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HOUSING FINANCE AND THE
SAVINGS AND LOAN INDUSTRY

By

ROGER CRAINE

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HOUSING FINANCE AND THE SAVINGS AND LOAN INDUSTRY

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Abstract: Integration of the mortgage and capital markets in the 1980s permanently changed the structure of housing finance in the US. The old structure of a segmented market for housing with S&Ls as the primary housing financial intermediary has been replaced with an integrated market linking the home buyer directly to the capital market. The intermediation function of S&Ls is now decomposed into mortgage origination and mortgage portfolio holding. Mortgage companies originate as many home mortgages as S&Ls. Over 40% of all outstanding mortgages on 1-4 family homes have been securitized. The new system is a high speed freeway built on financial innovation that bypasses the old route followed by traditional S&Ls that originated and held mortgages on local properties. This paper examines the evolution of the S&L industry in housing finance.
Introduction

Owning your home was, and still is, the centerpiece of the American dream. When Congress passed the Depression era financial reform legislation it created a separate system solely to nurture housing finance. Congress wanted to provide the small home buyer the same access to financing that large corporations enjoy. The legislation segregated savings and loans (S&Ls) from other intermediaries. Congress created a separate regulatory structure, the Home Loan Bank System, to guide S&Ls, and a separate fund, the Federal Savings and Loan Insurance Corporation, to insure their liabilities. Congress established a financial intermediary devoted to financing housing by coddling and coercing the S&L industry.

The Depression era legislation forced federally chartered S&Ls to specialize in long-maturity fixed-rate home mortgages. Specialization is risky, but a web of protective legislation and regulation insulated S&Ls from market forces and isolated the primary mortgage market from the capital market. By the 1960s S&Ls dominated the home mortgage market. S&Ls financed the post WWII housing boom. But the massive interest rate shock in 1979-1982 broke the protective shell insulating S&Ls and accelerated the integration of the mortgage and capital markets. The integration of the mortgage and capital markets in the 1980s changed the structure of housing finance in the US and eliminated the need for a special intermediary devoted to housing finance.

Today home buyers compete on a level playing field with large corporations for Americas'
savings. The intermediation function that S&Ls used to perform is now decomposed into mortgage origination and mortgage portfolio holding. Mortgage companies and the capital market replicate the intermediation function of the thrift industry. Mortgage companies now originate as many home mortgages as S&Ls and commercial banks are close seconds. S&Ls are still major mortgage originators and they hold portfolios largely comprised of mortgages and mortgage backed securities, but they are no longer the dominant, or even major, force in housing financing. Competitive capital markets determine mortgages rates and the allocation of savings among borrowers. Over 40% of all outstanding mortgages on 1-4 family homes have been securitized. The new system is a high speed freeway built on financial innovation that bypasses the old route followed by traditional S&Ls that originated and held mortgages on local properties.

This paper documents the integration of the mortgage and capital markets and the changing role of S&Ls as the intermediary for housing finance.

Section 1: An Isolated Home Mortgage Market

The collapse of the financial system in the Great Depression spurred Congress to overhaul the regulatory and legislative structures controlling all financial intermediaries. When it did, Congress took the opportunity to create a special system for housing finance. The objective was to provide home buyers with the same access to finance that business enjoyed. By 1935 Congress had created an entirely separate system to deal
with intermediaries that specialized in housing finance. The structure paralleled the Federal Reserve System that regulated banks. The Home Loan Bank Board would regulate S&Ls, regional Home Loan Banks would provide liquidity through advances, and the FSLIC would insure their deposits.

Legislation and regulation forced federally chartered S&Ls to hold most of their assets in fixed-rate long maturity home mortgages\(^1\). Specialization increases risk, and S&L portfolios were extremely vulnerable to interest rate risk. Over the years legislation and regulation evolved that shielded S&Ls from market forces. Legislation prevented intense competition among S&Ls for mortgages by restricting S&L lending to within a 50 mile radius of the institution or branch until 1971 when the limit was raised to 100 miles.\(^2\) Interstate branching was prohibited and the Federal Home Loan Bank Board and State agencies rarely gave new charters (although institutions did switch between state and federal chartering agencies.) The structure encouraged small local lenders. In 1965 the average FSLIC insured thrift held less $30 million in assets.

