Secondary Mortgage Markets, GSEs, and the Changing Cyclicality of Mortgage Flows

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Abstract

In recessions, depository institutions accounted for most declines in mortgage flows. Recently, they partially offset their withdrawals from primary markets with accumulations of mortgage-backed securities. Increases in direct flows into agency and private pools also countered the declining flows elsewhere. As the less-procyclical secondary mortgage markets grew and matured, they increasingly stabilized mortgage flows. During periods of international financial crises or of domestic economic stress, GSEs may be particularly well suited to facilitating mortgage flows. So long as there are such crises and stresses, GSEs may be particularly effective in stabilizing mortgage markets and moderating business cycles.

Congress chartered the Federal Home Loan Mortgage Corporation (Freddie Mac) and the Federal National Mortgage Association (Fannie Mae) as housing-related, government-sponsored enterprises (GSEs). The missions of Fannie Mae and Freddie Mac are to: (1) promote the flow of capital to residential mortgage markets and (2) stabilize residential mortgage markets by facilitating "a continuous supply of mortgage credit for U.S. homebuyers in all economic environments" (Federal Home Loan Mortgage Corporation 2000).

Numerous studies have concluded that Freddie Mac and Fannie Mae raised homeownership rates by promoting the flow of capital to (residential) mortgage markets. By providing guarantees of the timely payment of principal and interest on mortgages, Freddie Mac and Fannie Mae have contributed mightily to the development of secondary markets in mortgages (McCarthy and Peach 2002). Secondary mortgage markets, in turn, have increased the efficiency and liquidity of primary mortgage markets and the integration of U.S. mortgage markets into world capital markets (Devaney and Pickerill 1990, Federal Reserve Bank of Minneapolis 2001, Goebel and Ma 1993, Rudolph and Griffith 1997). Apart from the reductions in mortgage interest rates generally that may be attributed to the maturation of secondary markets, interest rates on conforming mortgages averaged a bit more than 25 basis points lower than those on jumbo mortgages before the 1990s, and a bit less than 25 basis points lower since the middle of the 1990s (Hendershott and Shilling 1989, Congressional Budget Office 2001). The total lowering of mortgage interest rates attributable to GSEs benefited homeowners substantially. By increasing the aggregate, longer-term supply of mortgage credit, and thereby lowering mortgage interest rates and raising homeownership rates, GSEs can be said to have achieved the first part of their missions.

Less attention has been devoted to the second aspect of the GSEs' public missions. The volumes of assets and trading associated with secondary mortgage markets and the GSEs, anecdotal evidence, and introspection support the hypothesis that large, active secondary mortgage markets have altered the procyclicality of residential mortgage flows and construction.[1] Nonetheless, in spite of the widely held view that the mortgage markets now operate fundamentally differently, little systematic evidence exists that secondary mortgage markets have altered mortgage flows during recessions.[2]

In contrast to the studies about GSEs that predominantly focus on the average effects of GSEs on mortgage rates, here we focus on fluctuations in mortgage flows at depository institutions and at other private sector suppliers of funds, as well as at GSEs. In particular, we quantify how much these total mortgage flows changed during national economic recessions. We calculate how much the flows of mortgage funds that were provided by depository institutions, pensions, insurance companies, and other suppliers of mortgage funds changed during recessions. We calculate how much GSEs intermediated mortgage flows during recessions, how their intermediation compared with others', and how it shifted through time. Of special interest to us was how much, or even whether, GSEs offset others' declines in mortgage intermediation and thereby stabilized the aggregate supply of mortgage credit during recessions.

By stabilizing mortgage flows, Freddie and Fannie could dampen fluctuations in real activity, both in the housing sector and in the macroeconomy.[3] For that reason, which stands quite apart from their continuing value to the longer-term operation and development of secondary mortgage markets, the housing GSEs may contribute to the broader aims of public policy.

How can GSEs stabilize mortgage flows? First, they may directly increase mortgage flows during recessions by purchasing whole mortgages and mortgage-backed securities to at least partially offset the procyclicality of supplies by others. GSEs may be more willing or able to act countercyclically than the private sector because they have "deeper pockets." Second, GSEs may reduce the procyclicality of other mortgage suppliers indirectly. One way to do that is to make mortgages more attractive to less-procyclical investors. The expansion of secondary markets, the increase in their liquidity, and the implicit government guarantee of GSEs' obligations are likely to have attracted more funds both from foreign investors, whose home business cycles are imperfectly correlated with those of the United States, as well as from sectors, such as insurance and pension funds, whose shares of whole mortgages held had been in longer-term decline.

Large, active secondary mortgage markets may alter financial and real magnitudes in housing markets during recessions for several reasons. The first revolves around differences between the average riskiness of home mortgages and of business loans in bank (and thrift) portfolios. Bank portfolios consist of investments, mortgages, and other, primarily business, loans. Home mortgages tend to have lower expected default rates and risk premiums than the average bank loan. During recessions, the default rates and associated risk premiums in their interest rates for business loans tend to increase relative to those for home mortgages. Since depository institutions' costs for their own liabilities reflect their entire portfolios, the risk-based spread between the secondary market yield on mortgages and depository institutions' liabilities' costs may shrink during recessions, thereby reducing the quantity of mortgages demanded by depository institutions. Secondary mortgage markets can cushion declines in mortgage flows

during recessions, then, by absorbing the mortgages that depository institutions are willing to originate but not hold.

Typically, recessions are preceded by tighter monetary policy in the form of significantly higher short-term interest rates. Secondary mortgage markets may reduce the declines in mortgage flows attributable to higher interest rates, and therefore reduce the extent to which total home mortgage flows decline during recessions. When tighter monetary policy reduces the supply of their less expensive, "core" deposits, depository institutions' funding costs rise relative to secondary mortgage market yields. By absorbing more mortgages, secondary mortgage markets can cushion housing markets when depository institutions accumulate mortgages on their balance sheets more slowly.

Recessions can also result from disruptions to financial markets. Disruptions stem from various sources. Contributing to the severity of the 1990-1991 recession, for example, was the "bank capital crunch," during which loan losses reduced banks' capital enough to reduce their supplies of credit, including mortgage credit. Banks can ease capital constraints by securitizing or selling mortgages that they have on their balance sheets. Given the structure of the Basle capital regulations, secondary mortgage markets likely cushion mortgage flows against bank capital shocks by enabling banks to convert whole mortgages into secondary mortgage market securities that have a lower capital requirement, thus "stretching" bank capital. Thus, when housing-related GSEs increase their supplies of mortgage activities in response to financial disruptions, they serve as shock absorbers that lessen the fall-off in the supplies of home mortgages.

