

# The Residential Mortgage Market in Recent Years:

## Structural Changes, Sectoral Behavior, and the Cost and Availability of Mortgage Credit

### I. INTRODUCTION

Recent years have witnessed major changes in the movement of several measures that had characterized developments in the residential mortgage market from the early 1950's to the middle 1960's. The time paths of three of these measures are shown in Charts 1 and 2. Chart 1 shows that the proportion of the gross national product (GNP) devoted to residential construction fell from over 6 percent in 1955 to a low of less than 3 percent in the first quarter of 1967.<sup>1</sup> The proportion stayed at historically low levels until the

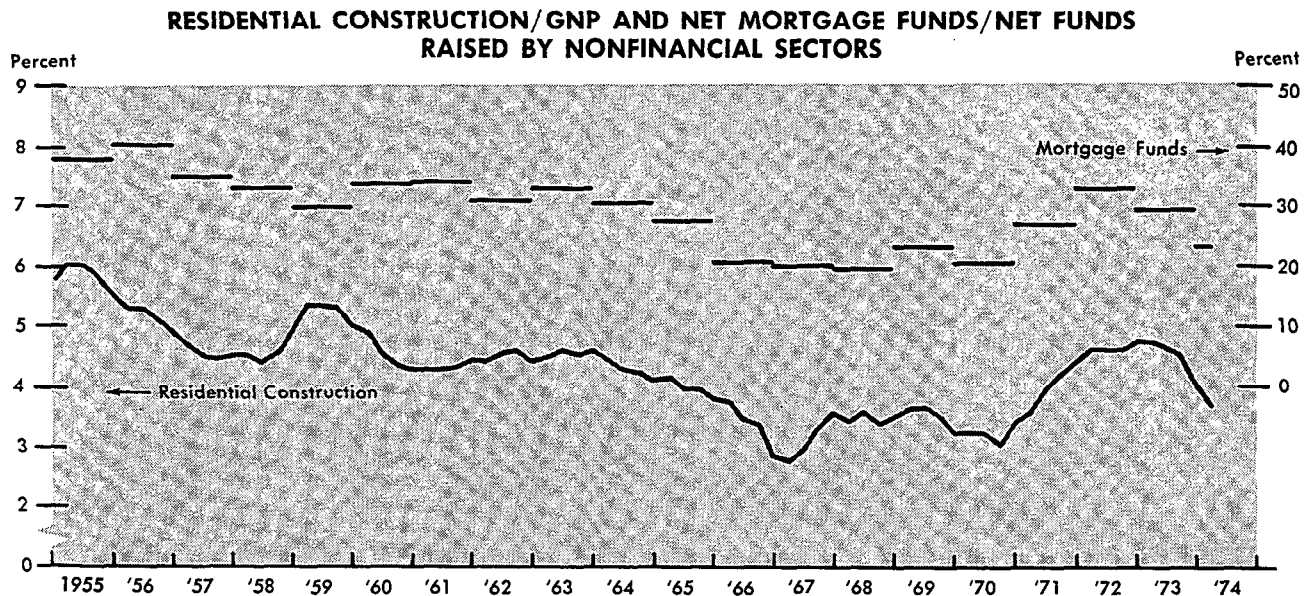
end of the decade but jumped dramatically in the first years of the 1970's to levels it had not reached since the late 1950's.

Chart 2 also shows the annual net change in mortgage<sup>2</sup> debt as a percentage of the annual net change in total debt outstanding of all nonfinancial sectors. By 1966, this percentage had declined to approximately one-half of its level in the mid-1950's. Like the percentage of GNP devoted to residential construction, however, the downward trend in the series ended in the latter half of the 1960's and the series rose substantially in the first years of the 1970's.

<sup>1</sup> The figures in Chart 1 are in nominal terms. The chart would not be significantly altered if they were in real (deflated) terms.

<sup>2</sup> Throughout the remainder of the article the term "mortgage" will be used in place of "residential mortgage."

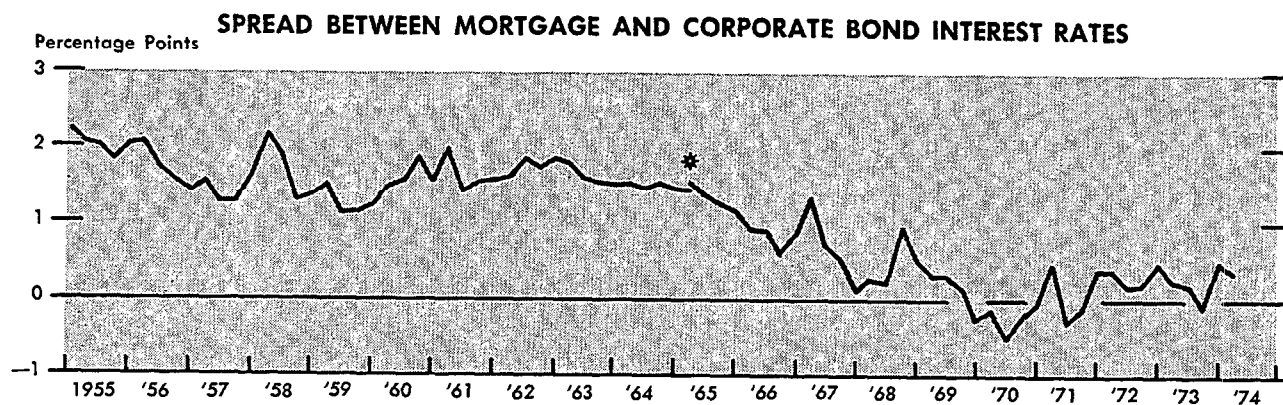
Chart 1



Note: All Flow of Funds data are seasonally adjusted quarterly rates (most recent data are tentative estimates). Net funds of nonfinancial sectors exclude corporate shares.

Source: Board of Governors of the Federal Reserve System, Flow of Funds Accounts.

Chart 2



\* The mortgage rate is the FHA rate on new home conventional mortgages through 1964 and the FHLB effective rate on new home conventional mortgages thereafter.<sup>3</sup> The corporate bond rate is the FRB's new issue Aaa utility rate.

Note: All rates are quarterly averages of monthly figures.

Source: Board of Governors of the Federal Reserve System, FHA and FHLB.

The third measure, shown in Chart 2, is the differential or spread between the mortgage interest rate and the corporate bond rate. The spread fluctuated around the 1.5 percent level throughout the 1950-1965 period, typically rising above that level in periods of declining interest rates and falling below that level in periods of increasing interest rates. The spread fell steadily in the latter half of the 1960's, however, and it was actually negative throughout 1970. Since then, the spread has remained low by historical (pre-1966) standards.

The long-run decline in the share of loanable funds flowing into the mortgage market and in the proportion of GNP devoted to residential construction together with the sharp fall in both series in the 1966-67 housing recession generated great concern in the mortgage and housing industries. Several commissions and study groups were formed to determine the causes of these developments and to make recommendations that would enable residential construction to become a larger and more stable share of GNP. (The recommendations of two such groups are contained in [5] and [18].) Also, major pieces of legislation were passed in 1968 and 1970 that were intended to support the residential mortgage market and stimulate residential construction through two types of programs. The first type was designed to increase and stabilize the supply of mortgage credit, while the second was designed to stimulate the quantity of mortgage credit demanded by lowering the effective mortgage rate for low and medium income groups. (These programs will be described in more detail.)

Charts 1 and 2 and the previous discussion suggest a number of interesting questions. First, why did the downward trend in housing's share of GNP terminate in the late 1960's and what caused the subsequent boom in residential construction in the early 1970's? Second, what caused the dramatic turnaround in the proportion of loanable funds flowing into mortgages? Third, why did the spread between the mortgage rate and the corporate bond rate fall substantially from earlier levels? To what extent can these developments be attributed to the effects of the various government programs?

This article will explore possible answers to these questions. The focus throughout will be on the mortgage market and related financial developments. Section II will look briefly at the overall structure of the mortgage market and indicate the predominant views of the relationship between it and the housing sector. Section III will discuss the behavior of the various mortgage market participants in recent years, emphasizing the numerous behavioral changes that have occurred in the market. Section IV will look in more detail at the supply of mortgage funds over the period, concentrating on the effects of the entrance of the Federal Government as a major participant in the market, and on the difficulties in-

<sup>3</sup> The FHA rate is based on FHA field office opinions of prevailing conditions in the mortgage market. Prior to 1973, the FHLB rate was for loans *approved* during a particular month. Through 1972, therefore, both rates were indicators of current market conditions, and the two moved very closely together. After 1972, the FHLB rate is for loans *closed* during the first five working days of a month. It is not, therefore, a measure of current conditions and should not be used for comparison with other interest rates. The FHLB rate is used in Chart 1, however, for the purposes of a later section of the article (see Chart 10).

involved in measuring these effects. Section V will discuss the closely related and equally difficult question of identifying the factors underlying the apparent fall in the spread between the mortgage rate and the corporate bond rate over the period.

