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HOUSING FINANCE

Budget Savings From the Sale of HUD Loans

G A O

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The Honorable Wayne Allard
Chairman
The Honorable John F. Kerry
Ranking Minority Member
Subcommittee on Housing and
Transportation
Committee on Banking, Housing
and Urban Affairs
United States Senate

During the 1980s, defaults on mortgages insured by the Department of Housing and Urban Development's (HUD) Federal Housing Administration (FHA) increased, primarily because real estate markets were weak. As a result, by the early 1990s, HUD owned nearly 110,000 single-family and 2,400 multifamily loans that it had insured. To make better use of its resources, HUD decided to sell these loans. Between June 1994 and September 1997, HUD held six sales of single-family loans and seven sales of multifamily loans. Through these 13 sales, HUD sold 98,640 single-family loans and 1,093 multifamily loans. According to HUD, these sales produced over $2.2 billion in budgetary savings--$830 million for single-family loans and $1.3 billion for multifamily loans. The Federal Credit Reform Act of 1990 defines these budgetary savings as the difference between the net proceeds from selling the loans and the value of the loans to the federal government (the net present value of the future cash flows to HUD) if it had not sold the loans.

As agreed, this report discusses the reasonableness of (1) HUD's estimates of budgetary savings from the sale of its single-family loans and (2) the model HUD used to estimate savings from the sale of multifamily loans.[1] To assess the reasonableness of HUD's estimates of savings from the sale of

[1]HUD employed computerized models of future cash flows to estimate the value to the Department of not selling both single-family and multifamily loans.

single-family loans, we reviewed HUD's single-family model and assumptions and developed our own estimates of savings from three of the six single-family loan sales. These three sales were held between October 1995 and September 1996.[2] To assess the reasonableness of HUD's multifamily model, we reviewed available documentation for the model and the findings of an independent contractor hired by HUD to evaluate the accuracy of the multifamily model. We did not prepare our own estimates of savings to HUD from the sale of multifamily loans.

Results in Brief

According to HUD, it achieved $830 million in budgetary savings by selling 98,640 single-family loans. Nearly all of these savings, $774 million, were attributable to the sale of 71,946 single-family loans that HUD acquired through its mortgage assignment program and sold through five sales held between October 1995 and September 1997. On the basis of our independent estimates, we conclude that HUD's estimates of budgetary savings from the sale of the single-family loans we reviewed are reasonable. Specifically, we independently estimated that HUD achieved budgetary savings of $345 million, compared with HUD's estimate of $259 million, from its sale of 38,547 loans sold in three single-family sales held between October 1995 and September 1996. The $86 million difference between our estimate of savings and HUD's is not large when one considers that the loans sold through these three sales represented an unpaid principal balance of $1.7 billion.[3]

According to Booz-Allen & Hamilton, Inc., a large management and technology consulting firm, the model HUD used to estimate savings from the sale of multifamily loans produced reasonable estimates of savings. However, Booz-Allen & Hamilton questioned the logic and support for several key assumptions and found that the model was not thoroughly

[2]Between 1994 and 1997, HUD sold 98,640 single-family loans. Of these, 71,946 were Mutual Mortgage Insurance Fund loans that HUD acquired through its mortgage assignment program. Using a model we developed in 1995, we were able to estimate the value to HUD of 38,547 of these single-family loans sold through three single-family sales held in Oct. 1995, Mar. 1996, and Sept. 1996. Because of data limitations, however, we could not use the 1995 model to independently estimate the savings from the remaining 33,399 single-family loans that were sold in two subsequent sales, held in Jan. and Sept. 1997. Nearly all of the remaining 26,694 single-family loans were HUD-held performing 221 (g)(4) loans insured by HUD before Nov. 30, 1983 (which lenders assign to HUD in the 21st year) and General Insurance Fund loans acquired through other means. Because of data limitations, we also excluded from our analysis these loans—most of which were sold in the first single-family loan sale, held in June 1994.