GSEs may act either as conduits to ultimate holders of home mortgages or as the ultimate holders themselves. An increase in GSEs' holdings of home mortgages further mitigates the

decline in depository institutions' supplies of mortgage credit. In that way, secondary markets for guaranteed mortgages play the role that some envisioned for Fannie Mae and Freddie Mac after the mortgage credit crunch associated with disintermediation from depository institutions in the 1960s.

In this paper, we provide evidence that, as secondary mortgage markets grew, the procyclicality of primary mortgage markets diminished. The next section provides background on the growth of the secondary mortgage market and of two mortgage-related GSEs. The third section focuses on the (pro-) cyclicality of mortgage flows. The fourth section compares flows of mortgages across recessions. The final section summarizes our findings and suggests fruitful directions for further research on the effects of secondary mortgage markets on the financial and real sides of housing markets.

1. Direct and Indirect Holdings of Mortgages by the Private Sector and GSEs

Two basic activities of Fannie Mae and Freddie Mac increase the supply of mortgage funds: (1) providing credit guarantees and (2) investing in mortgages or mortgage-backed securities (MBS). The term "retained portfolio" generally refers to the sum of the whole mortgages plus the MBS that Fannie Mae and Freddie Mac each hold. After purchasing mortgages, Fannie Mae and Freddie Mac can either (1) securitize the mortgages upon which they have placed their credit guarantee by issuing guaranteed MBS and then sell these securities to investors or (2) retain these mortgages for their own portfolio.[4] Fannie Mae and Freddie Mac fund their holdings of mortgages and of MBS by issuing non-mortgage-backed securities.

When they retain mortgages or issue guaranteed MBS, Freddie and Fannie assume the credit risk associated with the mortgages. Unlike providing credit guarantees, the retained portfolio imposes interest rate and prepayment risks on Fannie Mae and Freddie Mac. Fannie

Mae and Freddie Mac mitigate these risks with derivative financial instruments. The revenues to Fannie Mae and Freddie Mac differ across the basic two activities: Fannie Mae and Freddie Mac receive a guarantee fee for the mortgages that they securitize, while they earn the differential of the yields on their retained portfolio above those of their own liabilities.

The market for MBS developed slowly, beginning in the early 1960s with the issuance of securities backed by pools of Farmers' Home Administration (FmHA) mortgages. The outstanding stock or volume of these pools did not reach $1 billion until late 1968. Growth of mortgage pools accelerated in the 1970s after the Government National Mortgage Association (Ginnie Mae) and Freddie Mac began pooling mortgages in the early 1970s. Growth accelerated again in the early 1980s after Fannie Mae and the private sector began to pool mortgages. The outstanding volumes of both GSE pools and private mortgage pools again grew rapidly in the early 1990s, a time when the total volume of mortgages outstanding grew slowly. The absence of the typical decline in total mortgages during the 1990-91 recession coupled with the large increase in the size of secondary markets suggests that secondary markets somewhat reduced the effects of recessions on mortgage flows.

Figure 1 plots quarterly data for MORTBAL, which is the outstanding total of residential mortgage balances, as a percentage of (nominal) potential GDP for 1968Q1-2001Q3.[5] MORTBAL is clearly procyclical, declining during the 1970, 1974-75, and the two 1980s recessions. However, during the 1990 recession and the ensuing slow recovery, the total dollar stock of mortgages outstanding grew at about the same rate as GDP, rather than following its typical procyclicality. Idiosyncrasies of the 1990-91 recession, such as the favored treatment of mortgages and agency securities by the 1988 Basle Accord, may explain the missing

procyclicality of MORTBAL. Alternatively, MORTBAL may have become less procyclical as a result of the maturation of secondary markets for mortgages.

Insert Figure 1 here.

Figure 2 plots holdings of whole mortgages by Fannie Mae (DFANNIE) and Freddie Mac (DFREDDIE), as a percentage of potential GDP. Fannie Mae acquired whole mortgages rapidly during the 1970s. Since then, DFANNIE has been nearly trendless. DFANNIE fluctuates considerably over shorter spans. Relative to potential GDP, Fannie Mae's holdings of whole mortgages peaked near each of the recessions since the early 1970s. Freddie Mac's holdings of whole mortgages relative to potential GDP, DFREDDIE, were smaller and fluctuated less than those of Fannie Mae. DFREDDIE, too, peaked in the mid-1970s, in the mid-1980s, and in the early 1990s. In contrast to DFANNIE, DFREDDIE did not rise as much during the two recessions at the beginning of the 1980s. Note that Figure 2 plots data only for holdings of whole mortgages, and therefore ignores the growing holdings by Fannie Mae and Freddie Mac of MBS and the growing volume of guaranteed MBS held outside the GSEs.

Insert Figure 2 here.

Figure 3 plots total residential mortgage intermediation by Fannie Mae (TFANNIE) and Freddie Mac (TFREDDIE), calculated for each GSE as its holdings of whole mortgages plus its guaranteed MBS outstanding. Figure 3 also plots the intermediation by private mortgage conduits (TPRIVATE), calculated as the sum of private (i.e., not guaranteed by a GSE) MBS. Data for each series in Figure 3 are expressed as a percentage of potential GDP for 1968Q1 – 2001Q3. TFANNIE and TFREDDIE grew quite slowly until the early 1980s. Both then accelerated. Thereafter, TFANNIE maintains its rapid growth rate. While TFREDDIE grew more rapidly than TFANNIE through the mid-1980s, it grew more slowly for the ensuing

decade. Clearly, GSEs accounted for the overwhelming share of growth in total intermediation until the early 1990s. But, once secondary markets became well established, non-GSE issuance of MBS grew rapidly, too: TPRIVATE grew relatively slowly through the 1980s, but then accelerated in the 1990s to growth rates similar to those of TFANNIE and TFREDDIE.

Insert Figure 3 here.

Figure 4 plots total mortgages outstanding and total intermediation by GSEs, each relative to potential GDP. FANFRED is the sum of total residential mortgage intermediation activities by Fannie Mae and Freddie Mac, calculated as the sum of TFANNIE and TFREDDIE from Figure 3. MORTBAL is the total residential mortgage balances outstanding series from Figure 1. DIFF, calculated as the difference between MORTBAL and FANFRED, measures the volume of mortgages that do not pass through Fannie Mae or Freddie Mac.

Insert Figure 4 here.