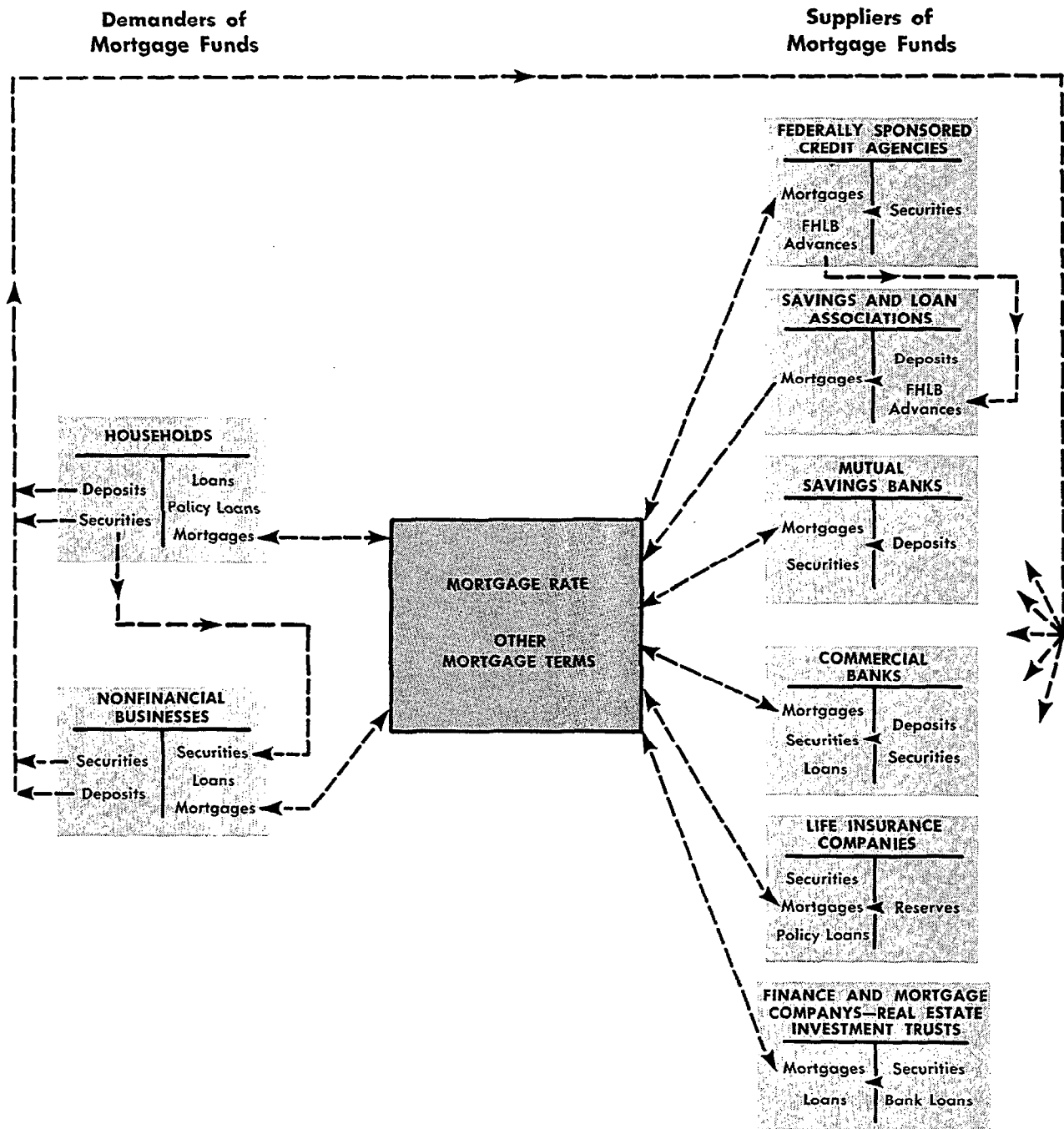
## II. STRUCTURE OF THE MORTGAGE MARKET

A diagram of the residential mortgage market is shown in Chart 3. The diagram, which is intended

to provide a framework for the remainder of the article, shows only the major financial sources and uses of funds of each sector in the market. The sources of funds (or liabilities) of each sector are shown on the right hand side of its "T" account, while the uses of funds (or assets) are shown on the left hand side. The main categories of financial assets shown are mortgages, deposits, loans, and securities. The last category includes all marketable debt

Chart 3

### THE MORTGAGE MARKET



of the business, state and local government, U. S. Government, and U. S. Agency sectors.

The sectors that supply mortgage credit are shown on the right hand side of the diagram, while the sectors that demand mortgage credit are shown on the left hand side. The sectors that supply funds to the mortgage market are savings and loan associations (SLAs), mutual savings banks (MSBs), commercial banks (CBs), life insurance companies (LICs), Federally-sponsored credit agencies (FSCAs), finance and mortgage companies (FCs), and real estate investment trusts (REITs). The first four sectors are long-time participants in the market, while the last three are fairly recent entrants.

Two of the sectors that supply mortgage credit—SLAs and MSBs—acquire funds exclusively through the issuance of nonmarketable deposits to the public, while a third, CBs, acquires funds primarily through deposits, but also through the issuance of short-term securities, such as certificates of deposit (CDs). LICs, the fourth traditional suppliers of mortgage credit, acquire funds in the form of life insurance reserves by selling insurance policies to the public. The FSCAs acquire funds exclusively through the selling of securities, while FCs and REITs acquire funds either through bank loans or security issuances. The fact that the great majority of funds acquired by the four traditional mortgage market investors originate from the creation of deposit liabilities has had major implications—which will be discussed below—for developments in the mortgage market in recent years.

With regard to the use of funds acquired by the intermediaries, a worthwhile distinction used to be between the “thrift” institutions—SLAs and MSBs—and the “discretionary” institutions—CBs and LICs. The thrift institutions channeled virtually all of their available funds into the mortgage market, while the discretionary institutions exhibited a willingness to shift out of mortgages into securities or loans in response to such factors as changes in relative yields and loan demand. This distinction is no longer appropriate, however, since MSBs have clearly become discretionary investors in recent years. The FSCAs, however, have joined SLAs as non-discretionary mortgage market investors, in the sense that all their funds are channeled in the mortgage market. The continued presence in the market of two major sectors that show no discretionary investment behavior is a feature that distinguishes the mortgage market from the various securities markets and has important consequences for the operation of the market itself.

The sectors that demand mortgage credit are households and businesses. Households generally use mortgage credit to finance the purchase of houses, while businesses use it to finance multi-family income-earning residential structures. It follows, therefore, that a fairly close correspondence might be expected between additions to the nation's stock of residences and the growth of mortgage credit. That expectation, however, is subject to a number of qualifications, which will be made below.

The arrows in Chart 3 indicate the directions of influence between the demand for and supply of mortgage credit on the one hand and the mortgage rate on the other. In general, the quantity of mortgage credit demanded or supplied by a particular sector is shown as dependent on the mortgage rate. Furthermore, a shift in the demand for or supply of mortgage credit by any sector is shown as influencing the mortgage rate since the mortgage rate is the primary mechanism that “clears” the market, moving up to eliminate excess demand for mortgage funds and down to eliminate excess supply.

It should be noted here that there are two qualifications often made with respect to the view that the mortgage rate clears the mortgage market. First there are a number of non-rate mortgage terms—such as the downpayment, maturity, and prepayment penalty—related to the riskiness of a mortgage, which, together with the mortgage rate, can influence demand and supply behavior. Changes in these non-rate terms can also operate to help clear the market. Changes in the required down payment, in particular, are generally believed to play this role, reinforcing the effect of the mortgage rate on supply and demand by moving in the same direction. The second qualification, appearing in many mortgage market studies [4, 14, 17, 19], is that neither the mortgage rate itself nor the whole set of mortgage terms clears the market. According to this view, the mortgage market frequently experiences excess demand for mortgage funds at the going set of mortgage terms, especially in periods of rising interest rates.

An additional complication in the functioning of the mortgage market is the use of mortgage lending commitments. A mortgage commitment is an agreement made by a supplier of mortgage funds with a builder to supply mortgage credit at some specified terms to the ultimate purchaser of a residence. The commitment procedure is used by virtually all of the intermediaries to a varying degree. [7] The supply of commitments by these intermediaries is generally thought to be a function of current and expected yields and deposit flows, while the demand for them

is dependent on the number of desired housing starts by builders. There are actually, therefore, two markets: (1) the market for mortgage funds, which is affected by past commitments, and (2) the market for commitments to supply future mortgage funds. The latter market has received scant attention from economists (an exception is [14], a study which specifies the supply side of the market), but conceptually it is entirely possible that the set of current mortgage terms that clears the mortgage market might not clear the market for commitments.