The Interest Rate Control Act in 1966 extended insulation to the liability side of the S&Ls' balance sheet. The act gave the HLBB the power to set ceilings on the S&L deposit rates

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\(^1\) Federally chartered S&Ls had to hold 75% of their loans in home mortgages until 1978 and 2/3 of their assets in home mortgages until DIDMCA and Garn-St Germain loosen the asset restrictions, see Appendix A in Barth 1991. And the FHLBB did not authorize adjustable rate mortgages until 1981.

\(^2\) Geographic lending limits were not abolished until 1980.
in coordination with the Federal Reserve. Coordination of ceiling rates on savings deposits at S&Ls and banks effectively blanketed the small savers' opportunities in 1966.

The economic and legislative environment was good to S&Ls. S&Ls grew explosively with the post WWII housing boom. In 1945 the assets of S&Ls comprised only 3% of the assets of all financial service firms. Mutual savings banks were more than twice as large, holding 7% of the assets of all financial firms. By 1965 the situation had reversed. S&Ls held 14% of the assets of financial service firms and mutual savings banks stayed about the same at 6% of the assets\(^3\). By 1970 S&Ls had become the dominant home lender. They originated 40% of all home loans and held over 40% of the outstanding home mortgages in their portfolios. Mutual savings banks only originated about 6% of the home loans and commercial banks originated about 20%. Commercial banks and mutual savings banks each held about 15% of the outstanding home mortgages in their asset portfolios, see Figures 1 and 2\(^4\).

**Foundations of a Secondary Mortgage Market**

In the 1960s and 70s S&Ls were, for the most part, still small local lenders that raised funds locally. A web of regulation and legislation insulated S&Ls from market forces and

\(^3\) See Barth (1991) Table 2-1 p18.

\(^4\)Mortgage pools are securitized mortgages backed by a government sponsored agency, see below. Mortgage pools were insignificant until the late 1970. Mutual savings banks originations never reach 10% of the total originations so I did not put them in Figure 2.
Residential Mortgages Holdings

Shares

Source: Flow of Funds
Originations of 1-4Family Mortgages

Source: HUD Survey of Mortgage Lending
isolated the home mortgage market from the capital market. The insulation led to regional imbalances. Funds did not flow easily from surplus saving regions to deficit saving regions. Until the imposition of interest rate ceilings in 1966 California S&Ls paid higher rates for their deposits and advertised in east coast papers to attract funds to support the California boom. Mortgages rates were higher in faster growing regions and deposit rate ceilings only exacerbated the discrepancies.

Congress had always tried to promote a national market in home mortgages to smooth the regional imbalances. Congress gave the Federal National Mortgage Association (FNMA) a line of credit with the US Treasury and charged them with creating a liquid secondary market in Federal Housing Administration (FHA) and Veterans Administration (VA) insured mortgages. The FHA and VA insured mortgages against default which protected the buyers of these mortgages from getting a "lemon." But not many mortgages were sold. FNMA tried to support a secondary mortgage market by purchasing qualifying mortgages for its portfolio. But the effort was not successful.

In 1968 Congress tried a new approach. It split the FNMA into two agencies. One agency, now known popularly as Fannie Mae, assumed the duties of FNMA and continued purchasing mortgages for its own account. The charge of the new agency, the Government National Mortgage Association (Ginnie Mae) was to support the markets for FHA and VA mortgages. Ginnie Mae did not buy for its own account. Instead it used "the full faith and credit of the US Government" to guarantee securities of private entities
backed by pools of FHA and/or VA mortgages.

The Ginnie Mae guarantee allowed the creation of the first pass-through mortgage securities. Pass-through securities form the basic building block for mortgage securitization. Pass-throughs simply transfer the cash flow from a pool of underlying mortgages to the owner of a pass-through certificate. Ginnie Mae guarantees the timely payment of interest and principal, but never actually buys the underlying mortgages. In 1970 Congress created the Federal Home Loan Mortgage Corporation, popularly known as Freddie Mac, to add breadth to the support program for the secondary mortgage market. Freddie Mac could guarantee securities collateralized by pools of conventional mortgages as well as FHA and VA mortgages. Conventional mortgages also had to meet certain criteria--eg, loan to value ratio less than a fixed cutoff, a maximum loan amount, and so on--but, they were not restricted to borrowers that qualified for FHA or VA guarantees.