[3]All savings estimates are presented in 1994 dollars.

documented.[4] In response, HUD developed a new model that addressed these weaknesses. Without documentation for the original model and the historical data used to support key assumptions, we cannot conclude whether the original model would produce reasonable estimates of savings.

Background

Since 1934, FHA, an agency within HUD, has insured lenders against losses on single- and multifamily mortgages that otherwise might not have qualified for conventional financing. During the 1980s, weak real estate markets prompted a surge of defaults on both the single-family and multifamily mortgages insured by FHA. By 1994, when the wave of defaults subsided, HUD owned almost 110,000 single-family mortgages and 2,400 multifamily mortgages.

This large inventory of troubled loans consumed a disproportionate amount of FHA staff time and prevented the agency from properly servicing its portfolio of insured loans and preventing further defaults.[5] To remedy the situation, in March 1994, HUD initiated an aggressive program to sell FHA's inventory of HUD-held loans. From June 1994 through September 1997, HUD held six sales of single-family loans and seven sales of multifamily loans.[6] Through these sales, HUD sold 98,640 single-family loans and 1,093 multifamily loans. As of September 30, 1998, HUD owned about 12,000 single-family and 1,100 multifamily loans.

About 72,000 of the single-family loans sold by HUD were acquired through the Department's now defunct mortgage assignment program. This program allowed lenders, under certain conditions, to assign an FHA-insured mortgage to HUD after the borrower defaulted, making HUD the owner of the loan. For borrowers accepted into the program, HUD paid the mortgage debt, took assignment of the loan from the lender, and developed a new repayment plan (forbearance agreement) for the borrower, under which mortgage payments could be reduced or suspended

[4]See Model Documentation and Users Guide for the "Value-to-HUD" Model for Multifamily Notes, Booz-Allen & Hamilton, Inc. (Apr. 24, 1998).

[5]Servicing and managing the loans assigned to FHA requires a considerable amount of staff resources. This staff-intensive effort takes resources away from monitoring HUD-insured mortgages, thereby increasing the risk of default for these mortgages.

[6]HUD also negotiated the transfer of 26 subsidized multifamily loans to the Missouri Housing Development Commission and reassigned 85 unsubsidized multifamily loans to Fannie Mae (the Federal National Mortgage Association).

for up to 36 months. HUD, acting as the lender, collected monthly mortgage payments from the borrower while allowing the borrower to keep the home. By taking assignment of loans rather than having lenders foreclose on them, HUD can, at times, avoid foreclosure losses, help borrowers retain their homes, and provide borrowers with opportunities to avoid foreclosure. However, as we reported in October 1995, even with the forbearance provided by HUD to these financially strapped borrowers, over half would eventually lose their homes through foreclosure.[7] Moreover, the mortgage assignment program did not reduce HUD's foreclosure losses; rather, the program's losses exceeded those that would have occurred if the loans had gone immediately to foreclosure.

Usually, HUD acquires ownership of a multifamily mortgage when the borrower defaults on an FHA-insured mortgage. After such a default, the private lender may submit a claim for the insured amount to FHA and assign the mortgage to FHA.[8]

The Federal Credit Reform Act of 1990 was enacted to (1) require that the federal budget more accurately measure the government's subsidy costs for federal direct loans and loan guarantees and (2) permit better cost comparisons between credit and noncredit programs. The credit subsidy cost is the estimated net cost, in present value terms, to the government of direct or guaranteed loans over the entire period that the loans are outstanding. Under the act, loan asset sales are treated as modifications that change the cost of the loan or guarantee to the federal government. For federal budgetary purposes, the subsidy cost of a sold loan is the difference between the value to the federal government of the loan if the loan were not sold (the estimated net present value of the future cash flows from the loan) and the net proceeds from the loan sale. If the estimated value of keeping the loan is greater than the estimated proceeds from a sale, a positive credit subsidy estimate would result, and the sale cannot go forward unless budget authority has been provided to cover the additional subsidy cost to the government. However, if the estimated value to the government of retaining ownership of the loan is less than the estimated proceeds from a sale, the government would be achieving a savings from the sale and no additional budget authority is necessary.