Studies of the mortgage market have generally indicated two types of influence exerted by the market on residential construction activity.<sup>4</sup> The first influence is the indirect effect of developments in the mortgage market on housing starts *through* the market for housing. For instance, a reduction in funds flowing into the thrift institutions will decrease the supply of mortgage funds, putting upward pressure on the mortgage rate. The rising mortgage rate decreases the demand for housing. Slackened demand, in turn, exerts a number of influences on the housing sector that signal decreased profitability to builders on construction of new units, thereby reducing desired housing starts. These signals might include a decrease in the price of houses relative to construction costs, an increase in the inventory of unoccupied units, and a slower turnover of existing units. If the mortgage market clears, then the indirect effects of the market on residential construction activity will be captured by the going set of mortgage terms. If there is credit rationing, however, construction activity will be influenced not only by the set of mortgage terms but also by the availability of funds at the institutions that supply mortgage credit.

The second channel of influence operates directly from the mortgage market intermediaries to builders via the effect of the intermediaries' willingness to make commitments. A decline in the flow of funds into the intermediaries (or a relative decline in the mortgage yield) decreases their supply of commitments to builders, whose willingness to start construction projects is then constrained. In other words, the supply of commitments is insufficient relative to desired housing starts.<sup>5</sup>

<sup>4</sup> There is still some disagreement, however, on the paths of influence—see 111 for an attack on some widely held views—and substantial disagreement on the magnitudes involved.

<sup>5</sup> A common approach in econometric models is to derive, either explicitly or implicitly, a reduced form housing starts equation in which housing starts is a function of the (lagged) mortgage rate. An additional explanatory variable (such as the supply of deposits at the thrift institutions) is then added to the equation to account for the effects on housing starts of excess demand for commitments and/or excess demand for mortgage funds. 14, 15, 17, 191

### III. BEHAVIOR OF MORTGAGE MARKET PARTICIPANTS

This section will focus more closely on the developments affecting the supply of and demand for mortgage credit in recent years. Emphasis will be placed on the major changes in behavior among some of the market participants—changes that have fundamentally altered the nature of the mortgage market. The discussion will be divided into three parts corresponding to: (1) the flow of funds into the intermediaries, (2) the flow of funds from the intermediaries into mortgages, and (3) the demand for mortgage funds by the nonfinancial sectors of the economy.

**The Supply of Funds to the Private Intermediaries: Disintermediation** A major aspect of the mortgage market in recent years and one that perhaps has received more attention than any other is disintermediation: a sharp decrease in the rate at which funds flow into the deposit intermediaries in periods when security rates—short-term security rates, in particular—are rising relative to the interest rates that the intermediaries are willing (or able) to pay on their deposits. As shown in Chart 3, the nonfinancial sectors (primarily households) purchase either securities or deposits with their savings. If they do the latter, the financial sectors serve as intermediaries between savers and the ultimate borrowers of funds. When interest rates on securities rise relative to deposit rates, savers naturally tend to increase their direct purchases of securities, thereby decreasing the amount of funds flowing into the intermediaries—hence, the term disintermediation. Disintermediation is an important phenomenon for the mortgage market because, as indicated in Chart 3, households purchase virtually no mortgages, while the deposit intermediaries purchase substantial amounts.

The obvious question to ask is why, when interest rates are rising, do deposit rates not rise as fast as interest rates on securities? There are two answers generally given to that question. The first is that Government-imposed deposit rate ceilings at times restrict the ability of the deposit intermediaries to raise deposit rates. The second and, many argue, more fundamental answer is that the deposit intermediaries would be threatened with insolvency if they attempted to keep deposit rates competitive with security rates in periods of rising interest rates. The reason for this is that the assets (mortgage and long-term securities) of the thrift institutions have a much

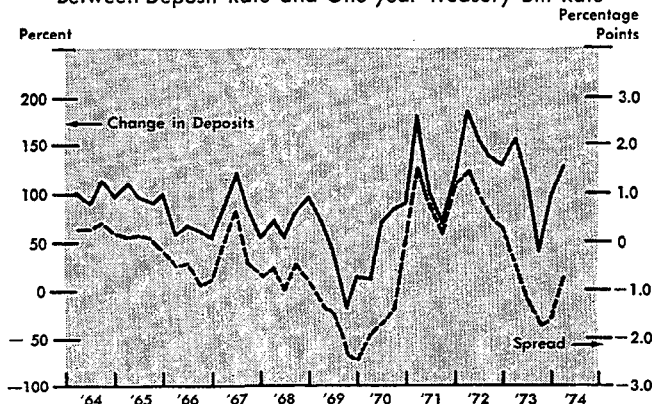
longer average maturity than their liabilities (deposits). When interest rates are rising, the average yield on the assets of the thrift institutions rises at a much slower rate than the yield of new assets. Changes in the yield on new assets, however, are indicative of the changes in the rate that these institutions would have to pay on most of their deposits in order to be competitive with current security rates. To pay such a rate, it is argued, would therefore cause these institutions to operate at a loss and could lead to insolvency.

Disintermediation is a highly predictable phenomenon. Chart 4 compares the spread between the intermediary deposit rate and the rate on 1-year U. S. Treasury bills to the net change in the sum of all SLA deposits, MSB deposits, and CB time deposits (excluding CDs greater than \$100,000). The latter figure is deflated by personal savings, which is the major source of new funds to be allocated to deposits and securities. The chart clearly shows that the flow of funds into the deposit institutions is closely related to the spread between the deposit rate and the Treasury bill rate. The chart also shows that major periods of disintermediation occurred in 1966, 1969, and 1973.<sup>6</sup> Disintermediation for the thrift institutions was more severe in the 1966 episode than it appears in the chart, however, since there was a shift out of deposits of MSBs and SLAs into CB liabilities. The figures in the chart rise substantially above

<sup>6</sup> Although not shown in Chart 3, the thrift institutions underwent another wrenching bout with disintermediation in the second and third quarters of 1974.

Chart 4  
**DISINTERMEDIATION:**

Net Change in Deposits at SLA's and MSB's Plus  
Net Change in Time Deposits (Less CD's) at CB's as a  
Percent of Personal Savings Compared to Spread  
Between Deposit Rate and One-year Treasury Bill Rate



Note: The deposit rate is a simple quarterly average of the effective rates on SLA shares, MSB deposits, and CB passbook savings.

Source: Board of Governors of the Federal Reserve System, Flow of Funds Accounts and Federal Reserve Bulletin.

100 percent at times because a change in the spread between the deposit rate and the security (Treasury bill) rate not only affects the allocation of current savings but also induces substantial shifts out of existing assets.

Recent periods of disintermediation have occurred immediately prior to the decline in the ratio of residential construction to GNP (shown in Chart 1); and, for that reason, disintermediation is generally thought to have been one of the major determinants of these short-run declines. As indicated earlier, disintermediation is generally thought to affect residential construction not only indirectly through the impact of the change in mortgage terms and mortgage loan availability, if rationing exists, on the demand for housing, but also directly through the availability of commitments to builders.

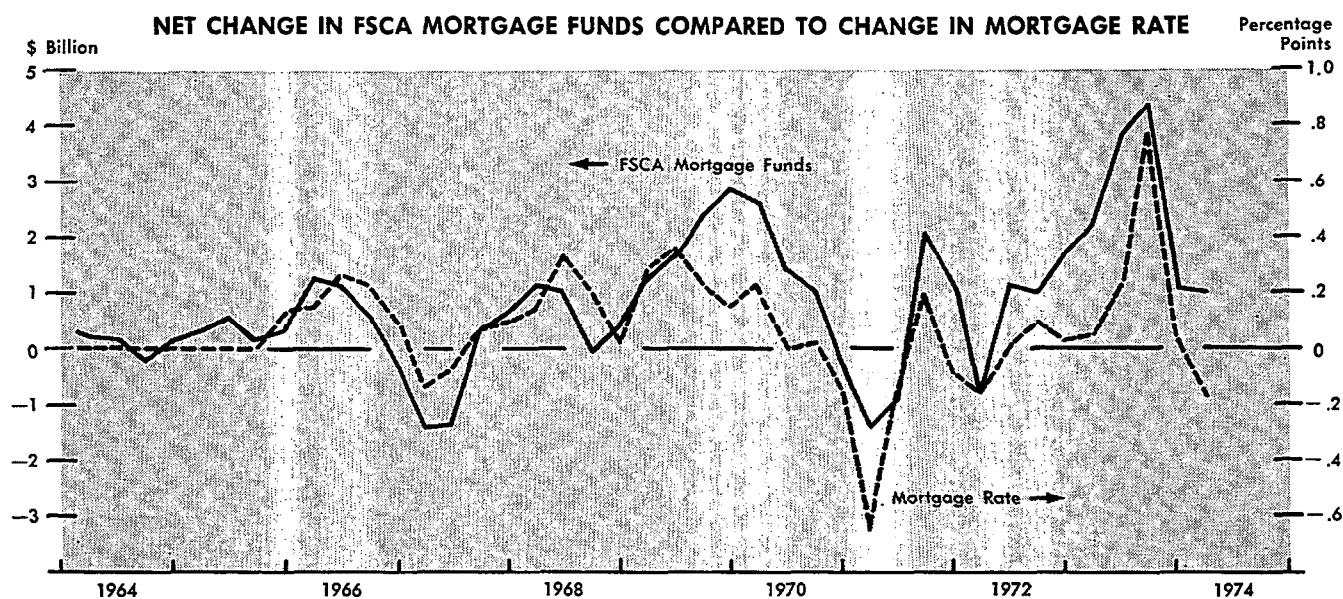
LICs acquire funds in the form of insurance reserves, (generally included under the label "contractual savings"), which are highly insensitive to interest rate movements. The LIC sector is, nevertheless, subject to a disintermediation of sorts, almost as predictable as that to which the deposit intermediaries are exposed. Laws in many states require LICs to provide policy loans to customers at fixed rates, generally 5 or 6 percent. When the security rate rises above this fixed rate, policyholders increase their demand for loans, which in turn decreases the supply of funds LICs have to invest in mortgages and securities. Major increases in demand for policy loans, which is the main cause of short-run fluctuations in LIC investable funds, occurred in 1966, 1969, and 1973.

