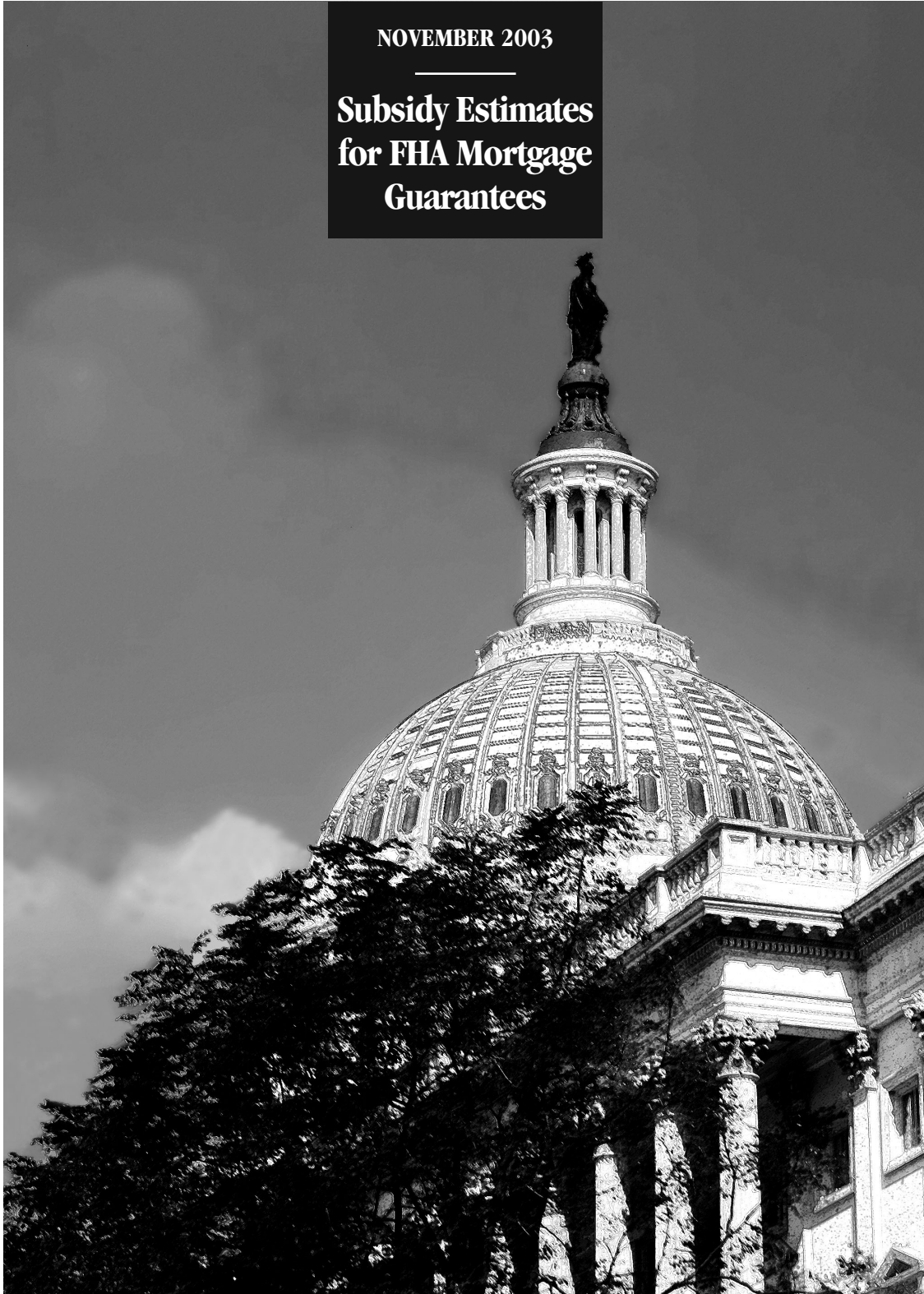


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NOVEMBER 2003

**Subsidy Estimates
for FHA Mortgage
Guarantees**





Subsidy Estimates for FHA Mortgage Guarantees

November 2003

Note

Numbers in the text and tables of this report may not sum to totals because of rounding.



