The Allocative Efficiency of the Private
Housing Finance Sector

by

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The authors are solely responsible for the contents of this paper.

This paper presents a selective overview of the private residential finance sector. Our purpose is to examine how the private residential finance intermediaries direct the flow of funds from savers to the borrowers in the housing market, and to explore the effects of the current system and proposed changes in institutional arrangements upon the functioning of private housing finance. Our analysis is not exhaustive, but is intended to focus upon recent trends and policy issues that are thought to have potentially significant future impact on the adequacy of the housing finance system. The discussion is divided into six sections below. While our principal interest is in the private sector housing finance system, Section 1 will briefly discuss its interrelationship with the capital markets as a whole and with public sector residential finance institutions. Section 2 provides a background discussion of the current trends in housing and private housing finance, and is followed by an analysis of the efficiency of the private residential finance system (Section 3). The fourth section explores the consequences of the current system and the possible effects of several proposed policy modifications. In the fifth section, we present long-run projections for housing and associated financing. The last section summarizes our findings and suggests means for improving the allocation of financial resources to housing via the private sector.

1. The Structure of the Residential Finance Market

Since the end of World War II, the housing market has been one of the largest users of borrowed funds in the American economy. The total net public and private debt[1] outstanding in the United States between 1946 and 1973 rose from $396.6 billion to $2,525.8 billion, which represents an increase of more than six times. During the same period non-farm mortgage debt changed from $31.8 billion to $480.1 billion, which is an increase of approximately 15 times. Comparatively, for this same time period, private corporate debt changed by slightly less than 12 times, from $93.5 billion to $1,111.1 billion. Overall, mortgage debt constitutes about 21 percent of the change in outstanding total net public and private debt between 1946 and 1973.

The housing finance system can be divided into four major segments: the private sector primary lenders and originators of mortgages, the private sector secondary lenders (who generally do not specialize in originating mortgages), the government-sponsored mortgage market support ("second layer" support) institutions, and public and private insurers and guarantors of mortgages. As will be discussed in Section 2 below, although four private financial institutions, commercial banks, life insurance companies, mutual saving banks, and savings and loan associations (s&l's), hold the bulk of the long-term residential mortgage debt and construction loans, their lending activities are supplemented and complemented by several public agencies and private finance institutions. Historically, the largest holders of residential mortgages are s&l's, who have increased their share to almost 50 percent of the total home mortgage debt outstanding.

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[1] Council of Economic Advisers, Economic Report of the President (Washington, D.C.: U.S. Government Printing Office, 1975), p. 323, Table C-63.

Since the 1930's, the government has established or sponsored a number of institutions designed to facilitate the financing of residential housing, enhance the liquidity of the mortgage market and provide direct support for selected mortgages. The principal existing "second layer" support governmental institutions are the Federal Home Loan Bank Board System (FHLBB), the Federal National Mortgage Association (FNMA), the Farmers Home Administration (FmHA), the Government National Mortgage Association (GNMA), and the Federal Home Loan Mortgage Corporation (FHLMC).

By insuring or guaranteeing the prompt payment of principal and interest on individual mortgages, as well as the payment of claims on default, the .Federal Housing Administration (FHA) and the Veterans Administration (VA), as the principal Government mortgage insurers and guarantors, have contributed to the marketability of mortgages by decreasing risks of mortgage investment. This enables larger quantities of mortgages to be lumped into saleable blocks and exchanged on the secondary market with relative safety for the investor. [Of special interest in this paper (Section 4-b below) is the more recent growth of private sector mortgage insurance.]

Two areas that deserve mention, though beyond the principal focus of this paper, are the efforts of Government-sponsored agencies to moderate short-run fluctuations in the supply of mortgage credit and to affect the long-run values of mortgage interest rates and the quantity of mortgage credit outstanding. It is important to distinguish between short-run fluctuations and long-run values of mortgage variables in assessing the Government's effectiveness on the housing finance system. We believe that Government-sponsored agencies can (and do) have significant short-run impacts on the mortgage market and residential construction activity, while having somewhat less effect on the long-run values of mortgage variables and the housing stocks.

Monetary phenomena play a major role in the market for housing finance. There exist differing views about the magnitudes of effects of monetary policy on total consumption or investment, and the relative efficacy of monetary and fiscal policy. However, there appears to be more agreement that monetary policy has a powerful and pervasive effect on residential construction activity and housing finance through the markets for savings deposits, mortgages and residential construction.

The monetary impact is believed to operate through both the cost of capital and capital rationing (i.e., interest rates and credit availability). Credit rationing by mortgage-lending institutions is likely to be most severe when overall credit conditions are tightest, leading to a reduction in the volume of mortgage lending, with interest rates not adjusting upward either sufficiently or quickly enough to clear the market. It is during these periods of severe credit rationing that Government-sponsored credit agencies can exert their largest impact, as they have in recent times, by increasing the supply of mortgage credit and reducing the extent of credit rationing.

It can reasonably be argued that the longer-run effectiveness of the Government-sponsored credit agencies to increase mortgage flows and perhaps also to lower mortgage yields is probably less potent. As the actions of these institutions begin to lower mortgage yields, private investors may seek relatively more attractive investment opportunities in non-mortgage securities. Thus, the increase in mortgage credit flows created by the public sector may, to some degree, be offset by reductions in private sector lending to mortgage markets.

Of course, Government actions have had several significant and lasting effects where they have, in essence, changed the characteristics of the mortgage investment or the nature of the market place. It is clear that

the Government over the long-run has reduced the risk of investing in major types of mortgages by providing public sector mortgage insurance and pooling risks into mortgage backed securities. Also, it has encouraged the development of private secondary markets and facilitated the flow of funds between geographically-isolated markets.

2. Changes in the Private Market Since the Second World War

As a background for discussing the post-World War II developments in the
financing of housing, it may be useful to summarize the long-run trend in the
relative importance of housing to the total assets of households and to re-
lated economic variables.[1] According to estimates by Raymond W. Goldsmith
and Robert E. Lipsey,[2] the share of residential real estate in total assets
of nonfarm households was relatively constant at about 25% over the period
from 1912 through 1958.[3] Unpublished estimates by Helen Stone Tice of the
Federal Reserve Board from 1958 through 1969 for owner-occupied homes show
a slight decline in the ratio of market value of homes to total household
assets, probably reflecting the surge in common stock prices over most of
this period. However, the current ratio of homes to total household assets
is likely to be fully as high as in the 1950's as a result of the upward
movement in house prices in recent years in conjunction with the depressed
state of the stock market.

Thus there has been little secular movement in the relative importance
of the current dollar value of housing in total household assets for more
than a half century,and an upward movement in the ratio of housing to dis-
posable income.[4] However, in view of the more rapid rise in housing prices

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[1] It is, also, important to note that since the Second World War there has
been, on average, a marked increase in the typical household's level of
housing consumption. This change is a complex phenomenon, and is discussed
in detail, using Census information, in Appendix A below.

[2] Studies in the National Balance Sheet of the United States, Vol. 1, Prince-
ton University Press, 1963, p. 257.

[3] Leo Grebler, David M. Blank and Louis Winnick (Capital Formation in Resi-
dential Real Estate, Princeton University Press, 1956, p. 42) report a sub-
stantial decline in the constant dollar ratio of non-farm residential to
gross capital formation over this period and some downward movement in the
ratio for net capital formation.

[4] Housing consumption in the United States, at least in nominal terms, appears
to constitute a higher proportion of total consumption than in other coun-
tries generally. See Richard Netzer, Housing Taxation and Housing Policy,
The Brookings Institution, 1967.

than in consumption prices generally, the increase in the current dollar

ratio of housing to income would be largely dissipated and might even be

reversed if the corresponding constant dollar ratio were computed. More-

over, for the past year the level of housing investment in constant dollars

has been extremely depressed as a result of high interest rates and probably

some capital rationing affecting the supply of mortgage funds, and depressed

real income and high housing prices affecting the demand for funds. There

is substantial concern that high interest rates and high housing prices may

continue for some time to depress the level of new housing.

The ratio of outstanding mortgages to the current dollar value of homes

increased moderately in the 1920's, remained relatively constant until the

early 1950's and then moved substantially upward for most of the next two

decades.[1] In view of the developments mentioned above, the ratio of mort-

gages to home value declined somewhat over the past year.

As Table 2-1 indicates, the ratio of home mortgages to the total of all

credit market instruments, exclusive of equities, increased substantially from

1946 to 1955 and then showed little change thereafter. A generally similar

picture is provided by the ratio to credit market instruments, inclusive of

equities, except for a further increase from the end of 1970 to the end of

1974, again reflecting the depressed state of the equity markets at the

latter date.

An increasing share of mortgage debt over this period was held by sav-

ings and loan associations (s&l's), with the share increasing from 29.7%

in 1946 to 48.0% in 1974 (Table 2-2). Life insurance companies exhibited

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[1]Goldsmith and Lipsey, op. cit., p. 292 and Allan H. Meltzer, "Credit
Availability and Economic Decisions: Some Evidence from the Housing and
Mortgage Markets," Journal of Finance, June 1974, p. 765.

Table 2-1

Ratios of Home Mortgages to Total of
Credit Market Instruments Held by Both
Institutions and Individuals, 1946-1974

(Percent)

	Year						
	1946	1950	1955	1960	1965	1970	1974
Ratio to Credit Market Instruments Excluding Equity	8.3	13.0	17.6	20.8	22.7	21.5	21.8
Ratio to Credit Market Instruments Including Equity	6.3	9.7	11.4	13.2	13.5	13.7	16.9

Source: Federal Reserve Board, Flow of Funds Accounts 1945-1972 and Flow of Funds, Assets and Liabilities Outstanding, 1974.

Table 2-2

Ratios of Home Mortgages Held by Different
Financial Institutions and Individuals to Total Home
Mortgages Outstanding, 1946-1974

(Percent)

Type of Holder	Year						
	1946	1950	1955	1960	1965	1970	1974
Savings & Loan Associations	29.7	29.0	34.0	39.2	44.3	44.6	48.0
Commercial Banks	19.9	21.0	17.1	13.6	14.3	15.1	17.7
Mutual Sav. Banks	8.8	9.5	12.6	13.0	14.1	13.3	10.7
Life Insurance Cos.	11.1	18.8	20.0	17.6	13.9	9.5	5.3
Priv. Pension Funds	0.1	0.2	0.4	0.9	1.6	1.5	0.6
REITS	0.0	0.0	0.0	0.0	0.0	0.2	1.0
Other Financial Institutions[1]	3.9	4.9	5.9	7.4	5.2	11.0	14.2
Households	26.6	16.5	10.0	8.3	6.4	4.6	2.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Include state and local government, U.S. government, credit unions, finance companies, and sponsored credit agencies.

