

CBO

Transferring Credit Risk on Mortgages Guaranteed by Fannie Mae or Freddie Mac



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Notes

Unless this report indicates otherwise, all years referred to are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end.

Numbers in the text, tables, and figures may not add up to totals because of rounding.

Supplemental data are posted with this report on CBO's website.



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Transferring Credit Risk on Mortgages Guaranteed by Fannie Mae or Freddie Mac

Summary and Introduction

Fannie Mae and Freddie Mac are government-sponsored enterprises (GSEs) that help finance mortgages in the United States. They were originally established by the federal government as private corporations with a public mission. However, in September 2008, the government placed the GSEs in conservatorships under their regulator, the Federal Housing Finance Agency (FHFA), because of financial distress stemming from the recession that began in 2007.

Today, under those conservatorships, the debt securities and mortgage-backed securities (MBSs) that Fannie Mae and Freddie Mac issue are effectively guaranteed by the federal government (subject to limits). That guarantee explicitly exposes the government to risk from the activities of the GSEs.¹

Fannie Mae and Freddie Mac operate mainly in the secondary (or resale) market for single-family mortgages.² They buy mortgages that meet certain standards from banks and other mortgage originators; pool those loans into mortgage-backed securities, which they guarantee against most of the losses from defaults on the underlying mortgages; and sell the MBSs to investors—a process known as securitization. The GSEs' guarantees

on MBSs provide insurance to investors that they will receive payments of principal and interest on the underlying mortgages even if a borrower defaults. Some of the other losses from defaults on those mortgages are borne by private mortgage insurers. However, on most of the loans pooled into MBSs, the GSEs—and thus the federal government—bear a significant share of the risk of losses as part of their traditional guarantee operations.³

How Do the GSEs Share Risk With Private Investors?

At the direction of FHFA, the GSEs began undertaking transactions in 2013 to transfer some of the credit risk of their guarantees to private investors.⁴ In most of those transactions, the GSEs issue bonds, called credit-risk notes, that pay principal and interest to investors based on the performance of an underlying pool of mortgages guaranteed as part of traditional MBSs. Credit-risk notes insulate Fannie Mae and Freddie Mac from a specified amount of mortgage losses by having those losses reduce the amount of principal repaid to holders of the notes. The GSEs have also experimented with reducing their exposure to credit risk by issuing subordinate MBSs that they do not guarantee, by having mortgage originators retain some of the risk on the loans sold to the GSEs, and by purchasing reinsurance on pools of mortgages.

How Are the GSEs' Risk-Sharing Transactions Working?

The Congressional Budget Office examined how the GSEs' use of credit-risk-transfer (CRT) transactions has

1. For an overview of the federal government's support of the GSEs, see Congressional Budget Office, *The Effects of Increasing Fannie Mae's and Freddie Mac's Capital* (October 2016), www.cbo.gov/publication/52089.
2. The two GSEs also guarantee loans in the multifamily mortgage market and invest in mortgage-related securities for their portfolios of assets. Those investment portfolios expose the GSEs to interest rate risk and prepayment risk—that is, to the possibility of losses when fluctuating interest rates and early repayments of mortgages create a gap between the value of the GSEs' asset portfolios and the value of the debt securities used to fund them. For more information about the GSEs' operations, see Congressional Budget Office, *Fannie Mae, Freddie Mac, and the Federal Role in the Secondary Mortgage Market* (December 2010), www.cbo.gov/publication/21992.

3. In the case of mortgages issued to borrowers who made a 20 percent down payment, the GSEs have historically insured investors against all losses on those loans. In the case of mortgages issued with less than a 20 percent down payment, a private mortgage insurer generally covers a portion of losses ahead of the GSEs.
4. To date, those investors have consisted mainly of private-sector money managers, hedge funds, insurance companies, and real estate investment trusts. Public entities, such as foreign governments or U.S. state and local governments, have not been significant investors in the market for the GSEs' credit risk.

been operating under current policy and concluded the following:

- Current CRT transactions are being executed in a fully functioning liquid market, and the GSEs use a competitive process to determine the price they will pay private investors to accept the risk being transferred. Although those transactions generate administrative expenses for the GSEs, they do not change the GSEs' fair-value subsidy cost.⁵ (Fair value is a market-based measure of the federal government's obligations and is the measure that CBO uses to estimate the subsidy cost of Fannie Mae and Freddie Mac in the federal budget.)
- Currently planned CRT transactions are projected to reduce the GSEs' exposure to risk by \$2.8 billion in 2018. That amount is equal to 11 percent of the total risk exposure from the GSEs' new guarantees in that year, CBO estimates. (In this analysis, CBO evaluates risk exposure using a fair-value measure of losses from defaults that implicitly puts more weight on losses that occur in adverse economic conditions.)
- If the economy performs as CBO projects in its January 2017 baseline macroeconomic forecast, the currently planned CRT transactions will reduce the GSEs' total net premium income on their 2018 guarantees. The reason is that, under normal economic conditions, the GSEs will pay more in interest to CRT investors than they will receive in protection from losses. The situation may be different if the economy experiences more challenging conditions, such as a severe recession. In that case, the

5. That conclusion follows directly from the definition of fair value—which is the price paid in an orderly, competitive market—and the exclusion of administrative costs from the fair-value measure that CBO uses to estimate the subsidy cost of the GSEs. (For a discussion of the accounting for administrative costs in a fair-value estimate, see Congressional Budget Office, *Fair-Value Accounting for Federal Credit Programs* (March 2012), p. 10, www.cbo.gov/publication/43027.) Transferring credit risk in orderly transactions at market prices would not directly increase or decrease the subsidy cost of the GSEs (defined as the difference between the present value of projected fair-value insurance losses on mortgages guaranteed by the GSEs and the present value of fair-value fees that the GSEs are projected to collect in exchange for providing those guarantees). If markets were disorderly, transfers might occur only at “fire sale” prices that would be below fair value, creating significant costs on a fair-value basis. The estimates of subsidy cost in this analysis are for transfers conducted in orderly markets.

GSEs' net premium income may be higher with CRT transactions than it would be otherwise, meaning that the GSEs will receive more in protection than they will pay in interest. (Net premium income is defined here as the GSEs' collections of premiums for their guarantees net of interest paid to the investors involved in CRT transactions and net of losses borne by the GSEs in excess of losses borne by CRT investors.)

How Could the GSEs Expand Their Risk Sharing?

CBO also analyzed two approaches for expanding the GSEs' efforts to share risk with investors: increasing the amount of risk shared on new mortgages guaranteed in the future, and transferring some of the risk on mortgages guaranteed before 2013, when the current CRT program began. CBO concluded that expanding the GSEs' use of credit-risk transfers in those ways would have the following effects:

- Produce no change in the fair-value subsidy cost of the GSEs;
- Further reduce the GSEs' risk exposure in 2018; and
- Further reduce the total annual net premiums collected by the GSEs on their guarantees, compared with net premium income in the absence of risk sharing, if the economy performs as CBO projects in its baseline macroeconomic forecast, or further increase net premium income (relative to not conducting credit-risk transfers) under a scenario of economic stress.

Rationales for the GSEs' Credit-Risk-Transfer Transactions

In 2013, Fannie Mae and Freddie Mac began sharing with private investors a portion of the credit risk on single-family mortgages they guarantee. Those credit-risk-transfer transactions are designed to accomplish a number of goals set out by the GSEs' conservator and regulator, the Federal Housing Finance Agency.⁶

First, CRTs are designed to reduce the cost to taxpayers from the risk of future losses associated with the GSEs' credit guarantees. Under a traditional guarantee, if a

6. For a discussion of alternative ways to share credit risk with the private sector, see Congressional Budget Office, *Transitioning to Alternative Structures for Housing Finance* (December 2014), www.cbo.gov/publication/49765.

borrower defaults on a mortgage backed by the GSEs, they assume the costs of default that are not borne by the borrower or a private mortgage insurer. CRT transactions shift some of those costs from the GSEs to other private parties, such as investors, mortgage insurers, or private reinsurance firms.

Second, CRT transactions help to create a broader, more liquid market for mortgage credit risk by introducing multiple sources of private capital. (In a liquid market, investors can quickly buy or sell large quantities of an asset without affecting its price.) Before 2013, providers of private capital participated in absorbing credit losses on mortgages mainly through the market for private-label securities (MBSs issued and insured by private companies without government backing) and through the private mortgage insurance industry.⁷ Today, the market for private-label securities is much smaller than it was before the 2007–2009 recession, but investors can still assume mortgage credit risk by investing in the credit-risk notes and other CRT instruments issued by the GSEs. Ultimately, the market created through those CRT transactions may aid in developing a private market for mortgage credit risk after the GSEs' conservatorships end by reducing the direct role of the GSEs in the mortgage market.

Third, CRT transactions help to create transparency about the price of mortgage credit risk by providing a clear signal of the price that private investors would pay to assume a share of the risk borne by Fannie Mae and Freddie Mac. The GSEs and others may use that price signal to gauge the appropriate level at which to set the fees they charge mortgage borrowers for their guarantees in the future. Although the GSEs publish their guarantee fees (both individually and through FHFA) and provide some information about how those fees are determined, the fact that the GSEs are explicitly backed by the federal government gives them a financing advantage over private mortgage insurers. That advantage creates an opportunity for the GSEs to price their mortgage guarantees at below-market, subsidized levels. Allowing private investors to buy and trade a share of the credit risk currently borne by the GSEs increases transparency about the value of the risk that the GSEs have assumed.

7. Providers of private capital bear credit risk on mortgages that are not guaranteed by Fannie Mae, Freddie Mac, or the Federal Housing Administration. That credit risk is borne mainly by banks (which originate mortgages and hold them in their portfolios) or by investors that purchase private-label securities.