After having been approximately trendless until the early 1980s, MORTBAL rises by about 20 percentage points, or about 70 percent, through the end of the period. From 1968 through 2001, DIFF was approximately trendless. By contrast, FANFRED rose from near zero to about 20 percent since the late 1960s. Thus, the major, longer-term increase in homeownership, as measured by mortgages relative to potential GDP, coincided not with an increase in DIFF, but rather with a strikingly similar increase in the extent to which GSEs participated in mortgage markets. Such evidence supports the notion that the housing GSEs have succeeded in the first part of their missions.

The second part of their missions is to stabilize mortgage finance. Figure 4 shows that, until about the mid-1980s, fluctuations in MORTBAL coincide impressively with fluctuations in DIFF, the mortgages not held or securitized by the GSEs. And, the fluctuations in both series

were visibly procyclical. Although the procyclicality of DIFF appears unabated, MORTBAL seems much less procyclical after the mid-1980s for two reasons. First, the upward trend in FANFRED offset the contributions of DIFF to the procyclicality of MORTBAL. And, second, FANFRED itself seems to have been somewhat countercyclical: Its growth was somewhat faster during the macroeconomically weaker periods of the early 1990s and early 2000s and somewhat slower during the macroeconomically stronger periods of the late 1980s and mid-1990s.

2. The Declining Procyclicality of Mortgage Flows

Figure 4 illustrated that total residential mortgages outstanding were clearly procyclical prior to the 1990s, but much less clearly so after 1990. An important issue is to what extent the two housing GSEs offset the reductions in supplies of mortgage credit by others during recessions. To the extent that Fannie Mae and Freddie Mac operated countercyclically, they stabilized mortgage flows and likely the macroeconomy as well.

Table 1 shows the changes in total residential mortgage balances and the changes in (total) intermediation by Fannie Mae and Freddie Mac for the five most recent recessions. These are the five recessions that have occurred since Fannie Mae and Freddie Mac became substantial participants in secondary mortgage markets. Table 1 also shows the difference between those two series and the averages across the five recessions for each series in Table 1. Recession periods in Table 1 span the quarters that contain the peak and trough months designated by the National Bureau of Economic Research (NBER). As of January 2003, NBER had not yet chosen the month for the trough of the recession that began in 2001.

Insert Table 1 here.

The comparison period associated with each recession was based on seasonally adjusted, quarterly data for total flows of home mortgages. These data came from the Flow of Funds

accounts of the Board of Governors of the Federal Reserve System. Data for mortgage flows were expressed as a percentage of potential GDP.

Tables 1-4 focus on changes in mortgage flows during recessions. That is, they focus on cyclical rather than trend-like developments. In Table 1, each comparison period spans the period from the calendar quarter that contains the (local) maximum flow of total home mortgages that occurred just prior to the national economic peak quarter to the calendar quarter with the ensuing (local) minimum flow of total home mortgages. Measured this way, the comparison period spans the period of peak to trough in the flow of total home mortgages. Table 1 shows that the trough in mortgage flows occurred in either the quarter of the trough in the national economy or the quarter immediately prior for the four recessions for which trough dates are available.

We expected most financial and economic stocks and flows to decline (relative to potential, rather than actual, GDP) during recession or comparison periods. We also expected that the longer or more severe the recession, the larger the decline during that recession or its comparison period. Those patterns show up in Table 1. Table 1 shows that total residential mortgage balances fell during the longer and more severe recessions of 1973-75 and 1981-82. During the 1990-91 recession, which was less severe, total balances declined by a smaller amount. During the 1980 recession, which was very brief and anomalous for having been much influenced by government-induced credit controls, total mortgage balances actually rose by a small amount. By contrast, during the most recent recession, which began in 2001, total residential mortgage balances actually rose considerably, increasing by over one full percentage point of potential GDP during the middle of 2000.

Here we use the standard that cyclicality is measured by changes in financial quantities relative to potential rather than to actual GDP. On average over these five recessions, total residential mortgage balances fell by 0.69 percent of potential GDP. By that measure, total balances were procyclical. The procyclicality of total balances has waned, however, through time. During the 1990-91 recession, total balances fell by only 0.16 percent. And, during the most recent recession, total balances actually rose by 1.11 percent, which is about as countercyclical as the average decline for the first four recessions in Table 1 of 1.14 percent was procyclical. Thus, total balances, and thus presumably mortgages and real activity in housing markets, have become much less procyclical over the postwar period.

Table 1 next shows that total intermediation by Fannie Mae and Freddie Mac during recessions has typically been countercyclical. It also shows that GSE intermediation has been increasingly countercyclical. The two rows under the row labeled TOTAL show the changes in the components of TOTAL. The row labeled GSE contains data for the changes in total intermediation by Fannie Mae and Freddie Mac. These data are based on the data used for FANFRED in Figure 4.

Having increased during (the comparison period associated with) each recession, intermediation by Fannie Mae and Freddie Mac combined was countercyclical. On average, the combined total intermediation rose by 0.71 percent of potential GDP. During the two most recent recessions, it rose by an average of 1.1 percentage points, which is more than twice as much as it rose on average (0.44 percentage points) during the three prior recessions. By contrast, the non-GSE portion of mortgage intermediation, calculated as TOTAL – GSE, fell in each but the most recent recession. These declines mean that, taken together, the behavior of the other participants in the mortgage market was procyclical. Nonetheless, non-GSE

intermediation has also become notably less procyclical recently. Whether that decline in procyclicality is connected to increasingly countercyclical total intermediation by GSEs is a question worthy of further investigation.

The bottom panel in Table 1 shows the changes in the components of total balances relative to changes in total balances. Thus, the sums of the data in the first two rows of the bottom panel equal 100 percent. The data in the rightmost column in both the top and bottom panels show that, on average over these five recessions, total intermediation by Fannie Mae and Freddie Mac rose by half as much as non-GSE holdings declined. In that sense, Table 1 indicates that the countercyclicality of Fannie Mae and Freddie Mac offsets half of the procyclicality of others.

To further investigate the cyclicality of GSEs and others, we used the Federal Reserve's Flow of Funds accounts (FOF) to obtain data for the flows of home mortgages that are disaggregated by sector of holder. The FOF data show the major holders of home mortgages by sector, but do not similarly show holdings of MBS by sector. To approximate holdings of MBS by sector, we used FOF data for holdings of agency securities. These data overstate holdings of MBS by sector and overstate the direct obligations of Fannie Mae and Freddie Mac. The sum of MBS issued by agencies plus the bonds, notes, and short-term debt issued by Fannie Mae and Freddie Mac accounts for nearly all of the total stock of agency securities. On the other hand, the data for agency securities exclude the large and growing stock of MBS that has been issued by the private sector.

