Congressional Budget Office

Modeling The Budgetary Cost of FHA's Single Family Mortgage Insurance

Presentation for the Inaugural Conference of the Center for Finance and Policy, Massachusetts Institute of Technology

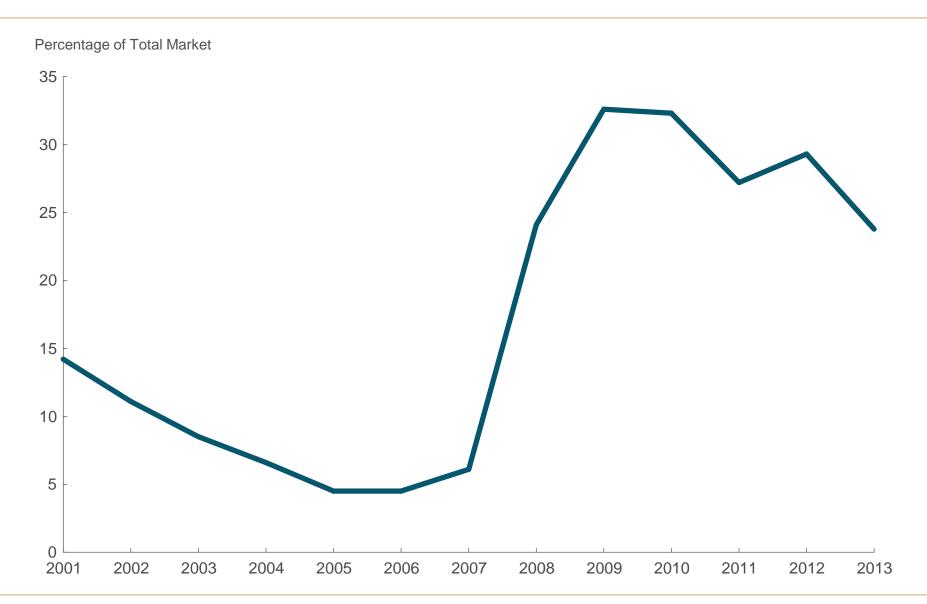Francesca Castelli, formerly of CBO; Gabriel Ehrlich, Damien Moore, and Jeffrey Perry, all of CBO

Overview

■ The Federal Housing Administration's (FHA's) single-family mortgage insurance program

■ Budgetary costs and the capital reserve account
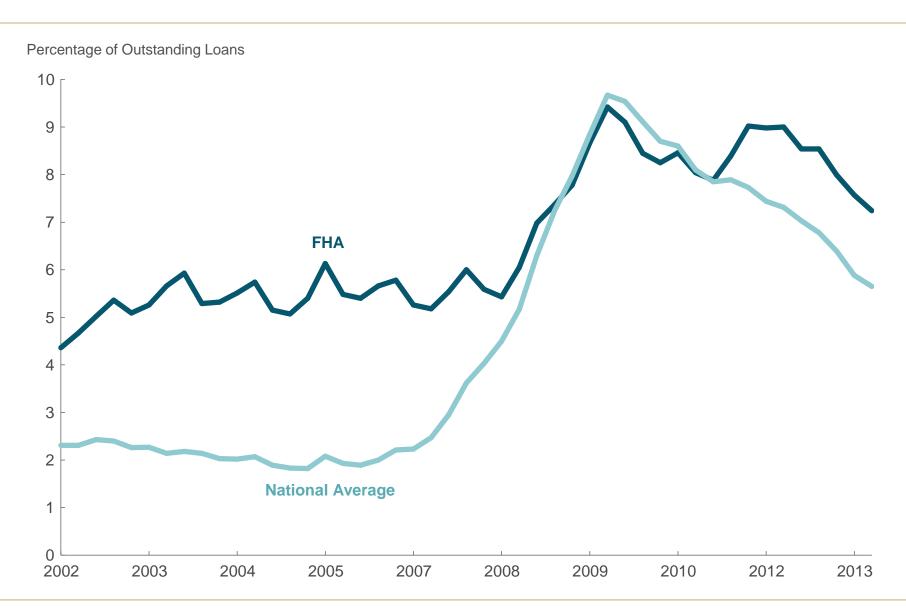
■ CBO's statistical modeling and cost projections