The secondary mortgage market grew rapidly in the late 1970s when rising short term interest rates made money-market mutual funds an attractive alternative to savings deposits with controlled rates. Before 1975 S&Ls rarely sold more than 10% of the home mortgages they originated. But as rates rose and they couldn't attract funds they sold more and more mortgages. In 1978 S&Ls sold 16% of the 1-4 family mortgages they originated. In a decade the secondary market had grown from roughly $2 billion in 1968 when Ginnie Mae guaranteed the first pass-through securities to over $70 billion.
Still the integration of the primary mortgage and capital market would not occur until the severe interest rate shock of 1979-1982 completely cracked the protective shell insulating S&Ls from market forces. In an integrated market rates move together except for changes in the risk premium. Figure 3 shows the mortgage commitment rate\textsuperscript{5} and the 10year Treasury rate from April 1971 (beginning of the data collection) through September 1979 (until the Federal Reserve changed operating procedures in 1979.) Over this period mortgages rates tended to follow Treasury rates, but not closely and they are much smoother. The standard deviation of the weekly change in the mortgage rate is half the standard deviation of the weekly change in the Treasury rate.

Table 1 presents regression results that quantify the visual image that the mortgage and capital markets are not integrated.

\textsuperscript{5}In 1971 Freddie Mac started collecting survey data on primary mortgage markets. The mortgage rate is the commitment rate for conventional fixed rate mortgages from Freddie Mac's Weekly Primary Mortgage Market Survey. The treasury rate is the rate on a constant maturity 10Treasury bond.
Mortgage and Treasury Rates
The first regression shows that the weekly change in the mortgage rate (DMOR) is essentially uncorrelated with the weekly change in the 10yr Treasury rate (DTR10). The lagged one and four period treasury rates enter significantly and the coefficients just about cancel in magnitude showing the smoothing.\(^6\) The weekly changes in the mortgage rate are simply not closely related to changes in the Treasury rate--the R\(^2\) is only 0.09.

The second equation examines the risk premium in the mortgage rate, MR-TR. Since the duration of the two instruments is similar the spread between the rates should reflect a risk premium in an integrated market. Most of the risk in home mortgages is prepayment

\(^6\)The results are robust with respect to the lag length.
risk.\textsuperscript{7} When interest rates decline home owners refinance and pay off the existing mortgage. Mortgage lenders have to reinvest a lower rate. The risk premium should depend positively on the volatility of rates. The more volatile rates are the greater the probability rates will fall and home owners will prepay, see Fabozzi (1985,1987) for more detail. I used, VOL, a 13week moving average of squared changes in the Treasury rate as a proxy for the volatility and included lagged Treasury rates as explanatory variables. Volatility does not explain the mortgage risk premium over this time period. The coefficient has the wrong sign and is statistically insignificant. Lagged rates enter significantly, but the coefficients sum to zero which reflects smoothing. The equation does not explain the risk premium in the primary mortgage market.

\textbf{Maturation of the Secondary Mortgage Market}

After more than a decade of effort by government sponsored agencies to establish a viable secondary mortgage market the outstanding value of mortgage pool debt--Ginnie Mae, Fannie Mae, Freddie Mac, and FHA--had grown to $70billion in 1978. But the primary mortgage market and the capital market still were not closely linked. It took the interest rate shock in 1979 to break the artificial protective barrier insulating S&Ls from the market to link the mortgage and capital markets. In 1982 S&Ls sold more than $50billion in mortgages, and they did it again in 1983. In 1982 the value of S&Ls' mortgage sales exceeded the value of their originations. As the protective barriers came

\textsuperscript{7} For example, Van Order (1988-1989) estimates of the default risk premium on runs 10 to 15 basis points and Passmore (1992) says 25 basis points is too high for a default risk premium.
down S&Ls lost their dominant position in the home mortgage market. By 1987 mortgage companies originated as many home mortgages as S&Ls, and S&Ls sold over 2/3 of the mortgages they originated in the secondary market. By 1987 competition linked the primary mortgage market to the capital market.