CRT transactions are designed to shift risk, and thus costs, away from the GSEs, but risk transfers also create some concerns for the GSEs. For example, although there may be a stable supply of investors willing to assume credit risk from Fannie Mae and Freddie Mac under normal market conditions, it could be difficult to entice private investors to assume that risk during periods of market stress. In that case, the GSEs might be left holding a larger share of the risk of losses on their traditional guarantees. In addition, some analysts argue that Fannie Mae and Freddie Mac pay more than a fair-market price to transfer risk in some CRT transactions—driven in part by FHFA's goals for the amount of risk it wants the GSEs to share—potentially weakening the GSEs' financial positions.⁸ Finally, although current CRT transactions have been designed not to harm the liquidity of the broader MBS market, a small potential exists that carrying out a large volume of certain types of CRT transactions, which make the underlying loans ineligible for standard securitization, could reduce the liquidity of that market. (Such transactions might include senior-subordinate securities and mortgage-originator recourse transactions, which are described below.)

The Current State of the GSEs' Credit-Risk-Transfer Transactions

According to FHFA, between July 2013 and December 2016, Fannie Mae's and Freddie Mac's CRT transactions transferred a portion of the credit risk on a total of \$1.4 trillion in mortgages, as measured by the unpaid principal balance (UPB) of the loans when the CRTs occurred.⁹ Those mortgages represent a substantial share of the new loans that the GSEs guaranteed during that period. The GSEs' objective in 2017 is to share risk

8. See J. Timothy Howard, "Risk Sharing, Or Not," *Howard on Mortgage Finance* (blog entry, March 9, 2016), <http://tinyurl.com/y7wwmkka>. Assessing the degree to which current market prices for the GSEs' risk-sharing transactions reflect the future costs of the GSEs' guarantee operations is uncertain and subject to differences in modeling assumptions and methods. For example, FHFA analyzed certain issuances of credit-risk notes by the GSEs and concluded that the market-based credit costs in those deals implied an estimated guarantee fee below the actual fee that the GSEs charged on the related mortgages—suggesting that the GSEs paid less than a fair-market price to transfer risk in some CRT transactions. See Federal Housing Finance Agency, *Credit Risk Transfer Progress Report: December 2016* (March 2017), <http://tinyurl.com/y7cqlp6e>.

9. See Federal Housing Finance Agency, *Credit Risk Transfer Progress Report: December 2016* (March 2017), <http://tinyurl.com/y7cqlp6e>.

on at least 90 percent of the total UPB of the newly guaranteed loans it is targeting for credit-risk transfers.

The portion of credit risk shared on those loans depends on the measure used to define risk. The GSEs' current CRT transactions leave investors with a large share of expected losses—that is, losses from the defaults projected to occur if the economy performs as CBO projects in its baseline macroeconomic forecast. Under measures of risk that include losses from the defaults that might occur if the economy experienced more challenging conditions, the GSEs' current CRT transactions transfer a smaller share of losses to private investors.

Types of CRT Transactions

To date, the GSEs have used several kinds of transactions to transfer credit risk. The most common type of transaction is the issuing of credit-risk notes, which account for 78 percent of the dollar amount of CRT instruments sold to investors. Those notes—called Structured Agency Credit Risk (STACR) at Freddie Mac and Connecticut Avenue Securities (CAS) at Fannie Mae—are bonds that pay principal and interest to investors based on the performance of an underlying pool of mortgages guaranteed as part of traditional MBSs. The underlying loans are known as the reference pool.

The principal balance of the credit-risk notes is a percentage of the total outstanding balance of the reference pool.¹⁰ That outstanding balance is divided into different bonds, called tranches, that have differing levels of seniority (see Figure 1). A fraction of borrowers' scheduled and unscheduled principal payments on mortgages in the reference pool is used to repay the most senior tranche still outstanding at any given point. Those payments are made on a prorated basis: For example, if the principal balance of the credit-risk notes at issuance represented 1 percent of the principal balance of the reference pool, 1 percent of principal payments on the reference loans is used to repay the holders of the most senior tranche. By contrast, all losses on mortgages in the reference pool are used to reduce the principal balance of the most subordinate tranche outstanding. For instance, \$1 of losses on the reference pool reduces the principal

balance of the most subordinate tranche outstanding by \$1.¹¹

The GSEs pay interest to investors on the unpaid principal of the credit-risk notes. The interest rate is a floating rate—a specific percentage (or spread) above the London Interbank Offer Rate (LIBOR) that varies by tranche. For the GSEs' recent issuances of credit-risk notes, average spreads have ranged from approximately 1 percentage point for the most senior tranche to 10 percentage points for the most subordinate tranche. Those spreads are generally set to ensure that the bonds sell to investors at par, meaning that investors pay \$1 for every \$1 of principal of the credit-risk note.

The spread for each tranche is based on private investors' assessment of the risks inherent in that tranche, including credit risk, liquidity risk, and market risk. Tranches that are more exposed to the risk of credit losses on loans in the reference pool have a higher spread to compensate investors for the potential loss of principal. (Although losses are less likely on more senior tranches, those tranches are exposed to the risk that borrowers will repay their mortgage principal early.) All tranches provide investors with compensation for liquidity risk, the risk that investors may receive less money if they attempt to sell their tranches before maturity (because the market for credit-risk notes is much smaller than the market for MBSs issued by Fannie Mae or Freddie Mac). The spread also includes compensation for the cost of market risk, the risk that investors face because losses on guaranteed mortgages tend to be high when economic and financial conditions are poor and resources are therefore more valuable.¹²

Besides issuing credit-risk notes, Fannie Mae and Freddie Mac have used several other types of transactions, on a smaller scale, to transfer risk:

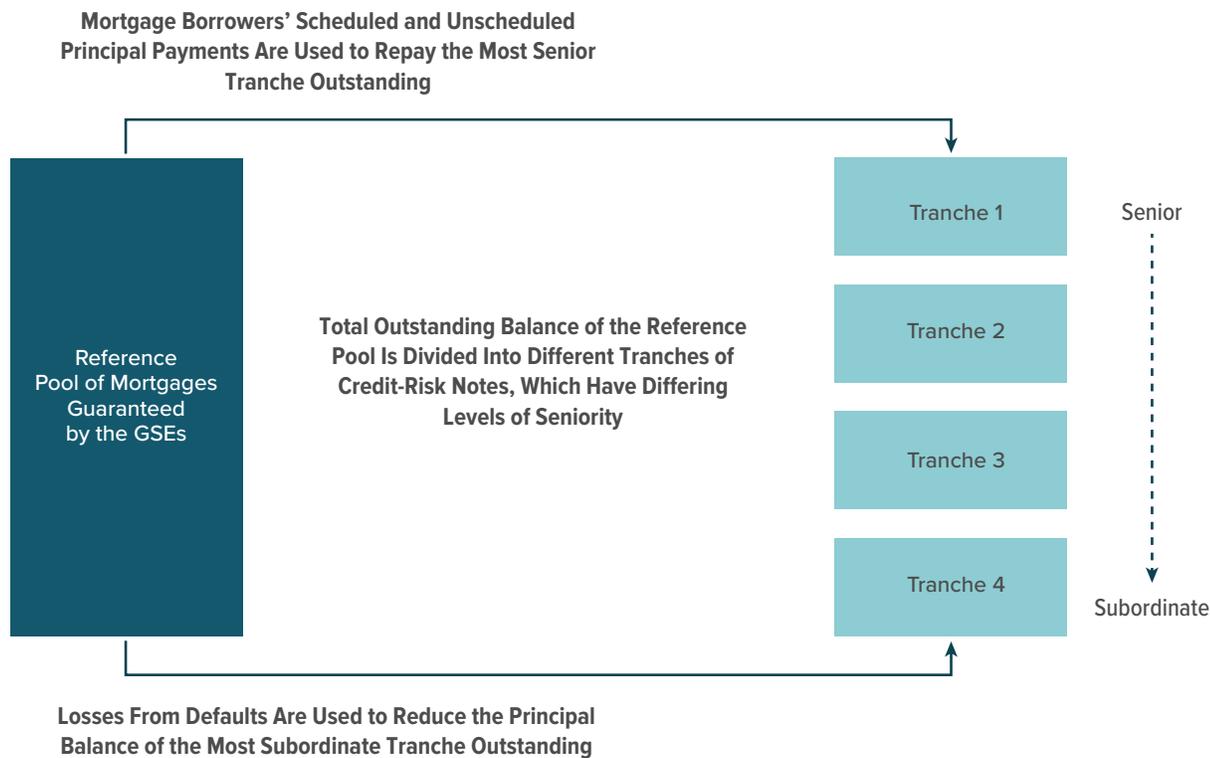
11. For more information about how the STACR and CAS programs operate, see Freddie Mac, "Freddie Mac Structured Agency Credit Risk (STACR)" (accessed October 23, 2017), www.freddiemac.com/creditriskofferings/stacr_debt.html; and Fannie Mae, "Connecticut Avenue Securities (CAS)" (accessed October 23, 2017), <http://tinyurl.com/hursvq6>.

12. Market risk is the component of financial risk that remains even after investors have diversified their portfolios as much as possible. It results from shifts in macroeconomic conditions, such as productivity and employment, and from changes in expectations about future macroeconomic conditions.

10. The fact that the GSEs receive the principal balance of the notes from investors eliminates counterparty risk, the possibility that lenders or investors with whom the GSEs share risk will not honor their obligations.

Figure 1.

Overview of the Structure of the GSEs' Credit-Risk Notes



Source: Congressional Budget Office.

GSEs = government-sponsored enterprises (in this case, Fannie Mae and Freddie Mac).

