully paid for by draws on the PS lines. In effect Treasury was paying itself and the lines were being depleted, a situation that increased confusion about whether Treasury was making or losing money on the GSEs, and that diminished the size of the federal backstop available for future emergencies. In 2012, the “3<sup>rd</sup> Amendment” to HERA ended those circular payments by replacing the requirement to pay a 10% dividend with a sweep of all GSE profits to the Treasury. Figure 1 shows the gross cash flows between Fannie Mae and Treasury from late 2008 through 2014 (a similar picture would be seen for Freddie Mac).

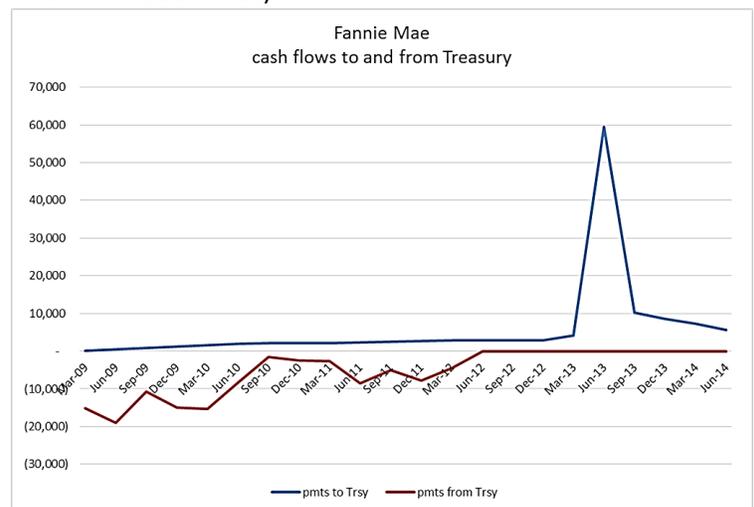


Figure 1: Cash flows between Fannie Mae and Treasury in post-HERA

I will describe several approaches that have been discussed to measure the cost of the bailout, starting with two that may be superficially appealing but that for reasons explained later significantly understate the full cost. My preferred method—a “fair value” approach—asks what an insurance company would have charged to provide the same level of protection as the PS agreements in a liquid market. That approach acknowledges that taxpayers ultimately provide the insurance and hence bear its cost.

The first approach is a naïve cash flow analysis that simply compares the sum of cash flows paid to the GSEs by Treasury and paid to Treasury by the GSEs. The data to do this is readily available from the GSEs’ annual reports. By that measure, the total cost to date has been \$187 billion. Total receipts have exceeded that cost by \$58 billion. Breaking those numbers down for Fannie Mae, cash received from Treasury totals \$116 billion and cash paid to Treasury totals \$147 billion. Hence the net payments received by Treasury are positive and stand at \$31 billion. Freddie Mac received \$71 billion and paid \$98 billion, for a net cash flow to Treasury of \$27 billion.

The naïve approach of summing cash flows has two major drawbacks. First, it neglects the time value of money and the risk premium associated with guarantee cash flows. More fundamentally, the naïve approach measures the *ex post* realizations of cash flows rather than the *ex ante* value of the insurance provided.

Mechanically it is straightforward to discount cash flows taking into account time value and risk premiums. However, the right choice for the discount rate is often not obvious. For this application some observers have suggested that the contractual 10% dividend rate be used for discounting, but as Wall (2014) points out, the market rate at the time was probably higher. The theoretically correct rate for discounting the Treasury’s PS purchases is much lower, and likely lies below the risk-free rate. That is because the lines were drawn on during unusually bad economic times when the associated cash flows were particularly valuable. Here for illustrative purposes, I discount both cash inflow and cash outflows at 10%. Under that assumption, the GSEs have not fully repaid Treasury. The net value of Treasury payments to Fannie Mae and Freddie Mac are \$6.6 billion and \$2.7 billion respectively. Using a higher discount rate for dividends

and a lower one for PS purchases would imply a larger shortfall for Treasury.

Neither the naïve nor the simple discounting approach is consistent with the concept of economic cost as it applies to government guarantees. Economic cost is an *ex ante* concept that takes into account the entire statistical distribution of future cash flow outcomes as of the date a firm contractual commitment is made. The relevant question is, what was the cost of the insurance that HERA provided at the time of its passage? Looking just at the realized cash flows neglects the very real possibility in 2008 that the economic situation could have gotten worse or stayed bad for longer, as well as that the recovery could have been stronger or more rapid.