Source: Federal Reserve Board, Flow of Funds Accounts 1945-1972, August 1973 and Flow of Funds, Assets and Liabilities Outstanding, 1974.

the largest decline in the shares of mortgage-debt held, with commercial banks and mutual savings banks showing no clear trend over the period as a whole. Other financial institutions, including notably Government-sponsored credit agencies, like the s&l's greatly increased their share in home mortgages held,from 3.9% in 1946 to 14.2% in 1976, with most of the increase occurring after 1965.

It is interesting to note that while s&l's were becoming an increasingly important part of the mortgage market, their ratio of home mortgages to total financial assets held decreased fairly steadily subsequent to 1960, though the overall change was fairly moderate (Table 2-3). Both mutual savings banks and life insurance companies also exhibited a decline in the relative importance of home mortgages in their portfolios, with an especially large movement for life insurance companies. Commercial banks which had the lowest portfolio share of these four institutional groups in home mortgages at the beginning of this period showed little change in the relative importance of these mortgages. The resulting composition of assets held by these different institutional groups at the end of 1974 is presented in Table 2-4. Only two groups held more than 10% of their financial asset in home mortgages--s&l's with 68.2% and mutual savings banks with 40.7%.

The increased importance of s&l's in the home mortgage market over the postwar period is attributable in large part to the more rapid increase in their total assets than for other institutional groups, especially in the period up to the mid-1960's (Table 2- 5). Subsequent to that time, of all the different institutional groups, only commercial banks experienced a substantial increase in their share of total financial assets.

Table 2-3

Ratios of Home Mortgages to Total Financial Assets
of Different Financial Institutions, 1950-1974

(Percent)

Type of Institution	1950	1955	1960	1965	1970	1974
Savings & Loan Associations	77.6	79.7	77.5	72.7	70.9	68.2
Mutual Savings Banks	19.2	35.4	45.3	51.6	47.3	40.7
Commerical Banks	6.3	8.1	8.5	9.0	8.5	9.5
Life Insurance Cos.	13.5	20.1	21.5	19.2	13.3	8.8
Private Pension Funds	1.5	1.8	3.4	4.5	3.9	2.3
REITS	0.0	0.0	0.0	0.0	69.5	25.6
Other Financial Institutions[1]	6.4	4.5	3.6	5.0	4.6	6.8
TOTAL	12.4	17.8	20.4	20.9	18.5	18.4

[1] Include credit unions, finance companies, open-end investment companies and security brokers and dealers.

Source: Federal Reserve Board,Flow of Funds Accounts 1945-1972, August 1973 and Flow of Funds, Assets and Liabilities Outstanding, 1974.

Table 2-4

Asset Composition of Different Financial Institutions,
December 31, 1974

(Percent)

Type of Institution	Type of Asset				
	Demand, Time & Sav. Deposits (and Currency)	Corporate Shares	Home Mortgages	Credit Market Instruments Other Than Home Mortgages	Security & Trade Credit and Miscellaneous
Savings & Loan Associations	1.4	0.0	68.2	25.9	4.6
Savings Banks	1.6	3.8	40.7	51.7	2.4
Commercial Banks	0.1	0.1	9.5	82.5	7.8
Life Insurance Cos.	0.8	8.7	8.8	76.7	5.0
Other Insurance Cos.	2.3	18.3	0.0	69.0	10.4
Private Pension Funds	3.5	55.6	2.3	33.7	4.8
State & Local Govt. Retirement Funds	1.0	23.5	0.0	75.4	0.0
Other Financial Institutions[1]	4.0	15.2	8.5	67.8	3.7

[1] Include credit unions, finance companies, reits, open-end investment companies and security brokers and dealers.

Source: Federal Reserve Board, Flow of Funds, Assets and Liabilities Outstanding, 1974.

Table 2-5

Ratios of Financial Assets Held by Different
Financial Institutions to Total Financial Assets
Held by All Financial Institutions, 1950-1974

(Percent)

Type of Institution	Year					
	1950	1955	1960	1965	1970	1974
Commerical Banks	51.0	43.5	38.0	36.5	37.4	42.6
Savings & Loan Associations	5.8	8.9	12.1	14.1	13.4	15.0
Mutual Savings Banks	7.7	7.4	6.8	6.3	6.0	5.6
Life Insurance Cos.	21.5	20.7	20.0	16.7	15.3	13.0
Other Insurance Cos.	4.0	4.6	4.4	4.0	3.8	3.5
Private Pension Funds	2.3	4.3	6.4	8.0	8.4	6.0
State & Local Govt. Retirement Funds	1.7	2.5	3.3	3.6	4.4	4.8
Other Financial Institutions[1]	6.0	8.1	9.4	10.9	11.1	9.6

[1] Include credit unions, finance companies, real estate investment companies, security brokers and dealers, and open-end investment companies.

Source: Federal Reserve Board, Flow of Funds Accounts, 1945-1972, August 1973, and Flow of Funds, Assets and Liabilities Outstanding, 1974.

3. Efficiency of the Private Residential Finance System

    a. Meaning of efficiency

The measurement of efficiency of the housing finance system depends upon the perceived functions it is intended to serve.[1] While many specific functional performance goals for the housing finance system have been suggested by economists, there are three global, inter-related objectives for the housing finance system that span these specific suggestions. These relate to operational efficiency, allocative efficiency and equity or distributional considerations. Operational efficiency signifies that the housing finance system should be organized in order to minimize the use of resources (i.e., social costs) for each level of housing finance and distribution of social risk. Allocative efficiency of the housing finance system means that, for a given level of resources, the social returns are maximized for each risk distribution. Finally, equity or distributional considerations require that the housing finance system be organized such that costs, risks, and resource utilizations are equitably spread across society. The degree to which these objectives are met through private financing institutions measures the efficiency of the private housing finance system.

    b. The housing finance system and overall societal well-being

In principle, the objective in this discussion is the evaluation of the social desirability of alternative methods and mechanisms through which the private sector provides residential financing. Each set of alternative housing finance arrangements has implications for the allocative

[1]See for example Jack Guttentag and Robert H. Keeley, "Recommendations for a More Efficient System of Housing Finance," Savings and Residential Financing: 1970 Conference Proceedings (Chicago: United States Savings and Loan League) pp. 115-128.

efficiency of resources and the distribution of rewards throughout the economy. Although economists may not be able to prescribe a method by which one state of the economy can be made optimal, policy actions are generally available for changing an existing situation. It is obviously important to know in such cases whether a contemplated change is desirable.

The implied problem of choice among different policy alternatives is one of welfare or normative economics, and, in the broadest sense, depends upon the satisfaction levels of all consumers. But almost every alternative to be considered will have favorable effects on some groups and unfavorable effects on others. In principle, the economist can determine whether a particular state of the economy involves an efficient allocation of resources, and can analyze the consequences in moving from one state of circumstances to another. However, he has no special competence to conclude that particular sets of institutional arrangements, if they imply unfavorable effects upon some groups, are truly preferable for society.

As a starting point an economist typically considers the notion of Pareto optimality as a basis for evaluating societal well-being. A state of the world is considered Pareto optimal if the current use of resources cannot be reorganized to increase the well-being of one or more individuals without decreasing the well-being of others. Conversely, a state of the world is Pareto non-optimal if at least one person's well-being can be improved without harming anyone else. Put differently, a positive "social dividend" can be achieved by a move from a non-Pareto allocation to a Pareto optimal position. For the latter reason, Pareto conditions are frequently considered a plausible welfare target toward which society should move.

Perfect competition is often considered to be a socially desirable market form because it normally results in the fulfillment of necessary

(first-order) conditions for Pareto optimality. It is in this sense that perfect competition represents a welfare optimum.[1] On the other hand, imperfect competition usually engenders violations in the conditions necessary for Pareto optimality. The situation is further complicated by the existence of external effects[2] in consumption and production. In general,

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[1]Of course, perfect competition does not guarantee that second-order conditions are satisfied or ensure that the distribution of income (or utility) is optimal in any sense. Furthermore, there are an infinite number of possible Pareto optimality points, each depending upon the initial distribution of resources, prices, and utility functions, all of which are equally satisfactory without an additional "ethical" judgment.

[2]The optimum allocation theorems of perfect competition assume that each economic unit affects other units only through its buying and selling in the markets for factors, goods, and services. Frequently, of course, economic units affect the welfare of other units directly in many ways other than through their interactions in buying and selling commodities on the market. The ability of an economic unit to affect the well-being of other units through, for example, its consumption or production activities, without directly interacting in the market, is called "external effects." For instance, "neighborhood effects" in real estate are a well-known illustration of external effects on local land markets.

perfectly competitive markets will not lead to Pareto optimality if external
effects, such as public goods, exist.[1]

An illustration will serve to focus on the complications of evaluating
societal well-being by using efficiency measurement for only the residential
finance system where there exist inter-dependent social objectives beyond
the housing sector. Consider the social costs implied by sharp fluctuations
in housing construction (besides the effects on the adequacy of the housing
stock itself). A "stop-and-go" construction cycle is likely to contribute
to economic inefficiencies because of the difficulties associated with at-
tracting and releasing labor and capital over the cycle. It, also, has been
suggested that larger and more efficient firms tend to be discouraged by the
cyclical patterns from entering the construction industry. To the extent
short cycles in housing activity could be moderated through a smoothing out
of credit availability by changing residential financing institutions, it is
plausible to claim that the construction industry would become more efficient
over time. In terms of the discussion about efficiency measures, the resource
costs and the distribution and total magnitude of risks for providing a speci-
fic level of housing over time should be reduced. However, short-term varia-
tions in construction historically have been a crucial component in overall
economic stabilization by moderating inflationary pressures during periods
of excess demand and by contributing to recovery during economic downturns.

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[1] If a public good exists, Pareto optimality of consumption requires that the
sum of the marginal rates of substitution between the public good and ordi-
nary goods equal the corresponding marginal rates of technical (production)
transformation. For production, the price must be equal to social marginal
costs of production (rather than private marginal costs). Some economists
have argued that appropriately designed taxes and subsidies can be used to
lead a market economy, even under conditions of external effects, from a
Pareto-non-optimal allocation to a Pareto-optimal allocation. See J. de V.
Graaf, Theoretical Welfare Economics (London: Cambridge University Press,
1957) and J. Quirk and R. Saposnik, Introduction to General Equilibrium
Theory and Welfare Economics (New York: McGraw-Hill Book Co., 1968) for
fuller statements about these issues.

Revisions in the housing finance system that moderate the housing credit cycle and, thereby, building cycle may affect adversely the efficient attainment of the goal of overall economic stability. Put differently, increased efficiency in the housing finance system does not always have to yield a welfare superior situation for the economy as a whole.