[7]See Homeownership: Mixed Results and High Costs Raise Concerns About HUD's Mortgage Assignment Program (GAO/RCED-96-2, Oct. 18, 1995).

[8]HUD may also acquire a mortgage through a "nondefault" assignment of 221(g)(4) loans after 20 years.

HUD used separate multifamily and single-family models to estimate the net present values of future cash flows to HUD--the value of the loans to HUD if they had remained in its portfolio. According to HUD, the seven multifamily and six single-family loan sales that the Department held from June 1994 through September 1997 resulted in $2.2 billion in budgetary savings.[9]

HUD's Estimates of Savings From the Single-Family Loan Sales We Reviewed Are Reasonable

Over the past 5 years, HUD sold 98,640 single-family loans with an unpaid principal balance of $4.4 billion. According to HUD, it saved $830 million by selling these loans. Nearly all of these savings, $774 million, were attributable to the sale of 71,946 single-family loans that HUD acquired through its mortgage assignment program and sold through five sales held from October 1995 through September 1997. Where we were able to independently estimate savings, we believe that HUD's estimate of budgetary savings from the sale of assigned single-family loans is reasonable.[10]

HUD based its estimate of savings on the results of a model that estimated the future revenues and costs to HUD of holding these loans rather than selling them. In 1995, using a model we had developed, we reported the cost to HUD of holding assigned loans in its portfolio. To determine the reasonableness of HUD's estimate of budgetary savings from the sale of its single-family loans, we used this earlier model to estimate the value to HUD of the 38,547 assigned single-family loans that HUD sold through sales held in October 1995, March 1996, and September 1996. (See app. I for a more complete discussion of our model.) The 38,547 loans we analyzed represent all but 141 of the mortgage assignment program loans sold through theses three sales. However, because of data limitations, we could not provide savings estimates for the 33,258 assigned loans that HUD sold in two sales held in January and September 1997.

[9]Budgetary savings result because the loan purchaser places a higher value on these loans than their value to HUD. According to the information contained in the Budget of the United States Government, Fiscal Year 1997, the private sector may place a higher value on these loans than would HUD because the net cash flows to the private sector may be larger. For example, it is generally felt that the private sector is more efficient than HUD at servicing loans and collecting loan payments.

[10]The reasonableness of HUD's and our estimates depends on the data provided to the models. While we did not independently verify the accuracy of HUD's data, we did perform extensive testing of the data elements used in producing our savings estimates (see page 10 for a more detailed discussion of the data reliability tests we performed).

For the three sales for which we had data, our estimate of the combined savings to HUD is $345 million, a figure that is $86 million higher than HUD's estimate of $259 million. The $86 million difference between our estimates of savings and HUD's is not large when one considers that HUD, through these three sales, sold 38,688 single-family loans with an unpaid principal balance of $1.7 billion. These estimates of savings represent the difference between the estimated value to HUD of the loans if HUD had not sold them and the proceeds from the sale. Since loan sale proceeds remain constant, it is the difference in HUD's and our estimates of the value of these loans to HUD if HUD had not sold them that causes the $86 million difference in our estimates. As table 1 shows, HUD's estimate of the total value of these loans and our estimate are within 7 percent of each other—a difference of $86 million. Given the degree of uncertainty surrounding any estimates of cash flows that may occur 20 or more years into the future, this 7-percent difference is not substantial.

Table 1: Estimated Value to HUD and Savings From Sales of 38,547 Single-Family Loans

1994 dollars in millions

	HUD's estimate[a]	GAO's estimate[a]	Difference[a] (HUD's minus GAO's)
Value to HUD			
Oct. 1995 sale	$329	$317	$12
Mar. 1996 sale	397	389	8
Sept. 1996 sale	460	394	66
Total value to HUD	$1,186	$1,100	$86
Total sale proceeds	1,445	1,445	0
Total savings	**$259**	**$345**	**$86**

Note: HUD's and GAO's estimates exclude the sale of General Insurance Fund and 221(g)(4) loans, of which there were 2,309 in the Oct. 1995 sale, 1,891 in the Mar. 1996 sale, and 3,260 in the Sept. 1996 sale. Together, these loans represented less than 7 percent of the savings to HUD from loans sold through these three sales. The total estimated savings equals the total proceeds from the sales minus the total estimated value to HUD.