Large commercial bank CDs greater than \$100,000 and demand deposits—the remaining sources of funds of the four traditional lenders—do not fit into the disintermediation framework. CDs can more logically be treated as a type of security; and, in periods when the CD rate has not been constrained by a maximum ceiling, the rate on newly issued CDs has been comparable to the rate on other securities of similar maturity and risk. Demand deposit holdings, although sensitive to movements in the security rate, are also responsive to movements in income. In any case, they are generally thought to have little effect on CB purchases of mortgages, as indicated below. The recent mortgage market entrants—FSCAs, FCs, and REITs—are not directly affected by disintermediation since they do not issue deposit liabilities to acquire funds.

**The Supply of Mortgage Credit** It is in the area of the supply of mortgage credit that the changes



Chart 5



Note: FHLB advances (less member association deposits) are included in FSCA figures. Mortgage pools backing GNMA-guaranteed securities are not included. The mortgage rate is a quarterly average of end of month rates.

Source: Flow of Funds Accounts and FHA.

in participation have been most dramatic in recent years.

*Federally-sponsored credit agencies* The role in the mortgage market of the Federal Government and Federally-sponsored credit agencies was greatly expanded in the latter half of the 1960's in reaction to the developments described in the first section of this article. The expanded Government activities can be divided into two types: demand stimulating and supply supporting.<sup>7</sup>

The major supply supporting Federally-sponsored credit agencies are the Federal Home Loan Bank Board (FHLB), the Federal National Mortgage Association (FNMA), and the Federal Home Loan Mortgage Corporation (FHLMC). The FHLB has been in existence since 1932 and provided substantial funds to SLAs prior to 1968. FNMA was also in existence prior to 1968; however, it was in that year that it was transformed from a Government agency to a quasi-Government agency. Since that time its function has expanded from that of providing a secondary market for FHA-VA loans to that of serving as a permanent lender of substantial magnitude. Most of the mortgages it purchases are originated by mortgage bankers. Lastly, the FHLMC, which is a branch of the FHLB, was created by the Home Finance Act of 1970 and serves a function similar to

that of FNMA, except that its operations are performed largely with SLAs. FNMA and FHLMC support the mortgage market directly by purchasing mortgages, while FHLB supports it indirectly by lending funds to SLAs.<sup>8</sup>

Chart 5 compares the quarterly net change in the total supply of funds to the residential mortgage market by the FSCAs with the quarterly changes in the mortgage rate. Three observations are suggested by the chart. First, and foremost, the total FSCA support of the market is highly sensitive to developments in the mortgage market. In particular, increases in the mortgage rate induce the FSCAs to increase the magnitude of their support, while decreases in the rate induce them to decrease their support. Second, as would be expected from the discussion above, a change in the relationship between the two curves occurred subsequent to the passage of the Housing and Urban Development Act of 1968, so that a given increase in the mortgage rate tended to induce a stronger total response from the FSCAs. Third, in recent years the net supply of funds has frequently been positive even in periods of declines in the mortgage rate. For instance, in the fourth quarter of 1971, when the mortgage rate was falling, the net contribution to the market by the FSCAs was over \$1 billion.

<sup>7</sup> The discussion of these activities will be brief. For a more comprehensive description of the demand stimulating and supply supporting activities, see [6] and [3], respectively.

<sup>8</sup> A fourth agency, the Government National Mortgage Association (GNMA), guarantees securities called "pass-throughs" backed by pools of FHA and VA mortgages. Over \$9 billion of these securities were issued in the 1970-73 period.

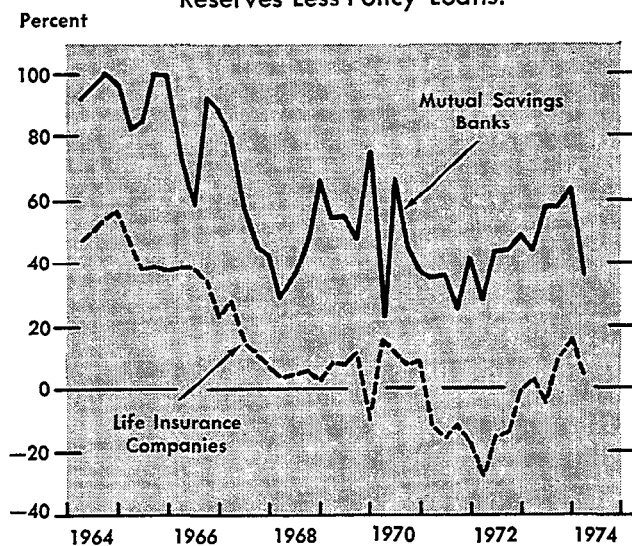
Chart 5, in aggregating over the various agencies, ignores the differences in the behavior of the two major agencies, FHLB and FNMA, in recent years. The behavior of FHLB has essentially been contracyclical: providing funds to SLAs during periods of disintermediation and withdrawing funds in subsequent periods, such as 1967 and 1971. This pattern is to some extent a result of the fact that the net supply of FHLB advances is partially determined by the behavior of SLAs, which have typically desired to repay advances in periods of ample deposit supply. SLA behavior is influenced, however, by policy weapons available to the FHLB, such as the rate charged on FHLB advances, liquidity requirements, and minimum down payment requirements on new mortgages.

FNMA's behavior has exhibited two facets. First, like the FHLB, its mortgage market support is very responsive to mortgage market developments. Unlike FHLB, however, FNMA has been a positive net investor in mortgages in virtually every quarter since its transformation in 1968. For instance, in the last three quarters of 1970, when the mortgage rate experienced a net decline, FNMA injected approximately \$3 billion into the mortgage market. Its total net injection of funds in the 1969-1973 period was over \$17 billion.

Chart 6

### MSB AND LIC MORTGAGE PURCHASES

Change in MSB Mortgages as a Percent of Change in Deposits and Change in LIC Mortgages as a Percent of Change in Reserves Less Policy Loans.



Note: MSB deposits and LIC reserves are four quarter moving averages ending on the current quarter.

Source: Flow of Funds Accounts.

*Savings and loan associations* SLAs remain the major private investor in the residential mortgage market, and their behavior has remained unchanged in the "new" mortgage market characterized by the greater participation of the FSCAs. Except for liquidity requirements, SLAs, for various historical and legal reasons, continue to channel virtually all of their deposits and FHLB advances into mortgages.

*Mutual savings banks* Until 1966, MSBs, like SLAs, channeled virtually all of their deposits into mortgages. Since that time, however, the MSB sector has definitely become a discretionary investor. Chart 6 shows that in recent periods MSBs have invested as little as 20 percent of their net inflow of deposits in mortgages. It is highly likely that the main reason for this behavioral change was the substantial decline in the late 1960's of the spread between the mortgage rate and other rates on alternative investments such as corporate bonds. Due to the commitment process, there are long distributed lags between a movement of the mortgage-corporate bond rate differential and its effect on the share of MSB deposits flowing into mortgages. The relationship is, therefore, difficult to show graphically. (The same is true for LICs and CBs.) Empirical studies have supported the view, however, that the fall in the spread was a major factor in the decision of MSBs to exercise more discretion and purchase fewer mortgages in recent years. (For example, see [14].)

*Life insurance companies* Like MSBs, LIC mortgage market behavior underwent major changes in the last decade. Chart 6 shows that starting in the mid-1960's LICs' net contribution to the mortgage market dropped fairly steadily to a point where in 1968-70 it was less than 10 percent of their net investable funds (new reserves less policy loans). In 1971 and 1972 there was actually a net withdrawal of funds from the market of almost \$3 billion, and in 1973 the net contribution was close to zero.