This example suggests why economists have claimed that in evaluating societal well-being the theory of second best suggests that if one or more of the (first order) Pareto conditions are <u>not</u> satisfied, say, because of institutional constraints, it is normally neither necessary nor desirable to satisfy the remaining Pareto conditions. This theory, in essence, questions the desirability of changes that attain Pareto conditions on a piece-meal basis for markets considered in isolation. Proponents of a sub-optimization approach counter that Pareto conditions can provide a reasonable guideline for policy choices, if sufficient inter-market separability exists. That is, if changes of prices and outputs in one market do not affect the marginal rates of substitution in other markets, following Pareto guidelines will increase economic efficiency. In much of the discussion that follows, implicitly we have adopted the latter assumption as a working approximation.

c. Differential interest rates

Subject to the caveats above, a rudimentary but suggestive measure of changes in the efficiency of the housing finance system is the difference between the yields on mortgages and comparable non-mortgage securities. In particular, as this differential falls, it is argued that the economy is allocating resources across competing activities more efficiently. Table 3-1 demonstrates that there is an apparent secular reduction in this differential. While undoubtedly there are other factors that partially explain this trend, it is very likely to reflect increased allocative efficiency in the housing finance system. This conclusion must be modified to the extent that usury

Table 3-1

Comparative Interest Rate Yields, 1955-1974
(Per Cent)

Year	Conventional Mortgages for New Homes[1]	Moody Aaa Corporate Bonds (Seasoned)	Conventional Rate Minus Moody Aaa Rate
1955	5.14	3.06	2.08
1960	6.22	4.41	1.81
1962	5.93	4.33	1.60
1965	5.83	4.49	1.34
1966	6.40	5.13	1.27
1967	6.53	5.51	1.02
1968	7.12	6.68	.44
1969	7.99	7.03	.96
1970	8.52	8.04	.48
1971	7.55	7.39	.16
1972	7.64	7.21	.43
1973	8.30	7.44	.86
1974	9.22	8.57	.65

[1]HUD series of primary yields for conventional mortgages on new homes.
Source: Federal Reserve Bulletin.

laws applicable to home mortgages in various states would tend to depress average mortgage rates when general interest rates are rising, as is the case in the latter portion of the time period considered in Table 3-1.[1]

Furthermore, in some local or regional markets, mortgage rates may be depressed relative to general market yields by an abundant supply of mortgage funds that remain immobile, with shortages elsewhere, because of limited flexibility of financial institutions to shift funds geographically.[2] In addition, there may be non-economic pressures on lenders not to adjust interest rates, especially when interest rates are rising, in order to maintain supply equal to demand.[3] In spite of these modifying considerations, on balance, it is fair to believe that efficiency of the housing finance system has increased.

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[1]Of course, it might be possible to explain some part of the behavior of mortgage interest rates (even when usury ceilings do not apply) on the basis of lender portfolio adjustments. For example, lenders may choose to upgrade the average quality of mortgages held by changing non-price terms on the loan contracts. Under these hypothesized conditions, the falling differential may partly reflect the reduction in mortgage portfolio risk.

[2]See Jack M. Guttentag, "Changes in the Structure of the Residential Mortgage Market: Analysis and Proposals," in Study of the Savings and Loan Industry Vol. IV, pp. 1545-1556 (Appendix A).

[3]See Jack M. Guttentag and Morris Beck, New Series on Home Mortgage Yields Since 1951 (New York: NBER, Occasional Paper Number 92, 1970, p. 13.

4. Critique of Private Financial Institutions and Related Mechanisms for Improving Housing Markets

    a. Specialized financing intermediaries

Historically, perhaps the two most important developments in the private sector to facilitate the financing of housing were the emergence of long-term amortized mortgages in the 1930's and the growth of specialized housing financing intermediaries, especially the savings and loan associations (s&l's), since the end of the Second World War. Since a significant part of the long-run growth of s&l's has been attributable to Government policies, and these policies have been criticized both in the Hunt Commission's Report and more severely in some recent studies by economists, it may be useful to briefly appraise the rationale of public policy encouragement of specialiced housing financing institutions.

There is ample evidence that the housing markets are affected more severely than the capital markets generally in periods of financial stringency. This result presumably reflects the size of the required down-payment in the purchase of a home relative to the typical householder's resources, the importance of interest costs in the total cost of home ownership, and the unfavorable effect on mortgage rates and probably on capital availability of the fragmented nature of mortgage markets compared to the markets for most other financial instruments. Because of these special influences affecting the housing and mortgage markets, specialized institutions such as the s&l's may contribute to allocational efficiency over the business cycle as a whole by minimizing interest rate differentials between mortgage and other rates (holding social risk and costs constant), with expected availability likely to play a much less important role secularly than cyclically.

Any such narrowing of the differentials between mortgage and other interest rates,which would of course be expected to have a favorable long-run impact on housing investment, would in the absence of Government financial assistance

presumably result from a more correct assessment of mortgage risk, efficiency

in the diversification of risk, scale and other cost economies attached to

specialization in mortgages, and--to the extent markets are compartmentalized--

to a greater availability of funds for financing housing. Government financial

incentives to specialized housing financing institutions would also be expected

to be reflected in the narrowing of rate differentials. In the short-run dur-

ing periods of credit stringency, the existence of these institutions may also

add significantly to capital availability totally apart from interest rate ef-

fects since home buyers are not likely to be high priority customers of commer-

cial banks and, in general, do not have direct access to the capital markets.

The fact that there is reason to believe that the growth of specialized

financing institutions may have reduced the relative cost of mortgage financ-

ing and may have had an important stimulating effect on housing investment

does not mean it did have such an effect. More important, even it if did have

such an effect, there is still a question whether an equivalent (or greater)

impact could not be achieved more efficiently.

An examination of trends in the relative cost of mortgage financing indi-

cates that the risk differential between average interest rates for conventional

first mortgages and the Moody's average corporate bond yield which had generally

been over 2% until the early 1950's was greatly reduced by the mid-1960's and

was largely eliminated by 1974.[1] Comparing the average interest rate for conven-

tional first mortgages and the Moody's AAA corporate bond yield, the trends in

the risk differential were quite similar but the effective mortgage interest rate

was still close to ½ of 1% above the AAA yield at the end of the period (Table

3-1). Assuming that any capital rationing over these years was significant

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[1] Since the average maturity on mortgages was shorter than on long-term corporate
bonds, and intermediate-term bonds were associated with lower interest costs than
long-term bonds, even in 1974 mortgage rates were still somewhat above bond rates
of comparable maturity.

only in selected periods of credit stringency, that the risk of conventional

first mortgages was little different from the risk of an average corporate

bond,[1] and that initial and continuing costs associated with making the two

types of loans did not differ by more than ½ of 1% annually, the narrowing of

interest rate differentials implies an improvement in financial market effi-

ciency. Totally apart from its effect on market efficiency, the lowering of

the risk premium on mortgage rates clearly stimulated the demand not only for

mortgages but probably also for housing since a key element in the total cost

of housing services was appreciably reduced.

This change in the structure of interest rates occurred during the period

subsequent to 1950 when s&l's had their greatest growth both in absolute terms

and relative to other suppliers of mortgage funds. Thus, specialized private

housing financing intermediaries may have played a substantial role in the

relative improvement in mortgage rates. The only other obvious institutional

development over this period which may have exercised a similar influence on

mortgage rates was the very large growth in home mortgage acquisitions by

federally sponsored credit agencies, but this did not occur until after the

mid-1960's.

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[1]See Irwin Friend, "Changes in the Asset and Liability Structure of the
Savings and Loan Industry," in Study of the Savings and Loan Industry,
Vol. III, pp. 1359-60 and 1392-93, Federal Home Loan Bank Board, July 1969.
The materials referred to in that source suggest that reasonable loss al-
lowances on home mortgages are likely to be a maximum of ¼ of 1% and that
the loss rates on mortgages average lower than those on bank loans to
businesses.

The Study of the Savings and Loan Industry, which one of the authors of
this paper directed, also pointed out that a comparison of both gross and
net mortgage and other interest yields over the postwar period as a whole
did not indicate that the channeling of funds into housing by specialized
savings intermediaries had lowered mortgage rates below rates on most other
loans of comparable risk (even after allowance for differences in transac-
tions costs), and that it could be inferred that the special assistance
given housing simply helped to offset the imperfections of the mortgage
markets as compared with the markets for securities or for business loans.
Based partly on such considerations, the Study concluded that the encourage-
ment of housing via incentives to the s&l industry did not seem to have
resulted in generally excessive investment in housing even from an economic
(totally apart from a public policy) viewpoint.

Specialized financial intermediaries and effective housing demand. However,
as the Study noted, this line of reasoning implies that rechanneling funds from
commercial banks or other diversified financial intermediaries to the special-
ized housing financing institutions has a significant effect on mortgage rates
and/or capital availability and as a consequence on effective housing demand.
The three pieces of empirical evidence cited in the Study to support this hy-
pothesis were (1) the coincidence in savings and loan growth and the substan-
tial narrowing of the differentials between mortgage and the long-term interest
rates, (2) the decline of new housing starts in 1966 from an annual rate of
well over 1,500,000 units at the start of the year to under 900,000 units in
the early fall, apparently not so much a result of a decline in demand for
housing or the effect on demand of higher mortgage interest rates, as a result
of an inadequate supply of funds to the specialized savings intermediaries and
especially to the savings and loan associations, and (3) some extremely crude
econometric evidence from studies conducted by Gregory Jump and David S. Huang

suggesting that rechanneling funds to the specialized housing institutions stimulates the effective demand for housing both in the long-run as well as short-run, though the long-run effect is likely to be much smaller than the short-run impact.

The econometric model by Jump, showing the quantitative impact of a shift of savings deposits from the associations to commercial banks over the 1953-1966 period, suggests that a shift of $1 billion in 1966 would have resulted in a decline in the housing stock of roughly 80,000 units in the long run.[1] The analysis by Huang which appeared in the Study of the Savings and Loan Industry also implies substantial effects of net savings inflows into savings and loan associations on the value of conventional housing starts in the same year and in the long run.[2] These econometric results are admittedly tenuous, but on the basis of the actual sequence of developments in 1966 seem to understate at least the short-run impact of the shift in savings on housing starts during that year. Moreover, they probably do not reflect the longer-term influences of the specialized intermediaries in reducing the risk premiums included in mortgage rates. At about the same time as the Study of the Savings and Loan Industry, the first results of the current MIT-Pennsylvania--SSRC (MPS) model also pointed to an appreciable short-run effect (somewhat over three years) on the effective demand for housing from rechanneling funds among the different types of deposit institutions.[3]

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[1] Gregory V. Jump, An Econometric Model of the Financial Sector of the U.S. Economy. Ph.D. dissertation, University of Michigan, 1969.

[2] This finding will be discussed further subsequently.