[a]All of the figures in this column are estimates except the one for total sale proceeds.

According to HUD, for the single-family loan sales held in January and September 1997, it used the same model and assumptions to estimate savings as it used for the sale immediately preceding these sales. As noted above, data limitations precluded our providing independent estimates of savings to HUD from these two sales. Over 90 percent of the single-family loans sold during these last two sales were also mortgage assignment program loans. During our review, we did not identify any issues that would raise questions about the reasonableness of HUD's estimates of savings from these two sales.

The similarities between our estimates and HUD's are not surprising, given that both models, while differing in some respects, base their estimates of savings on the same key variables and assumptions. For example, both models estimate the value to HUD of not selling loans by projecting the future cash HUD would receive from recoveries on foreclosed homes, principal and interest payments, and homeowners' prepayments of loan obligations. All of these cash flows must be forecasted 10 or more years into the future. In addition, the assumptions driving both models are based on historical data.

There are some differences, however, between HUD's model and ours. For example, while our model estimates future principal and interest payments together as one payment, HUD's model treats them as separate cash flows. In addition, our model estimates recoveries on foreclosures by applying an assumed recovery rate to HUD's acquisition cost on foreclosed loans, while HUD's model applies an assumed recovery rate on foreclosures to the unpaid principal balance on foreclosed loans.

The Multifamily Model HUD Used to Estimate Savings Had Weaknesses That HUD Has Now Addressed

In December 1996, HUD hired an independent contractor to review the conceptual basis and mechanics of the model the Department used for estimating savings from the sale of multifamily loans and to determine whether the model's estimates of savings were reasonable. In April 1998, the contractor reported that the model produced reasonable results. However, according to the contractor, the model had certain weaknesses that could be corrected through a thorough, rigorous, and documented analysis of historical data on the performance of HUD-held multifamily loans.[11] In response, HUD developed an improved model that addressed the weaknesses the contractor identified in the original model.

The contractor also questioned the logic and support for several of the model's key assumptions. Specifically, the contractor could not identify the source of information supporting the assumptions about loan prepayment,

[11]See Model Documentation and User's Guide for the "Value-to-HUD" Model for Multifamily Notes, Booz-Allen & Hamilton, Inc. (Apr. 24, 1998).

third-party and property-sale proceeds, and holding costs. The contractor also questioned the model's (1) use of one collection rate for all types of loans that did not vary over time and was based on data for only 12 months of collections, (2) failure to address arrearages or the application of collections to arrearages and current billings, and (3) failure to reduce the scheduled principal and unpaid principal balances to zero over time. The contractor also found that the model was not thoroughly documented and that people who were knowledgeable about the model's assumptions and data sources were no longer available.

According to one HUD official, the model was not well documented, and over time, HUD employees who were involved in the sale of multifamily loans and could describe the model moved on to other jobs. In addition, the company hired to develop the multifamily model was no longer in existence. As a result, HUD officials were unable to provide us with detailed information on the model's structure or on the basis for all of the assumptions used. Given the limited amount of information available, we were unable to provide an independent analysis of the strengths and weaknesses of HUD's multifamily model. Furthermore, given the weaknesses identified by the contractor, we cannot conclude whether the model produced reasonable estimates of savings.

In its final report, the contractor concluded that none of the identified weaknesses were serious enough to compromise the reasonableness of the results produced by the multifamily model and that HUD's estimates of savings were reliable in all material aspects. According to the contractor, this conclusion was based on professional judgment after a thorough examination of the model's documentation and structure and available data on HUD-held multifamily loans.[12] As part of its April 1998 report, the contractor also provided documentation for a new multifamily model it developed. According to the contractor, the new model addresses all of its concerns about the original model.