In actuality, the LIC sector had virtually withdrawn from the 1-4 family residential mortgage market by 1967, and there has been a net decline in their holdings of 1-4 family mortgages in every quarter since that time. In the late 1960's, however, the LIC sector's continued presence in the multi-family market was sufficient to keep the net change in its residential mortgage holdings positive. The willingness of the LICs to remain in the multi-family mortgage market was apparently based on the higher yields available there.<sup>9</sup> In the last three years, however,

<sup>9</sup> An interest rate series on income property loan commitments of 15 large LICs, constructed by the Life Insurance Association of America, fell only about 50 basis points relative to corporate bond rates in the late 1960's.



LICs' net purchase of multi-family mortgages has also declined as they have turned more toward the commercial mortgage and corporate bond markets.

*Commercial banks* Of the discretionary sectors, mortgage market behavior of CBs has been the least affected by the fall of the spread between the mortgage rate and rates on alternative investments in recent years. Most studies have concluded that the dominant factor underlying mortgage purchases of CBs is the movement in time deposits.<sup>10</sup> (There is little consensus on the importance of yield as a determinant.) Chart 7 compares the movement of the change in time deposits with the movement of the change in CB mortgage holdings, both of which boomed in the early 1970's. Although the fit is far from perfect, it does support the view that the flow of time deposits into CBs is an important determinant of mortgage purchases.

*Finance and mortgage companies and real estate investment trusts* FCs and REITs began to inject a substantial amount of funds into the mortgage market for the first time in the 1970's. The annual average of their combined contributions to the market grew from less than \$.5 billion in the latter half of the 1960's to \$3.7 billion in the 1970-1973 period.

REITs are mainly involved in short-term mortgage lending—principally construction and development loans—on income earning properties. Virtually all of the mortgage holdings of FCs, on the other hand, are home mortgages. A large proportion of the growth in these holdings was undoubtedly "second" mortgages. These mortgages, like first mortgages, are collateralized by housing, but the funds are often used for other purposes such as education and vacations.

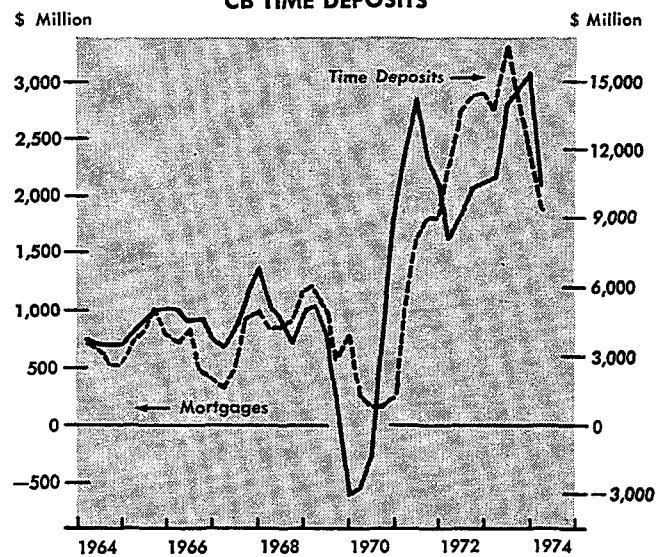
**The Demand for Mortgage Credit** The argument is often made, and the assumption is usually used in empirical studies of the mortgage market (for example, see [13, 14]) that, since residences serve as collateral for mortgages, the stock of residences should be closely related to the outstanding supply of mortgages, at least in the "long-run." In flow terms this implies that the net change in outstanding mortgage credit over any period should be closely related to the change in the housing stock, as measured by the volume of residential construction.

The ratio of the net change in outstanding residential mortgages to residential construction is shown in Chart 8. The shaded areas in the chart represent

<sup>10</sup> For a discussion of the factors underlying this relationship, see [12] and for econometric support of it, see [14].

Chart 7

**CHANGE IN CB MORTGAGE HOLDINGS  
COMPARED TO CHANGE IN  
CB TIME DEPOSITS**



Note: CB time deposits are a three quarter moving average ending on the preceding quarter.

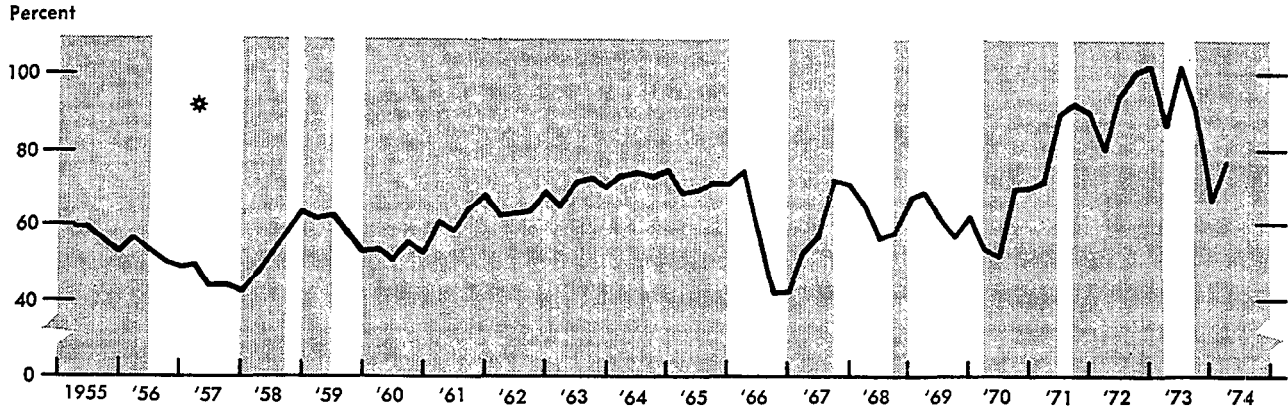
Source: Flow of Funds Accounts.

periods of significant increases in the mortgage rate. Three observations can be made from the chart. First, from 1955 to the end of the 1960's, the ratio of the change in mortgages to residential construction averaged around .6, although there appears to be a slight upward trend in the ratio up to the mid-1960's. Second, up until 1970 the short-run declines in the ratio were closely related to increases in the mortgage rate. And third, there was a jump in the ratio in the 1971-73 period to unprecedented levels; in three quarters the ratio was actually greater than one.

Both the short-run movements in the mortgage-residential construction ratio and the large increase in the ratio in the early 1970's are probably due to a number of factors, although the relative importance of each factor is difficult to assess. The short-run movements in the ratio are partially explained by the rise in required down payments as institutions, in periods of credit restraint, use higher down payments as a non-rate means of curtailing demand for funds. A second influence on the short-run movement of the mortgage-residential construction ratio occurs because mortgage credit is used to finance the purchase of both new and existing properties. (In fact, about two-thirds of mortgage lending is typically on existing properties.) When housing prices are rising, as they generally have been in recent years, the turnover of existing properties will increase the amount of mortgage credit outstanding, since the inflated value

Chart 8

## NET CHANGE IN MORTGAGE CREDIT AS A PERCENT OF RESIDENTIAL CONSTRUCTION



\* All non-shaded areas are for quarters in which the average mortgage rate rose at least ten basis points.

Source: Flow of Funds Accounts and FHA.

of the properties has to be financed. Rising mortgage rates and (presumably) expectations of lower rates in the future decrease the rate of turnover of existing houses, thereby putting downward pressure on the ratio of mortgage credit to residential construction. Third, expectations also probably affect the short-run relationship between new construction and mortgage financing as attempts are made to delay permanent financing until credit terms become more favorable.

The apparent shift in the long-run relationship between mortgage financing and residential construction in the 1970's would seem to indicate a significant loosening of the historical relationship between housing and mortgage financing. A major cause of this weakening was probably the introduction and widespread use of second mortgages to finance non-housing expenditures. The rise in the mortgage-residential construction ratio in the early 1970's was also affected by the substantial increase in the average loan-to-value ratio. This development, however, cannot explain a very large percentage of the increase. Whatever the cause, the apparent loosening of the relation between residential construction and mortgage financing could have significant implications for programs that are designed to stimulate residential construction through additions to the available supply of mortgage credit.

**Summary** The mortgage market in recent years has been characterized by several developments. First, the FSCAs have become one of the major participants in the market, not only as a stabilizing element, but also as a substantial net investor. Second, MSBs have evolved from a non-discretionary to a discretionary investor. Third, LICs, discretion-

ary investors in mortgages in earlier years, virtually withdrew from the market. Fourth, CBs injected unusually large amounts of funds into the market in the early 1970's apparently due to the large increases in time deposits. Fifth, the relationship between residential construction and increases in mortgages underwent a change, at least to some extent because of the expansion of the institutional means to provide mortgage funds for nonhousing purposes. Sixth, the thrift institutions underwent several major bouts with disintermediation.