- Senior-subordinate securities—securities that the GSEs issue outside the traditional MBS market that consist of a senior bond shielded from credit losses by a subordinate bond, which does not have a GSE guarantee;
- Mortgage-originator recourse transactions and “front-end” pilots—arrangements in which lenders keep a portion of the credit risk on mortgages they sell to the GSEs, often by agreeing to repurchase certain loans that default in exchange for paying the GSEs a lower guarantee fee (which can exclude those loans from the traditional MBS market); and
- Pool-level reinsurance—supplementary insurance that the GSEs purchase from a traditional mortgage insurer or reinsurance firm to cover losses on a pool of loans that exceed the coverage provided by the primary mortgage insurance that the individual loans carry.¹³

Amount of Risk Transferred

Although the GSEs have transferred risk on mortgages with a total UPB of more than \$1.4 trillion, the maximum amount of credit risk that private investors bear on those loans is much smaller than that unpaid principal balance. Investors cover only an amount of loss represented by their bond investment (for credit-risk notes and senior-subordinate securities), their recourse arrangement, or their insurance obligation (for reinsurance). For example, the STACR and CAS notes sold to investors through December 2016 covered slightly more than \$38 billion of losses on mortgages with a total UPB of \$1.2 trillion.

The GSEs' recent issuances of credit-risk notes cover losses of about 3.75 percent of the original UPB of the underlying mortgages, on average. However, only notes covering an average of about 3 percent of the original UPB were sold to private investors. The GSEs typically retain a small portion of the more senior tranches and a large portion of the subordinate tranches instead of selling them to investors. The GSEs keep some of those credit-risk notes for a variety of reasons, including to

13. See Federal Housing Finance Agency, *Single-Family Credit Risk Transfer Progress Report* (June 2016), <http://tinyurl.com/yc6kgda2>.

show that their interests are aligned with those of investors and, in the case of subordinate tranches, because they judge that the economic value of holding that risk outweighs the value of selling it at current market prices.

The 3.75 percent average loss coverage on credit-risk notes issued recently would have been sufficient to cover most of the losses that the GSEs experienced on their guarantees during the height of the most recent crisis in the mortgage market, which began in calendar year 2007. For example, according to a 2015 report by FHFA, Freddie Mac's losses reached roughly 3.5 percent on mortgages guaranteed in calendar year 2007—a cohort of loans whose borrowers had a lower average credit score than loans guaranteed by the GSEs since the housing crisis.¹⁴ At the time of the FHFA report, nearly 20 percent of the 2007 cohort of loans remained outstanding, so losses on that cohort could increase, but total losses are likely to remain below 5 percent of the initial loan balance. As a result, FHFA and the GSEs assert that STACR and CAS transactions generally insulate the GSEs from all but “catastrophic” losses. Another means of assessing the risk on single-family mortgages is bank capital standards. Such standards require banks holding single-family mortgages similar to those guaranteed by the GSEs to retain at least 4 percent of the loan balance as capital.¹⁵

In its latest annual report setting objectives for Fannie Mae and Freddie Mac, FHFA called on the GSEs to transfer a “meaningful” amount of credit risk on at least 90 percent of the UPB of newly guaranteed loans that meet certain criteria in 2017. Specifically, the GSEs' target is to share risk on 90 percent of the UPB of the following types of mortgages: refinance loans (other than those from the Home Affordable Refinance Program or those with high loan-to-value ratios), fixed-rate mortgages with terms longer than 20 years, and mortgages with loan-to-value ratios greater than 60 percent.¹⁶

14. See Federal Housing Finance Agency, *Overview of Fannie Mae and Freddie Mac Credit Risk Transfer Transactions* (August 2015), <http://tinyurl.com/ydbzm5gq>.

15. For a description of capital requirements for mortgage-related assets, see Government Accountability Office, *Mortgage-Related Assets: Capital Requirements Vary Depending on Type of Asset*, GAO-17-93 (December 2016), www.gao.gov/products/GAO-17-93.

16. See Federal Housing Finance Agency, *2017 Scorecard for Fannie Mae, Freddie Mac, and Common Securitization Solutions* (December 2016), <http://tinyurl.com/y9qzho6b>.

FHFA also directed the GSEs to continue to experiment with new risk-sharing structures and partners.

Options for Expanding the GSEs' Credit-Risk-Transfer Transactions

Although Fannie Mae and Freddie Mac already transfer some risk on most of the new mortgages they guarantee, the GSEs could expand their risk-sharing efforts to promote additional private-sector participation. The ultimate goals of such an expansion would be to reduce taxpayers' exposure to the risk of losses on those guarantees and to make loan costs for mortgage borrowers more competitively determined and transparent.

CBO forecasts the credit-risk transfers that Fannie Mae and Freddie Mac will conduct in future years as part of its baseline projections of the budgetary effects of federal programs that guarantee mortgages.¹⁷ On the basis of the GSEs' current policy, CBO estimates that for loans newly guaranteed in 2018, the GSEs will transfer a portion of risk on 70 percent of those mortgages overall and on 90 percent of the subset of mortgages targeted for risk sharing. CBO projects that the GSEs will sell credit-risk notes covering 20 percent of the losses equal to the first 0.5 percent of the original UPB of the reference pool of loans and 85 percent of the losses that equal between 0.5 percent and 3.75 percent of the pool's original UPB (see Figure 2).¹⁸ In other words, if a reference pool of GSE-guaranteed mortgages had an original unpaid principal balance of \$1 million in all, the GSEs would sell credit-risk notes covering 20 percent of the first \$5,000 in losses on that pool (covering \$1,000 in losses) and 85 percent of the losses between \$5,000 and \$37,500 (covering up to an additional \$27,625 in losses).

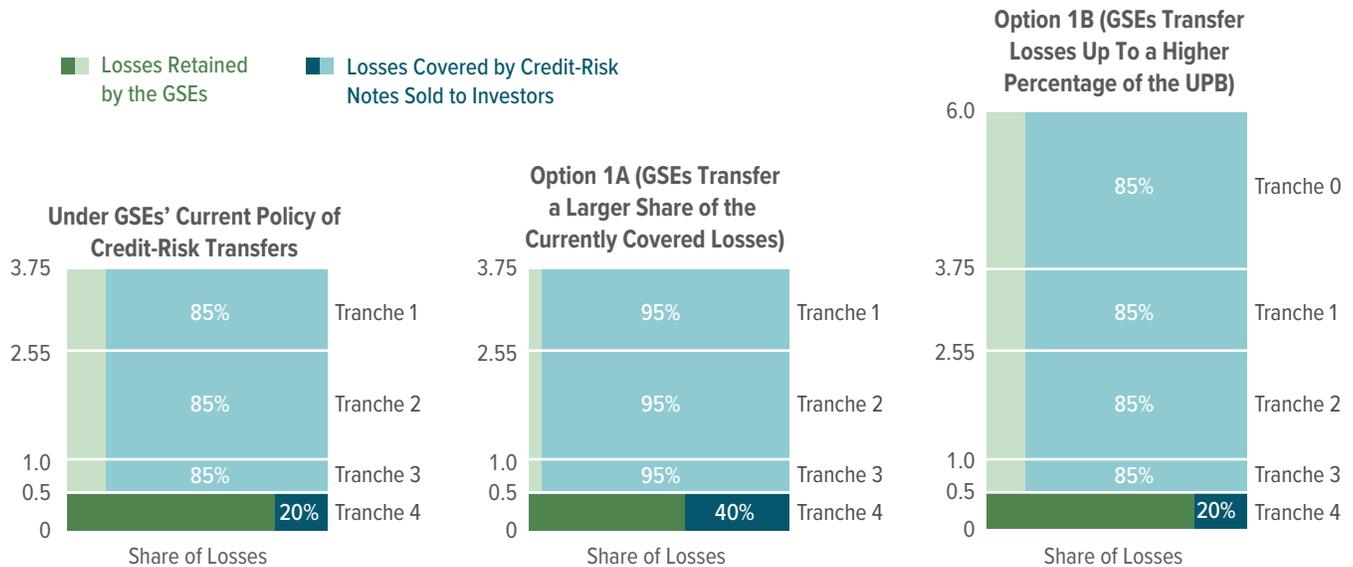
17. The projections in this report are based on the budget and macroeconomic projections that CBO published in January 2017 in *The Budget and Economic Outlook: 2017 to 2027* (www.cbo.gov/publication/52370). In that baseline, Fannie Mae's and Freddie Mac's total volume of loan guarantees in 2018 is projected to be \$935 billion. In June 2017, CBO released updated projections in *An Update to the Budget and Economic Outlook: 2017 to 2027* (www.cbo.gov/publication/52801). In that update, the GSEs' total volume of loan guarantees in 2018 is projected to be \$818 billion. The conclusions of this report would be generally unchanged using either forecast.

18. With notes issued in calendar year 2017, the GSEs have retained a larger share of the losses equal to the first 0.5 percent of the original UPB of the reference pool, including many issuances in which they sold no credit-risk notes covering those losses. However, CBO estimates that they will sell notes covering 20 percent of such losses in 2018.

Figure 2.

Loss Coverage of the GSEs' Credit-Risk Notes Under Current Policy and Option 1

Losses as a Percentage of the Original UPB of the Reference Pool



Source: Congressional Budget Office.

In the case of current policy, CBO estimates that in 2018, the GSEs will sell credit-risk notes covering 20 percent of the losses equal to the first 0.5 percent of the original UPB of the reference pool of loans and 85 percent of the losses that equal between 0.5 percent and 3.75 percent of the pool's original UPB. In other words, if a reference pool of GSE-guaranteed mortgages had an original UPB of \$1 million in all, the GSEs would sell credit-risk notes covering 20 percent of the first \$5,000 in losses on that pool (covering \$1,000 in losses) and 85 percent of the losses between \$5,000 and \$37,500 (covering up to an additional \$27,625 in losses). Options 1A and 1B would modify those percentages as shown here.

GSEs = government-sponsored enterprises (in this case, Fannie Mae and Freddie Mac); UPB = unpaid principal balance.

Under that current policy, the GSEs will engage in a total of \$18.6 billion in CRT transactions with investors in 2018, CBO estimates. (Although the GSEs conduct various types of risk-sharing arrangements with differing characteristics, CBO assumes for simplicity's sake that all CRT transactions executed in 2018 and beyond involve credit-risk notes.)