We used data for direct holdings (of whole mortgages) and direct-plus-indirect holdings (i.e., holdings of whole mortgages plus MBS) in Tables 2 and 3. In addition to the recessions analyzed in Table 1, Table 2 includes data for the other postwar recessions and data for the 1966

credit crunch, which is the only non-recession period when the flow of total home mortgages (relative to potential GDP) declined for at least four consecutive quarters. (Hereafter, we include the 1966 credit crunch in the set of postwar recessions). Because quarterly flows of mortgages are so volatile, for Tables 2 through 5 we calculated changes in the two-quarter averages of flows by first-differencing the seasonally adjusted, net flows (relative to potential GDP) of direct holdings of home mortgages by each holder.

Insert Table 2 here.

The comparison periods span the quarters with the peak and trough flows for total home mortgages (relative to potential GDP). We calculated the first-differences reported in Table 2 by subtracting the average value for the minimum flow quarter and the quarter preceding the minimum flow quarter from the average value for the maximum flow quarter and the higher of the two adjacent quarters. The two exceptions are that a single quarter is used for the minimum flow quarter for both the 1980 recession, because it was immediately followed by the next recession comparison period, and the 2001 recession, because the total home loans series rose strongly after 2000Q4.

Table 2 shows changes in the flows of holdings of whole home mortgages for each recession, for the 1966 credit crunch, and on average over the most recent five recessions. Table 2 shows changes in total flows (ALL HOLDERS) and changes in the flows for each of ten sectors. The sectors are depository institutions (D-DEP), which includes the commercial banking sector, savings and loans, and credit unions; nondeposit financial institutions (D-NDEPFIN), which includes finance companies, mortgage companies, REITs, money market mutual funds, mutual funds, and brokers and dealers; insurance companies (D-INS), which includes life insurance companies and other insurance companies; pensions (D-PENS), which

includes private pension funds and state and local government retirement funds; nonfinancial corporate business (D-NFCORP); households (D-HH); government (D-GOVT), which includes the federal, state, and local governments; government-sponsored enterprises (D-GSE); federally related mortgage pools (D-POOL); and private issuers of asset-backed securities (D-ABS).

Table 2 shows that the flow of home mortgages to all holders declined during each recession. Over the most recent five recessions, the decline averaged two percent of potential GDP. Depository institutions reduced the rate at which they acquired whole mortgages in each episode. In fact, over the most recent five recessions, the average decline for depository institutions was larger than that for all holders. In contrast, on average over the five most recent recessions, countercyclicality was most prominent among issuers of MBS: federally related mortgage pools and private sector issuers of MBS. Although the other Federal Reserve data used for Figures 1-4 and for Table 1 allowed it, FOF accounts data did not allow us to separate data for Fannie Mae and Freddie Mac from the reported aggregate data for all GSEs.

Table 3 shows data for changes in flows of direct-plus-indirect holdings of home mortgages. Indirect holdings consisted of MBS. This table, as well as Table 5 below, includes the foreign sector (FOREIGN), which had no whole mortgages reported in the FOF accounts and thus was omitted from Table 2. The data for the ALL HOLDERS row is from Table 2. As with direct holdings, direct-plus-indirect holdings by depository institutions accounted for most of the declines. Thus, in Table 2 and Table 3, depository institutions were generally the most procyclical holders of mortgages. Households were typically procyclical, too, as were the government and nonfinancial corporate sectors. The most countercyclical sectors were the federally related mortgage pools, GSEs, and private issuers of MBS. In Table 3, GSEs

contributed more to countercyclicality than in Table 2 because of the rapid growth of their holdings of MBS.

Insert Table 3 here.

Table 4 re-expresses the flows in Table 2 relative, not to potential GDP, but rather to the changes in flows of total home mortgages. That is, for Table 4, the numerators in Table 2 were divided by the changes in flows to all holders. Since this denominator was negative for each recession, positive entries in Table 4 show the shares of the declines in the total flows associated with a sector. Negative entries indicate the percent of the change in the total flows that was offset by a sector.

Insert Table 4 here.

In five of the ten recessions, depository institutions accounted for more than 100 percent of the decline in the flow of total home mortgages. In the most recent recession, they accounted for more than twice the actual decline in the flow of total home mortgages. The contrast with the actions of federally related mortgage pools is particularly striking. During the most recent recession, the increase in the flow of home mortgages to federally related mortgage pools rose significantly. In fact, the increase in the pools' rate of acquisition of home mortgages was far greater than the net decline in the flow of total home mortgages.

Table 5 re-expresses the flows of the sum of direct-plus-indirect holdings of home mortgages relative, not to potential GDP, but rather to the changes in flows of total home mortgages. Even with this broader measure, depository institutions remain very procyclical, on average accounting for 105 percent of the declines in total mortgage flows over the five most recent recessions. By this broader measure, households are significantly procyclical, on average accounting for about one-third of the declines over the five most recent recessions. Although

they had no consistent pattern before that, the large negative entry for non-depository financial institutions for the most recent recession shows that they partially offset the procyclicality of depositories. By the broader measure of mortgage flows in Table 5 that included their holdings of MBS, GSEs were more countercyclical than suggested by Table 4.

Insert Table 5 here.

3. Summary, Implications, and Future Directions

The housing-related GSEs have contributed to the growth and maturation of secondary mortgage markets. In doing so, they have contributed to higher, long-term homeownership rates by lowering mortgage interest rates.

Here, we have focused on the cyclical, rather than the longer-term, effects of secondary mortgage markets and GSEs. Not surprisingly, total residential mortgage flows declined relative to potential GDP during post-WW II recessions. Declines of direct flows into depository institutions typically accounted for most of the declines of total flows. Especially during more recent recessions, depository institutions tended to offset partially their withdrawals from primary mortgage markets by relatively increasing their accumulations of MBS. At the same times, increases in direct flows of mortgages into federally related and private sector pools also countered the declining flows of mortgages into depository institutions. GSEs also tended to speed up their accumulations of MBS for their own portfolios during the recession that began in 2001. As less-procyclical secondary mortgage markets grew and matured, aggregate primary mortgage flows became less procyclical. In that sense, secondary mortgage markets stabilized mortgage flows.

The values that world capital markets place on the association of GSEs with the U.S. government seem to fluctuate with conditions here and abroad. During periods of international

financial crises or of domestic economic stress, those values seem to rise appreciably. Thus, in such periods, GSEs may be particularly well suited to facilitating mortgage flows. So long as there are such crises and stresses, GSEs may be particularly effective in stabilizing mortgage markets and moderating business cycles.