Preface

Federal Housing Administration (FHA) guarantees of home mortgages account for more than half of all federally insured loans, and net budgetary collections from that program are expected to offset about half of the cost of all other federal loan guarantees. Actual net receipts for FHA, however, have fallen short of expectations for the past decade. That discrepancy between projected and realized cash inflows has raised doubts about the reliability of budget estimates for the program.

This Congressional Budget Office (CBO) analysis of FHA's subsidy estimates is one part of a response to a request from the House Budget Committee to review the budgetary treatment of federal credit programs and possible improvements in and extensions of current practice. The paper draws on research begun in response to a request from the House Committee on Banking and Financial Services. Consistent with CBO's mandate to provide objective, impartial analysis, this paper makes no recommendations.

Using a model developed by Charles A. Capone Jr., formerly of CBO, the staff of CBO's Microeconomic and Financial Studies Division prepared this report under the direction of Marvin Phaup and Roger Hitchner. Many others at CBO contributed to the model, including Bob Arnold, Ufuk Demiroglu, Robert Dennis, Deborah Lucas, and John Peterson. The sub-model for regional house-price movements was developed by Malgorzata Klosek.

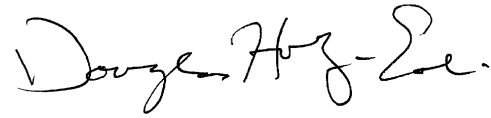
Research assistance and computer programming support were provided by Jenny Au, Sean Corcoran, Lori Ellebracht, Carol Frost, Erin Hirsch, Joseph Nichols, DaRon Ross, and Errick Simmons. Information technology support was provided by Georgia Brown, Eric Guille, Guanli Lu, and Rick Williams. The report also benefited from comments by CBO analysts Perry Beider, Kim Cawley, Sunita D'Monte, Cary Elliot, Peter Fontaine, Mark Hadley, Susanne Mehlman, Albert Metz, Mark Musell, Elizabeth Robinson, and David Torregrosa.

CBO is grateful to FHA for providing access to the data required for this study and to Judy May, Dominic Stasulli, and Ed Szymanoski of FHA for their help. Many other staff members at FHA and the Department of Housing and Urban Development were also helpful, including Harold Bunce, Darryl Getter, Ian Keith, and Maude Williams.

Christine Bogusz edited the report, and Christian Spoor proofread it. Maureen Costantino designed the cover, and Sharon Corbin-Jallow prepared the paper for publication. Lenny

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Skutnik produced the printed copies, and Annette Kalicki prepared the electronic versions for CBO's Web site (www.cbo.gov).

A handwritten signature in black ink, reading "Douglas Holtz-Eakin". The signature is written in a cursive style with a large initial "D" and a long horizontal stroke extending to the right.

Douglas Holtz-Eakin
Director

November 2003



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Summary

The Federal Housing Administration (FHA) guarantees home mortgages for eligible home buyers. By protecting lenders against credit losses when borrowers default, FHA increases the availability of mortgage loans, especially for borrowers with few financial resources or short credit histories. In connection with that service, FHA collects guarantee fees paid by borrowers.

FHA home loan guarantees are unusual among federal credit programs in that they are generally estimated to produce net income for the government, rather than net costs. That is, the value of collections from guarantee fees is expected to exceed the value of outlays from defaults. The projected gain to the government from those guarantees during the 1992-2002 period was about 2.5 percent of the dollar volume of loans guaranteed. Actual program performance, however, has fallen short of expectations. Credit subsidy reestimates for guaranteed mortgages disbursed during that period reduced the expected gain to the government by about 0.5 percent of the total dollar volume. On nearly \$900 billion in guaranteed loans, that downward revision amounts to more than \$4 billion in anticipated net collections that are no longer expected.

A plausible explanation for the tendency of FHA's budget estimates to overstate expected gains is the use of a single, smooth economic forecast to project cash flows from loan guarantees. The actual path of the economy is not smooth; rather, it exhibits fluctuations in interest rates, housing prices, income, and unemployment, among other variables. Mortgage loan defaults, which trigger payments by FHA, and loan prepayments, which halt the inflow of annual FHA guarantee fees, are sensitive to economic changes, es-

pecially to variations in housing prices and mortgage interest rates. Accordingly, FHA's outlays and receipts are themselves sensitive to such movements. By failing to account for economic fluctuations, FHA's current method of forecasting its cash flows from mortgage insurance may tend to underestimate both defaults and prepayments and, therefore, to overestimate net income to the government from mortgage insurance.