Agency Comments

We provided copies of a draft of this report to HUD for review and comment. Officials of the Department, including the FHA Comptroller, generally agreed with the report's findings.

[12]One way to assess the reasonableness of the estimates produced by HUD's original multifamily model would be to use the new model to reestimate the savings from past loan sales. According to HUD, resource limitations have precluded their using the new model for this purpose.

Scope and Methodology

In conducting this review, we focused on the two models that HUD used to estimate budgetary savings from the sale between March 1995 and September 1997 of 71,946 single-family loans and 887 multifamily loans.[13]

To determine the reasonableness of HUD's estimates of budgetary savings from the sale of its single-family loans, we interviewed HUD officials responsible for overseeing the single-family loan sales program. In addition, we developed our own estimates of savings from HUD's sale of 38,547 assigned single-family loans through three sales held between October 1995 and September 1996. To develop our estimates, we used a model that we developed in 1995 to estimate HUD's costs of holding the single-family mortgages it had acquired through its mortgage assignment program. This program allowed lenders, under certain conditions, to assign FHA-insured mortgages to HUD in cases of default, making HUD the owner of the loans.

Our analysis was based on data we received from HUD during our initial review of the mortgage assignment program in 1995. We worked closely with HUD officials and discussed the interpretation of HUD's data. While we did not independently verify the accuracy of the data, we did perform internal checks of the data elements used to determine (1) the extent to which the data fields were coded and (2) the reasonableness of the values contained in the data fields. We checked the mean, median, mode, skewness, and high and low values for each of the variables used. We also compared several variables from each data set to see if they were recorded the same way within each data set. We developed an appropriate methodology for using the data to estimate losses, costs, and revenues to FHA for the time period covered.

To assess the strengths and weaknesses of the model HUD used to estimate savings from the sale of multifamily loans, we reviewed available information on the model and HUD's assumptions and interviewed HUD officials responsible for overseeing the multifamily loan sales program. In addition, we interviewed the independent contractor hired by HUD to assess the model and reviewed the contractor's final report. This report

[13]Since June 1994, HUD has also sold 16,029 single-family and 206 multifamily 221(g)(4) loans that were assigned to HUD in their 21st year by lenders, as previously allowed under the terms of FHA's mortgage insurance. These 221 (g)(4) loans were excluded from our review. Also excluded from the scope of this review were 26 multifamily loans transferred to the Missouri Housing Development Commission, 85 multifamily loans reassigned to Fannie Mae, 10,085 single-family loans that were originally insured through FHA's General Insurance Fund, and 580 other single-family loans.

also provides documentation for HUD's improved multifamily model. We did not prepare our own estimates of savings to HUD from the sale of multifamily loans or assess HUD's new multifamily model. We performed our work from September 1998 through May 1999 in accordance with generally accepted government auditing standards.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 15 days after the date of this letter. At that time, we will provide copies to Senator Connie Mack, Chairman, Subcommittee on Economic Policy, Senate Committee on Banking, Housing, and Urban Affairs; Andrew M. Cuomo, Secretary of Housing and Urban Development; and other interested parties. Copies will also be made available to others on request.

If you or your staff have any questions about this report, please contact me at (202) 512-6520. Key contributors to this assignment were Chuck Bausell, DuEwa Kamara, Matt Sciré, and Pat Valentine.

Stanley J. Czerwinski

Stanley J. Czerwinski
Associate Director, Housing and Community
Development Issues

GAO's Model Used to Estimate Single-Family Loan Sales Savings

Using a cash flow model,[1] we estimated the net present value of future revenues and costs for 38,547 loans that the Department of Housing and Urban Development (HUD) sold in three separate sales held between October 1995 and September 1996. This net present value is an estimate of the value of these loans to HUD if it had not sold them. We then compared this estimate of net present value with the actual proceeds of the loan sales to determine the savings, if any, from these sales.[2] The results of these calculations, presented in table I.1, indicate an overall savings of $345 million, compared with HUD's lower estimate of $259 million.