Further analysis of the declining countercyclicality of mortgage markets awaits. Two issues present themselves immediately. One is how much secondary mortgage markets have altered the responses of real activity in the housing sector and in the macroeconomy to various shocks. A second is the extent to which the apparently declining procyclicality of non-GSE intermediation is connected to the increasingly countercyclical total intermediation by GSEs. In contrast to our analysis here, those analyses may benefit from more statistical and econometric approaches.

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Table 1

Changes in Total Residential Mortgage Balances and Changes in Intermediation by GSEs near Recessions

RECESSION PERIODS	1973:4-1975:1	1980:1-1980:3	1981:3-1982:4	1990:3-1991:1	2001:1-200?:?	Average Over Five
COMPARISON PERIODS	1972:4-1974:4	1978:4-1980:2	1980:4-1982:3	1989:4-1991:1	2000:2-2000:4	Most Recent Recessions
TOTAL	-1.82	0.05	-2.65	-0.16	1.11	-0.69
GSE	0.44	0.22	0.67	1.52	0.68	0.71
TOTAL-GSE	-2.26	-0.17	-3.32	-1.68	0.42	-1.40
Ratios (%)						
GSE/TOTAL	-24	440	-25	-950	61	-103
(TOTAL-GSE)/TOTAL	124	-340	125	1050	38	203
GSE/(TOTAL-GSE)	-19	-129	-20	-90	162	-51

Notes: First differences of not-seasonally adjusted outstanding balances as a percent of potential GDP. Recession periods span the quarters that contain the peak and trough months designated by the National Bureau of Economic Research (NBER). Comparison periods span the quarter with the (local) maximum (seasonally adjusted) flows of total home mortgages outstanding to the quarter with the (local) minimum flow of total home mortgages outstanding. GSE is the sum of balances of residential mortgages that FNMA or FHLMC directly held in their own portfolios plus outstanding principal balances of residential mortgage-backed securities insured or guaranteed by FNMA or FHLMC. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, www.freelunch.com.

Table 2

Changes in Flows of Home Mortgages near Recessions: Direct Holdings, by Holder

RECESSION PERIODS	1953:2-1954:2	1957:3-1958:2	1960:2-1961:1	Credit Crunch	1969:4-1970:4	1973:4-1975:1	1980:1-1980:3	1981:3-1982:4	1990:3-1991:1	2001:1-200?:?	Average Over Five
COMPARISON PERIODS	1953:1-1954:1	1955:1-1958:1	1959:2-1961:1	1965:3-1967:2	1968:4-1970:2	1972:4-1974:4	1978:3-1980:2	1980:3-1982:3	1989:3-1991:1	2000:2-2000:4	Most Recent Recessions
ALL HOLDERS	-0.33	-1.54	-0.61	-1.38	-0.85	-1.51	-3.14	-2.44	-2.10	-0.81	-2.00
D-DEP	-0.12	-1.28	-0.83	-1.22	-0.93	-1.74	-2.83	-2.56	-1.28	-2.12	-2.11
D-NDEPFIN	0.02	-0.09	-0.04	0.00	0.08	-0.28	-0.27	-0.03	-0.68	-0.04	-0.26
D-INS	0.03	-0.35	0.01	-0.20	0.02	0.10	0.08	-0.02	-0.06	0.01	0.02
D-PENS	0.00	0.01	0.02	-0.03	0.01	0.02	0.03	0.02	-0.07	0.00	0.00
D-NFCORP	0.00	0.00	-0.00	0.00	0.01	-0.04	0.25	-0.24	-0.19	0.00	-0.04
D-HH	-0.06	0.04	0.54	0.06	-0.35	-0.17	-0.16	-0.14	-0.09	0.00	-0.11
D-GOVT	-0.21	0.01	-0.18	0.06	-0.06	0.29	0.13	-0.24	0.13	0.01	0.06
D-GSE		0.11	-0.14	-0.08	0.32	0.31	-0.26	0.16	0.06	-0.03	0.05
D-POOL				0.03	0.04	0.01	-0.09	0.61	-0.29	1.19	0.29
D-ABS									0.20	0.18	0.19

Notes: First differences of seasonally adjusted net flows of direct holdings of home mortgages by holder, all expressed as a percent of potential GDP. Recession periods are the same as in Figure 1. Comparison periods span the first quarter of the two adjacent quarters that contain the (local) maximum flows of total home mortgages outstanding to the quarter with the (local) minimum flow of home mortgages outstanding. The amounts in the table are the differences between (1) the average of the flows of the maximum-flow quarter and the higher of the two adjacent quarters, and (2) the average of the flows during the minimum-flow quarter and the quarter that preceded the minimum-flow quarter. The 1966 credit crunch period was not a recession. Prefix D- indicates direct holdings. Mnemonics for holders are described in the text. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, www.freelunch.com.

Table 3

Changes in Flows of Home Mortgages near Recessions: Direct-plus-Indirect Holdings, by Holder

RECESSION PERIODS	1953:2-1954:2	1957:3-1958:2	1960:2-1961:1	Credit Crunch	1969:4-1970:4	1973:4-1975:1	1980:1-1980:3	1981:3-1982:4	1990:3-1991:1	2001:1-200?:?	Average Over Five
COMPARISON PERIODS	1953:1-1954:1	1955:1-1958:1	1959:2-1961:1	1965:3-1967:2	1968:4-1970:2	1972:4-1974:4	1978:3-1980:2	1980:3-1982:3	1989:3-1991:1	2000:2-2000:4	Most Recent Recessions
ALL HOLDERS	-0.33	-1.54	-0.61	-1.38	-0.85	-1.51	-3.14	-2.44	-2.10	-0.81	-2.00
DEP	1.33	-0.23	-0.50	-0.86	-0.75	-2.11	-2.77	-2.48	-0.39	-1.42	-1.83
NDEPFIN	0.02	-0.09	-0.04	0.00	0.08	-0.28	-0.00	0.33	-0.10	0.98	0.19
INS	0.03	-0.35	0.06	-0.11	0.03	0.10	-0.13	0.03	0.05	-0.01	0.01
PENS	0.01	0.04	-0.01	-0.07	-0.04	0.02	0.27	0.13	-0.09	0.14	0.09
NFCORP	0.00	-0.10	-0.21	-0.14	-0.11	-0.01	0.31	-0.33	-0.27	-0.21	-0.10
HH	-1.07	-0.41	-0.54	-0.04	0.45	1.20	-0.37	-0.08	-1.29	-1.46	-0.40
GOVT	-0.13	-0.07	0.00	0.08	-0.50	-0.12	-0.62	0.04	-0.19	-0.05	-0.19
FOREIGN				-0.01	-0.00	-0.10	-0.05	-0.08	-0.20	0.39	0.01
GSE		0.11	-0.14	-0.07	0.32	0.32	-0.20	0.17	-0.12	1.12	0.26
POOL				0.03	0.04	0.01	-0.09	0.61	-0.29	1.19	0.29
ABS									0.30	0.11	0.21