The GSEs could increase the amount of risk they share with investors on newly guaranteed mortgages by selling notes that cover a larger share of the losses equal to the first 3.75 percent of the reference pool's unpaid principal balance or by selling notes that cover losses up to a higher percentage of the pool's UPB. The GSEs could also expand the CRT program to include mortgages guaranteed before 2013, when the program began. CBO examined several illustrative versions of those approaches.

Option 1A: Transfer a Larger Share of the Currently Covered Losses

In the first alternative that CBO analyzed, for loans newly guaranteed in 2018, the GSEs would transfer 40 percent (rather than 20 percent) of the losses equal to the first 0.5 percent of the original unpaid principal balance of the reference pool of loans and 95 percent (rather than 85 percent) of the losses that equal between 0.5 percent and 3.75 percent of the pool's original UPB (see Figure 2). CBO estimates that the GSEs could sell credit-risk notes covering that larger share of losses for the same interest rate spread over the one-month LIBOR as on their existing notes sold to investors (see Table 1). Under this alternative, the GSEs would sell \$21.4 billion (rather than \$18.6 billion) in credit-risk notes to investors in 2018, CBO estimates, covering the same pool of mortgages as under current policy.

Table 1.

Interest Rate Spread Paid on the GSEs' Credit-Risk Notes in 2018

Percentage Points Above the London Interbank Offer Rate

| | 2018 Cohort of Guarantees | | | | Spread Under Option 2 (GSEs Share Risk on Mortgages Guaranteed Between 2008 and 2012) | |
|--|--|--|--|---|--|-------------------------|
| | Losses Covered (Percentage of the original UPB of the reference pool) | Spread Under GSEs' Current Policy of Credit-Risk Transfers | Spread Under Option 1A (GSEs Transfer a Larger Share of the Currently Covered Losses) | Spread Under Option 1B (GSEs Transfer Losses Up To a Higher Percentage of the UPB) | 2008 | 2012 |
| | | | | | Cohort of Guarantees | Cohort of Guarantees |
| Tranche 0 (Most senior under Option 1B) | 3.75 to 6.0 | n.a. | n.a. | 1.0 | n.a. | n.a. |
| Tranche 1 (Most senior, except under Option 1B) | 2.55 to 3.75 | 1.2 | 1.2 | 1.3 | 2.3 | 0.7 |
| Tranche 2 | 1.0 to 2.55 | 3.1 | 3.1 | 3.4 | 6.3 | 1.9 |
| Tranche 3 | 0.5 to 1.0 | 4.9 | 4.9 | 4.9 | 9.8 | 2.9 |
| Tranche 4 (Most subordinate) | 0 to 0.5 | 10.3 | 10.3 | 10.3 | 20.5 | 6.2 |

Source: Congressional Budget Office.

The total outstanding balance of the reference pool of mortgages underlying credit-risk notes is divided into different bonds, called tranches, that have differing levels of seniority. Borrowers' scheduled and unscheduled principal payments on mortgages in the reference pool are used to repay the most senior tranche still outstanding at any given point, whereas losses on mortgages in the reference pool are used to reduce the principal balance of the most subordinate tranche outstanding. That difference in risk accounts for the different interest rate spreads paid on different tranches.

Tranches 1 and 2 would bear the same losses under Option 1B as they would under current policy. CBO estimates that investors would require a slightly higher spread for those tranches under Option 1B, however, because the tranches would be exposed to a greater risk of losses than those same tranches under current policy. The reason is that under Option 1B, the most senior tranche would absorb more payments of reference loans ahead of subordinate tranches. CBO estimates that investors would require identical spreads for tranches 3 and 4 under Option 1B and under current policy because in both cases, those tranches would be exposed to similar levels of liquidity risk, market risk, risk of losses, and risk that borrowers will repay their mortgage principal early.

GSEs = government-sponsored enterprises (in this case, Fannie Mae and Freddie Mac); UPB = unpaid principal balance; n.a. = not applicable.

Option 1B: Transfer Losses Up To a Higher Percentage of the Unpaid Principal Balance

In another version of this approach that CBO analyzed, the GSEs would issue credit-risk notes covering a portion of the losses equal to as much as 6 percent of the original UPB of the reference pool of loans newly guaranteed in 2018.¹⁹ The CRT program's current average loss coverage, 3.75 percent of the UPB, is generally considered sufficient to shield the GSEs from the losses on any

cohort of loans they guaranteed during the housing crisis. However, although annual losses have not exceeded 5 percent on average, CBO estimates that certain high-risk categories of loans have experienced losses greater than 5 percent. (Such high-risk loans represent a smaller share of the GSEs' guarantees now than they did during the crisis.) In addition, losses could exceed 5 percent on future years' cohorts of guarantees if the GSEs loosened their standards for issuing a guarantee or if the mortgage market experienced stresses greater than those of 2007 and 2008.

Under this option, as under current policy, the GSEs would transfer 20 percent of the losses equal to the first 0.5 percent of the reference pool's original UPB.

19. The GSEs issued credit-risk notes with loss coverage of up to 6.5 percent in calendar years 2014 and 2015. In addition, many notes issued in 2017 have loss coverage of 4 percent or more. However, CBO's baseline projections are based on the average loss coverage of notes issued in calendar years 2016 and 2017, which is closer to 3.75 percent.

However, they would also transfer 85 percent of the losses that equal between 0.5 percent and 6 percent (rather than 3.75 percent) of the pool's UPB (see Figure 2 on page 7). Under this alternative, the GSEs would sell \$31.1 billion (rather than \$18.6 billion) in credit-risk notes to investors in 2018, CBO estimates, covering the same pool of mortgages as under current policy.

Adding a senior tranche to cover losses between 3.75 percent and 6 percent of the reference pool's UPB would extend the length of time in which credit-risk notes would cover losses, because that senior tranche would absorb more repayments of reference loans ahead of subordinate tranches. That additional time would allow the notes sold to investors to cover more losses between zero and 3.75 percent of the UPB.

For example, under current policy, the most senior tranche of a credit-risk note bears losses between 2.55 percent and 3.75 percent of the reference pool's original UPB (with subordinate tranches bearing losses between zero and 2.55 percent). That senior tranche also receives the credit-risk note's initial prorated share of borrowers' scheduled and unscheduled principal payments on the loans in the reference pool. If those payments were sufficient to repay the entire tranche within two years of its issuance and then losses exceeded 2.55 percent of the reference pool's original UPB in the third year, the GSEs would receive no protection from the credit-risk note under current policy. Under this option, by contrast, losses between 2.55 percent and 3.75 percent of the UPB would be borne by the second-most senior tranche, and the most senior tranche would cover losses between 3.75 percent and 6 percent. That senior tranche would also receive the credit-risk note's initial prorated share of borrowers' principal payments on the reference pool. If those payments were sufficient to repay the entire senior tranche within two years of its issuance and then losses exceeded 2.55 percent of the UPB in the third year, the GSEs would receive protection from the second-most senior tranche of the credit-risk note under this option.

CBO estimates that investors buying those notes would require spreads consistent with the ones offered under current policy for similar risks (see Table 1). Those spreads would range from about 10 percentage points above the one-month LIBOR to bear losses up to the first 0.5 percent of the UPB to 1 percentage point above

the one-month LIBOR to bear losses between 3.75 percent and 6 percent of the UPB.

Option 2: Share Risk on Mortgages Guaranteed Between 2008 and 2012

CBO also analyzed an option in which the GSEs would expand their risk-sharing efforts to include loans originated before the 2013 start of the CRT program. Such older loans can be responsible for disproportionate losses. For example, Fannie Mae reported last year that mortgages originated between calendar years 2005 and 2008 made up only 9 percent of its outstanding guarantees but accounted for nearly 65 percent of the total credit losses on those guarantees.²⁰ The percentage of losses from cohorts of mortgages guaranteed before 2013 is declining over time, but the GSEs could still share a significant fraction of future losses by entering into risk-sharing agreements that cover pools of those older loans.

In CBO's illustrative version of that approach, the GSEs would share the losses expected to be incurred in 2018 and later years on loans originated from 2008 through 2012 that were being paid on schedule by the borrowers in 2018.²¹ That risk sharing would take the same form as recent issuances of credit-risk notes: The GSEs would transfer 20 percent of the losses equal to the first 0.5 percent of the original UPB of the reference pool of loans and 85 percent of the losses that equal between 0.5 percent and 3.75 percent of the pool's original UPB. Under this option, CBO estimates, the GSEs would sell investors \$12.9 billion in credit-risk notes based on reference pools of outstanding mortgages originated each year between 2008 and 2012.

The pricing of CRT transactions involving older loans would provide additional transparency about the costs of those loans. Such prices would not be relevant to the pricing of new loans, however, because the prices paid on notes linked to older loans would reflect any deterioration or improvement in the condition of those loans

20. See Fannie Mae, *2016 Third Quarter Credit Supplement* (November 2016), p. 17, <http://tinyurl.com/y8qcknsq> (PDF, 2.3 MB).

21. This option does not include mortgages originated in 2005, 2006, or 2007 because few of those loans are still outstanding (most having been repaid, for example, when the borrower refinanced the loan or sold the property). The option also excludes loans from the 2008–2012 period that will have been repaid or gone into default before 2018 or that are projected to be delinquent in 2018.

since they were originated. For example, CBO estimates that investors would require more compensation—in the form of higher spreads—for credit-risk notes based on the GSEs' 2008 cohort of guarantees than for notes based on the 2018 cohort because loans guaranteed in 2008 are expected to have higher losses than loans guaranteed in 2018 (see Table 1). Conversely, investors would require lower spreads for credit-risk notes based on the 2012 cohort than for notes based on the 2018 cohort because losses are expected to be lower on the remaining loans from the 2012 cohort than on the 2018 cohort, CBO estimates.

Uncertainty About Pricing Under the Options

The GSEs' current credit-risk notes provide some information about what private investors might charge to share risk beyond the current parameters of the CRT program. Nevertheless, the prices that the GSEs would have to pay to expand their risk sharing are uncertain for several reasons.