[3] Frank de Leeuw and Edward M. Gramlich, "The Channels of Monetary Policy," Federal Reserve Bulletin, June 1969, p. 487.

Specialization versus direct incentives. More recently, the Hunt Commission's Report has taken the position that where public policy dictates the channeling of resources to achieve certain goals, encouraging institutions to specialize in their uses of funds is an inefficient means of allocating resources as against direct subsidies.[1] Though this point is repeated time and time again throughout the report, no corroborative evidence is given. We have pointed out that our interpretation of the evidence is that the incentives provided to encourage the growth of specialized savings intermediaries have probably stimulated the housing markets, though over the past decade the favorable impact of these institutions in housing has been offset by the perverse effects of excessive relaince on monetary policy to contain inflation. However, presumably the relevant question is whether a dollar of indirect subsidy to a specialized savings intermediary stimulates more or a better allocation of housing investment than a dollar of direct subsidy to a prospective investor or some alternative form of assistance to the housing markets.[2]

While the available information does not permit a satisfactory answer to this question, it is at least consistent with the thesis that,in the absence of specialized savings intermediaries,home financing would either experience a significant setback in the competition for funds in the capital markets or require alternative forms of subsidy which might be more or less expensive. The moral is not that additional flexibility in the asset-liability structure of specialized deposit institutions is undesirable. We think additional flexibility is desirable. Many of the recommendations along

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[1] It is noteworthy that the architects of "section 8" of the Housing and Community Development Act of 1974 presumably believed the demand side subsidies to housing consumers will be more effective for increasing housing supplies than than direct construction subsidies.

[2] We should point out, regardless of the merits of Government policy designed to channel funds from commercial banks to the specialized savings intermediaries such as the s&l's, there is little reason to believe that the s&l's have been treated more favorably than the commercial banks (see Study of the Savings and Loan industry).

these lines made by the Hunt Commission parallel those made earlier in the

Study of the Savings and Loan Industry. However, we do not think that public

policy should be based on the unproved premise that providing government

incentives to influence the portfolios of financial institutions is an ineffi-

cient means of either allocating resources to housing or achieving other social

objectives. Even if we assume that this premise is as likely to be right as

it is to be wrong, the uncertainty of benefits and the costs of change, es-

pecially if the change is rapid and drastic, would suggest that the initial

steps taken in the direction of flexibility guard against the danger of a

severe adverse impact on the housing market. These initial steps obviously

do not preclude further measures at some later time.[1]

Evidence on the effects of Government policy. A more extreme position

than that in the Hunt Commission Report is advanced in two recent papers, the

first by Francisco Arcellus and Allan H. Meltzer,[2] and the second by Meltzer

alone.[3] The first paper argues that the tests it presents based on a three

equation model of the housing market provide no evidence of any effect of

mortgage policy or "availability" on the number of houses or the real value

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[1]For similar reasons, we disagree with the Hunt Commission's recommendation that
the standby power of the appropriate supervisory agencies to establish in-
terest rate ceilings be abolished at the end of a ten-year period. Such com-
plete faith in the performance of competitive markets seems to be unwar-
ranted. The potential need for a standby Regulation Q seems to us to be
reasonably well documented by the situation in the late summer of 1966. It
is entirely possible that a more competitive financial system might have
avoided the serious difficulties at that time, but we see no good reason
for advocating public policy based on that assumption. Optimal policy in
the presence of uncertainty differs significantly from optimal policy in the
world of certainty. For that reason, we prefer the recommendation in the
Study of the Savings and Loan Industry that the supervisory agencies should
retain standby power to reinstate effective ceilings, though such action
should be reserved for emergency use.

[2]"The Markets for Housing and Housing Services," Journal of Money, Credit and
Banking, February, 1973. A "Comment" on this paper by Craig Swan and a "Reply"
by Arcellus and Meltzer appear in the November, 1973 issue of the same journal.

[3]"Credit Availability and Economic Decision: Some Evidence from the Mortgage
and Housing Markets," Journal of Finance, June, 1974.

of housing services if proper allowance is made for the method of financing the government's mortgage program. Craig Swan shows the basic theoretical and statistical deficiencies in the Arcellus-Meltzer (A-M) analysis which leads him to conclude, correctly we believe, that "A-M's views of housing markets can only be said to be resting on a blend of conjecture and casual empiricism."[1]

Since Swan's critique (and the A-M reply) are readily available in the literature, we shall not devote much space here to the nature of his arguments.[2] However, one simple test that Swan makes of the reasonableness of the A-M results deserves mention here.

Simply by breaking up the period 1915-40 and 1948-68, which A-M use to fit the model, into the two component parts before and after World War II, Swan points out that the results are radically changed and no longer consistent with the A-M views. The signs of the key variables are changed in the 1948-68 period, with the mortgage stock variable now having a positive instead of negative sign, and the real stock of base money variable which is basic to Meltzer's view of how the economic world works now having a significant negative instead of positive effect. Moreover, Swan's statistical tests, not too surprisingly, point to a statistically significant change in the structure of the housing markets between the 1915-40 and 1948-68 periods. The A-M reply on this point is surely the height of disingenuousness, maintaining that it is inappropriate to reduce the number of degrees of freedom by half in spite of the statistical evidence

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[1] "Reply," op. cit., p. 971.

[2] Swan spells out, among other things, the serious deficiencies in the structure of the A-M model, the irrelevance of the mortgage stock variable they use as a proxy for capital rationing to test the effect of rationing on the effective demand for housing, and the assumption imbedded in their statistical analysis that there is only one effective market interest rate (an open market rate) so that the narrowing of the risk differential on the mortgage rate is not reflected in their model.

of a change in structure between the two periods.

The second paper by Meltzer argues that evidence from long term changes in the ratio of housing to total assets implies that mortgage policy and government credit programs have no long-term effect in housing, and that evidence from other econometric studies of the mortgage market reinforces the A-M conclusion relating to the absence of short-run effects as well. The long-run argument is that the ratio of housing to total assets has remained constant at least from 1912 to 1958, and probably through the 1960's, in spite of stimulating mortgage policy, and that this suggests that such policy has affected the composition of liabilities and not the composition of spending. More specifically, Meltzer concludes that households, as a result of the loosening of mortgage credit and the tightening of securities credit, have substituted the former for the latter but have not altered their expenditure pattern.

The long-run argument seems completely without merit. If it is assumed as Meltzer does that the income elasticity of housing investment is equal to one, presumably the asset elasticity of housing would be less than one since the available evidence suggests that the income elasticity of assets is well above one.[1] Following the Meltzer line of reasoning, it could be concluded that stimulation of mortgage markets was responsible for maintaining the ratio of housing to total assets. Moreover, prices of housing have increased more rapidly than prices generally and since the price elasticity of housing may be in excess of one,[2] again a decline in the ratio of housing to total assets

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[1] E.g., see Jean Crockett and Irwin Friend, "Consumer Investment Behavior," in Determinants of Investment Behavior, Princeton University Press, 1967, p. 127.

[2] E.g., Richard F. Muth, "The Demand for Non-Farm Housing," in Arnold C. Harberger, ed., The Demand for Durable Goods, Chicago, 1963, p. 72, concludes the price elasticity is at least one and may be larger. A more recent though more limited analysis by Frank de Leeuw, "The Demand for Housing: A Review of Cross-Section Evidence," Review of Economics and Statistics, Feburary, 1971, finds a range for the overall price elasticity of rental housing between -.7 and -1.5.

might have been anticipated if it were not for the support given the mortgage markets.

As for the likelihood that increased mortgage availability was largely used to offset decreased securities credit availability, the probability this is true seems close to zero. The great bulk of mortgages has always been concentrated in the lower to middle income grcups while the great bulk of securities has been concentrated in the middle to upper income groups. The notion that the lower income groups somehow use their increased mortgage credit to finance the securities transactions of upper income groups seems bizarre, so that as a minimum a major share of increased mortgage credit could hardly have been used to finance the securities market.[1]

A much more plausible (though by no means demonstrated) long-run scenario than the one Meltzer spells out is that the support given the mortgage market resulted in lower mortgage rates and, other things equal, helped to keep down housing costs. However, because of rising relative prices of houses to other assets, associated with a price elasticity above one and wealth elasticity below one, the ratio of housing to total assets did not increase.

The other econometric studies referred to by Meltzer which he apparently believes reinforce the A-M conclusion are those by Phoebus Dhrymes and Paul Taubman, David Huang, William Silber, and Dwight Jaffee. The first

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[1] It might also be noted that Meltzer's assumption of a fixed ratio of security credit to the value of stock, which he uses to obtain a lower bound for the substitution of mortgage credit for securities credit, provides a much higher figure than the probably more correct (though still highly questionable) assumption of a fixed ratio of security credit to the value of stock trading.

two of these analyses were published in the Study of the Savings and Loan

Industry, but despite careful statements by Dhrymes-Taubman and Huang,

Meltzer in his earlier discussion of these authors in the A-M paper ap-

parently was unaware that both authors concluded that they had found evi-

dence of non-price credit rationing.[1]

Meltzer again makes no reference to the Dhrymes-Taubman finding on non-

price credit rationing to which Swan had called his attention (or to Swan's

Comment on the A-M paper) presumably because he does not believe in the result.

However, this is the main result in the Dhrymes-Taubman paper which is

relevent to the existence or significance of non-price credit rationing.[2]

Interestingly enough, Meltzer stresses that the Dhrymes-Taubman "tentative

finding that the demand for mortgages at savings and loan associations are

very responsive to changes in mortgage rates is consistent with the conclusion

that the demand for housing is very responsive to interest rates." This find-

ing is equally consistent with the thesis that any effect that the specialized

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[1] As a result, A-M imply that the "principal author" of the Study of the
Savings and Loan Industry reached conclusions quite different from Dhrymes-
Taubman and Huang "despite careful statements" by these authors (Arcellus
and Meltzer, p. 79). As pointed out by Swan (p. 962), Dhrymes-Taubman do con-
clude that non-price rationing existed in 1966, the last year they covered,
but in their reply A-M (p. 976) assert (without proof) that the Dhrymes-
Taubman "careful" analysis was invalid on this point. Nor do A-M either in
their original paper or Reply make any reference to Huang's conclusion that
"net saving inflow [to savings and Loan associations] have generally shown
strong positive influence over the conventional starts," (A Study of the
Savings and Loan Industry, Vol. III, p. 1236), though if called to their at-
tention they would presumably again state that the Huang "careful" analysis
was invalid on this point--even if presumably this was the main point at
issue. Parenthetically, it might be pointed out the A-M original partial
and misleading quotation from a statement made by the "principal author" of
A Study of the Savings and Loan Industry (A-M, p. 79) is repeated substan-
tially more fully and accurately in their Reply (p. 976).