#### IV. THE OBSERVED QUANTITY OF MORTGAGE CREDIT

This section will return to one of the questions asked at the beginning of the article: What factors contributed to the halt of the downward trend, and the subsequent sharp rise, in the proportion of loanable funds flowing into mortgages? Three possible contributing factors will be considered. The first two are structural changes on the supply side of the mortgage market, while the third is movements in the determinants of the demand for housing and, hence, mortgage credit.

**The FSCAs** The FSCAs injected approximately \$29 billion into the residential mortgage market from the end of 1968 through 1973. This injection amounted to 16 percent of the net increase in mortgage credit, and in several quarters the figure was over 40 percent. There is a wide variety of opinion as to what the net effect of the FSCA participation was (and is), and it seems probable that the debate will intensify in the future. According to

one side, the residential mortgage market would have been near collapse without the support of FNMA and the FHLB system, while according to the other, the supply supporting activities of these agencies have had virtually no net effect on the cost and quantity of mortgage credit.<sup>11</sup> At first glance, the latter opinion appears preposterous in view of the billions of dollars involved; however, it is based on very logical arguments. The crux of these arguments is that an action by the FSCAs will cause offsetting reactions by the other mortgage market participants that will result in "leakages" of funds from the mortgage market. These leakages can be divided into three types, related to the three parts of the previous section: (1) the supply of funds to the intermediaries by the public, (2) the supply of mortgage credit by the intermediaries, and (3) the demand for mortgage funds by the nonfinancial sectors.

*The first leakage* The first and most widely discussed leakage of funds out of the mortgage market following an FSCA action is potential additional disintermediation at the institutions that buy mortgages. The argument here is that the public has the option of buying deposits or securities. In order to finance their operations, the FSCAs must sell securities to the public, thereby exerting upward pressure on the security rate relative to the deposit rate. The increase in the spread between the security and deposit rates will induce the public to substitute securities for deposits (as shown in Chart 4), thereby decreasing the funds available to the intermediaries that buy mortgages. The result is that some portion of the funds used by the FSCAs are simply "recycled" through them *instead of* through the intermediaries.

It is very difficult to try to quantify the percentage of FSCA funds, if any, that were recycled in the manner described, and no attempt will be made to do so here. Two separate studies, however, have concluded that in the 1969 episode of disintermediation, the percentage of FSCA funds that would have flowed through the intermediaries into mortgages was at most 20-25 percent. [10, 19]

*The second leakage* A second, and perhaps more serious, potential leakage is that posed by the portfolio behavior of the discretionary private lenders. The supply oriented mortgage support programs of FHLB and FNMA are intended to affect the availability and, hence, the cost of mortgage credit. If, as seems likely, these programs succeed in lowering the mortgage rate relative to the security rate, one would

expect the discretionary sectors—LICs, MSBs, CBs—to react by decreasing their purchases of mortgages and increasing their purchases of securities. In the extreme case in which mortgages and securities are perfect substitutes and the discretionary intermediaries react with no lag, any action by the FSCAs would immediately induce an opposite reaction by the intermediaries that would neutralize the effect on mortgage supply.

It is important to distinguish here between the short-run and longer-run considerations. As shown earlier, the FSCA response to disintermediation and rising interest rates has been massive and immediate in the last two periods of disintermediation. The discretionary private intermediaries, however, react with much longer lags, so that even if mortgages and securities are close substitutes in their portfolios, the second leakage would be small in the short-run. Eventually, however, after the intermediaries fully react, the leakage would diminish the long-run effect of the FSCA action. Therefore, even if the long-run effect of the FSCA action is small, it could nevertheless serve to smooth out the short-run flow of funds into the mortgage market.

The recent history of the mortgage market suggests that this second leakage had indeed been a factor. The change in LIC and MSB mortgage market behavior coincided closely with, and was almost certainly caused by, the drop in the spread between the mortgage rate and the security (i.e., corporate bond) rate. To the extent that the FSCA behavior was a (or the) major factor causing this drop, it can be very reasonably argued that an indirect effect of the FSCA presence in the market was to reduce substantially LIC and MSB mortgage holdings. A long-run implication of this kind of reasoning is that a successful continuation of the FSCAs' policy of helping to keep the mortgage rate low relative to its historical relationship with the corporate bond rate might result in a continued reduction in the mortgage market participation of the discretionary intermediaries.

*The third leakage* The purpose of the FSCA activities is to provide a steadier and presumably larger flow of funds into the mortgage market to finance the purchase of new and existing houses. A third potential leakage following an injection of FSCA funds into the market is that the traditional link between home financing and mortgage issuance will be weakened as the increase in the availability of mortgage funds and the relatively low mortgage rate draw borrowers into the market to acquire funds for non-

<sup>11</sup> See [10] for the former opinion and [9] for the latter.

housing purposes. According to a recent exponent of this view, "Money and credit are fungible. Loans given for one purpose can be used for another, and there is no necessary or expected relation between the composition of credit and the composition of output. Attempts to facilitate housing by changing the composition of credit to increase the volume of mortgages have no effect." [1, p. 93] It is not clear whether this third leakage has, in fact, occurred; however, Chart 8 offers some support for the view that it has.

An important conceptual point is that arguments against the presence of the second and third leakage are based on the view that the mortgage market is substantially segmented from security markets. The absence of the second leakage assumes that holders of mortgages are impervious to mortgage-security yield differentials, while the absence of the third leakage implies that security and mortgage credit are not substitutable.

**CB Time Deposit Growth and FC-REIT Entrance into the Market** Other structural changes affecting the supply side of the market in recent years were the entrance of FCs and REITs into the market on a significant scale and the substantial growth in the use of CDs by CBs to raise funds. The latter development resulted in large inflows of time deposits, both absolutely and relative to total deposits, which probably were an important factor underlying the sharp jump in CB mortgage purchases shown in Chart 7. These developments added a significant amount of funds to the market in the period beginning in 1971, and, for that reason, they cannot be discounted as a factor contributing to the low relative level of the mortgage rate. Nevertheless, the long-run fall in the mortgage-corporate rate spread cannot be attributed to these developments, since they occurred a full five years after the spread began to fall.

**Demand Factors** The difficulty in assessing the impact of the FSCAs on the observed quantity of mortgage credit in recent years is also compounded by the fact that there were two major forces at work affecting the demand for mortgage credit and housing.

The first of these forces, shown in Table 1, was the sharp increase in the rate of net household formations in the latter half of the 1960's, stemming from the extended post-World War II baby boom. The rate of household formations has continued to increase in the first half of the 70's and is projected to increase at about the same rate in the second half of

the decade. Also, throughout the 1970's there will be a substantial increase in the 25 to 34 year old age group, which is the group responsible for most of the demand for increased home ownership.

The relatively low rate of household formations was likely the major factor causing the downward trend in the ratio of residential construction to GNP from the early 1950's to the middle 1960's. In the late 1960's, as net household formations began to increase while residential construction activity remained fairly low, the levels of rental and home-owner vacancies fell sharply, and stayed at fairly low levels despite the 1971-73 boom in residential construction. In view of this fact, it seems safe to conclude that the large increase in mortgage credit and residential construction in the early 70's was at least partially due to the large increase in housing needs arising from basic demographic factors.

A second factor affecting demand, at least through 1972, was the widened scope of the demand stimulating subsidized housing programs. The major components of these programs were enacted in the HUD Act of 1968: Section 235 rental subsidies and Section 236 home subsidies. The former provided landlords with mortgage interest subsidies so that they could charge rents below the "fair market rental," while the latter subsidized mortgage interest payments for low income families, thereby reducing the effective mortgage rate paid by such families. There had been, of course, subsidized housing programs prior to 1968, but after passage of the 1968 Act, the number of subsidized housing starts soared, and in 1970 and 1971 subsidized housing starts were 29 percent and 22 percent, respectively, of total housing starts. [6] The Section 235 and 236 subsidy

Table 1

**ESTIMATES AND PROJECTIONS  
OF NET HOUSEHOLD FORMATIONS**

(Millions of households)

	Total	Age of Head: 25-34 yrs. old
1960-1965	4.45	—
1965-1970	5.62	1.75
1970-1975	7.21	3.32
1975-1980	7.22	3.29
1980-1985	6.91	2.29
1985-1990	5.85	0.76

Source: U. S. Bureau of the Census, *Current Population Reports, Series p-25, no. 476, "Demographic Projections for the United States," Table 7.*

programs came to an abrupt halt in early 1973, however, when a moratorium, still in effect, was instituted on new commitments for subsidized housing.