First, the private market may be more or less willing to assume risk on loans originated during the housing crisis, or to assume greater risk on newly originated loans, than CBO projects. In that case, investors would require lower or higher compensation than the estimates shown in Table 1.

Second, given the potential that investors' willingness to accept that new risk may be higher or lower, the market for credit-risk notes issued under the options might be more or less liquid than CBO anticipates, further changing costs. Although that new risk might be more difficult to price initially, developing structures that enabled the GSEs to share additional risk could enhance the benefits of the existing CRT program for both the primary and secondary mortgage markets.

Effects of the Options for Expanding the GSEs' Credit-Risk-Transfer Transactions

Risk-sharing transactions are designed to reduce the credit losses borne by taxpayers, but the impact of those transactions on the federal government and the budget depends on a number of factors. First, measures of that impact must take into account the price that Fannie Mae and Freddie Mac pay to compensate investors to accept credit risk. As such, the full cost of the GSEs' credit-risk transfers is net of the reduction in credit losses and the compensation paid to the investors assuming that risk.

Second, the estimated impact of CRT transactions depends on the budgetary approach used to measure cost. CBO and the Administration use different approaches to account for the activities of Fannie Mae and Freddie Mac in the federal budget, and they would therefore have different estimates of the cost of the GSEs' risk-sharing transactions. CBO shows as federal outlays the estimated present value of the GSEs' new credit activity.²² Those estimates are constructed on a fair-value basis that reflects the cost of market risk. The Administration, by contrast, reports in the budget the GSEs' annual cash transactions with the Treasury, which now consist mainly of dividend payments to the Treasury on stock purchased from the GSEs. CBO believes that its approach more appropriately reflects the GSEs' current relationship with the government and provides more relevant and comprehensive information to policymakers than the Administration's approach does.

Finally, the cost of the GSEs' activities is shown in CBO's baseline budget projections as a single estimate, reflecting the price a private investor would charge to assume the GSEs' guarantee obligations. That single estimate represents the central estimate from a distribution of economic forecasts surrounding CBO's baseline macroeconomic forecast. However, policymakers may also be interested in how CRT transactions affect the GSEs under different economic conditions. Thus, in this analysis, CBO examined the impact of the options under a scenario of severe economic stress as well as under its baseline macroeconomic forecast.

CBO analyzed how the options would affect the fair-value subsidy cost of the GSEs (the difference between the present value of projected losses from defaults on loans guaranteed by the GSEs and the present value of the fees that the GSEs are projected to collect in exchange for providing those guarantees), their exposure to credit risk, and their annual net premiums. CBO concluded that the options would have no effect on the federal subsidy cost of the GSEs, as measured on a fair-value basis; would increase the amount of risk transferred

22. A present value is a single number that expresses a flow of income or payments in terms of an equivalent lump sum received or paid today. For budget projections, such as those published in *The Budget and Economic Outlook*, CBO chooses to report cash transactions between the GSEs and the Treasury for the current year instead of the fair-value estimate for that year. That treatment helps align CBO's deficit estimates for the current fiscal year with those of the Administration.

to investors; and, in some cases, would increase the annual premiums collected by the GSEs, net of losses and interest payments to CRT investors.

Effects on the Fair-Value Subsidy Cost of the GSEs

Each CRT transaction that the GSEs undertake with a private entity is, by definition, conducted at market prices. Market-priced transactions have a fair-value subsidy rate of zero because the GSEs receive a fair-value reduction in their credit losses in exchange for making fair-value payments to investors. As a result, those transactions do not directly increase or decrease CBO's estimate of the subsidy cost of the GSEs. CBO's January 2017 baseline, for example, projects a total subsidy cost for the GSEs in 2018 of \$1.7 billion, taking into account their current policy of credit-risk transfers.²³ If the GSEs implemented any of the options analyzed in this report, that estimated subsidy cost would not change.

The additional transactions carried out under those options, however, would generate administrative expenses, which are not included in CBO's estimates of the GSEs' fair-value subsidy cost. For example, the GSEs would pay firms for their assistance in selling credit-risk notes to private investors. Those payments, which are typically disclosed in the prospectus document associated with the notes, reduced the proceeds that the GSEs received for credit-risk notes sold in calendar year 2016 by 0.25 percent to 0.5 percent of the principal amount of the notes. With \$13 billion in credit-risk notes sold in that year, the GSEs incurred about \$40 million in payments, CBO estimates. Such administrative expenses would not exist if the GSEs retained the credit risk on the loans in the reference pool.

Effects on the GSEs' Exposure to Risk

There are many ways to measure the GSEs' exposure to the risk of credit losses, all of which capture aspects of the distribution of potential losses. The measure that CBO uses in this analysis is the insurance-loss component of a fair-value estimate of the budgetary cost of the GSEs' guarantee operations. That measure accounts for the market risk inherent in mortgage guarantees and thus puts more weight on losses that occur in adverse economic conditions. (For more details about that and other measures of risk exposure, see Box 1.)

23. See Congressional Budget Office, "Federal Programs That Guarantee Mortgages" (January 2017), www.cbo.gov/about/products/baseline-projections-selected-programs#5.

Amount of Risk Transferred Under Current Policy

CBO's January 2017 baseline projects that the GSEs will guarantee \$935 billion in newly originated mortgages in 2018. Over their lifetime, those loans are estimated to produce \$25.3 billion in insurance losses for the GSEs on a fair-value basis (with market risk taken into account). Of the \$935 billion in guaranteed loans, about \$732 billion consists of loans that are projected to potentially meet the GSEs' target for CRT transactions. CBO projects that the GSEs will issue credit-risk notes on a reference pool of about \$658 billion—90 percent of the total amount of targeted loans, consistent with FHFA's goals, or about 70 percent of the 2018 cohort of guarantees. The GSEs' insurance losses on that reference pool are projected to total about \$17.7 billion on a fair-value basis.

CBO estimates that the market value of the risk transferred through those credit-risk notes will equal the present value of the expected interest payments on the notes.²⁴ Under their current CRT policy, the GSEs will sell \$18.6 billion in credit-risk notes to investors in 2018, CBO estimates, representing about 3 percent of the \$658 billion UPB of the reference pool. Those transactions are expected to transfer approximately \$2.8 billion in risk exposure to private investors—equal to 11 percent of the \$25.3 billion in expected fair-value losses on the GSEs' 2018 cohort of guarantees, or 16 percent of the \$17.7 billion in expected fair-value losses on the reference pool (see Figure 3).

Reasons That the GSEs Would Retain Most of the Risk of Losses

Despite those risk-sharing transactions, the GSEs would still bear 89 percent of the risk exposure on their 2018 cohort of guarantees under current policy. In CBO's assessment, there are three main reasons for that result. First, about 30 percent of the loans in the 2018 cohort are not expected to meet the GSEs' target

24. CBO's estimate of the market value of the transferred risk reflects the entire interest rate that the GSEs pay to investors and does not attempt to break down that rate into investors' compensation for credit risk, market risk, and liquidity risk. For arguments in favor of including liquidity risk in the accounting for federal credit programs, see Financial Economists Roundtable, *Accounting for the Cost of Government Credit Assistance* (October 2012), www.financialeconomistsroundtable.com. For arguments against including that risk, see Government Accountability Office, *Credit Reform: Current Method to Estimate Credit Subsidy Costs Is More Appropriate for Budget Estimates Than a Fair Value Approach*, GAO-16-41 (January 2016), p. 51, www.gao.gov/products/GAO-16-41.

Box 1.

Ways of Measuring the GSEs' Exposure to Credit Risk

The cost of Fannie Mae's and Freddie Mac's guarantees of single-family mortgages could be higher or lower than initially projected because of unexpected changes in the risky cash flows of the guarantees. Like other mortgage insurers, those government-sponsored enterprises (GSEs) are exposed to the risk of higher-than-expected losses mainly because of credit risk, which stems from their obligation to repay the mortgage holder when a borrower defaults. The credit risk of a loan—one of the most significant risks posed by investments in mortgages—results from the possibility of unanticipated changes in the likelihood and severity of losses from a default by the borrower.¹

The GSEs' exposure to credit risk can be measured in many ways, all of which ultimately attempt to capture aspects of the distribution of potential losses.² Those ways of measuring include stress tests, the present value of expected insurance losses, and the insurance-loss component of a fair-value estimate of the GSEs' cost.

In theory, potential losses on the GSEs guarantees range from zero (no GSE-insured loan defaults) to 100 percent (all GSE-insured loans default, and Fannie Mae or Freddie Mac recovers nothing on any of them). However, even under the most adverse market conditions, the GSEs' ultimate risk exposure is less than 100 percent of the unpaid principal balance of their insured mortgages. The reason is that the GSEs typically recover a portion of default costs through loss-mitigation efforts (such as temporarily lowering borrowers' payments and offering flexible refinancing programs) or through sales of foreclosed property.

1. The GSEs are also exposed, to a lesser extent, to other types of risks inherent in the mortgage market. They include prepayment risk (the possibility that interest rates will fall, prompting more borrowers than expected to prepay their mortgages, thus reducing the GSEs' premium income), interest rate risk (the possibility that interest rates will differ from the discount rate used to calculate the present value of the GSEs' future premiums), and counterparty risk (the possibility that the institutions that service GSE-insured loans will not make premium payments to the GSEs in a timely manner or that lenders will not honor their obligations).

2. For a discussion of the different approaches to measuring risk exposure, see Congressional Budget Office, *Options to Manage FHA's Exposure to Risk From Guaranteeing Single-Family Mortgages* (September 2017), www.cbo.gov/publication/53084.

Stress Tests

An increasingly common approach to measuring risk exposure is to use stress tests, simulations that provide estimates of losses under adverse economic conditions. From the perspective of federal budgeting, stress-test scenarios tied to adverse economic conditions have the desirable trait of drawing attention to outcomes that can occur when the pressure on federal spending and revenues is likely to be greatest. But a limitation of stress tests is that they depend on specific economic scenarios that provide little guidance about the likelihood of the estimated losses.