[2] Nor does Meltzer refer to the Dhrymes-Taubman conclusion that the mortgage
rate at savings and loan associations is sensitive to the ratio of associa-
tion savings accounts to mortgages held (Study of the Savings and Loan
Industry, Vol. 1, p. 123 and p. 139).

savings intermediaries have in lowering the risk differential between mortgage and other rates would stimulate the effective demand for housing.

Meltzer's reexamination of the paper by Huang, which he categorizes as "one of the most detailed studies of the effect of mortgage credit and interest rates on housing," still makes no reference to the major conclusion Huang draws which is applicable to the impact of non-price credit rationing on housing investment, viz, that net savings inflow to savings and loan association shows a "strong positive influence" over the value of conventional starts. Meltzer's omission is strange since he is purportedly summarizing Huang's findings. It may reflect the fact that the coefficient of the net saving inflow variable in the value of conventional starts equation--presumably the most relevant of the equations tested--is not quite statistically significant at the usual standards of significance (with a t value of 1.52), but in this equation it is fair to observe that the interest rate variable stressed by Meltzer is no more significant (t = 1.51). Given the amount of measurement error involved in the variables used as proxies for the true variables desired, their coefficients would be expected to be biased downward in absolute value.

Finally, in discussing the Silber[1] and Jaffee[2] studies, Meltzer makes no reference to the Comment by Swan (p. 962) that "a careful reading of these sources fails to find the support that A-M do [for the absence of credit rationing]...Silber assumes that the mortgage rate adjusts to clear the market every quarter, but he never tests this maintained hypothesis...Jaffee estimates an equation for mortgage rates that allows for credit rationing. The coefficient of the variable that measures the existence of credit rationing is statistically significant."

[1]Portfolio Behavior of Financial Institutions, Holt, Rinehart and Winston, 1970.

[2]"An Econometric Model of the Mortgage Market: Estimations and Simulations," in E. Gramlich and D.M. Jaffee, Savings Deposits, Mortgages and Residential Construction, Heath - Lexington, 1972.

To conclude our discussion of the effect of specialized intermediaries on housing investment via either lowered interest rates or greater credit availability, we should mention the interesting work carried out by Jaffe both in the study referred to by Meltzer and in several more recent papers including one carried out together with Ray C. Fair.[1] All of this work is based on the MIT-Penn-SSRC(MPS) model. Fair's and Jaffee's findings suggest that capital rationing does affect the level of mortgages and to a considerably smaller extent the level of housing but the effects on housing do not appear to be large. Their results indicate that the implementation of the Hunt Report--notably including abolition of rate ceilings and permitting specialized savings intermediaries to exercise extended lending functions--would not have serious repercussions for the mortgage and housing markets. They find that even without extended lending functions the largest reasonable estimate of the decline in the mortgage market would be about 10% and the decline in housing would be negligible.[2] However, these declines might be considerably larger if commercial banks aggressively competed for savings deposits.[3]

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[1] Dwight M. Jaffee, "Eliminating Deposit Rate Ceilings-A Study of the Effect on S&L's," Federal Home Loan Bank Board Bulletin, August 1973; "The Extended Lending, Borrowing and Service Function Proposals of the Hunt Commission Report," Journal of Money, Credit and Banking, November 1972; and Ray C. Fair and Dwight M. Jaffee, "The Implications of the Proposals of the Hunt Commission for the Mortgage and Housing Markets: An Empirical Study," in Policies for a More Competitive Financial System, Federal Reserve Bank of Boston, June 1972.

[2] Like the Hunt Report, they assume but do not test the proposition that indirect subsidies are not efficient. Indirect subsidies are defined by them as those which take the form of constraints and regulations that force or induce financial institutions to lend in the mortgage market "without directly affecting the interest cost of mortgages". It is not clear why indirect subsidies are defined to be restricted in the manner quoted.

[3] For example, see Jaffee, 1973, op. cit., pp. 11-12. Jaffee also indicates that under such competition the interest rate on mortgages would be significantly increased. In contrast, the retention of ceilings on commercial banks would, according to him, substantially raise the level of mortgages and lower mortgage rates.

While the Jafee and Fair-Jaffee analyses are carefully and imagina-
tively executed, it is not clear how much reliance can be placed on their
conclusions which depend vitally on the validity of the MPS model. The basic
difficulty with taking at face value the parameters of a large-scale econo-
metric model based on time-series data is well known, i.e., the small number
of independent observations for choosing among the large number of alterna-
tive forms for each of the large number of equations in the model. It is
relatively easy to "explain" past data with such a model but substantially
more difficult to predict the future.

Even "explanations" of past investment in housing from the MPS model
seem quite poor in the period probably marked by the most severe credit
rationing, the second half of 1966. Thus the MPS model implies a $25.6
billion annual rate of investment in housing in the fourth quarter of 1966
as against an actual figure of $22 .1 billion.[1] While a continuous series
of such comparisons are not publicly available, out of nine quarters between
the fourth quarter of 1965 and the fourth quarter of 1973 for which comparable
data were made available to us by Dwight Jaffee, in seven out of ten quarters
the values for investment in housing simulated by the MPS model were higher
than the actual values and in three quarters the discrepancies (all over-
statements) were substantial.[2] It is extremely difficult to tell what de-
ficiencies in the model might account for these discrepancies, but one

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[1] "The Extended Lending, Borrowing, and Service Function Proposals of the
Hunt Commission Report," op. cit., p. 996.

[2] These discrepancies were $3.5 billion in the fourth quarter of 1966,
$4.3 billion in the fourth quarter of 1971, and $7.0 billion in the fourth
quarter of 1973, the latest period covered.

possibility is understatement of either mortgage rate or rationing effects. In addition, the long-run effect of inflows to specialized housing financing intermediaries on the risk premium reflected in mortgage rates may be inadequately captured by the model.

The dangers in taking the results of the MPS (or any other macro time-series) model too seriously for assessing the effect of financial variables on real variables is illustrated by the model's inventory demand function which implies that neither interest rates nor any other financial variables have any effect on inventory demand except through their effect on business activ-ity generally.[1] Economic policy decisions based on such results can be costly. Thus, while we would recommend a movement towards additional flexibility in the asset-liability structure of specialized deposit institutions, we would also recommend that the movement be gradual (consistent with the recommendations of A Study of the Savings and Loan Industry) to minimize the danger of an adverse impact on the housing market.

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[1]For alternative approaches to such problems, see Jean Crockett, Irwin Friend, and Henry Shavell, "The Impact of Monetary Stringency on Business Investment," Survey of Current Business, August 1967 and Irwin Friend and Charles Lieberman, "Short-Run Asset Effects on Household Saving and Consumption," The American Economic Review, September 1975. The first of these papers points to a fairly sizable direct effect of monetary stringency on inventory investment in 1966.

b. Private sector mortgage bonds

Commencing in the latter part of the 1960's, Government and quasi-government agencies indirectly augmented the flow of funds to the traditional residential financing sector by their activities in the securities markets. Subsequently, a set of proposals has evolved predicating that more fully developed direct access by private residential financing institutions to the securities markets will benefit the housing sector in the long-run by increasing the total flow of funds and lowering average costs and over the cycle by reducing fluctuations in mortgage credit by enhancing the housing finance sector's ability to compete for capital in periods of monetary stringency.[1] The private sector mortgage bond (PSMB), one of these suggested capital market instruments, would be a large denomination security issued by the private residential finance sector, based upon mortgage collateral.

PSMB are assumed to have two attractive marketability features not possessed by the currently available array of mortgage investment instruments.[2] First, while many large investors in the capital market have the capacity to evaluate and operate a general bond portfolio, they do not have the specialized expertise required to deal with mortgage portfolios. A PSMB, therefore, will eliminate the need to administer, originate and

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[1] It has, also, been argued that issues, such as PSMB, might be used to increase the asset-liability flexibility of thrift institutions. However, as a practical matter, this type of change is envisaged to have a small potential relative to total assets at thrift institutions. For a fuller discussion of this point, see Irwin Friend, "Changes in the Asset and Liability Structure of the Savings and Loan Industry" in the Study of the Savings and Loan Industry, Vol. III, pp. 1420-1423.

[2] The following discussion borrows heavily from Jack M. Guttentag, "Changes in the Structure of the Residential Mortgage Market: Analysis and Proposals" in The Study of the Savings and Loan Industry, Vol. IV, pp. 1536-1540.

service mortgage loans. Second, the PSMB is purported to transform usually small denomination mortgage instruments, whose payment schedules usually are designed for the borrower (and not the large investor), requiring specialized servicing, into large relatively investor-oriented instruments. Further, it is argued that if a PSMB secondary market of sufficient scale can be established, the liquidity requirements of potential investors can be satisfied as well. In particular, the proponents of the PSMB believe that mortgage-backed paper could be designed to meet the specific requirements of pension funds, bank-administered personal trusts and certain non-profit organizations in terms of issue type, size, marketability and yield in order to attract funds into the housing sector.

In our opinion, while in principle the PSMB may appear to be an instrument that could augment the total flow, stabilize the cyclical variation and reduce the costs of funds to the housing finance sector, there are substantive practical reasons to doubt that the effect would be large. There is at least a prima facie case that PSMB have not flourished in the United States because the claimed potential economies from investment specialization already have been substantially exploited. There exist complex, specialized financial intermediaries, such as s&l's, mutual savings banks and so forth, dealing extensively in mortgage financing already. In fact, Arthur Viner, President of Investors Central Management Corporation, historically one of the most prominent companies selling a full range of mortgage investment services has claimed "the provision of access to the market for ... mortgages is no longer the basic problem ... in attracting pension funds.... [The difficulty is] the ability of mortgages to compete with other types of investment(s)...."[1]

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[1]Arthur Viner, "Investors Central Management Corporation," in A Study of Mortgage Credit, U.S. Congress, Senate, Committee on Banking and Currency, 90th Congress, First Session, May 22, 1967, p. 443.

Indeed, life insurance companies, which have dealt extensively in mort-
gages, have gradually left the residential mortgage market over the
last twenty years to seek other more attractive market investmnet oppor-
tunities.

While specialization economies are not likely to be extensive, the
potential economies from transforming mortgages into PSMB, we believe,
do exist.   However, the transformation of mortgages into PSMB by private
issuers lessens the direct connection between the cash flow of the
underlying mortgages and the payments received by bond-holders.   In
such circumstances, the bond-holders will be concerned with the over-all
solvency and balance sheet of the bond issuer.   Obviously, institutions
that currently specialize in the origination and servicing of mortgages
for clients, such as mortgage companies, are in the best position to
gain from selling PSMB (by eliminating a significant portion of their
transactions costs).[1]   Oliver P. Jones, in his evaluation about why
mortgage companies have been unsuccessful in developing PSMB, observed
that "the yield spread [between the mortgage asset and the PSMB in the
market] has been the major deterring factor to the development of a
security instrument."[2]   Put differently, the risk as perceived by the

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[1]For example, large commercial banks, among financial institutions possess
relatively strong capital positions and general capital market strength,
but would usually need to incur transactions costs to obtain the mortgages.
Therefore, it would appear that PSMB would hold no advantage to commercial
banks over, say, the issue of "unsecured" debentures.   REIT's, another
suggested issuer of PSMB, even in their most successful times, preferred
to obtain capital in forms other than mortgage-bond type instruments.   See
Durrand A. Holladay, "Working with REIT;s in Commercial Lending," Federal
Home Loan Bank Board Journal, Vol. VI (March, 1973), p. 26.