**Breaking the Protective Barrier**

Inflation in the late 70s drove interest rates up. In October of 1979 the Federal Reserve changed operating procedures and drastically tightened monetary policy to fight inflation. The 90 day Treasury Bill rate rose from 6% in December 1977 to 12% in December of 1979. Interest rate ceilings at S&Ls limited deposit rates to 5.5%. This time the gap was too big for artificial ceilings to stem the outflow of deposits. Money Market Mutual Funds (MMMF), whose rates were not controlled, now offered small savers an alternative. The assets of MMMFs exploded from $3.3 billion in 1978 to $236 billion in 1982 as they siphoned savings accounts from depository institutions with rate ceilings. S&Ls sold over $18 billion worth of mortgages in the secondary mortgage market in 1979.

Congress, regulators and the industry knew the deposit ceiling patch would not stem the flow of withdrawals this time. In fact deposit rate ceilings launched MMMFs. So in 1980 Congress, with the support of the S&L industry, passed the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) which, among other things, began the phasing out of rate ceilings. Now S&Ls could compete for funds. S&Ls could only stop the hemorrhaging of deposit outflows by paying market rates on their liabilities. Mortgage
sales dropped to $15 billion in 1980 and $12 billion in 1981. But, at best, DIDMCA could only provide temporary relief. Their cost of funds exceed their earnings on assets. In 1981 a third of all thrifts lost money.

In 1981 the S&L industry was in desperate shape. Circumstances over which they had little control trapped them and they were bleeding to death. The market value of S&L assets fell by 20 to 40% and the cost of their liabilities skyrocketed. If their portfolios were marked to market most S&Ls were insolvent.

In September of 1981 the FHLBB changed the accounting system to paper over the loss. Under generally accepted accounting principles, or GAAP, losses or gains are recorded when the asset is sold. So when S&Ls sold their mortgages they had to record a loss at the time of the sale under GAAP. The losses would erode the book value of the capital and put them in violation of the regulatory capital requirements. The FHLBB replaced GAAP accounting with regulatory accounting principles, or RAP. RAP accounting allowed S&Ls to sell their assets and amortize the loss over the remaining life of the asset for regulatory purposes. This gave S&Ls the flexibility to restructure their asset portfolios without violating regulatory capital standards. It seemed to make good economic sense. After all, the real damage was done. In terms of economic value (market value accounting) the loss had already occurred. Recognizing the loss would require regulators to shut down the S&L industry and destroy (at least temporarily) the housing intermediary. But, the industry was still functioning and the macroeconomic interest rate shock wasn't
their fault. Amortizing the losses gave the S&L industry a chance to survive.

By itself RAP accounting provided little incentive for S&Ls to sell mortgages. Just selling mortgages and replacing them with mortgage backed securities essentially put them right back where they started. For example, swapping a portfolio of mortgages for a pass-through security doesn't change the cash flow. Simply trading mortgages for securities only allows S&Ls to increase their cash flow by increasing risk. They would still bleed to death.

But tax rules are based on GAAP accounting. The Internal Revenue Service recognized the S&L's capital loss in the current period, and the S&L could offset the loss against taxes paid over the previous ten years. The S&L could get a tax refund in the current year to stem the bleeding. It allowed S&Ls to recapture some of the taxes they paid when they were profitable. It was an intertemporal transfer.