FHA's Single Family Mortgage Insurance Program

- The program facilitates access to mortgage credit for borrowers with
  - Low down payments
  - Limited or poor credit histories

- FHA guarantees mortgages against default

- Borrower pays up-front and annual fees

- Estimated $1.2 trillion of insurance is in force at the end of fiscal year 2014 (HUD 2013a)

FHA Share of Purchase Loan Originations
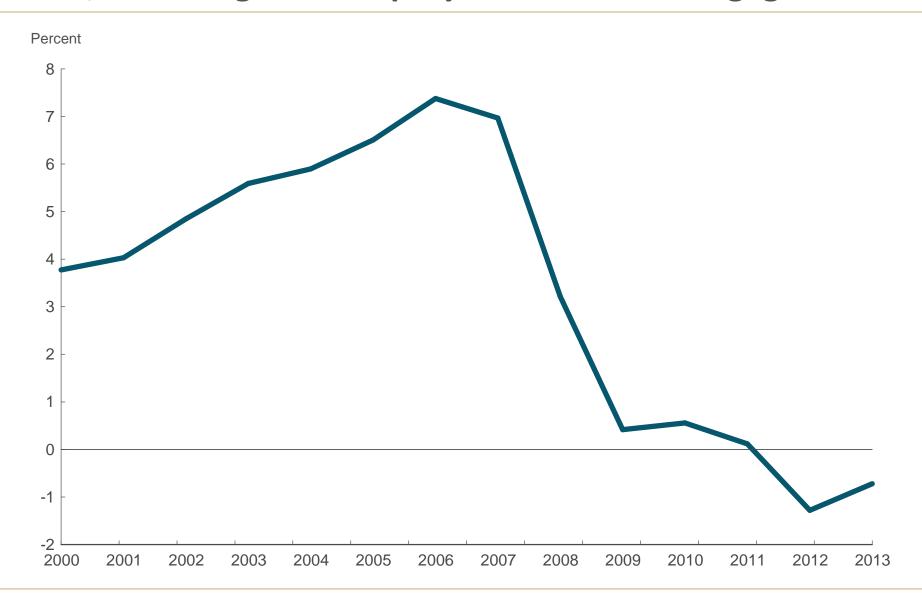

Percentage of Total Market

FHA and National Average Serious Delinquency Rates

Percentage of Outstanding Loans

Capital Reserve Ratio of the Mutual Mortgage Insurance Fund, Excluding Home Equity Conversion Mortgages

Percent

Budgetary Treatment of Federal Credit Programs: Key Concepts

- Credit reform subsidy

- Fair-value subsidy

- Capital reserve account

Budgetary Treatment of Federal Credit Programs

■ Federal Credit Reform Act (FCRA) of 1990

■ In each year, the federal budget deficit reflects

  – Estimates of lifetime costs (credit reform subsidies) of new mortgage guarantees in that year

  – Reestimates of costs (subsidy reestimates) of previously issued mortgage guarantees

■ Credit reform subsidies are present value calculations that use a Treasury rate to discount cash flows

Credit Reform Subsidy Calculation (Illustration)

- FHA fee: 175 basis points (bps) up front, 135 bps annually

- Expected insurance claims: 70 bps annually

- Annual cash outflow (in basis points):

Year	0	1	2	. . .
Fees	−175	−135	−135	. . .
Claims		70	70	. . .
Net Cash Flow	−175	-65	-65	. . .
Discounted at Treasury Rates	−175 plus −455 equals −630, or −6.3% credit reform subsidy			

Fair-Value Subsidies

- Private mortgage insurers charge annual mortgage insurance premiums
  - Generally exceed FHA's fees
  - Significantly higher than expected losses

- Private insurers' fees in excess of losses
  - Administrative costs
  - Return on capital (Investors demand a higher return than Treasury rates to compensate them for market risks.)

- For FHA
  - Administrative costs are accounted for outside of subsidies
  - Market risks are not accounted for in the budget
  - Taxpayers (and beneficiaries of federal programs) bear market risks associated with FHA's guarantees

Fair-Value Subsidy Calculation (Illustration)

■ Same cash flows as in the FCRA illustration, but they include a risk premium for credit loss exposure of 115 bps per annum.