The shortcomings of a cash basis accounting for credit guarantees, which is what the naïve approach emulates, is widely accepted. In fact, the current rules for budgeting for most federal credit support programs take an accrual approach that incorporates the possibility of the entire range of outcomes although it does not incorporate risk adjustment which leads to cost understatement.<sup>2</sup>

The President’s budget accounts for the GSEs on a cash basis under the logic that they are not governmental, while CBO has accounted for them in its baseline on a fair value basis since the passage of HERA.

My preferred approach to evaluating the cost of government guarantees—a fair value approach—uses market values (either actual market prices, or approximations thereto when markets are absent or ill-functioning) as the basis for cost estimates. Following the precedent of using a fair value approach to evaluate the budgetary cost of the Troubled Asset Relief Program, CBO (2010) applied that methodology to estimate the cost of the government’s assistance to the GSEs and concluded that it was approximately \$290 billion through 2009. That number is much higher than what one finds using the naïve or simple discounting approaches because not only does it take into account time value and a market risk premium, but it also incorporates the possibility of more or less favorable outcomes than what ultimately occurred. The cost on a fair value basis clearly far exceeds the value of dividend payments subsequently received.

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<sup>2</sup> See Lucas (2011 and 2014) for an in-depth discussion of these and related issues.

## What is the value of the current Treasury backstop?

The PS agreements provide the GSEs with ongoing federal protection against losses that represents a continuing cost to taxpayers. In order to estimate that cost, I have recently developed a contingent claims valuation model calibrated to Fannie's and Freddie's balance sheets and current market conditions. The valuation approach is based on the model in Lucas and McDonald (2006), with modifications to account for the ongoing value of the PS agreements, for trust assets, and other changes such as the declining size of balance sheet mortgage holdings.

I use the model, implemented with a Monte Carlo simulation, to project the statistical distribution of draws on the PS agreements over a 5-year period under the assumption that no further payments are made to Treasury on already outstanding preferred stock over that time but that an insurance premium is charged instead. The results suggest that Treasury would need to charge a premium of about \$5 billion in 2017 to cover the cost of the protection provided that year. The estimated fair value premium exceeds the size of recent annual sweep payments to Treasury. The analysis also shows that if Fannie Mae were charged a fair premium over the next five years, then its residual value at the end of the 5 years would be less than \$3 billion.

While these estimates should be viewed as preliminary, they suggest that the GSEs are not particularly profitable under current pricing policies and market conditions.

## Would privatization cost money or make money for taxpayers?

The financial implications of privatization clearly would depend on the details of how the transactions were structured and executed. However, several observations point in the direction of there being limited value in the ongoing operations of the GSEs. The analysis described above suggests that when the full market cost of risk is taken into consideration and under current market and pricing conditions, the GSEs are not very profitable. Further support for limited profitability is the lack of entry into the conforming mortgage market by potential competitors to the GSEs. It has also been observed that their systems are aging and that investment is not keeping up with depreciation under conservatorship.

What could greatly increase the sales price of Fannie and Freddie would be the promise or expectation of underpriced guarantees or perpetuation of monopoly or duopoly pricing power. As neither of those would be desirable outcomes of privatization, it seems that there is little money to be made on a well-constructed privatization.

Nevertheless, a reform plan that includes privatization of the GSEs (selling them as ongoing concerns or liquidating them) could have enormous indirect benefits, including increased fiscal transparency, decreased taxpayer cost and risk, greater product innovation, and more efficient pricing and resource allocation. For these reasons, and because of the distortions in the way budgetary costs may be measured, a well-executed privatization could be a net win for taxpayers even if its budgetary cost is positive.

## References

- CBO (2010), "CBO's Budgetary Treatment of Fannie Mae and Freddie Mac," Background Paper
- CBO (2016), "The Effects of Increasing Fannie Mae's and Freddie Mac's Capital," CBO Report
- Lucas, Deborah and Robert McDonald (2006), "An Options-Based Approach to Evaluating the Risk of Fannie Mae and Freddie Mac," *Journal of Monetary Economics*
- Lucas, Deborah (2011), "The Budgetary Cost of Fannie Mae and Freddie Mac and Options for the Future Federal Role in the Secondary Mortgage Market," testimony presented on behalf of CBO before the Committee on the Budget, U.S. House of Representatives
- Lucas, Deborah (2014), "Evaluating the Cost of Government Credit Support: The OECD Context," *Economic Policy*, Vol. 29, Issue 79, pp. 553-597, 2014
- Wall, Larry (2014), "Have the Government-Sponsored Enterprises Fully Repaid the Treasury?" available at <https://www.frbatlanta.org/cenfig/publications/notes/fromthevault/1403.aspx>

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