A third type of demand stimulating measure, still in operation, is the "Tandem Plan" of the Government National Mortgage Association (GNMA). Under this program GNMA buys FHA-VA mortgages at higher than market prices—thereby reducing the effective mortgage rate for homeowners—and then resells them to FNMA or private institutions at the market price. The difference between the two prices is a housing subsidy paid by the U. S. Treasury.<sup>12</sup> There is almost unanimous agreement that financing costs are a significant determinant of mortgage and housing demand and to the extent that the expanded housing subsidy programs lowered this cost, they almost certainly affected the observed quantities of mortgage creation and residential construction. Beyond that statement little can be said, except that the area has received little attention from economists. (Most empirical studies of the housing and mortgage markets have ignored this aspect of the markets in recent years.)

**Summary** The question remains whether the FSCAs have had a significant impact on the supply of mortgage credit in recent years. Additional insight on this question can be gained by looking at the relative movement of the mortgage rate over the period. Certainly, the demand factors described above were not responsible for the fall in the spread between the mortgage and corporate bond rates; *ceterus paribus*, they should have had the opposite result. Moreover, the large increase in CB time deposits and the enlarged participation of FCs and REITs in the market cannot be given full credit either, since they did not occur until the 1970's, years after the fall in the mortgage-corporate bond rate spread. It would seem reasonable to conclude, therefore, that the FSCA activity has indeed significantly affected the quantity and cost of mortgage credit in recent years, despite the various leakages described above. Before making this conclusion, however, a number of additional factors relating to the nature of "the" mortgage rate will be considered in the next section.

<sup>12</sup> The three components of the plan announced by the Nixon Administration in May of this year to inject new funds into the mortgage market are all of this nature. The first component (potential \$3.3 billion) is a straightforward expansion of the GNMA Tandem Plan; the second component (potential \$3 billion) would have the FHLMC buy conventional mortgages at a below market yield (8.75%); and the third component (potential \$4 billion) would allow SLAs to borrow money from the FHLB at rates below what they would otherwise be charged.

## V. THE OBSERVED COST OF MORTGAGE CREDIT

The discussion in the previous section rested on the implicit assumption that the substantial fall in spread between the conventional mortgage rate and the corporate bond rate was necessarily the result of fundamental factors operating in the mortgage market. Comparing relative interest rate movements on different types of debt is a risky business at best, but, when mortgage rates are involved, making such comparisons is an especially hazardous undertaking. The reason is that there are many "technical" factors that affect the level of the computed mortgage rate and, hence, the differential between it and other rates.<sup>13</sup>

It is these technical factors that were generally used to explain the historical (pre-1966) 1.5 percent spread between the mortgage rate and the Aaa corporate bond rate shown in Chart 2.<sup>14</sup> The first technical factor thought to affect the spread is that the mortgage yields computed are gross and do not take into account the large administrative costs of mortgage acquisition and servicing. For holders of other securities, such as corporate and U. S. Government bonds, these costs are negligible. For mortgages, however, they have been estimated to be about 75 basis points. [16]

The second technical factor generally thought to affect the mortgage-corporate bond rate spread shown in Chart 2 is the risk of default associated with (conventional) mortgages. To the extent that default risk is greater for a mortgage than for a high-grade corporate bond, discretionary investors would be expected to demand a higher promised yield. For a particular mortgage the most commonly mentioned determinants of the risk of default are the loan-to-value ratio and the income of the borrower.

The third major factor generally cited as a contributor to the historical spread was the relative lack of marketability of mortgages. The term "marketability" is a somewhat vague one, but essentially it refers to the ability of the holder of an asset to

<sup>13</sup> Technical factors influencing yields are those pertaining to the characteristics of a particular debt instrument rather than to the underlying determinants of credit supply and demand. The discussion in this section is limited to the influence of these technical factors on conventional mortgage yields. See [20] for a comprehensive discussion of the technical factors that influence observed mortgage yields and [11] for an appraisal of the impact of these and other factors on the spread between conventional and government-insured mortgage yields.

<sup>14</sup> The discussion here is limited to the factors generally thought to affect the *long-run* spread. The mortgage rate has generally exhibited a smaller cyclical amplitude than the corporate bond rate, causing the spread between the two to fall in periods of rising interest rates and vice versa. [12] contains an extensive discussion of the possible factors causing the relatively small cyclical amplitude of the mortgage rate. While these factors might help to explain the fall in the mortgage-corporate bond rate spread in the late 1960's, they cannot explain why the spread continued to remain at historically low levels thereafter.

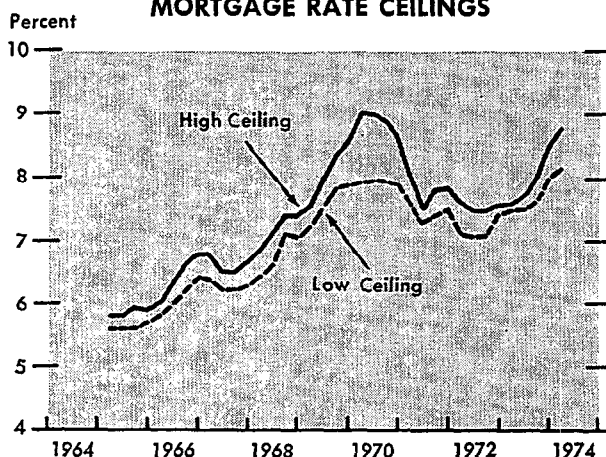
liquidate it relatively quickly with relatively small transactions costs. The more variation among debt instruments within a particular classification, such as mortgages, the more difficult it is to market these instruments. Traditionally, mortgages have been viewed as the least marketable of all long-term instruments because of their heterogeneous nature, compared to other securities. In particular, mortgages vary with respect to collateral provisions, state foreclosure laws, prepayment arrangements, and loan-to-value ratios. [20]

These three factors—administrative costs, risk of default, and lack of marketability—were generally cited as the major causes of the average 1.5 percent mortgage-corporate bond rate spread. Ideally, any attempt to isolate the factors that underlie the movement in the spread should start by examining these technical factors, which will be done briefly below. It should be noted, however, that since attempts to measure the past relative importance of these factors on the level of the spread have not been very successful, attempts to determine their importance as determinants of the changes in the spread are also likely to be unsatisfactory. At best, directions in the movements of the technical factors, and their impact on the spread, can be hypothesized.

A fourth technical factor affecting the spread, the effects of which are fairly recent, is state usury laws. The FHLB conventional mortgage used to compute the mortgage-corporate bond rate spread in Chart 2 is a weighted average of mortgage rates in 18 SMSAs in 16 different states. Several of these states have usury laws which set ceilings of 8 percent or less on mortgage rates. These ceilings have had, at times, a significant effect on the calculated mortgage rate, as shown in Chart 9 where a recomputed FHLB rate for 5 high ceiling (equal to or greater than 10 percent) states is compared with a recomputed FHLB rate for 5 low ceiling (equal to or less than 8 percent) states. Clearly, the average rate in the low ceiling states was affected by mortgage rate ceilings in 1969-1970 and again in 1973, but the ceilings had little, if any, effect in the intervening period. Therefore, it can be concluded that the state usury laws were partially responsible for the extreme low point in the mortgage-corporate bond rate spread in 1970. (Recomputation of the FHLB rate after elimination of the SMSA's in states with 8 percent mortgage rate ceilings shows the spread would have been about 0.0 instead of -0.5 percent.) The usury laws can be assigned little, if any, responsibility, however, for the longer-run fall in the spread between the mortgage rate and the corporate bond rate.

Chart 9

**AVERAGE MORTGAGE RATES FOR SMSA'S  
IN STATES WITH HIGH VS. LOW  
MORTGAGE RATE CEILINGS**



Note: High mortgage rate ceiling SMSA's are Dallas, San Francisco, Denver, Miami, and Boston. Low ceiling SMSA's are Cleveland, Baltimore, Chicago, Minneapolis, and New York.

Source: FHLB.

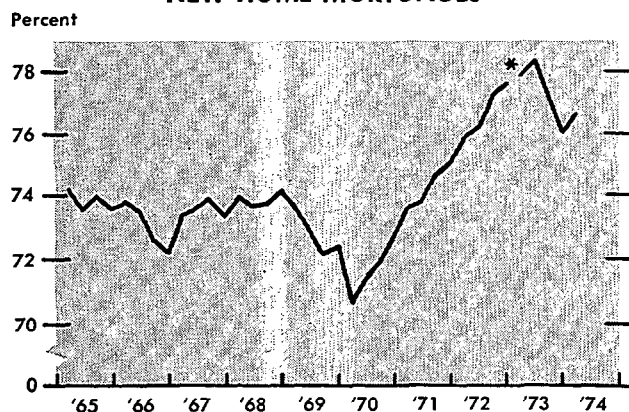
The question then is to what extent did changes in the first three technical factors described above contribute to the decline in the spread from its pre-1966 average level of 1.5 percent to its post-1970 average level of 0.2 percent. There have been a number of developments in recent years that might have affected the risk premium of (conventional) mortgages and, hence, the level of the mortgage rate relative to the Aaa corporate bond rate. The net effect of these developments, however, is difficult to assess. The first development was the growing use of private mortgage insurance on conventional mortgages. The charges for this insurance are paid directly by the borrower and do not enter into the computation of mortgage yields. The large growth in private mortgage insurance began in the latter half of the 1960's and should have exerted a downward influence on the mortgage rate in that period. A possible second factor having a similar effect on the mortgage risk premium was a favorable repayment history that reduced default expectations. [11] This factor, however, would have had a very gradual impact.