■ Annual cash outflow and risk premium charge (in basis points):

Year	0	1	2	. . .
Fees	−175	−135	−135	. . .
Claims		70	70	. . .
Risk Premium		115	115	
Net Cost	−175	50	50	. . .
Discounted at Treasury Rates	−175 plus 300 equals 125, or 1.25% fair-value subsidy			

FCRA versus Fair-Value Accounting

■ Fair-value accounting provides a more comprehensive measure of cost than FCRA accounting

■ Disadvantages of FCRA Accounting

– Budgetary savings provide incentive to expand credit programs
– Makes economically equivalent alternatives to credit programs appear to be more costly

■ Disadvantages of Fair-Value Accounting

– Risk premium is not a cash cost
– Cost of market risk is excluded from the estimates of many non-credit programs, for example, unemployment insurance

The Capital Reserve Account

- Part of the system of accounts used to reconcile subsidies with cash flows

- Can be calculated as the sum of estimated subsidy savings on outstanding cohorts plus accumulated interest

- Often cited as a measure of program solvency, but FCRA programs have permanent authority to draw funds to pay claims as needed

- FHA is required to maintain a 2% ratio of capital reserve balance to insurance-in-force (but has not done so since 2009)

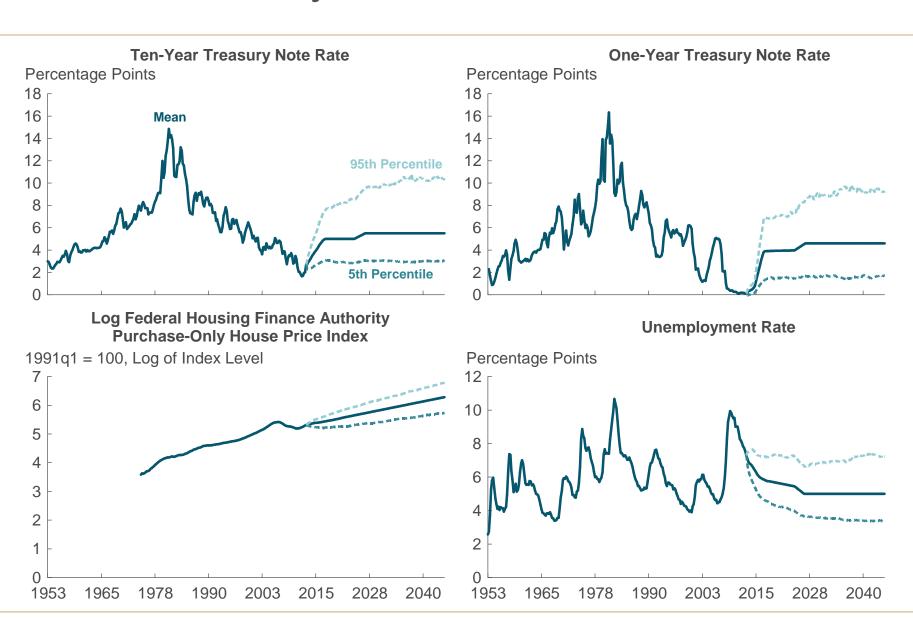- The balance does not represent resources that can be used to offset future spending

CBO's Statistical Modeling

- Used to project cash flows for FCRA and fair-value calculations

- Estimated from loan performance records from 1992 through 2009
  - Loan characteristics at origination plus quarterly performance data

- Statistical models follow existing literature
  - Multinomial logit model for default and prepayment probabilities
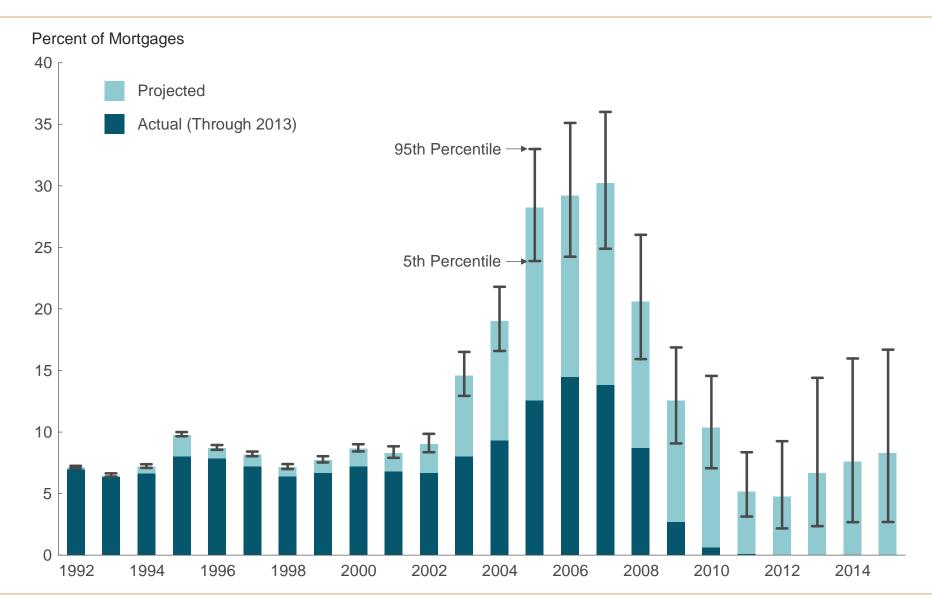 - Linear regression for loss given default