[2]Oliver P. Jones, "Study of Mortgage Credit in 1966" in A Study of Mort-
gage Credit, op. cit., p. 250.

market is large, and this is likely to be the result of mortgage companies', and, to a lesser extent, s&l's extremely low ratio of capital reserves to liabilities.

The perceived risk could be overcome, in part, by securing through "over-collateralizing" the PSMB issue. The extent that "over-collateralizing" would be necessary depends upon, among other things, the size of the issue and the nature of the securing collateral. In two recent PSMB issues by relatively large s&l's, the cost of funds was significantly greater than that paid for deposits.[1] Moreover, we expect that the use of PSMB's is likely to continue to be a relatively expensive method for raising funds.

Our overall, and at this stage of our thinking, tentative conclusion is that PSMB are likely to be of some utility in raising funds for large s&l's, especially in periods of extreme credit stringency. However, we suspect that this usefulness will be limited, particularly because of the expected relatively high cost of funds, and that the total amount involve are not l ly to be great.

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[1] "Big S&L Sells Mortgage-Backed Bonds In Successful Test of New Credit Source" The Wall Street Journal, October 8, 1975.

c. Variable rate mortgages

The mortgage loan instrument in general usage in the United States today, the equal monthly amortized payment mortgage, was a major innovation of the 1930's. It is, however, not the only way to finance housing, and, in many instances, it has been argued that the standard mortgage currently in use may not be the best way. Of course, no single financial instrument is best for all transactions and all conditions. For reasons to be explained below, the Variable Rate Mortgage (VRM), which is an alternative mortgage loan instrument, has been the recent focus in the United States for a great deal of public attention. This concern was highlighted in 1975 by the FHLB's proposal to permit federally-chartered s&l's to issue VRM's[1] as well as by the rapid growth of VRM's issued by the three largest state-chartered California savings institutions. However, prior to 1975 in the United States six states explicitly permitted interest rate variability provisions in residential mortgage contracts.[2] Furthermore, though it is not generally realized, there were a significant number of existing mortgage contracts with VRM provisions on residential properties in the USA even prior to 1975.[3,4]

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[1] For example, see "Variable Rate Mortgage Proposal and Regulation Q," Hearing before the Subcommittee on Financial Institutions, Supervision, Regulation and Insurance of the Committee on Banking, Currency, and Housing, U.S. House of Representatives 94th Congress, First Session, April 8, 9, Vol. IV, 1975.

[2] California, Illinois, Massachusetts, South Carolina, Virginia, and Wisconsin have statutes which permit variable rate type mortgages. Also, Michigan, Pennsylvania and Vermont have state legislation that expressly forbids variable rate clauses in residential mortgage contracts. The remaining forty-one states do not have statutes that either permit or forbid variable rate clauses in mortgage contracts.

[3] For example, technically speaking there were 2,120,000 (about 11% of total) mortgages on one-unit homeowner dwellings with some type of variable rate stipulations. U.S. Bureau of the Census, Census of Housing, 1970, Vol. V, Residential Finance, p. 83. Also, the Federal Land Banks have originated about 10,000 VRM's, worth about $230 million, for rural homes between 1972 and 1974. However, in practice variable rate provisions have been ostensibly inoperative in any large quantity in the U.S. before 1975.

[4] There are several nations that have had extensive and relatively successful experiences with VRM, such as United Kingdom, Canada, and Sweden.

The nature of the problem. The declining activity in residential con-
struction and mortgage markets during periods of high and/or rising in-
terest rates is principally attributable to four factors. First, as a
result of their asset-liability structure thrift institutions experience
difficulty in retaining and attracting deposits to provide funds for
mortgage lending. The root of this problem is that mortgage lenders mostly
borrow short to lend long. When credit markets tighten, they must pay
higher rates for all borrowing. However, they can typically earn higher
prevailing yields on only a small portion of their assets. Also contribut-
ing to the mortgage lender's difficulty is the fact that mortgage yields
tend to rise neither as fast nor as much as other long term rates. This
difficulty is further compounded by the large proportion of mortgage lend-
ing by financial intermediaries which takes place during periods of
economic slack, thereby creating portfolios with relatively depressed yields.

Second, ceilings on deposit interest rates may prevent mortgage lenders
from competing for funds, e   in some instances when they might be able to
raise deposit interest rates. Third, other financial institutions may decrease
their volume of mortgage lending and may shift into higher yielding securities
(as their rates rise relative to the contemporaneous mortgage rates). Fourth,
at times effective state-imposed usury ceilings on mortgage rates may in-
tensify the shift out of mortgages into other financial assets.

In sum, when credit markets tighten, mortgage lenders who can shift to
other forms of lending tend to do so. Those who cannot shift lose their
ability to stay competitive in their own borrowing markets. Disintermedia-
tion occurs, and the result is a drying up of mortgage credit. The VRM in
various forms has been proposed as a possible mechanism for mortgage lenders
to greatly reduce interest rate risk. Thus, the VRM will be examined to see
if it will both stabilize effectively the flow of funds into mortgage markets

at a relatively high level and at the same time redistribute social risk
among lending institutions, individual borrowers, and individual savers in a
desirable fashion.

VRM mechanics. The VRM replaces the constant contractual interest rate
of the standard Fixed Rate Mortgage (FRM) with a flexible interest rate which
is related to an index, presumably derived from prevailing market interest rates.
That is, the interest rate for the VRM loan changes as market interest rates
change. Actually, the VRM may be viewed as a sequence of automatically refi-
nanced short-term loans.[1] In order to avoid the costs of constantly being in-
volved in negotiations, the borrower and lender agree to accept an automatically
determined rate tied by some formula to one or more interest rates. As a practi-
cal matter the lender and the borrower also agree to disregard insignificant
changes in market rates, and the rates on the VRM loans change only with impor-
tant changes in market rates of interest. VRM proposals usually assume one of
three general forms. The fixed term VRM varies monthly payments to reflect al-
terations in the mortgage rate. The variable term, fixed monthly payment VRM
consists of equal monthly payments and alters the time for maturity as interest
rates vary. Finally, there is a hybrid VRM with simultaneously variable terms
to maturity and variable monthly payments as responses to changes in interest
rates.[2]

The VRM and inflation. Nominal interest rates observed in financial mar-
kets are dependent upon the real interest rate and the rate of price change.
Inflation, by altering nominal interest rates, affects all financial markets.

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[1]Usually, the borrower has the right to pay off the loan without penalty when-
ever loan terms change.

[2]There are actually several other interesting variants of the VRM that have been
suggested. For example see Donald P. Tucker, "The Variable Rate Graduated-Pay-
ment Mortgage." (Board of Governors of the Federal Reserve System, Division of
Research and Statistics, Research Paper, May 1974) and Richard Cohn and Stanley
Fischer, "An Analysis of Alternative Non-Standard Mortgages." MIT Mortgage Study,
Report #5, December 1974.

As recent history indicates, inflation may not be completely or perfectly anticipated. Inflationary expectations about the future do change over time and, in turn, engender changes in the observed nominal interest rates. This phenomenon may be associated with cyclical or secular interest rate patterns. A period of transition to higher levels of secular inflation, for example, will lead to rising nominal interest rates. This will create special problems for financial intermediaries specializing in mortgages. If the institutions' liabilities are short-term and their mortgages (i.e., their long-term assets) are FRM types, the cost of maintaining the same level of deposits will increase vis-a-vis the income stream generated by the fixed interest assets.

When inflation is under-anticipated, mortgage instruments such as the VRM can assist financial intermediaries in maintaining liquidity for lending even if the portfolio is ostensibly long-term assets and short-term liabilities. Increased general market interest rates will yield greater income flo. from variable rate assets for the lenders and thereby permit them to pay competitive interest rates on deposits (i.e., their short-term liabilities).

As a practical matter, it is unlikely that any VRM form will be approved by the regulatory authorities unless it stipulates the maximum permissible upward changes of the interest rates per period and over the life of the mortgage, and limits the extension of the maturity period (for the variable maturity VRM). In other words, it is not necessarily true that the VRM one might reasonably expect to be permitted by the regulatory authorities will guarantee "inflation proofing" for the lender, but any reasonable form of the VRM would certainly reduce the lender's interest rate risk.

Distribution of social risk. A key element in the analysis of the the social desirability of any form of the VRM is its effect upon the division of risk among the individual borrower, institutional lender, and the individual saver. It has been argued that the VRM approach as contrasted with

the FRM is a device to protect thrift institutions at least partially from nominal interest rate risk. The traditional practice of these financial intermediaries has been to acquire long term fixed rate assets, which are financed essentially by short-term liabilities so that financial intermediaries are absorbing all the attendant risk of rising interest rates.[1] The typical lender with mainly long-term fixed interest rate assets may be unable to increase deposit rates when in the short run market rates increase significantly. During high interest rate periods, this had led to the outflows of deposits from the s&l's and Mutual Savings Banks to commercial banks or higher yielding market instruments. Consequently, as the deposit inflows declined, mortgage acquisitions and s&l profits declined. In effect, it is claimed that, the short-term depositor and the long-term borrower have been able to avoid virtually all of the interest rate risk, leaving it to the financial intermediary.

An "unrestricted" variable rate mortgage with complete adjustments to the monthly payments shifts the nominal interest rate risk from the financial institution entirely to the borrower.[2] In general, abstracting from covariation between costs and overall returns and assuming there is uncertainty about the direction of change in the rate of inflation, risk averse borrowers would prefer fixed-rate mortgages to variable-rate mortgages. This will be true if the expected

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[1]The interest rate risk to thrift institutions is enhanced by the practices of "inexpensive" penalities for mortgage pre-payment. In particular, if interest rates fall mortgagees pre-pay and refinance at the lower rates, but obviously "hold on to" the original mortgage if interest rates rise. This is, in essence, a "one-way-down-only" VRM.