Notes: First differences of seasonally adjusted net flows calculated as the sum of (1) flows of direct holdings of home mortgages and (2) holdings of home mortgage-backed securities, by holder, all expressed as a percent of potential GDP. Recession periods are the same as in Figure 1. Comparison periods span the first quarter of the two adjacent quarters that contain the (local) maximum flows of total home mortgages outstanding to the quarter with the (local) minimum flow of home mortgages outstanding. The amounts in the table are the differences between (1) the average of the flows of the maximum-flow quarter and the higher of the two adjacent quarters, and (2) the average of the flows during the minimum-flow quarter and the quarter that preceded the minimum-flow quarter. The 1966 credit crunch period was not a recession. Mnemonics for holders are described in the text. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, and www.freelunch.com.

Table 4

Contributions to Changes in Mortgage Flows near Recessions: Direct Holdings, by Holder

RECESSION PERIODS	1953:2-1954:2	1957:3-1958:2	1960:2-1961:1	Credit Crunch	1969:4-1970:4	1973:4-1975:1	1980:1-1980:3	1981:3-1982:4	1990:3-1991:1	2001:1-200?:?	Average Over Five
COMPARISON PERIODS	1953:1-1954:1	1955:1-1958:1	1959:2-1961:1	1965:3-1967:2	1968:4-1970:2	1972:4-1974:4	1978:3-1980:2	1980:3-1982:3	1989:3-1991:1	2000:2-2000:4	Most Recent Recessions
D-DEP	36	83	136	88	109	115	90	105	61	262	127
D-NDEPFIN	-6	6	7	0	-9	19	9	1	32	5	13
D-INS	-9	23	-2	14	-2	-7	-3	1	3	-1	-1
D-PENS	0	-1	-3	2	-1	-1	-1	-1	3	0	0
D-NFCORP	0	0	0	0	-1	3	-8	10	9	0	3
D-HH	18	-3	-89	-4	41	11	5	6	4	0	5
D-GOVT	64	-1	30	-4	7	-19	-4	10	-6	-1	-4
D-GSE		-7	23	6	-38	-21	8	-7	-3	4	-4
D-POOL				-2	-5	-1	3	-25	14	-147	-31
D-ABS									-10	-22	-16

Notes: First differences of seasonally adjusted net flows of direct holdings of home mortgages by holder, all expressed as a percent of the first difference of total flows of home mortgages. Recession periods are the same as in Figure 1. Comparison periods span the first quarter of the two adjacent quarters that contain the (local) maximum flows of total home mortgages outstanding to the quarter with the (local) minimum flow of home mortgages outstanding. The amounts in the table are the differences between (1) the average of the flows of the maximum-flow quarter and the higher of the two adjacent quarters, and (2) the average of the flows during the minimum-flow quarter and the quarter that preceded the minimum-flow quarter. The 1966 credit crunch period was not a recession. Prefix D- indicates direct holdings. Mnemonics for holders are described in the text. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, www.freelunch.com.

Table 5

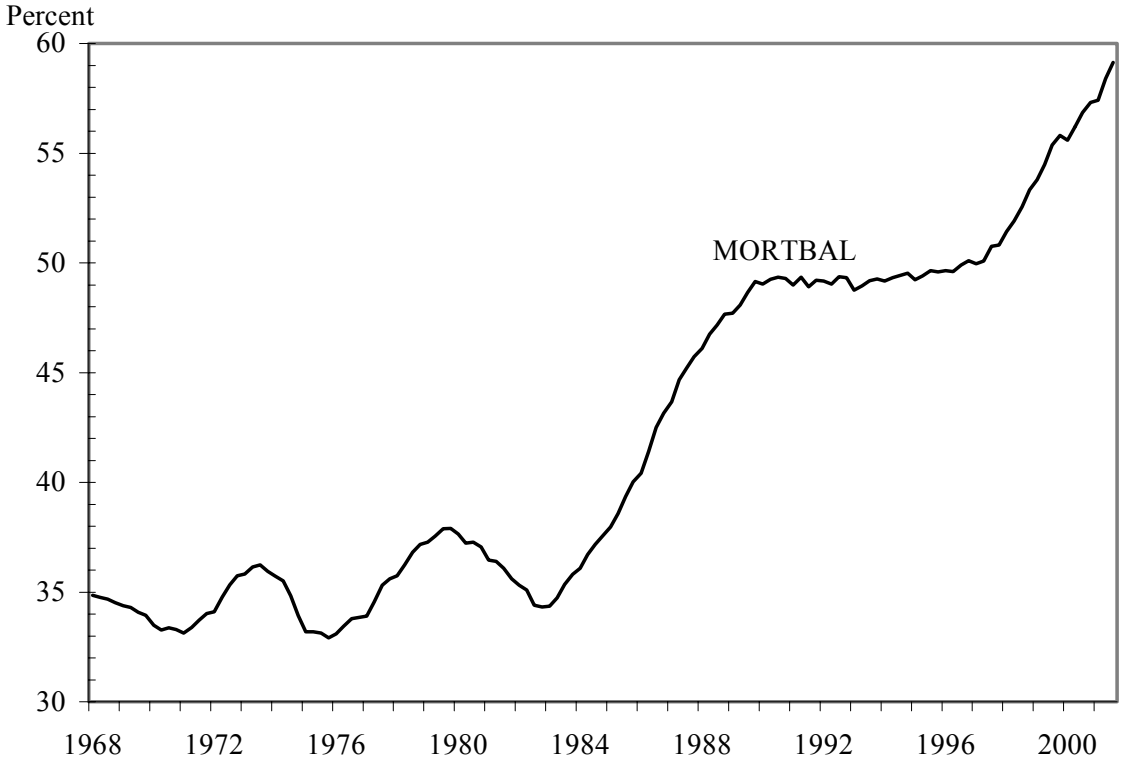
Contributions to Changes in Mortgage Flows near Recessions: Direct-plus-Indirect Holdings, by Holder