Statistical Modeling Variables

- Borrower credit scores (after 2004)

- Interest rates

- Home equity

- State unemployment

- Outside source of down payment

- Geographic location
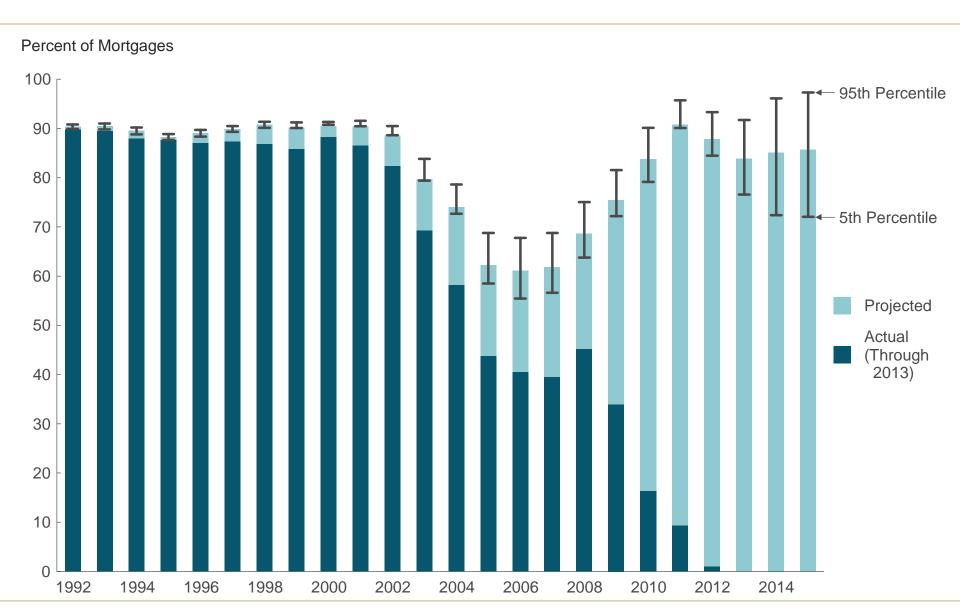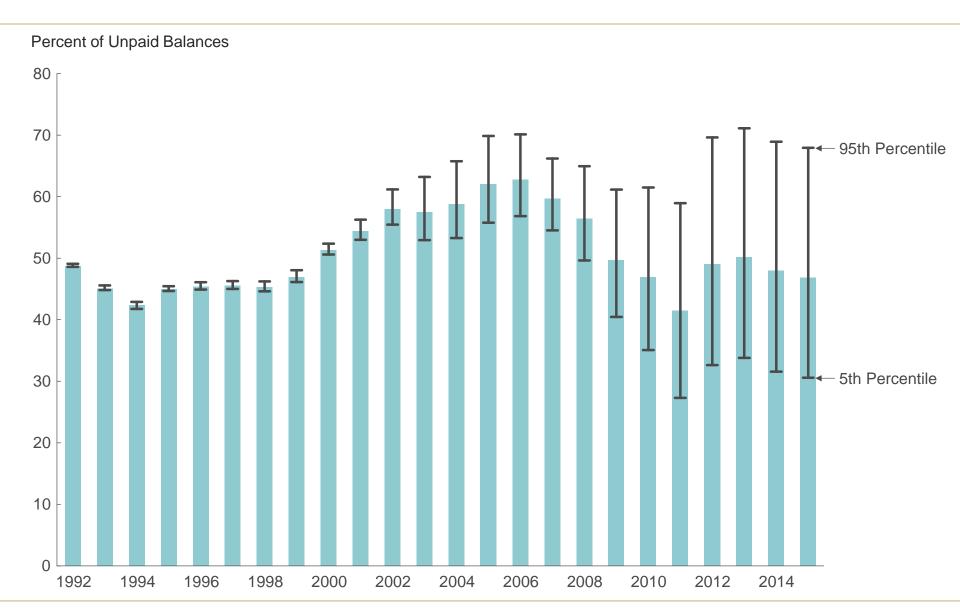
- Age of loan