One solution, developed by the Congressional Budget Office (CBO) and described in this report, is to incorporate into the forecast the observed historical volatility of key economic variables. That can be done by simulating multiple paths for the economy that start from current conditions and follow CBO's baseline forecast but also exhibit historical variation in economic activity, prices, and interest rates. A volatile forecast path, along with estimates of the effects of those economic variables on loan defaults and prepayments, could be used by FHA to project cash flows more accurately. Cash flows could then be converted into expected net collections or subsidies to FHA. CBO's approach calculates net income for a large number of different, but possible, economic paths. The average of net income from all those paths is an estimate of net cash inflows that is free of the upward bias introduced by using a single, smooth path.

CBO's approach would reduce the value of expected net receipts from FHA-guaranteed loans by including economic volatility in the forecast, by using a model of defaults and prepayments estimated from historical data, and by averaging FHA's net receipts across 1,000 alternative economic paths. Using that approach for mortgages disbursed between 1992 and 2002 would have lowered projected net collections from about \$22

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billion (an average of \$2 billion for the guaranteed loans disbursed in each budget year, or cohort) to about \$12 billion (\$1.1 billion per cohort).

Budgetary receipts from FHA loan guarantees made between 1992 and 2002 have already been subject to a series of downward adjustments totaling \$4 billion (to a current level of \$18 billion) on the basis of experience to date. The method described here for incorpo-

rating economic volatility into estimates of net collections suggests that FHA's initial estimates for single-family home mortgages may have been overstated for all cohorts guaranteed during the 1992-2002 period by as much as \$9.6 billion. The accuracy of the new estimates will be tested by future reestimates before the loans guaranteed during that period mature.



Subsidy Estimates for FHA Mortgage Guarantees

Introduction

The Federal Housing Administration provides a federal guarantee of mortgage loans funded through private lenders and state and local housing finance agencies. Since its inception in 1934, FHA has become an important contributor to home financing for first-time and low-income home buyers.¹

At the start of the 2003 budget year, FHA's portfolio of loan guarantees was \$563.4 billion, of which \$467.3 billion (83 percent) was for single-family mortgages that are accounted for in the Mutual Mortgage Insurance Fund (MMIF). Programs operating through that fund are expected to be self-supporting. They are the focus of this analysis.

The Secretary of the Department of Housing and Urban Development has a statutory obligation to balance the financial soundness of MMIF programs with the housing finance demands of first-time home buyers and buyers with low down payments.² In addition, the Secretary has authority to adjust the insurance premiums charged to insured borrowers as necessary to try to meet those competing goals. The Secretary, however, must charge all borrowers the same premium without regard to differences in individual risk.

1. FHA does not insure so-called subprime loans (those to borrowers with tarnished credit ratings), but the President's budget for 2004 proposes to extend FHA's guarantee authority to such mortgages. That proposal is included in the Senate version of the 2004 appropriations bill for the Departments of Veterans Affairs and Housing and Urban Development.

2. See 12 U.S.C. 1711(h)(2).

FHA in the Budget

The budgetary treatment of FHA loan guarantees follows the provisions of the Federal Credit Reform Act of 1990, which became effective with the 1992 budget year. Under credit reform procedures, the cost of federal credit activity in a budget year is the net present value of all expected future cash flows from guarantees and direct loans disbursed in that year. For loan guarantees, cash inflows consist primarily of fees charged to insured borrowers, and cash outlays consist mostly of payments to lenders to cover the cost of loan defaults. To calculate the net present value of activity for a budget year (a loan or guarantee cohort), FHA must forecast annual cash flows for the life of the mortgages it guarantees. Projected future cash flows are then discounted to the year in which the guaranteed loan was disbursed using interest rates on Treasury securities whose maturities match those of the cash flows. The discounted loss (or gain) is the estimated budgetary cost or subsidy value of the cohort of loans issued in the budget year.

The net value of each cohort's cash flows is often expressed as a percentage of the volume of guaranteed loans in the cohort—that is, as a subsidy rate. Per-dollar subsidy rates are especially convenient for comparing costs across cohorts of various sizes and across programs whose terms may differ. To prepare the budget, estimated subsidy rates are multiplied by the projected or authorized loan volume to arrive at estimates of the dollar amount of subsidies expected to be obligated or committed by each credit program.