RECESSION PERIODS	1953:2-1954:2	1957:3-1958:2	1960:2-1961:1	Credit Crunch	1969:4-1970:4	1973:4-1975:1	1980:1-1980:3	1981:3-1982:4	1990:3-1991:1	2001:1-200?:?	Average Over Five
COMPARISON PERIODS	1953:1-1954:1	1955:1-1958:1	1959:2-1961:1	1965:3-1967:2	1968:4-1970:2	1972:4-1974:4	1978:3-1980:2	1980:3-1982:3	1989:3-1991:1	2000:2-2000:4	Most Recent Recessions
DEP	-403	15	82	62	88	140	88	102	19	175	105
NDEPFIN	-6	6	7	0	-9	19	0	-14	5	-121	-22
INS	-9	23	-10	8	-4	-7	4	-1	-2	1	-1
PENS	-3	-3	2	5	5	-1	-9	-5	4	-17	-6
NFCORP	0	6	34	10	13	1	-10	14	13	26	9
HH	324	27	89	3	-53	-79	12	3	61	180	35
GOVT	39	5	0	-6	59	8	20	-2	9	6	8
FOREIGN				1	0	7	2	3	10	-48	-5
GSE		-7	23	5	-38	-21	6	-7	6	-138	-31
POOL				-2	-5	-1	3	-25	14	-147	-31
ABS									-14	-14	-14

Notes: First differences of seasonally adjusted net flows calculated as the sum of (1) flows of direct holdings of home mortgages and (2) holdings of home mortgage-backed securities, by holder, all expressed as a percent of the first difference of total flows of home mortgages. Recession periods are the same as in Figure 1. Comparison periods span the first quarter of the two adjacent quarters that contain the (local) maximum flows of total home mortgages outstanding to the quarter with the (local) minimum flow of home mortgages outstanding. The amounts in the table are the differences between (1) the average of the flows of the maximum-flow quarter and the higher of the two adjacent quarters, and (2) the average of the flows during the minimum-flow quarter and the quarter that preceded the minimum-flow quarter. The 1966 credit crunch period was not a recession. Mnemonics for holders are described in the text. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, www.freelunch.com.

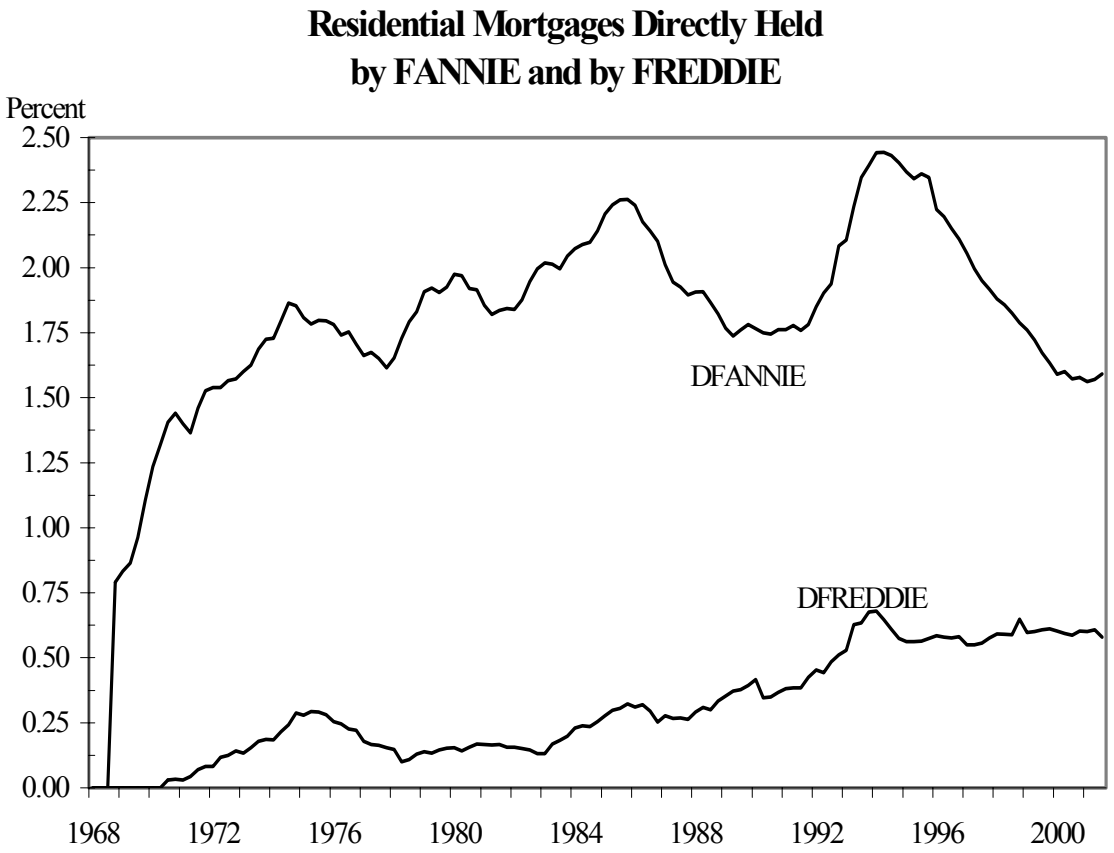
Figure 1

Total Residential Mortgages



Notes: End-of-quarter total residential mortgage balances outstanding, not seasonally adjusted, 1968Q1-2001Q3, as a percent of potential GDP. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, **www.freelunch.com**.