- Loan amount

Macroeconomic Projections

Projections of Lifetime Claim Rates

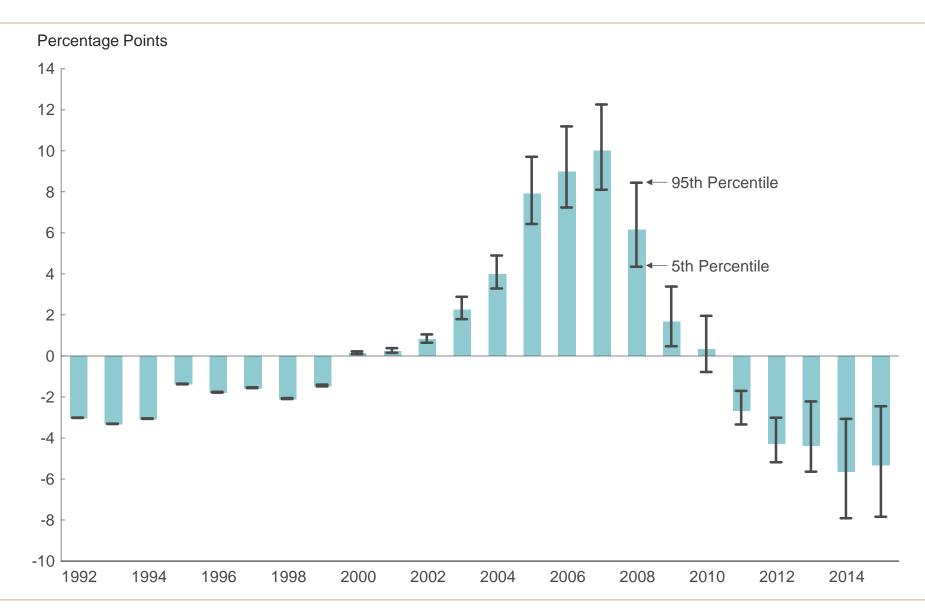# Projections of Lifetime Prepayment Rates

Percent of Mortgages

Legend:
- Projected
- Actual (Through 2013)
- 95th Percentile
- 5th Percentile

Projections of Loss Given Default

Percent of Unpaid Balances

Estimated FCRA Subsidy Rates

CBO's Projections for the Capital Reserve

Billions of Dollars

	Office of Management and Budget	Congressional Budget Office		
		Mean	5th Percentile— Better Outcome	95th Percentile— Worse Outcome
Capital Reserve Contribution, 1992 to 2013 cohorts	3.3	3.1	25.7	−28.0
Total Subsidy Savings, 2014 and 2015 cohorts	22.3	16.4	23.7	8.3

Projected Fair-Value Subsidy Rates for Purchase Loans for the 2014 Cohort, by FICO Score and Original Loan-to-Value Ratio

Percent

Loan-to-Value Ratio	Borrower's FICO Score						
	500 to 559	560 to 599	600 to 639	640 to 659	660 to 679	680 to 719	720 and Above
Less Than 80	3.9	2.3	2.0	1.2	1.2	0.8	0.3
80 to 90	5.8	4.4	3.7	2.4	2.5	1.8	0.8
90 to 95	2.9	3.5	3.9	2.1	2.4	1.5	0.4
95 to 97	n.a.	2.7	2.2	0.2	0.5	-0.4	-1.4
97 and Above	n.a.	3.1	2.8	0.5	0.7	-0.3	-1.2

Note: n.a. = not applicable.

Future Modeling Improvements

- Incorporate more recent performance data (after 2009)

- Use better information on FHA's streamline refinances

- Improve risk premium estimates

- Find additional ways to quantify uncertainty