Under current estimating procedures, the discounted present value of expected fee income from FHA's loan guarantees—taking account of expected prepayments—exceeds the discounted present value of expected

default expenses. Thus, under current budgetary procedures, FHA is expected to produce an inflow of net budgetary resources from its loan guarantee activity. Credit programs that produce net income rather than net outlays are said to have “negative subsidies” and “negative subsidy rates,” because net income from business-type activities is shown in the budget as negative outlays. When actual cash flows differ from original budget estimates, subsidy rates are “reestimated” to incorporate that information into the budget.³

Estimating FHA Subsidies

The subsidy estimate for each cohort is calculated on the basis of the contract terms of the loan guarantee and the economic forecast used to project future loan terminations from prepayments and defaults. Contract terms for FHA include the fees charged to borrowers and the default-related expenses of lenders that FHA will reimburse. Borrowers now pay a fee of 1.5 percent of the loan amount at origination and monthly fees that sum to an annual rate of 0.5 percent of the outstanding loan balance. The fee at origination is included in the loan amount, which enables borrowers to pay the fees for FHA insurance through their monthly mortgage payment.

FHA’s default-related expenses come primarily from foreclosures on mortgaged properties to satisfy unpaid debts. After a lender completes a property foreclosure, FHA pays off the balance of the defaulted mortgage; it also reimburses lenders for two-thirds of foreclosure-related expenses and for mortgage interest income not received from the borrower during the default period.⁴ Once FHA pays the lender the insurance claim, it takes possession of the property, which leads to a series of cash flows for property management and sales expenses, along with revenue from the final sale of the property.

3. See Congressional Budget Office, *Credit Subsidy Reestimates, 1993-1999* (September 2000).

4. The actual interest reimbursement is based on the 30-year Treasury bond yield at the time the loan was originated, rather than the note rate on the mortgage.

The economic forecast used to project FHA’s cash flows includes future interest rates and housing prices. Those variables affect the rates at which loans are expected to be prepaid or to default during the life of the guaranteed loans—up to 30 years. When loans are prepaid, fee income to FHA stops. Also, if borrowers prepay their loans in full during the first five years, FHA refunds a portion of the premium paid at loan origination. When loans terminate through default, fee income also stops and foreclosure expenses are incurred. So whether through prepayment or default, loan termination reduces the net budgetary resources from FHA’s loan guarantees. Thus, accurate forecasts of FHA’s guaranteed-loan terminations are essential to correctly project cash flows and subsidies from the credit activity.

Indications of Upward Bias in Estimates of Net Collections

Two factors suggest that original estimates of FHA subsidies may be subject to downward bias (overstatement of net income, which means understatement of subsidy cost): the persistent direction of reestimates, and the character of the forecasts currently used to project future cash flows for FHA guarantees.

Reestimates

Under credit reform accounting, the federal budget records outlays for the present value of expected cash flows from guaranteed loans disbursed in the budget year. However, actual cash flows are revealed slowly, over the life of the guaranteed loan. Thus, credit reform also requires agencies to periodically revise their initial subsidy estimates in light of experience to date. The Office of Management and Budget (OMB) directs agencies with outstanding cohorts of loans and guarantees to periodically reestimate subsidies by cohort as new information becomes available. Reestimates reflect actual cash flows and a revised forecast of future collections and outlays.

Reestimates provide additional information and correct the bias in initial subsidy estimates. Unbiased original estimates will produce upward and downward adjustments of approximately equal frequency and

Table 1.**Original and Reestimated FHA Subsidy Rates, by Cohort, 1992 to 2002**

(Percent)

Cohort Year	Original Estimate	Current Estimate	Difference (Original Minus Current)
1992	-2.60	-3.30	0.70
1993	-2.70	-2.57	-0.13
1994	-2.79	-1.60	-1.19
1995	-1.95	-0.58	-1.37
1996	-2.77	-1.00	-1.77
1997	-2.88	-1.31	-1.57
1998	-2.99	-2.07	-0.92
1999	-2.62	-2.47	-0.15
2000	-1.99	-1.43	-0.56
2001	-2.15	-2.13	-0.02
2002	-2.07	-2.74	0.67
Average	-2.50	-1.93	-0.57
Volume-Weighted Average	-2.48	-2.02	-0.46

Source: *Budget of the United States Government, Fiscal Year 2004: Federal Credit Supplement, Table 8.*

amount. In contrast, reestimates that consistently move estimates in only one direction suggest that the original estimates may have been biased.