Present Value of Expected Insurance Losses

One possible measure of the cost of the GSEs' exposure to credit risk is the present value of expected insurance losses based on the distribution of possible outcomes in a given year, which essentially weights those outcomes in proportion to their likelihood of occurring. That measure is the insurance-loss component of the GSEs' budgetary cost as estimated in accordance with the rules specified in the Federal Credit Reform Act of 1990 (FCRA).

The present value of expected losses would rise if the GSEs' policies changed in ways that widened the distribution of credit losses, such as a shift to guaranteeing mortgages with higher loan-to-value ratios. But the present value of expected losses would remain the same if policies changed in ways that increased the likelihood of losses in weak economic conditions and produced an equally likely reduction in losses in stronger economic conditions.

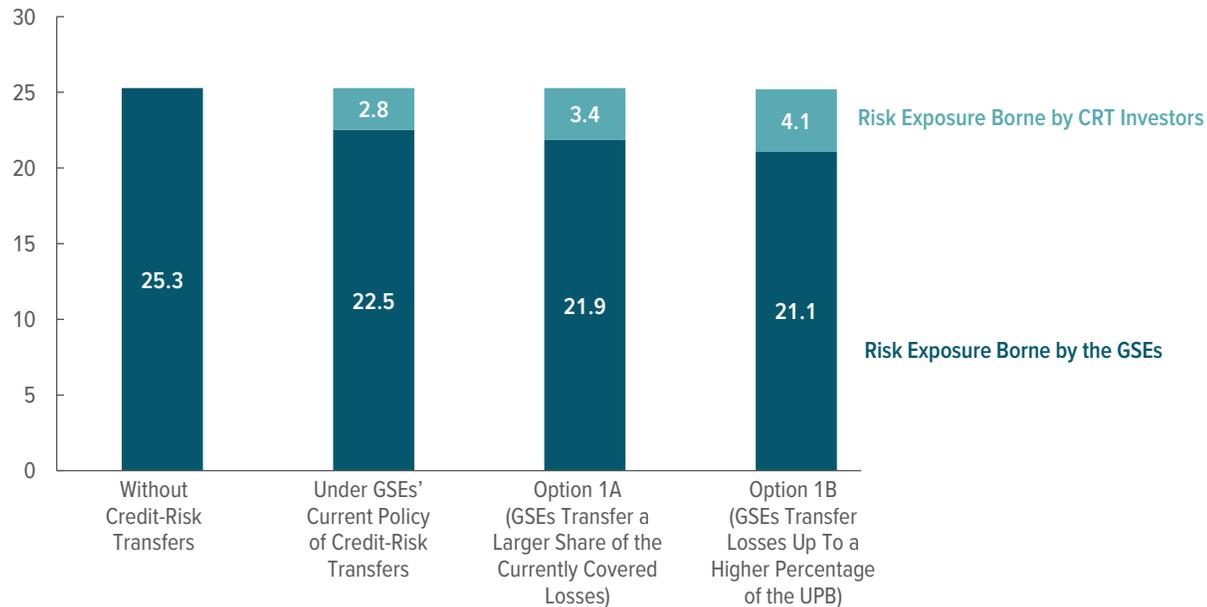
Insurance-Loss Component of a Fair-Value Estimate

An alternative measure of the GSEs' exposure to credit risk—which the Congressional Budget Office uses in this analysis—is the insurance-loss component of a fair-value estimate of the GSEs' cost. That measure is more comprehensive than the FCRA measure described above because, by including an adjustment for market risk, it implicitly puts more weight on losses that occur in adverse economic conditions. As a result, the fair-value measure of credit risk would rise (rather than remain the same) if policies changed in ways that increased the likelihood of losses in weak economic conditions and produced an equally likely reduction in losses in stronger economic conditions.

Figure 3.

Risk Exposure on the GSEs' 2018 Cohort of Guarantees Under Current Policy and Option 1

Billions of Dollars



Source: Congressional Budget Office.

CRT = credit-risk transfer; GSEs = government-sponsored enterprises (in this case, Fannie Mae and Freddie Mac); UPB = unpaid principal balance.

for inclusion in the reference pool for credit-risk notes, CBO estimates—because, for example, they have a loan-to-value ratio below 60 percent, have adjustable interest rates, or are guaranteed under certain refinancing programs. As an illustrative example, if the GSEs issued credit-risk notes covering all of the loans they guaranteed in 2018, they would increase the amount of risk exposure transferred to investors from \$2.8 billion to \$3.9 billion.²⁵

Second, credit-risk notes have an average maturity of 10 to 12 years, much shorter than the 30-year term of most mortgages in their reference pool. As a result, any losses that the GSEs experience on that pool after the notes have matured are not shared with the notes' investors. If the GSEs issued credit-risk notes with the same maturity

as the reference loans, the amount of risk exposure transferred to investors on the 2018 cohort of guarantees would increase from \$2.8 billion to \$3.3 billion.

Third, borrowers' scheduled and unscheduled repayments of principal reduce the amount of credit-risk notes outstanding and thus the capacity of those notes to absorb losses. If the GSEs did not use principal repayments on the reference loans to repay note holders, the amount of risk exposure covered by the 2018 notes would rise from \$2.8 billion to \$4.6 billion.

If the GSEs made all three of those changes simultaneously, investors would be at risk for \$11.7 billion (or 46 percent) of the \$25.3 billion in expected fair-value losses on the 2018 cohort of guarantees. As a result, the GSEs would bear only 54 percent of that risk exposure rather than 89 percent.²⁶ However, adding loans with different credit-risk profiles (such as adjustable-rate

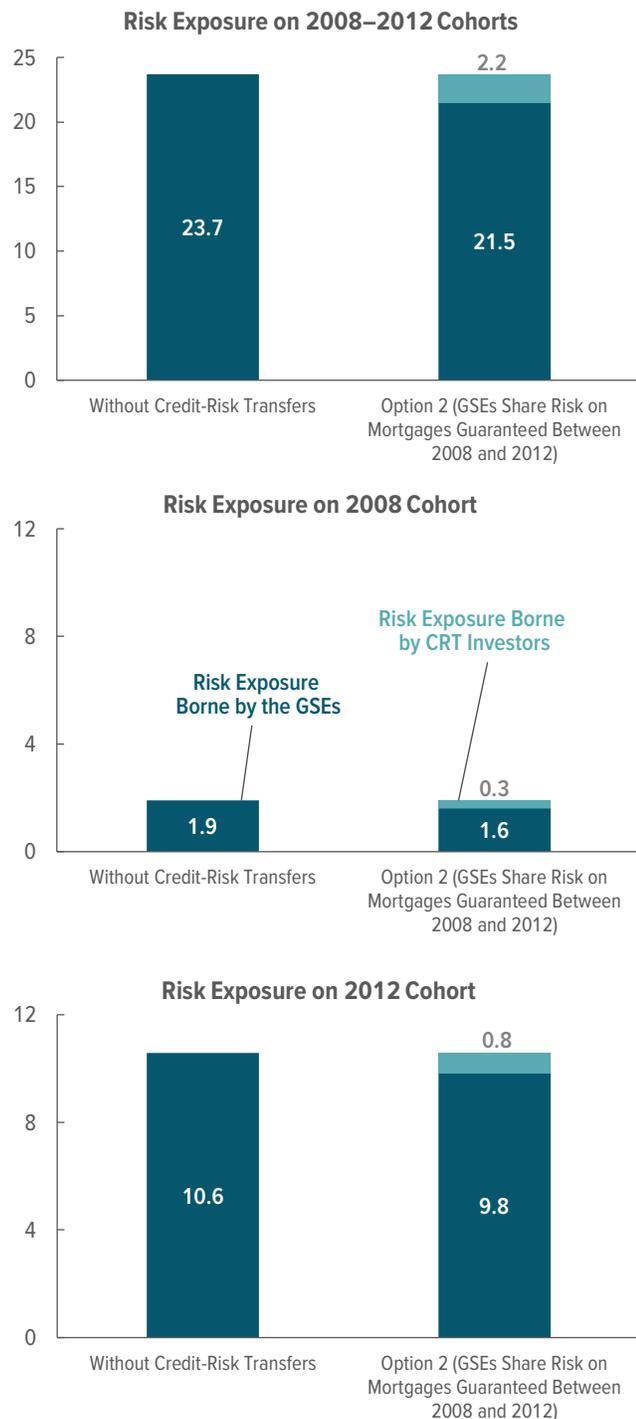
25. In the illustrative examples in this section, estimates of the amount of risk exposure transferred to investors are based on the assumption that the spreads required by investors would not change with the changes to credit-risk notes. CBO measures the value of risk exposure transferred to investors as the present value of the expected interest payments on the notes, so changes in the spreads required by investors would alter the amount of risk exposure transferred.

26. The 54 percent of risk exposure retained by the GSEs in this example includes the expected fair-value losses below 3.75 percent of the reference pool's UPB that are not transferred to investors through credit-risk notes and the expected fair-value losses above 3.75 percent of the UPB.

Figure 4.

Risk Exposure on the GSEs' 2008–2012 Cohorts of Guarantees Under Option 2

Billions of Dollars



Source: Congressional Budget Office.

CRT = credit-risk transfer; GSEs = government-sponsored enterprises (in this case, Fannie Mae and Freddie Mac).

mortgages or loans with very low loan-to-value ratios) or making structural changes to the notes (such as extending the term or eliminating principal amortization) would represent significant changes to the CRT program.

Amount of Risk Transferred Under the Options. As opposed to such structural changes, the options that CBO analyzed would allow the GSEs to increase the amount of risk they share with private investors on a more incremental basis. Option 1A—transferring a larger portion of the losses up to 3.75 percent of the UPB of the reference pool—would increase the risk exposure borne by investors on the 2018 cohort of guarantees by \$0.6 billion (from \$2.8 billion to \$3.4 billion).²⁷ Option 1B—selling notes that cover losses up to 6 percent of the reference pool's UPB—would boost the risk exposure borne by investors by \$1.3 billion (from \$2.8 billion to \$4.1 billion). Despite those expansions of risk sharing, the GSEs would retain the majority of risk exposure on the mortgages they are projected to guarantee in 2018 (see Figure 3).