Tax losses gave S&Ls an incentive to trade mortgages for mortgage backed securities and RAP made it possible to realize tax loss without violating the regulatory capital standards. S&Ls responded to the incentives by selling mortgages. They sold $50 billion worth of mortgages in 1982, more than the outstanding value of all mortgage backed securities in 1976. The value of S&L mortgage sales was more than the value of their mortgage originations. S&Ls purchased $24 billion worth of mortgaged backed securities in 1982 to replace half the mortgages they sold.
As the supply of mortgages for sale grew the government sponsored agencies and Wall Street began to repackage the cash flows from mortgages pools into derivative securities to increase the demand. Mortgages, and mortgage backed securities which simply pass the cash flow through, have a prepayment option that makes them riskier than a standard fixed coupon bond. The prepayment option makes the actual maturity of the mortgage backed security uncertain and creates reinvestment risk. Insurance companies and pension funds preferred bonds with a more certain payoff stream. The agencies and Wall Street created new mortgage-backed products tailored to clients' needs.⁸

1983 saw the introduction of the collateralized-mortgage obligation, or CMO. The collateralized-mortgage obligation was the first of a continuing stream of innovative mortgage-backed products designed to appeal to the capital markets' needs. The basic CMO just divides up the cash flows from a pass-through security into "tranches". The innovation is that the tranches are prioritized to isolate the prepayment risk. The highest tranche receives all principal payments until it is paid off. It bears most of the prepayment risk. The other tranches only get interest until the highest tranche is completely paid off. Then, the next highest tranche gets all the principal until it is paid off, and so on. Lower tranches have a long and predictable life. They look just like bonds with fixed maturities. CMOs decompose the cash flow and let investors choose among the payoff streams with different risk. Of course, the prices of the CMO tranches reflect the risk. $50 billion worth

⁸In 1983 Ranieri's mortgage trading department generated 40% of Solomon Brothers revenue.
of CMOs were issued in 1986.

In 1986 Fannie Mae introduced a more radical derivative security: "stripped" mortgage backed securities. In a completely stripped issue the cash flows from the underlying mortgage pool are divided into two securities: interest only (IO) and principal only (PO). The IO security is a claim to the flow of interest payments from the underlying mortgage pool, and the PO is a claim on the principal payments. Mortgage prepayments have opposite effects on the two securities. If the prepayments occur sooner than anticipated the owner of the PO receives the principal sooner than anticipated and makes a higher return. But prepayment extinguishes the IO payment stream so the owner of the IO security receives a lower return than anticipated. Derivative securities allow investors greater choice and increase participation in the market.

Table 2 shows the regression results for the transition period from 1979 through 1986.
Table 2: Regression Results 1979-1986

<table>
<thead>
<tr>
<th></th>
<th>constant</th>
<th>DTR10</th>
<th>TR10₁</th>
<th>TR10₂</th>
<th>TR10₃</th>
<th>TR10₄</th>
<th>R²</th>
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<tr>
<td>DMOR</td>
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<td>0.10</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constant</td>
<td></td>
<td>TR10₁</td>
<td>TR10₂</td>
<td>TR10₃</td>
<td>TR10₄</td>
<td>VOL</td>
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<td>MR-TR</td>
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<td>8.98</td>
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<td>0.11</td>
<td>2.84</td>
<td>15.37</td>
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The period between 1979 and 1987 was an extremely volatile period. Mortgage rates reached 17% and treasury rates 15% in 1982. The standard deviation of the weekly change in the 10yr Treasury rate was 25%, which was three times the volatility of 71-79 period. Mortgage rates were also volatile and moved more closely with the Treasury rate over this period. The standard deviation of the weekly change in the mortgage commitment rate was 18%—still smoother than the Treasury rate, but 3/4 as volatile.

The first regression shows that a 100 basis point change in the Treasury rate only results in a 10 basis point change in the mortgage commitment rate. But the coefficient is strongly significant and the $R^2$ is up to 0.4. Lagged values still are significant and sum to approximately zero which shows the smoothing effect. But the results confirm a strong
quantitatively significant link between the capital and primary mortgage market.

The second equation also confirms a tighter linkage. Volatility has a positive and significant effect on the mortgage risk premium. The coefficients on the lagged Treasury rates still reflect smoothing.

Integration of the Mortgage and Capital Markets

By 1987 the secondary mortgage market was almost as large as the market for nonfinancial corporate bonds and in 1990 the value of mortgage pools, ie, debt backed by the government sponsored agencies, topped a trillion dollars and was bigger than the nonfinancial corporate bond market, see Figure 4.