[2]More precisely, the perceived risk and, therefore, the changes in the well-being of households will depend upon the inter-relationships among market interest rates, the rate of change of the earnings stream from human capital, and the rate of change of income earned or imputed from non-human capital, such as a mortgaged home. The underlying theoretical framework for examining this problem is outlined in Irwin Friend and Yoram Landskroner, "The Demand for Risky Assets Under Uncertain Inflation," Rodney L. White Center for Financial Research, University of Pennsylvania, Working Paper No. 6-75.

costs over the life of a variable-rate and fixed rate mortgage are identical. That is, the typical borrower would not want to take the actual risk that the variable interest rate mortgage would increase beyond his expectations. Generally, the potential utility and disutility created by changes in interest rates are viewed as being asymmetrical: the losses incurred by unexpected increases in interest rates are potentially much more important than the potential gains from unexpected interest rate declines.

All things considered, it is reasonable to believe that generally, ceteris paribus, borrowers will prefer fixed rate mortgages to variable rate mortgages when expected interest rate costs are approximately the same over the life of each of the mortgages. Hence, lenders are likely to find that offering the variable rate mortgages will require an interest rate differential to make them competitive with fixed rate mortgages. (However, this need not be true when interest rates are regarded as abnormally high or when there is a uniformly high positive correlation between income and the rate of inflation reflected in mortgage rates paid by individual home owners). Finally, it is clear that the exact nature of this interest rate differential will not be independent of certain mortgage contractual stipulations, such as the size of pre-payment penalties.

On the other hand, "unrestricted" variable rate mortgages eliminate the risk of nominal asset value variation to the lender, and shift interest rate fluctuation risk in the form of either mortgage payments or maturity length to the borrower. Thus, the lender bears the nominal interest rate risk of the fixed rate mortgage instrument; the borrower bears the nominal interest rate risk with the "unrestricted" variable rate mortgage instrument (abstracting from mortgage default differences). Further, it has been argued, and to some extent it is probably true, that the fixed rate mortgages, which place the

risk of capital loss entirely on the lender, are responsible for at least part

of the downward stickiness in mortgage rates.

This argument, however, neglects the relationship between borrower and

saver, with the lending institution acting as a pure intermediary. Clearly, if

VRM permit lenders to pay higher rates on deposits, an analysis of equity should

consider the differential composition of borrowers and lenders. Table 4-1 sug-

gests that because lower income groups hold a larger percentage of the total

dollar amount of savings accounts than of total mortgage debt, changes on

the deposit side permitting more competitive deposit rates will have a greater

effect on lower income groups than changes on the lending side. Table 4-2 il-

lustrates that the borrowers and savers differ in terms of relative position

in the life-cycle as well. In sum, savers, on average, are older and in

the lower end of the income distribution than borrowers.[1]

Table 4-3 attempts to examine the fiscal burden of a "limited" VRM[2] on a

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[1]Note that the data in Table 4-1 are "measured" incomes, not permanent incomes. Usually, older households have higher permanent incomes than "measured" in-comes. However, it is probably correct to say, on average, that older house-holds have become relatively worse off compared to younger households during the most recent inflationary period.

[2]This is the VRM proposal that was studied, but rejected, by a Congressional subcommittee in May 1975. The proposed rules for variable rate mortgages represent a limited risk sharing scheme for borrower and lender. The lender receives interest rate risk reduction within pre-specified bounds. Similarly, the limits of risk exposure borne by the borrower over the life of the mort-gage and during sub-periods of the mortgage life are within the pre-specified bounds in terms of maturity changes and/or monthly payment changes caused by interest rate variations.

Table 4-1

Percent of Consumer Units Arrayed by Income (1962)	Percent of Total Value (1962)	
	Savings Accounts*	Mortgage Debt
Lowest 20	10	3
40	25	10
60	35	25
80	50	55
100	100	100

*At commercial banks, mutual savings banks, and savings and loan association.

Source: Estimated from charts in Dorothy S. Projector and Gertrude S. Weiss, Survey of Financial Characteristics of Consumers (Board of Governors of the Federal Reserve System, 1966), p. 11.

Table 4-2

SAVERS AND BORROWERS BY AGE DISTRIBUTION

Savings Accounts by Age of Family Head -- Early 1971
(Percentage of Family Heads within each Age Category)

	None	$1-499	$500-1,999	$2,000-4,999	$5,000 or more
Under age 25	44%	30%	20%	5%	1%
25-34	44	19	20	11	6
35-44	38	19	26	10	7
45-54	35	16	14	12	23
55-64	34	7	14	14	31
65-74	35	2	14	15	34
74 or older	36	*	12	10	42

*Less than 0.5 percent.

Mortgage Debt Outstanding and Median Liquid Assets by Age of Family Head -- 1970

	Percent of Those Families Owning Homes With Mortgage Debt	Median Mortgage Debt for Those With Such Debt	Median Liquid Assets for All Families
Under age 25	91%	$12,000	$ 250
25-34			450
35-44	87	11,000	830
45-54	66	9,000	1,040
55-64	33	5,000	2,000
64 or older	16	4,500	2,400

Source: Survey of Consumer Finances. (Survey Research Center, Institute for Social Research, University of Michigan).

Table 4-3

The Relationship Between the VRM Monthly Payments and Monthly Family
Income for $20,000 Mortgage Issued in 1960 for 30 year Term

Date [1]	Index I [2]	Index II [3]	Mortgage Rate [4]	Monthly Payment	Percent Change in Monthly Payments Over Previous Year	Monthly Family Income [5]	Ratio (percent) Payments to Income
1960	6.40	4.89	6.25	$123.15	-	$552.67	22.3
1965	5.99	4.31	5.75	117.04	-	671.33	17.4
1966	6.04	4.89	5.75	117.04	0	720.42	16.2
1967	6.65	5.10	6.50	125.19	6.96	759.83	16.5
1968	6.58	5.99	6.50	125.19	0	802.00	15.6
1969	7.28	6.46	7.00	130.45	4.20	833.58	15.6
1970	8.37	8.23	8.00	140.84	7.96	896.50	15.7
1971	8.24	6.88	8.25	143.42	1.83	953.33	15.0
1972	7.76	6.49	7.75	138.45	-3.11	984.25	14.1
1973	7.71	6.89	7.50	136.10	-1.70	1,078.58	12.6
1974	8.54	7.54	8.25	142.81	4.93	1,146.75	12.9

[1] Date is as of January for the corresponding year.
[2] Index I is the effective conventional mortgage rate average for all lenders for single family, newly built homes, which is published in the Federal Home Loan Bank Board Journal.
[3] Index II is the simple average of the 3 to 5 year Treasury Bond rate and the seasoned corporate bond rate.
[4] The adjusted mortgage interest rate under VRM such that a) the maximum upward change in any six-month period si .5%, b) the maximum upward adjustment for life of mortgage is 2.5%, and c) all changes are .25% increments.
[5] Disposable income per household per month.

typical household. In this table, the data for a simulated, hypothetical VRM are illustrated. The loan is assumed to be for $20,000 in 1960 with a 30 year maturity term. Using Index I, the effective average rate on new conventional mortgages, changes in VRM monthly payments are calculated. The last column of Table 4-3 presents the percentage ratio of monthly VRM payments to average disposable household income. It is clearly a falling function over time, and implies that, on average, households are likely to be able to bear most of the interest rate risk. This is true because nominal income has been growing over 1960-1974 period more rapidly than hypothetical VRM monthly payments.

A portfolio framework, therefore, suggests the nature of the "optimal" mortgage instrument as seen by the household: the "optimal" mortgage instrument would coordinate in a stochastic sense future expected income streams with mortgage payment requirements. In general, the ideal mortgage instrument from the purview of the household necessarily would be a proportional combination of a fixed-rate and a variable-rate mortgage that precisely corresponded to the proportions of income sources (including imputed value of rents) that were nominally fixed and variable over time, respectively. In essence, the household that purchased such a combination fixed-rate-variable-rate mortgage instrument would be "diversifying" against income stream risks, and, therefore, maximizing its expected utility.

Desirability of VRM. On balance, the VRM, if properly implemented, could be beneficial to all of the participants in the housing finance process. In this context, the VRM is viewed as an addition to the repertoire of mortgage instrument modifications that potentially can benefit borrowers, savers, and lenders. The VRM via competing financial intermediaries will compete with other mortgage forms in the market place, the equilibrium prices of each being

determined by supply and demand. This appears to represent the best of all worlds, but there are several practical pitfalls and limitations that must be confronted if VRM are to be successfully implemented. There exists the problem of "implicit cartelization." That is, once VRM are universally permissible, there is the concern that no one will offer any other form of mortgage. The recent California experience, while too early to assess completely, suggests that cartelization is possible. Since given permission, the three state-chartered banks authorized to issue VRM have offered basically only VRM.[1] Also, there is the issue that the VRM may be one part of an appropriate mix of needed policy changes for financial institutions. For example, should VRM flexibility be permitted and deposit rate ceilings maintained, or should these changes be integrated? The logic of markets might suggest that both changes be coordinated. Will the introduction of the VRM increase perceived default risk on mortgages and, thereby, result in more conservative mortgage underwriting policies which reduce the total flow of funds to housing? What form of the VRM should be permitted? What is the appropriate series of interest rates to index the VRM with? These are some of the issues which need precise empirical study. We believe in the light of both theoretical considerations and experience in the U.S.A. and elsewhere that the VRM can work and should be made readily available; the exact form that is appropriate for the United States, we feel, will require some degree of experimentation with careful scrutiny (at least initially) by the regulatory authorities.

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[1] Of course, it might be argued that there is an optimal asset portfolio of VRM and FRM, and we are observing a transition period from zero percent VRM to that optimal proportion. Once the proportion is achieved, both VRM and FRM will be offered by the banks.

d. Private mortgage insurance

Basically, there are two types of risks involved by originating a mortgage instrument. First, there is the risk that the borrower will default. Second, there is the risk that the lender will suffer a capital loss if he must sell the mortgage.[1] Private Sector Mortgage Insurance Companies (PSMIC), which provide the lender with direct risk reduction against defaults, have filled a gap in the mortgage insurance market that had not been covered by existing governmental programs. Also, to some extent, the increased availability of mortgage insurance through PSMIC reduces the liquidity risks of the lenders as well as the risk of capital loss by enhancing the secondary market for mortgages.

Operational Characteristics of PSMIC. During the 1960's and the early 1970's PSMIC have experienced accelerated growth rates.[2] This rapid expansion is attributable to the nature of the insurance instrument and the competitive efficiency of PSMIC operations.[3] A lender who has been approved by a PSMIC will submit an application for insurance on a loan when he feels that the credit of the applicant borrower is satisfactory and wishes to avoid the risk of property value decline. This is usually on loans with loan to value ratios of 90 percent or higher. Private mortgage insurance typically covers the top 25 percent of a 95 percent loan (i.e., pays 25 percent of a total claim after foreclosure). Therefore, the property value would need to decline 30 percent (5 percent of the owner's equity plus 25 percent insured coverage) before the lender would actually be exposed to capital loss on his investment under this co-insurance scheme. (This partial coverage by PSMIC is an important operational

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[1]There is, of course, a risk of loss even if the lender does not need to sell the mortgage.