How We Estimated the Value of the Single-Family Loans Sold

We started by estimating the value of all 71,458 loans assigned to HUD between 1977 and 1994 as if they had never been sold and had performed at a rate determined by historical data.[3] We then removed from this portfolio the loans sold in October 1995 and reestimated the remaining value of the loans. The resulting reduction in the estimated value of the loans in HUD's portfolio equaled our estimate of the value of the loans sold in this sale. We used the same methodology to estimate the values of the loans sold in the next two sales.

Table I.1 includes the number and unpaid principal balance of the loans sold in five sales HUD held between October 1995 and September 1997. Sale values and savings estimates are also provided. As noted below, we used our model to estimate savings from three of the loan sales, but not from the two sales that took place in January and September 1997.[4] Information on the number of loans modeled/sold and the unpaid principal balance are also reported in table I.1, along with the difference in HUD's and our estimates of savings.

[1]In 1995, we used this model to analyze the cost to HUD of holding single-family loans acquired through its mortgage assignment program. See Homeownership: Mixed Results and High Costs Raise Concerns About HUD's Mortgage Assignment Program (GAO/RCED-96-2, Oct. 18, 1995).

[2]These cash flow estimates are in 1994 present values, calculated by using discount rates specified by HUD for each loan sale.

[3]We first matched these loans with loans included in our 1995 model and then grouped them according to the date they were assigned to the program.

[4]Table I.1 does not include information on the loans sold in HUD's first (June 1994) single-family loan sale because these loans were not mortgage assignment program loans. We therefore could not use our model to analyze them.

Table I.1: Information on HUD's Savings Estimates for Single-Family Mutual Mortgage Insurance Fund Loans Sold From October 1995 Through September 1997

1994 dollars in millions

Data item	Oct. 1995	Mar. 1996	Sept. 1996	Jan. 1997	Sept. 1997
Unpaid principal balance	$447.1	$616.8	$653.7	$859.0	$853.2
Number of loans HUD sold	10,672	14,309	13,707	17,182	16,076
Number of loans GAO modeled	10,831[a]	14,159	13,557	0	0
HUD's estimated value to HUD	$328.5	$397.3	$460.1	$600.8	$567.6
GAO's estimated value to HUD	$317.0	$389.0	$393.7	[b]	[b]
Sale proceeds	$335.6	$515.5	$593.6	$790.0	$767.9
HUD's estimated savings[c]	$7.1	$118.2	$133.6	$189.2	$196.3
GAO's estimated savings[c]	$18.6	$126.5	$200.0	[b]	[b]
Difference between HUD's and GAO's estimates	**$11.5**	**$8.3**	**$66.3**	[b]	[b]

Note: HUD also sold 15,212 single-family 221(g) (4) loans in June 1994.

[a]For the Oct. 1995 sale, we identified 159 more loans than HUD reported as single-family mortgage assignment program loans sold.

[b]We did not estimate the value to HUD for the Jan. 1997 and Sept. 1997 loan sales.

[c]For each sale, the estimated savings equals the sale proceeds minus the estimated value to HUD.

Variables and Assumptions We Used in Our Model

Major cash flow variables, whose future values are estimated, include revenues from sales of foreclosed properties, early payoffs of loans, payments made by mortgagors (borrowers), and advances paid on properties by HUD.

We assumed that the value of the loans sold was a function of the foreclosure and payoff rates. Other factors that affected costs included (1) the ratio of the unpaid principal balance to the original loan amount, (2) receivables due on the original loan amount, and (3) the ratio of advances to the original loan amount, as well as the policy year of the loans. In addition, we assumed that the Federal Housing Administration (FHA) would continue to receive partial and delayed payments for some assigned mortgages and that both foreclosure and prepayment behavior would remain the same in the future as in the past, after each successive loan sale. Our analysis does not take into account the possibility that the loans assigned from fiscal year 1989 through fiscal year 1994 may differ from earlier loans in ways that could affect their prepayment and foreclosure probabilities beyond 6 years from the date of assignment. In addition, neither our analysis nor HUD's takes into account the difference in the distribution of loan performance for loan pools remaining after each sale.