The agencies and Wall Street continued to slice and dice the cash flows from mortgage-backed securities into a dazzling array of specialized derivative instruments. Now there are "planned amortization class" (PAC) bonds, and "stabilized mortgage reduction term" (SMRT) bonds, and "target amortization class" (TAC) bonds, and many more. These derivative instruments are designed to let investors choose a cash flow pattern and the risk that fits their investment criteria.

Today the primary mortgage market is closely linked to the capital market. Figure 5 shows the weekly mortgage commitment rate and the 10yr Treasury rate from 1987 through 1992. The rates move in almost locked step. The standard deviation of weekly
Mortgage Pools and Corporate Bonds

Source: Flow of Funds
Mortgage and Treasury Rates
changes in the 10yr Treasury rate is 13% and the standard deviation of the weekly change in the mortgage commitment rate is 12%. The regression results in table 3 confirm the integration of the primary mortgage market and the capital market.

Table 3: Regression Results 1987-1992

<table>
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<th>constant</th>
<th>DTR10</th>
<th>TR10₁</th>
<th>TR10₂</th>
<th>TR10₃</th>
<th>TR10₄</th>
<th>R²</th>
</tr>
</thead>
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<td>-0.03</td>
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<td>0.18</td>
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<td>24.81</td>
<td>6.16</td>
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<td>-1.65</td>
<td>-0.84</td>
<td></td>
</tr>
<tr>
<td></td>
<td>constant</td>
<td>TR10₁</td>
<td>TR10₂</td>
<td>TR10₃</td>
<td>TR10₄</td>
<td>VOL</td>
<td></td>
</tr>
<tr>
<td>MR-TR</td>
<td>1.29</td>
<td>-0.05</td>
<td>0.12</td>
<td>0.03</td>
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<td>5.40</td>
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</table>

Over this interval a 100 basis point change in the weekly Treasury rate results in a 70 basis point change in the mortgage commitment rate in the same week. The rates move closely together. Only one lagged Treasury rate enters significantly. It shows that higher rates result in larger weekly changes. There is no evidence of smoothing. The $R^2$ of 0.7 shows that the Treasury rate changes explain about 70% of the changes in the mortgage rate.

In the risk premium equation only volatility enters significantly. There is no evidence of smoothing. The spread between the Treasury rate and mortgage rate depends on risk.
Primary mortgage rates and capital market rates move together.

The quantitative evidence indicates that the primary mortgage market and the capital market are now closely linked through the secondary mortgage market. Savings and loans no longer dominate the primary mortgage market. Mortgage companies originate more home mortgages than S&Ls, and commercial banks originate around 25% of the home mortgages, see Figure 2. All the originators sell a large fraction of the mortgages they originate. According the HUD's Survey of Lending Activity the value of S&Ls' mortgages sales exceeds the value of their originations in recent years, see Figure 6. Mortgage and capital markets are integrated and the capital market drives the mortgage market.

Section 3: Conclusions

The integration of the mortgage and capital markets has permanently changed the structure of housing finance in the US. The market has replaced the old structure where S&Ls made housing loans in their community funded by deposits gathered in their community. Now the process is "unbundled" into originations and mortgage portfolio holdings. S&Ls, mortgage companies, mutual savings banks, and commercial banks compete for originations. Pension funds, insurance companies, mutual funds, and other large and small capital market participants hold mortgage-backed securities in their portfolios. The market is a national market, not a local market. Home buyers compete on a level field with large corporate borrowers.
S&Ls: Mortgage Originations and Sales

Source: HUD Quarterly Lending Survey
The system is a more efficient, more dependable, and cheaper, method of housing finance. Jaffee and Rosen (1991) show that competition forced S&Ls' profit margin on conventional fixed rate mortgages from around 2% at the beginning of the 80s down to .37% at the end of the decade. Carron and Brumbaugh (1989) argue that the margin is so small that S&Ls actually lost money on portfolio holdings of fixed rate mortgages during the 1980s. And, Hendershott and Shilling (1989), in a careful conservative study, document that the rates on conventional fixed rate mortgages that meet the standards for securitization were 30 basis points less in 1986 than the rates on nonconforming mortgages.
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