Reestimates of subsidies for FHA's home mortgage guarantees show a pattern of sizable upward adjustment (toward higher costs) across cohorts. As reported in OMB's annual *Federal Credit Supplement* to the President's budget, reestimates to date have lowered the value of expected net income—that is, raised the subsidy cost—for nine of 11 cohorts accounted for under credit reform (*see Table 1*).⁵ Reestimates have reduced FHA's negative subsidy from a weighted average (by volume of loans guaranteed) of almost 2.5 percent to about 2 percent. On nearly \$900 billion in mortgages guaranteed by FHA over the 1992-2002 period, that percentage difference amounts to \$4 billion (or \$365 million per cohort) in initially expected net budgetary inflows that are no longer expected to be received.

Current Estimating Method

In the economic forecast that FHA uses to estimate subsidy costs, interest rates and housing prices move smoothly over the first 10 years of the 30-year forecast period toward the long-run average for interest rates and the rate of growth for housing prices.⁶ Those variables are then held at their long-term averages for the remaining projected life of the cohort. That approach tends to understate the effect of economic conditions on FHA's loan terminations. Both interest rates and housing prices exhibit period-to-period variation rather than follow a smooth trajectory to their long-run average values. Those fluctuations generally tend to increase both loan prepayments and defaults. Therefore, a smooth economic forecast, used in conjunction with historically estimated effects of interest rates on prepayments and of housing-price declines on defaults, will underpredict prepayments and defaults, resulting in an overstatement of expected (net) budget-

5. *Budget of the United States Government, Fiscal Year 2004: Federal Credit Supplement, Table 8.*

6. FHA does not develop that economic forecast itself. Rather, it estimates subsidies from patterns of expected future loan terminations developed by a private contractor. See Deloitte & Touche, *Annual Actuarial Review of the Federal Housing Administration's Mutual Mortgage Insurance Fund, Fiscal Year 2001* (Philadelphia, Pa.: Deloitte & Touche LLP, December 2001).

Table 2.**Original and Mean-Value FHA Subsidy Rates, by Cohort, 1992 to 2002**

(Percent)

Cohort Year	Original Estimate	Mean-Value Estimate	Difference (Original Minus Mean Value)
1992	-2.60	-1.12	-1.48
1993	-2.70	-2.11	-0.59
1994	-2.79	-2.03	-0.76
1995	-1.95	-0.14	-1.81
1996	-2.77	-0.57	-2.20
1997	-2.88	-0.51	-2.37
1998	-2.99	-1.44	-1.55
1999	-2.62	-1.97	-0.65
2000	-1.99	-1.02	-0.97
2001	-2.15	-1.19	-0.96
2002	-2.07	-1.73	-0.34
Average	-2.50	-1.26	-1.24
Volume-Weighted Average	-2.48	-1.39	-1.08

Sources: *Budget of the United States Government, Fiscal Year 2004: Federal Credit Supplement*, Table 8 (for the original estimates), and Congressional Budget Office (for the mean-value estimates).

ary inflows from FHA loan guarantees. Economic forecasts more appropriate for projecting FHA's cash flows would incorporate realistic fluctuations in those key economic variables throughout the life of the guaranteed mortgages.⁷

Incorporating Volatility and Multiple Economic Paths

CBO has developed a computer model that estimates FHA-guaranteed subsidies using a large number of different economic paths, each with historically observed fluctuations.⁸ The version of the model used for this analysis creates 1,000 different economic paths starting from the prevailing state of the economy in the budget year. That large number of paths allows CBO to calculate subsidy rates for a wide range of eco-

nomical conditions, including sharp spikes in interest rates and deep national recessions. The new model also disaggregates national housing prices into 34 different regions. By doing so, it substantially increases the sensitivity of defaults to declines in housing prices, because regional prices are more volatile than the national average. Combined with the estimated effects on prepayments and defaults, each path yields a unique pattern of loan terminations and program cash flows. Discounting each set of cash flows to the year in which the cohort is disbursed produces a single subsidy estimate. The average of subsidy rates across all economic paths is the budget subsidy rate for the cohort.⁹

Using the new model, CBO has calculated average, or mean, subsidy rate estimates for each FHA cohort from 1992 through 2002 (*see Table 2*). For every cohort accounted for under credit reform, the mean-value estimate is lower in absolute value than the orig-

7. See, for example, Congressional Budget Office, *A Framework for Projecting Interest Rate Spreads and Volatilities* (January 2000).