Option 2—selling credit-risk notes based on reference pools of loans guaranteed between 2008 and 2012—would increase the risk exposure borne by investors by a total of \$2.2 billion (see Figure 4). That amount represents 9 percent of the estimated \$23.7 billion in risk exposure on those loans.

The amount of risk exposure on each annual cohort of guaranteed loans, and how much of that risk exposure would be transferred to investors under a standard credit-risk note, would depend on the UPB remaining and the composition of the loans in 2018. For example, mortgages guaranteed by the GSEs in 2008 that are expected to still be outstanding in 2018 have less total UPB and risk exposure than mortgages guaranteed in 2012, because most of the loans in the 2008 cohort will have either been repaid in full or defaulted by 2018. Measured per dollar of outstanding UPB, however, those 2008 loans have much more risk exposure than the loans guaranteed in 2012. The main reason is that, in CBO's estimation, the 2008 mortgages have higher current loan-to-value ratios (which rose when home prices declined during the housing crisis) and the

27. For more detail about CBO's budget estimates of CRTs under the baseline and the options, see Supplemental Table 1, available at www.cbo.gov/publication/53380.

borrowers have lower average credit scores, resulting in higher estimated default losses per dollar of outstanding UPB. Nevertheless, because fewer 2008 loans than 2012 loans remain outstanding, credit-risk notes based on 2008 loans would transfer less total risk exposure than notes based on 2012 loans (\$0.3 billion versus \$0.8 billion).

Effects on the GSEs' Annual Net Premiums

A measure of the financial standing of Fannie Mae and Freddie Mac is the net income generated by their operations. That net income is particularly relevant for policymakers now, while the GSEs are in conservatorships. Under the terms of agreements signed when the government took over the GSEs, in any quarter in which Fannie Mae's or Freddie Mac's net worth becomes negative, the Treasury is obligated to buy enough stock (subject to limits) from the GSEs to restore them to positive net worth.²⁸ In return, the GSEs must pay dividends to the Treasury on the government's holdings of that stock.²⁹

CBO estimates the budgetary impact of the GSEs on a fair-value basis rather than on the basis of their cash transactions with the Treasury, but CBO does estimate some of the GSEs' cash flows in order to calculate the annual net premiums they collect as a part of their guarantee operations. Net premiums consist of the income that the GSEs collect from guarantee premiums minus the losses they bear on the loans they guarantee. For loans that serve as part of a reference pool for a credit-risk note, annual net premiums also reflect the interest paid to the note's investors and the losses borne by those investors under the terms of the CRT transaction.³⁰ Although annual net premiums differ from net income, they provide guidance for estimating whether the GSEs' guarantee operations are likely to require further

payments (in the form of stock purchases) from the Treasury.³¹

If economic conditions turn out to be consistent with CBO's macroeconomic forecast, the mortgages that the GSEs are expected to guarantee in 2018 will generate positive net premiums each year through 2030, CBO estimates (see Figure 5).³² In 2018, those net premiums are projected to equal about 0.2 percent of the original principal guaranteed, meaning that the guarantee premiums collected by the GSEs on those loans exceed the sum of interest paid to holders of credit-risk notes and any losses that occur in that first year. Net premiums are projected to rise in 2019 to more than 0.3 percent of the original principal balance as some of the loans in the 2018 cohort begin to be repaid early and as the GSEs are allowed to recognize as income the full value of premiums assessed on the borrower when a guarantee is made. Annual net premiums then begin to decline, eventually falling below 0.1 percent of the original principal guaranteed, as the outstanding principal of the 2018 cohort decreases (because of repayments and defaults) and guarantee premiums are collected on that smaller amount of principal.

Effects of Current CRT Policy. Under the economic conditions in CBO's macroeconomic forecast, the GSEs' current credit-risk-transfer policy reduces annual net premiums slightly, CBO estimates, because the cost of interest paid to investors exceeds the value of the losses borne by those investors. That estimate is consistent with the expectation that investors will require compensation that will cover liquidity risk and some level of losses greater than those expected under normal economic circumstances.

Credit-risk transfers are financially beneficial to the GSEs under more adverse economic conditions. For example, in a scenario consistent with the "severely adverse" stress scenario that the Federal Reserve uses in its Comprehensive Capital Analysis and Review exercise

28. For more details about the relationship between the GSEs' earnings and payments by the Treasury, see Congressional Budget Office, *The Effects of Increasing Fannie Mae's and Freddie Mac's Capital* (October 2016), www.cbo.gov/publication/52089.

29. Under the current terms of the agreements, when Fannie Mae's or Freddie Mac's net worth exceeds a specified threshold (set to decline to zero in 2018), that GSE must pay dividends to the Treasury equal to the amount above the threshold.

30. CBO's interest calculation includes income that the GSEs earn by investing the funds they receive from the sale of credit-risk notes. Because the GSEs could use those funds instead of borrowing, the rate of return that CBO uses to calculate interest is based on the GSEs' borrowing costs.

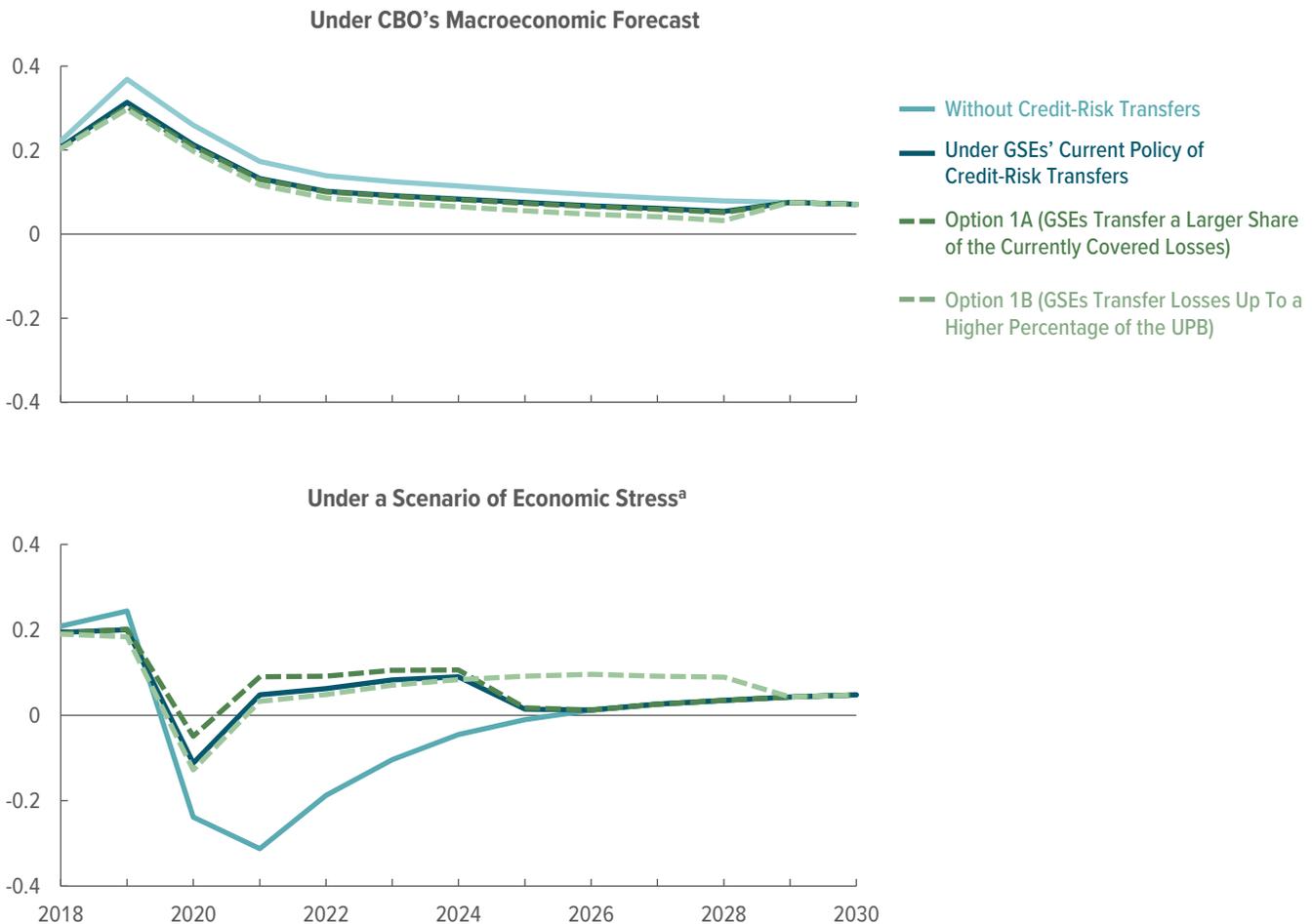
31. In addition to annual premiums from guaranteeing single-family mortgages, the GSEs' net income is affected by their guarantees of multifamily mortgages and their investments in mortgage-related securities to hold in their portfolios of assets. Other factors that influence net income include the results of hedging operations and changes to the GSEs' loss reserves (an estimate of future guarantee claims).

32. For the dollar amounts of those estimates, see Supplemental Table 2, available at www.cbo.gov/publication/53380.

Figure 5.

Annual Net Premiums Collected on the GSEs' 2018 Cohort of Guarantees Under Current Policy and Option 1

Percentage of Original Principal Guaranteed



Source: Congressional Budget Office.

Annual net premiums are the GSEs' collections of premiums for their guarantees net of interest paid to the investors involved in CRT transactions and net of losses borne by the GSEs in excess of losses borne by CRT investors.