The other factor that might have affected the mortgage risk premium over the period is fluctuation in the average loan-to-price ratio. As shown in Chart 10, the ratio showed typical behavior in 1966, 1969, and 1973, by falling when the mortgage rate was rising. From 1970 to 1973, however, the loan-to-price ratio rose sharply, due probably both to liberalized regulations and to the abundant funds flowing into



Chart 10

### LOAN-TO-PRICE RATIO ON NEW HOME MORTGAGES



\* New series begins January, 1973.

Note: Data are quarterly averages of monthly figures.

Source: FHLB.

the deposit institutions. The rise in the loan-to-price ratio would tend to increase the risk associated with mortgages in those years. The most reasonable conclusion would appear to be that there is not sufficient evidence to suggest that the net effect of these factors over the period has been to reduce significantly the *ex ante* mortgage default risk.

Marketability of mortgages has been somewhat improved in recent years through the expanded activity of the FSCAs and private organizations. For conventional mortgages the major developments in this area occurred in 1970 when the FHLMC was created and when FNMA was given the authority to include conventional mortgages in its secondary market activity. In 1972, MGIC Mortgage Corporation, a private organization also began secondary market operations.<sup>15</sup> To the extent that lack of marketability is accepted as one of the factors creating the historical mortgage-corporate bond rate spread, these developments would be expected to reduce that spread somewhat. The developments occurred long after the spread had already fallen to record lows, however, and cannot, therefore, be cited as a major determinant of its decline.

Moreover, there does not appear to be any evidence that changes have occurred in the magnitude of administrative costs of originating and servicing mort-

gages that have significantly influenced the size of the wedge between the gross and net yield on mortgages.

In the absence of more persuasive evidence that a significant part of the fall in the mortgage rate relative to the corporate bond rate was due to technical factors, it can be tentatively concluded that the decline in the spread was due to the more fundamental developments in the mortgage market discussed in the last section. In particular, the conclusion that the supply supporting activities of the FSCAs have had the effect of increasing the net supply of mortgage credit and decreasing the mortgage rate relative to the corporate bond rate need not be altered. This conclusion is repugnant to many who believe that substantial substitution exists on both the demand and supply sides of any security market and attempts to manipulate the cost and availability of credit in one market will be quickly offset by the rational behavior of market participants.

The alternative view, taken here, is that institutional realities can create barriers to the smooth flow of funds that will enable certain yield relationships to change over time. In the case of the mortgage market, these realities are the lack of discretionary investment behavior of SLAs, the collateral relationship between housing and mortgages, the apparent lack of sensitivity to the mortgage rate as a determinant of CB mortgage demand, the long lags in the demand behavior of the discretionary investors, and, most important, the highly endogenous (i.e., sensitive to mortgage market developments) behavior of the FSCAs.

Of course, in order for the supply supporting activities of the FSCAs to have had an impact on residential construction, it is necessary not only that these activities influence the cost and availability of mortgage credit, but also that the cost and availability of mortgage credit influence residential construction. This article has not dealt explicitly with the latter question. It has been pointed out, however, that there is substantial agreement that mortgage financing costs do indeed have a significant influence on housing starts and, hence, on residential construction.<sup>16</sup>

<sup>16</sup> The downward movement of the ratio of residential construction to GNP in the first quarter of 1974, shown in Chart 1, has continued in the second and third quarters of 1974 and the ratio is apparently approaching the 3 percent level despite large injections of funds into the mortgage market by the FSCAs. The mortgage-corporate bond rate spread, however, remains at the low levels of recent years. The declining movement in the ratio of residential construction to GNP in recent months will undoubtedly be taken as supportive evidence by those who take the position that the supply-supporting activities of the FSCAs have virtually no effect on residential construction. The continued low level of the spread, on the other hand, will be pointed to by those who support the view that the FSCA's can successfully influence residential construction by exerting downward pressure on the mortgage rate.

<sup>15</sup> An additional program, scheduled to start in June 1974, that should improve mortgage marketability is the FHLMC's automated mortgage market information network (Amminent), which is intended to provide an organized secondary market for mortgages.

As a postscript to the above discussion it should be noted that several recent econometric studies of the mortgage (and housing) market have attempted to determine the effects of the supply supporting activities of the FSCAs. The lack of agreement of the conclusions of these studies emphasizes the point made earlier that the subject will continue to be a highly disputed one in the future. On the one side the conclusion is that the supply supporting activities of the FSCAs "all have very small effects on the mortgage rate—not even uniformly in the right direc-

tion—and, hence, on housing expenditures." [9, p. 259] On the other side, however, it is concluded that the effects have been substantial. A discussion of these papers is beyond the scope of this article. It is worth mentioning, however, that the study that attributed maximum impact to the supply supporting FSCAs on the cost and availability of mortgage credit [13] is one that explicitly accounted for the highly endogenous behavior of the FSCAs.

Timothy Q. Cook

## REFERENCES

1. Arcelus, Francisco, and Allan H. Meltzer, "The Markets for Housing and Housing Services," *Journal of Money Credit and Banking*, V (February 1973), 78-89.
2. Bosworth, Barry, and James S. Duesenberry, "A Flow of Funds Model and Its Implications," *Issues in Debt Management*, Federal Reserve Bank of Boston, 1973.
3. Davidson, Philip H., "Structure of the Residential Mortgage Market," *Monthly Review*, Federal Reserve Bank of Richmond (September 1972).
4. Fair, Ray C., *A Short-Run Forecasting Model of the United States Economy*, Lexington, Massachusetts: D. C. Heath and Company, 1971.
5. Federal Reserve Staff Study, *Ways to Moderate Fluctuations in Housing Construction*, Board of Governors of the Federal Reserve System, 1972.
6. "FHA Mortgage Insurance and Subsidies," *Business Conditions*, Federal Reserve Bank of Chicago (March 1972).
7. Fisher, Robert Moore, "The Availability of Mortgage Lending Commitments," Staff Economic Study # 54, Board of Governors of the Federal Reserve System, 1969.
8. Gibson, William E., "Protecting Homebuilding from Restrictive Credit Conditions," *Brookings Papers on Economic Activity*, 3 (1973), 647-91.
9. Gramlich, Edward M., and Dwight M. Jaffee, "The Behavior of the Three Sectors [Housing, Mortgage, and Deposit] Together," *Savings Deposits, Mortgages and Housing*, Edited by Edward M. Gramlich and Dwight M. Jaffee, D. C. Heath and Company, 1972.
10. Grebler, Leo, "Broadening the Sources of Funds for Residential Mortgages" in [5].
11. Grebler, Leo, "Comparative Study of Yields on Conventional and FHA-Insured Home Loans," Federal Home Loan Bank Board Invited Working Paper No. 7 (April 1973).
12. Guttentag, Jack M. and Morris Beck, *New Series on Home Mortgage Yields Since 1951*, New York: National Bureau of Economic Research, 1970.
13. Hendershott, Patric, "The Impact of American Government Financial Policies on American Financial Markets: Experiments with a Flow-of-Funds Model," Presented at the European Meeting of the Econometric Society in Oslo, Norway on August 31, 1973.
14. Jaffee, Dwight M., "An Econometric Model of the Mortgage Market," *Savings Deposits, Mortgages and Housing*, Edited by Edward M. Gramlich and Dwight M. Jaffee, D. C. Heath and Company, 1972.
15. Kalchbrenner, John H., "A Model of the Housing Sector," *Savings Deposits, Mortgages and Housing*, Edited by Edward M. Gramlich and Dwight M. Jaffee, D. C. Heath and Company, 1972.
16. Klamann, Saul, *The Post War Residential Mortgage Market*, New York: National Bureau of Economic Research, 1961.
17. Maisel, Sherman J., "The Effects of Monetary Policy on Expenditures in Specific Sectors of the Economy," *Journal of Political Economy*, 76 (July/August, 1968), 796-814.
18. *Report of the Commission on Mortgage Interest Rates to the President of the United States and to the Congress*, Washington, D. C.: U. S. Government Printing Office, 1969.
19. Swan, Craig, "Homebuilding: A Review of Experience," *Brookings Papers on Economic Activity*, 1 (1970), 48-70.
20. Winger, Alan R., "An Economic Analysis of Mortgages During Periods of Monetary Restraint: Characteristics and Acquisitions by Lenders" in [5].