8. That model is described in detail in Charles A. Capone Jr., *The FHA Budget Subsidy Simulation System: A Dynamic Simulation Model of Budget Outcomes for FHA Single-Family Mortgage Insurance*, CBO Technical Paper No. 2003-07 (July 2003).

9. The practice of probabilistic scoring (using a weighted average of uncertain cost estimates by taking account of the probability of each) is described in Congressional Budget Office, *Estimating the Costs of One-Sided Bets: How CBO Analyzes Proposals with Asymmetric Uncertainties* (October 1999).

Table 3.**Original and Mean-Value FHA Subsidy Estimates, by Cohort, 1992 to 2002**

(Millions of dollars)

Cohort Year	New Loans ^a	Original Subsidy Estimate ^a	Mean-Value Subsidy Estimate	Difference (Original Minus Mean Value)
1992	42,120	-1,095	-472	-623
1993	62,502	-1,688	-1,319	-369
1994	91,813	-2,562	-1,864	-698
1995	40,142	-783	-56	-727
1996	59,221	-1,640	-338	-1,302
1997	61,175	-1,762	-312	-1,450
1998	90,518	-2,707	-1,304	-1,403
1999	113,174	-2,965	-2,230	-735
2000	86,274	-1,717	-880	-837
2001	107,449	-2,310	-1,279	-1,031
2002	136,382	-2,823	-2,359	-464
Average	80,979	-2,005	-1,129	-876

Source: Congressional Budget Office.

a. Subsidy estimates are for new guaranteed loans disbursed, rather than for new guarantee commitments issued in each cohort year. For budget preparation, the “original” estimate is based on the projected volume of commitments, which differs from the volume of new guaranteed loans disbursed.

inal estimate, which implies that the original negative subsidy rates were too high. As indicated by the simple average of the differences, the original subsidy rates are about twice as high as the estimates obtained using the new model. Weighting those “errors” by the volume of loans in each cohort (so errors in large-volume years receive more weight) produces an average difference between the two estimates of 1.08 percent. In dollar terms, the total discrepancy between the original and mean-value estimates (the volume-weighted difference times \$891 billion in guaranteed loans disbursed over all cohorts) is \$9.6 billion, or an average of \$876 million per cohort. The dollar value of the difference between estimates for each cohort varies from \$369 million to \$1,450 million (see Table 3).