Given these assumptions, we projected future cash flows from foreclosures, prepayments, and surviving loans. Because of inadequate historical data, it was not possible to estimate foreclosure and prepayment probabilities incorporating economic indicators such as unemployment rates, payment-to-income ratios, current interest rates, and house price appreciation rates.[5]

Additional detail on forecasting each of the major revenue variables follows.

Foreclosure and Prepayment Rates

On the basis of our analysis of foreclosure and prepayment data, we estimated an ultimate foreclosure probability of 52 percent. We also estimated conditional probabilities using data for the 6-year period ending September 30, 1994. These probabilities were for loans entering HUD's mortgage assignment program during a 17-year period (fiscal years 1977–94) and represented loan years 1 through 17. We assumed that the conditional foreclosure and prepayment rates for loan years 18 through 30 would be the same as for loan year 17.

Foreclosure Revenues

To estimate foreclosure revenues, we obtained an average recovery rate for loans foreclosed and sold from data on Mutual Mortgage Insurance Fund loans foreclosed during fiscal years 1983-94. Recovery rates ranged between 43 and 67 percent of acquisition costs each year, averaging 59 percent. The average recovery rate of 59 percent was applied to the acquisition costs of all foreclosed loans. Specifically, the average acquisition cost for each year times the recovery rate for each foreclosed loan results in the expected total foreclosure revenue.

[5]FHA's database records historical foreclosure and prepayment activity from fiscal year 1989 onward. Data on previous years' terminations were purged from the database.

Prepayment Revenues

Prepayment revenues are based on data for all assigned loans, the number of loans paid off and forecasted to be paid off, and the unpaid principal balance at the time of payoff. In estimating the unpaid principal balance, we used the ratio of the unpaid balance to the original loan amount for each year. Using the average loan amount, year in the program, and number of expected prepayments, we estimated prepayment revenues for each year.

For years 19 through 30, we assumed that the ratio of the unpaid balance to the original loan amount would continue to decrease at an accelerated rate. To determine the unpaid balance for years 19 through 30, a simple regression was applied to the ratio of the unpaid balance to the original loan amount for years 1 through 18, in which each year's ratio is dependent on the previous year's ratio. The resulting parameters were used to estimate the ratio of the unpaid balance to the loan amount for years 19 through 30.

Payment Revenues

Loan payment revenue estimates are based on the percentage of loans in five loan status categories--current, current with forbearance, delinquent with forbearance, delinquent with no forbearance, and pending foreclosure. For each year's book of business, we analyzed the ratio of the unpaid balance to the loan amounts and the actual payments made for each loan category. We also accounted for advances owed and original loan amounts.

We forecasted loan payment revenues using the estimated number of loans remaining in the program and the actual and scheduled payments made for each loan category. Actual loan payments averaged about 34 percent of scheduled payments.[6] It was assumed that the assigned loans would have the same distribution over the loan categories that they did in fiscal year 1994 but that their length of time in the program would vary. The ratio of actual to scheduled payments was also assumed to vary by the length of time in the program. As loans age, payment ratios rise, indicating that a higher percentage of scheduled payments are being made for older loans.

[6]The percentage of loans making full payments increases with time in the program. Some borrowers with less than 3 years in the program make no mortgage payments as part of their suspended payment mortgage forbearance agreement.

Databases We Used in Our Analysis

We used three of HUD's computerized databases:

- the F-60 database of current and historical information on all mortgage loans that HUD services under the mortgage assignment program;
- the A-43 database of historical information on mortgages insured under the Mutual Mortgage Insurance Fund before assignment; and,
- the Single-Family Accounting and Management System database of properties held and eventually sold by HUD following foreclosure.

These databases provided information on initial characteristics of each loan, such as the year the loan was assigned, the initial unpaid principal balance, any delinquent amounts, and the interest rate and term of the loan. We categorized the loans as foreclosed, prepaid, or active as of the end of fiscal year 1994.

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