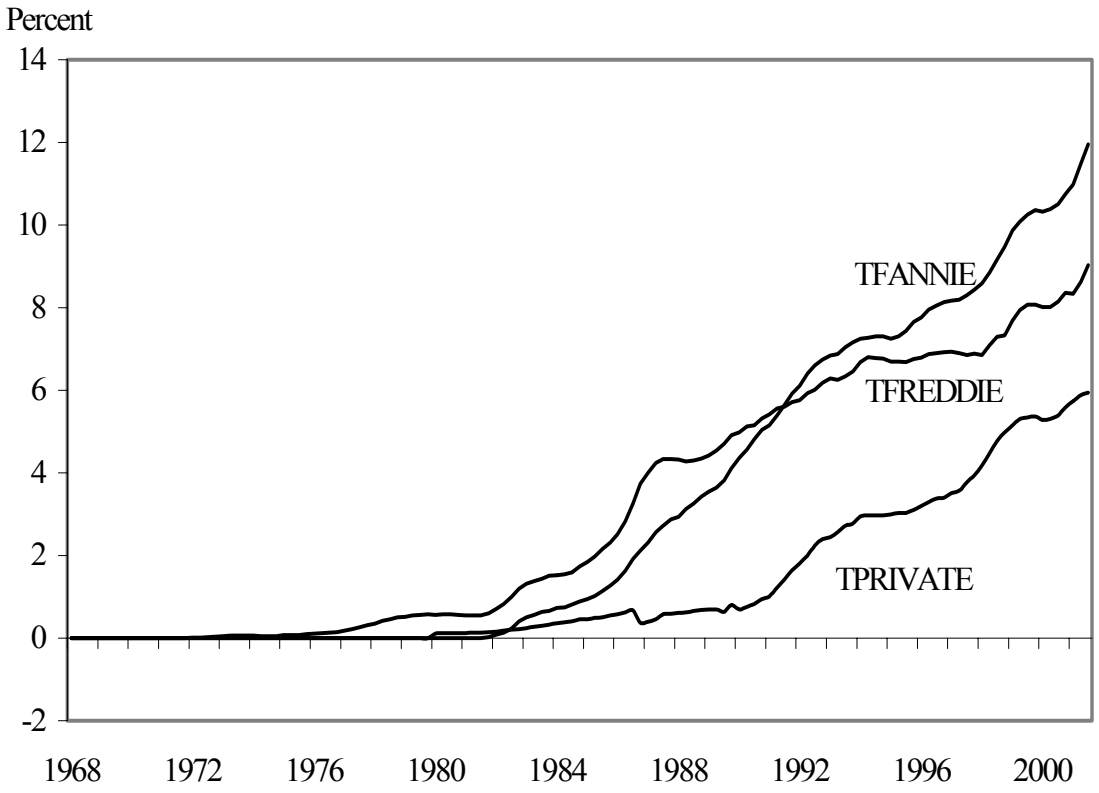
Figure 2



Notes: End-of-quarter residential mortgage balances outstanding, not seasonally adjusted, 1968Q1 to 2001Q3, as a percent of potential GDP. DFANNIE consists of residential mortgages directly held in portfolio by FNMA. DFREDDIE includes residential mortgages directly held in portfolio by FHLMC. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, **www.freelunch.com**.

Figure 3

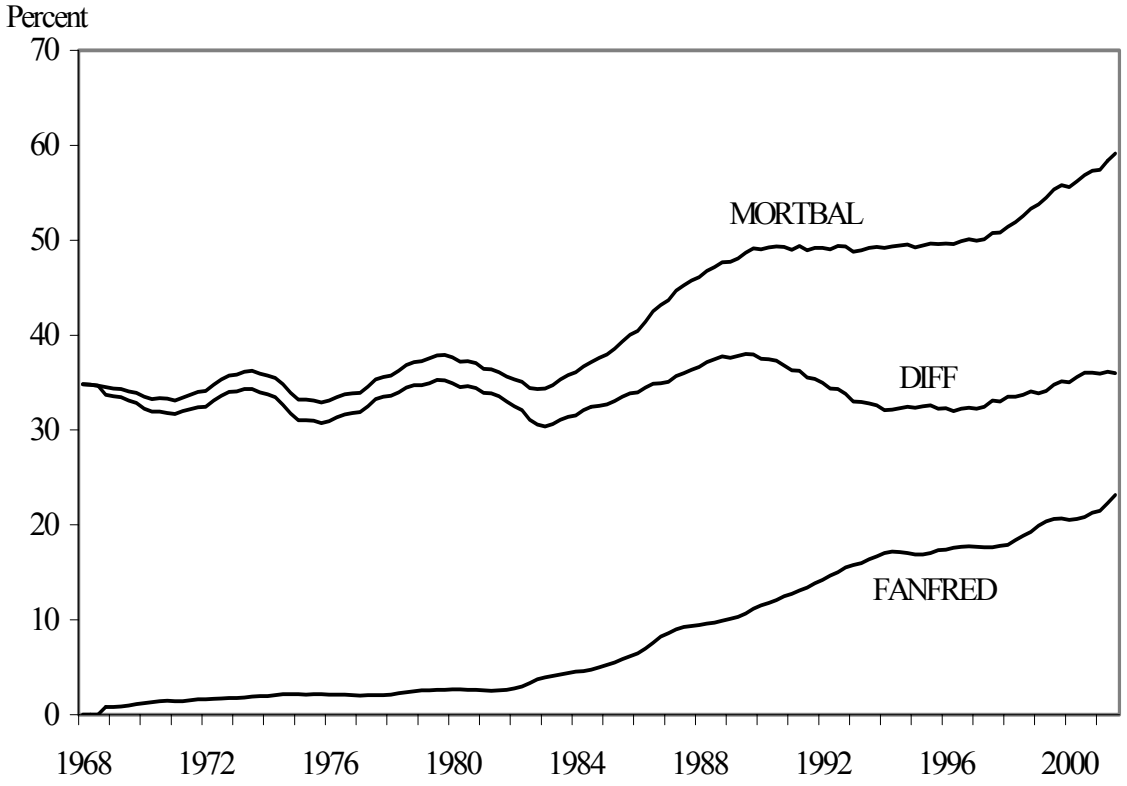
Total Residential Mortgage Intermediation by FANNIE, by FREDDIE, and by Private Mortgage Conduits



Notes: End-of-quarter residential mortgage balances outstanding, not seasonally adjusted, 1968Q1 to 2001Q3, as a percent of potential GDP. TFANNIE includes residential mortgages directly held in portfolio by FNMA plus outstanding principal balances of residential-mortgage-backed securities insured or guaranteed by FNMA. TFREDDIE includes residential mortgages directly held in portfolio by FHLMC plus outstanding principal balances of residential-mortgage-backed securities insured or guaranteed by FHLMC. TPRIVATE consists of outstanding principal balances of residential-mortgage-backed securities issued by private mortgage conduits. Data sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis FRED database, and www.freelunch.com.

Figure 4

Residential Mortgages and Total Intermediation by FANNIE and FREDDIE



Notes: End-of-quarter residential mortgage balances outstanding, not seasonally adjusted, 1968Q1-2001Q3, as a percent of potential GDP. MORTBAL is from Figure 1. FANFRED is the sum of TFANNIE and TFREDDIE from Figure 3. DIFF is the difference between MORTBAL and FANFRED.

Endnotes

[1] Some studies have noted the roles that Fannie Mae and Freddie Mac played during recent financial disruptions, such as the Russian bond market and Long Term Capital Management crises of the late 1990s.

[2] Studies based on data for the 1970s found some evidence that GSEs stabilized mortgage flows (Jaffee and Rosen 1978, 1979).

[3] By "stabilize", we mean "reduce recession-related fluctuations of".

[4] Equivalently, they can issue and exchange MBS for whole mortgages with the mortgage originator.

[5] Unless otherwise noted, all data in the figures and tables are quarterly. The data for residential mortgage debt outstanding are associated with Table 1.54 in the Federal Reserve Bulletin and were provided by the Board of Governors of the Federal Reserve System.