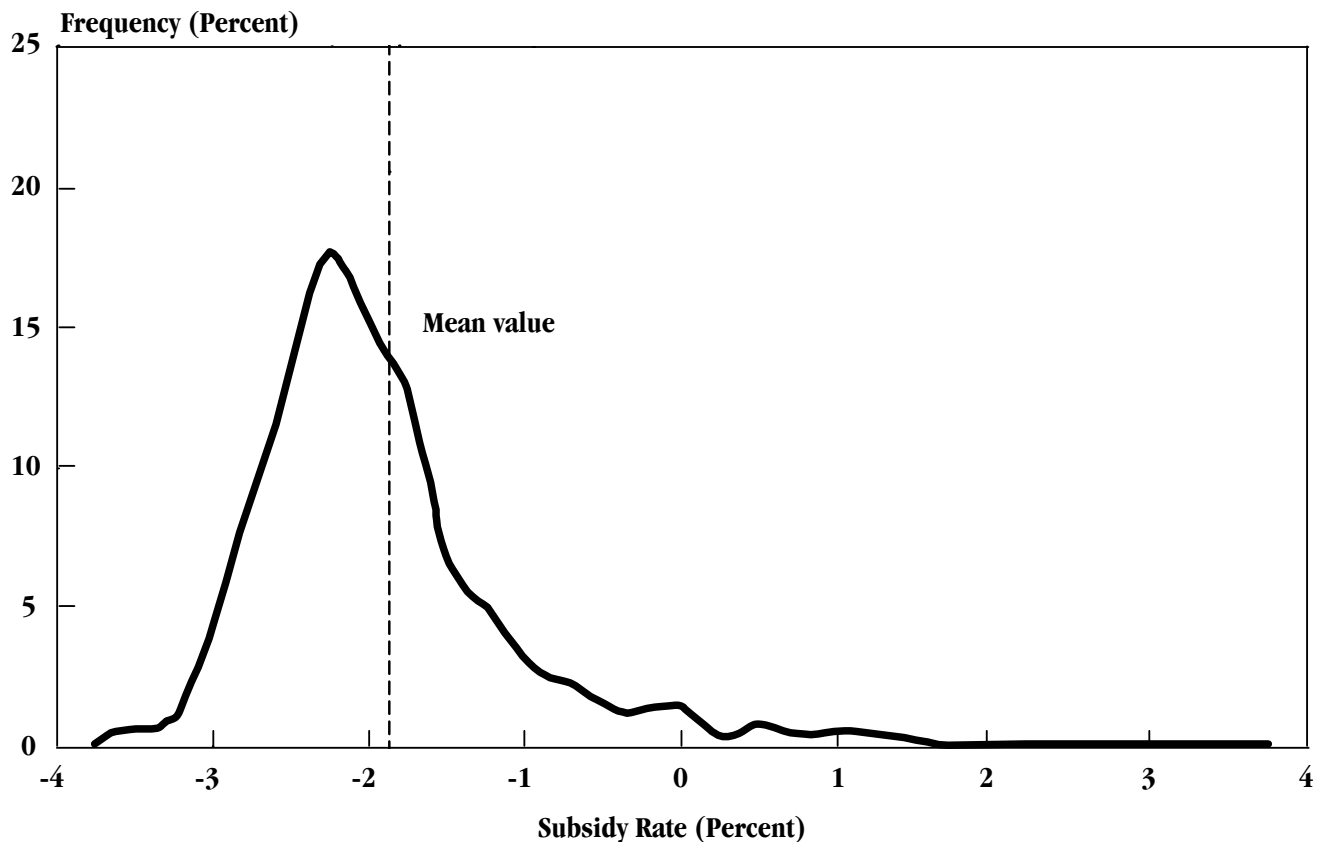
Estimates for the 2003 Cohort

The 1,000 individual subsidy estimates per cohort that result from using CBO’s model can be displayed as a frequency distribution, with subsidy rates on the horizontal axis and frequency of occurrence on the vertical axis. For the 2003 cohort, which has not yet been subject to reestimates, the mean of the distribution of estimates is -1.85 percent (see Figure 1).

By contrast, the subsidy estimate for that cohort used in the President’s budget for 2003 was -2.53 percent. Because only 210 (or 21 percent) of the 1,000 estimates in Figure 1 are as low as that rate, the distribution of estimates indicates, with 79 percent probability, that future reestimates will increase costs and decrease expected receipts over the life of that cohort. If the mean-value estimate is the actual value, downward reestimates of \$908 million will be required on \$133,582 million of new guaranteed loans.¹⁰

The range of estimated subsidy rates for the 2003 cohort is wide, extending from -3.80 percent to 7.36 percent. (Because of the low frequency of large positive values, the figure is truncated at 3.75 percent.) That wide range of subsidies corresponds to the extremes of past economic conditions. Yet the probability that the actual subsidy could be positive (and therefore costly to the government) is only 5.3 percent (53 of the 1,000 estimates), as indicated by the small area under the curve to the right of zero in Figure 1.

10. The estimate of new guaranteed loans is from *Budget of the United States Government, Fiscal Year 2004: Appendix*, p. 502.

Figure 1.**Frequency Distribution of FHA Subsidy Rates for the 2003 Cohort**

Source: Congressional Budget Office.

Two types of unfavorable events could drive the actual subsidy rate into the extreme right side of the distribution. First, interest rates could drop sharply. Such a decline would be expected to increase the volume of prepayments in the 2004-2006 period as homeowners refinanced with lower-cost mortgages, which means that FHA would have to rebate a percentage of their initial insurance premiums. Those prepayments would also reduce expected future fee income from guarantees. Even though a sharp increase in prepayments could turn expected net income into a cost for a single cohort, the overall effect on FHA's finances might not be so severe. If most of the prepaying homeowners refinanced with new FHA-insured mortgages, the rebates paid out and the lost future premiums would still flow to FHA as fee income on new loans.