CRT = credit-risk transfer; GSEs = government-sponsored enterprises (in this case, Fannie Mae and Freddie Mac); UPB = unpaid principal balance.

a. This scenario is consistent with the "severely adverse" stress scenario that the Federal Reserve uses in its Comprehensive Capital Analysis and Review exercise for banks. The scenario features a decline of more than 20 percent in house prices and an unemployment rate rising to 10 percent.

for banks, the GSEs' annual net premiums are projected to be higher from 2020 to 2025 under the GSEs' current CRT policy than they would be without credit-risk transfers (see Figure 5).³³ (By the end of 2025, credit-risk

notes based on the 2018 cohort are estimated to be fully extinguished under the stress scenario as a result of both principal repayments and losses borne by the investors. After 2025, the notes have no effect on the GSEs' net premiums for the 2018 cohort of guarantees under that scenario.)

33. The severely adverse stress scenario features a decline of more than 20 percent in house prices and an unemployment rate rising to 10 percent. For more details, see Board of Governors of the Federal Reserve System, *2017 Supervisory Scenarios for Annual Stress Tests Required Under the Dodd-Frank Act Stress Testing Rules and the Capital Plan Rule* (February 2017), pp. 5–6, <http://tinyurl.com/yclyaxfk> (PDF, 331 KB).

Translating annual net premiums into projected net income is difficult, requiring many assumptions about such things as accounting policy. Nevertheless, the results under both CBO's macroeconomic forecast and the stress

scenario illustrate the link between credit-risk transfers and the GSEs' need to draw on the Treasury. In general, credit-risk transfers may increase the likelihood that the GSEs will need to receive small payments from the Treasury, because interest paid to CRT investors exceeds the value of losses borne by those investors, resulting in lower net income for the GSEs in each quarter. That reduction may not be large enough to result in negative quarterly net income—and thus to require help from the Treasury—but it does increase the probability of that outcome (all else being equal). In adverse economic conditions, however, credit-risk transfers would decrease the amount that the GSEs would need to draw on the Treasury. Losses to the GSEs that necessitated a sizable draw, which would occur during a large or sustained economic downturn, would be buffered by the losses that CRT investors would bear under current policy.

Effects of CRT Options. Under Option 1A—transferring a larger portion of the losses up to 3.75 percent of the unpaid principal balance of the reference pool—annual net premiums on the 2018 cohort would be similar to premiums under the GSEs' current CRT policy, regardless of whether the economy followed CBO's macroeconomic forecast or the stress scenario. The same would be true for Option 1B—selling notes that cover losses up to 6 percent of the reference pool's UPB—under CBO's macroeconomic forecast. But under the stress scenario, Option 1B would have a noticeable effect on annual net premiums after 2024 (see Figure 5). Issuing notes that cover a higher level of losses would create additional risk-bearing capacity, generating higher annual net premiums from 2025 through 2028 than the GSEs would collect under current policy or under Option 1A in the stress scenario, CBO estimates.

Option 2—selling credit-risk notes based on reference pools of loans guaranteed between 2008 and 2012—would have a small total effect on annual net premiums. However, the impact would differ for notes based on different cohorts of guarantees (see Figure 6).

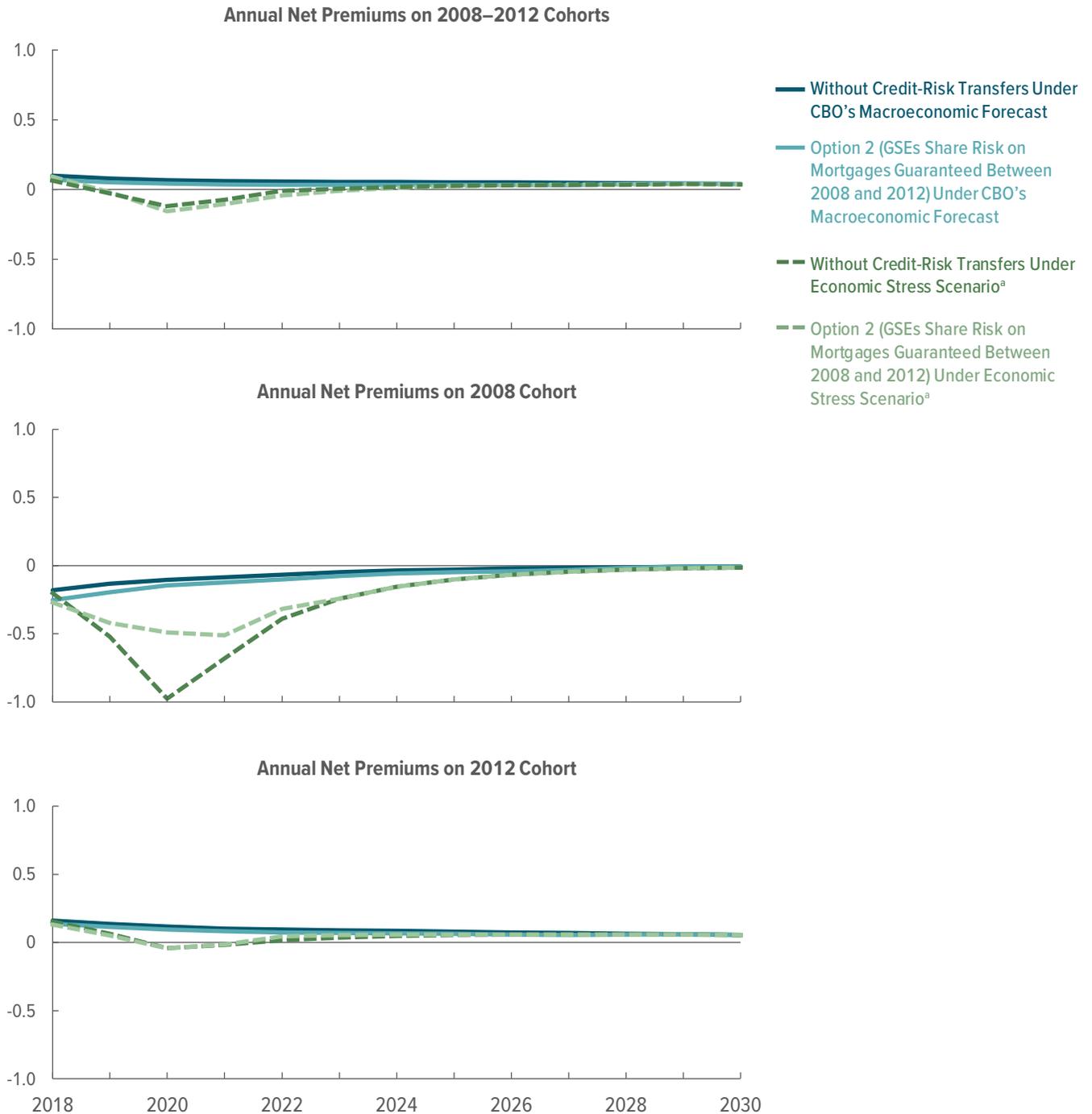
Unlike mortgages guaranteed in 2018, those guaranteed in 2008 are projected to generate negative net premiums for the GSEs from 2018 to 2030, even under CBO's baseline macroeconomic forecast. Those negative net premiums result because the 2008 loans are expected to have higher losses than 2018 loans and because the GSEs charged lenders lower guarantee premiums in 2008 than CBO estimates they will charge for similar loans in 2018. Although the 2008 and 2018 cohorts are projected to produce different net premiums during the 2018–2030 period under current policy, the effect of selling credit-risk notes based on 2008 loans would be similar to the effect of selling notes based on the 2018 cohort. Notes based on 2008 mortgages would decrease annual net premiums slightly under CBO's macroeconomic forecast, but they would increase net premiums under the stress scenario (see Figure 6). The existence of those notes would offer the GSEs protection against the large losses associated with a severe economic downturn until 2023, when notes based on the 2008 cohort would be fully extinguished under that scenario, CBO estimates.

Like mortgages guaranteed in 2018, those guaranteed in 2012 are projected to generate positive net premiums for the GSEs during most of the 2018–2030 period. As a result, issuing notes based on the 2012 cohort would have much the same effect as issuing notes based on the 2018 cohort: generating a small cost under CBO's macroeconomic forecast and a small amount of protection in a severe downturn.

Figure 6.

Annual Net Premiums Collected on the GSEs' 2008–2012 Cohorts of Guarantees Under Option 2

Percentage of Original Principal Guaranteed

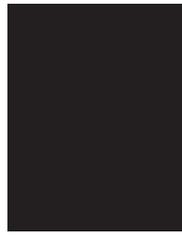


Source: Congressional Budget Office.

Annual net premiums are the GSEs' collections of premiums for their guarantees net of interest paid to the investors involved in CRT transactions and net of losses borne by the GSEs in excess of losses borne by CRT investors.

CRT = credit-risk transfer; GSEs = government-sponsored enterprises (in this case, Fannie Mae and Freddie Mac).

a. This scenario is consistent with the "severely adverse" stress scenario that the Federal Reserve uses in its Comprehensive Capital Analysis and Review exercise for banks. The scenario features a decline of more than 20 percent in house prices and an unemployment rate rising to 10 percent.



About This Document

This report was prepared at the request of the Chairman of the House Committee on Financial Services. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, the report makes no recommendations.

Jeffrey Perry and Mitchell Remy of CBO's Financial Analysis Division prepared the report with guidance from Sebastien Gay. Ermengarde Jabir (formerly of CBO) assisted with programming. Kim Cawley, Michael Falkenheim, Jonathan Huntley (formerly of CBO), Wendy Kiska, Damien Moore (formerly of CBO), Chayim Rosito, Aurora Swanson, and David Torregrosa provided useful comments on various drafts of the report, as did Edward DeMarco of the Financial Services Roundtable, Edward Golding and Laurie Goodman of the Urban Institute, and Stephen Oliner of the American Enterprise Institute and the University of California, Los Angeles. (The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.)

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Keith Hall
Director
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