The second type of adverse event that could cause the 2003 cohort to be costly would be declines in housing

prices in one or more regions of the country. Prices that fell sufficiently to reduce collateral values below unpaid mortgage balances could increase defaults and foreclosures and consequently push up insurance-claim payments by FHA. Recoveries by FHA on sales of foreclosed properties would also be lower under that scenario.

The distribution indicates that the probability of such adverse developments for the 2003 cohort is only 5.3 percent, which means that a negative subsidy (a value to the left of zero in Figure 1) is much more likely. In general, the distribution of subsidy estimates is a useful supplement to the mean-value point estimate because it indicates the range of outcomes consistent with past experience as well as the likelihood of favorable and unfavorable results.

Table 4.**Projected Total FHA Reestimates, by Cohort, 1992 to 2002**

(Millions of dollars)

Cohort Year	Total Projected Reestimates	Reestimates to Date ^a	Additional Projected Reestimates (Total Minus Reestimates to Date)
1992	623	-295	918
1993	369	81	288
1994	698	1,093	-395
1995	727	550	177
1996	1,302	1,048	254
1997	1,450	961	489
1998	1,403	833	570
1999	735	170	565
2000	837	483	354
2001	1,031	21	1,010
2002	<u>464</u>	<u>-914</u>	<u>1,378</u>
Total	9,640	4,031	5,608

Source: Congressional Budget Office.

a. These reestimates are smaller than the net lifetime reestimates reported by the Office of Management and Budget because OMB's reestimates include adjustments for guarantee commitments that did not result in new loan disbursements, proceeds from sales of pre-1992 loans in 1996 and 1997, and interest on reestimates.

Implications

Consistent overestimation of expected net income from new loan guarantees could give policymakers a false indication of the budget surplus or deficit. Biased estimates could also mislead FHA and the Congress about the level of premiums or defaults that would be consistent with break-even financial operation of the Mutual Mortgage Insurance Fund. Although current procedures include provisions for correcting errors in original subsidy estimates, reestimates occur slowly over the life of the cohort. For the 1992-2002 cohorts, original subsidy estimates have increased by \$4 billion, but that is less than half of the total reestimate of \$9.6 billion that will be required if the mean-value estimates from CBO's model are correct (*see Table 4*).

The current method of estimating FHA subsidies also has the potential to distort financial information in the budget because the annual reestimates by FHA are for all cohorts but are entered as a single adjustment. Combining reestimates that tend to move in the same direction can result in an adjustment that is large compared with account activity. For example, the reesti-

mate for all cohorts recorded in 2002 was -\$1.8 billion, or more than half of the absolute value of the original subsidy estimate for the guarantees disbursed in that year.

FHA could incorporate economic volatility into its subsidy estimates. If the model is correct, doing so would improve the accuracy of the initial estimates and of cost estimates of proposed changes in the terms and conditions of FHA guarantees. It would thereby reduce reestimates for each cohort and increase the likelihood that net reestimates would be close to zero.¹¹

11. An issue beyond the scope of this report but worthy of investigation is the extent to which current estimating methods result in biases for other programs. Parallels between FHA's home mortgage insurance and the direct and guaranteed housing loans of the Department of Veterans Affairs suggest that those activities could be susceptible to a related bias. Similarly, the cost of small-business loans might be increased by taking account of variations in the pace of economic activity and interest rates.

Taking account of economic volatility can reduce, but not eliminate, budgetary uncertainty about the value of expected cash inflows to the government from FHA mortgage guarantees, which are used in the budget to offset the cost of other housing programs. The remaining uncertainty stems from three factors. First, mean-value estimates are point estimates of a distribution of values. Consequently, the mean-value subsidy estimate will not exactly equal the actual subsidy. Re-estimates will still be required.

Second, dollar volumes of projected inflows from FHA guarantees are the product of two estimates: the subsidy rate and the volume of loans guaranteed. The volume is highly variable and difficult to predict be-

fore the end of the budget year, and year-over-year changes of roughly 25 percent are common. Adopting an unbiased estimate of the subsidy rate will not address the errors in projected loan volume.

Third, the valuation of cash inflows required under the Credit Reform Act does not recognize the cost of market risk (the tendency of those inflows to be high during good economic conditions but low during less prosperous times, when they are more valuable). Mean-value estimates will not correct for that omission; thus, the value of FHA's cash inflows will continue to be overstated. However, the cost of market risk is excluded from subsidy costs for all credit programs, not just FHA's.



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