[2]Chester Rapkin, The Private Mortgage Insurance of Private Homes; A Study of the Mortgage Guaranty Insurance Corporation (1973, revised edition), pp. 40-42.

[3]For a more complete discussion of this point see Rapkin, op. cit.

difference between it and governmental insurance and guarantee programs, which have ostensibly 100 percent insurance coverage).

The mortgagor usually pays the insurance premium, typically about one-quarter of one percent per annum on the unpaid loan.[1] (This is approximately one-half the FHA mortgage insurance premium rate). The policy is subject to cancellation at the discretion of the lender. After the mortgage loan has been amortized to 60 or 70 percent of value, the lender will frequently permit the insurance coverage to terminate because risk of losing principal through foreclosure is then negligible.

The PSMIC industry has an excellent record on processing applications quickly, usually reporting a decision within 48 hours of receipt of the application.[2] Insurance claims are, also, processed rapidly. Finally, FNMA and the FHLMC have "approved" the large PSMIC, which make their insured loans acceptable for purchase in these agencies' conventional mortgages secondary market operations. In principle, and in fact, FNMA and FHLMC do exert significant regulatory control over PSMIC by permitting or denying access to the secondary market.[3]

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[1]Though price competition does exist, according to the recent A.D. Little study conducted under the auspices of FNMA and FHLMC, price competition is currently not extensive. See A.D. Little, Study of the Private Mortgage Insurance Industry, April 1975, especially p. 131.

[2]Rapkin, op. cit., pp. 46-47,indicates that more than forty percent of the insurance applications under the FHA program take at least 5 days for approval. Also, the "red-tape" associated with governmental insurance guarantee programs is significantly greater than in the typical PSMIC operations.

[3]PSMIC are chartered under various state laws. In fact, there appears to be a great deal of inter-state regulatory homogeneity in terms of loss reserve requirements and so forth. See Rapkin, op. cit., Chapter IV.

Public policy concerns about the PSMIC. While PSMICs have been over-
whelmingly successful in efficiently filling an insurance market gap, recent
concern has emerged with regard to their long run viability on at least two
counts: i) PMSIC's selection and total level of risk exposure and ii) the
extent and effect of competition on the PSMIC industry concentration. These
concerns are exemplified by the focus of the recent study by A.D. Little,
done for FNMA and FHLMC, on the Private Mortgage Insurance Industry.

Risk selection. Mortgages being long-term investments intrinsically
contain default risk, a risk that must be faced by the originator as well
as insurer. Insurance is intended to spread the risk, and, on an actuarially
sound basis, develop a fiscal system for paying out losses. From the insurer's
view, there are several innate problems that must be confronted. First, there
exists the problem of adverse selection. A lender frequently has more know-
ledge about the borrower than the insurer does, and can differentiate be-
tween apparently similar risks. In such circumstances, the insurer faces
the possibility of adverse selection in his pool of applications for mort-
gage insurance. Second, this is further complicated because a lender, per-
ceiving he can, at least in part, insure his mortgages, may issue "riskier"
mortgages than he would have otherwise. This is a form of "moral hazard,"
and will represent a problem to insurers who cannot (or do not) differenti-
ate between good and bad risks. Third, over time mortgage default risks
can vary significantly. A PSMIC must, therefore, capitalize and expand its
surplus reserves in "good" periods in order to be able to withstand loss-
expenses in "bad" periods. Fourth, the PSMIC will and should reduce its
overall portfolio risk by properly diversifying across geographic sub-mar-
kets.[1] Fifth, the PSMIC cannot readily calculate the actuarial risks

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[1]See Rapkin, op cit., pp. 31-37. He observes that there exists sufficient uni-
formity of legal statutes across states that PSMIC find it reasonably easy to
attain necessary levels of geographic diversification.

and attendant loss reserve requirements because of inadequate "mortality tables" for loans on real estate. Especially for this last reason the overall solvency of the PSMIC would be at issue. However, all of these five factors and their interaction bear upon the overall solvency of the PSMIC. The A.D. Little study developed a simulation for the effects of several economic scenarios on PSMIC, and found that the PSMIC industry is viable over the long run under likely pessimistic as well as optimistic economic circumstances.[1]

Competition and concentration. Since the post Second World War rebirth[2] of PSMIC in the 1960's, Mortgage Guaranty Insurance Corporation (MGIC) has been the market share leader. However, MGIC's market share, which was virtually 100 percent in 1960, has fallen to about 60 percent, with at least three other firms each having about 10 percent of the market share. While by normal definitions this would be considered a concentrated industry, this is more apparent than real. First, the government still maintains the largest portion of the insurance mortgage market.[3] Second, competition for relative shares (but not to any major extent through price competition among the ten largest PSMICs) is significant. Third, there does exist the practice of self-insurance by mortgage lenders, which can be extended if reduced PSMIC industry competition should lead to higher prices for insurance. Another concern relating to competition is that an appreciable part of the asset portfolio of PSMIC's is in the form of deposits at s&l's.[4] Moreover, there exist some interlocking controls of s&l's and PSMIC's. According to A.D. Little's study of PSMIC, these two factors could lead to conflicts of interest to the detriment of the public, and may require careful monitoring over time.[5]

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[1]A.D. Little, op. cit., pp. 191-228.

[2]Rapkin, op. cit., pp. 22-26 discusses early history of PSMIC in the U.S.

[3]PSMIC's constitute about 45 percent of the total residential mortgage insurance market. This proportion varies substantially among individual s&l's.

[4]A.D. Little, op. cit., Table IV-3, p. 87 indicates that 7.5 percent of assets of the PSMIC industry are in s&l's deposits.

[5]A.D. Little, op. cit., p. 247.

e. Mortgage rate insurance

Unlike the previously discussed mechanisms for improving housing mar-
kets, mortgage rate insurance--designed to protect mortgage lenders who lend
long and borrow short against the risks of sharp increases in interest
rates--has not yet been implemented even on a limited basis. Though the
potential of such insurance has aroused considerable interest in recent
years, it is clear that the basic risk involved cannot be eliminated through
diversification and that any system of mortgage rate insurance would have
to rely on Government participation either through direct insurance or re-
insurance.

Thus, in view of the focus of this paper on the private sector, we shall
simply point out here that mortgage rate insurance may be an effici nt means
of stimulating mortgage lending and housing investment. It is obvious that
such insurance would shift to the Government the risks of cyclical or secu-
lar fluctuations in the general level of interest rates, and that these
risks and costs may be substantial, especially in periods of rapid and marked
increases in the rate of inflation. However, it can be argued that it is
Government monetary and fiscal policy which is largely responsible for major
changes in the interest rate level, and that the Government has the respon-
sibility for shielding the economic sectors most severely affected by its
policies from their more extreme effects. While we feel that some type of
mortgage rate insurance may ultimately turn out to be desirable, further
study of the relative efficiency of mortgage rate insurance vs. other
mechansims for improving the housing markets (i.e., benefits per unit of
cost) would seem to be required to justify the initiation of subsidies in

this new form.[1]

[1]For further discussion, See Robert Lindsey, "Rate-Risk Insurance for Mortgage Lenders," Federal Reserve Staff Study: Ways to Moderate Fluctuations in Housing Construction (Board of Governors of the Federal Reserve Ssytem, December 1972). Lindsey estimates on the basis of a partial analysis that over the 1962-70 period, with an insurance coverage of 50% of s&l mortgage holdings, excluding construction loans, and premiums of 50 basis points on unpaid balances, the costs to the Government housing agency would have amounted to $3.7 billion and the increase in the net mortgage flow would have been $23.9 billion.

5. Projections of Financial Requirements for Housing

To obtain some perspective on the financial requirements for housing over the next decade, it is necessary to assess first the demand for housing during this period. The demand for housing is determined by such economic variables as real income, relative prices, and monetary conditions, and by such demographic factors as the size, composition and location of the population. Public policies, reflecting the social priorities placed on adequate housing vs. other public goals, can of course exert a major influence on the economic variables affecting the demand for housing.

The two most recent long-term projections of the demand for housing that we have seen were made by Bosworth, Duesenberry and Carron (BDC) for the period to 1980[1] and by the Wharton Econometric Forecasting Associates, Inc. for the period to 1983.[2] The BCD housing projections are presented in Tables 5-1 to 5-3. These projections are in aggregate roughly consistent with the revised ten year goal of 25 million new housing units under the Housing and Urban Development Act of 1968, though the composition is quite different with mobile homes and multifamily units representing a much larger proportion of the total of new units than envisaged under the 1968 Act. The average annual rate of 2.7 million new units from 1974 through 1980 is not much different from the average for 1971-73 but is high in relation to net household formation when judged

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[1]Barry Bosworth, James S. Duesenberry and Andrew S. Carron, Capital Needs in the Securities, Brookings Institution, 1975.

[2]Wharton Long Term Econometric Model, June 23, 1975. Several sets of projections were made based on different policy assumptions. Those presented here are the results of the "control" model, incorporating what were regarded as the most plausible assumptions.

Table 5-1, Change in the Housing Stock, 1950-80

(Millions of units)

Description	1950	1960	1970	1980
Housing stock				
Occupied units	43.0	53.3	64.0	79.5
Vacant units*	3.2	5.0	6.2	9.7
Total	46.1	58.3	70.2	89.2
Vacancy rate (percent)	6.9	8.6	8.8	10.9
Change from preceding decade				
Units added	n.a.	16.9	18.6	27.0
New construction	n.a.	15.0	17.2	25.8
Other[b]	n.a.	1.9	1.4	1.2
Units removed[c]	n.a.	4.5	6.7	8.0
Net change	n.a.	12.3	11.9	19.0

Source: Bosworth, Duesenberry and Carron,

n.a. Not available
a. Includes seasonal units (vacation homes).
b. Conversions from group and nonresidential quarters and miscellaneous additions.
c. Demolitions, mergers, or conversions to group or nonresidential use, units unfit for habitation, and units destroyed by fire or flood.

Table 5-2. Net Household Formation and Composition of Housing Production, Selected Periods, 1956-80

(Thousands, annual average)

		New units			
Period	Net household formation	Single-family dwellings	Multi-family dwellings*	Mobile homes	Total
1956–65	929	975	471	133	1,579
1969–73[b]	1,491	1,043	853	495	2,392
1974–78[c]	1,450	1,196	900	571	2,667
1980[c]	1,450	1,275	875	575	2,725

Source: Bosworth, Duesenberry and Carron.

a. Includes public housing.
b. Estimated from partial data,
c. Projected.

Table 5-3. Housing Starts and Value of Residential Construction
Selected Years, 1960-80

Year	Housing starts[a] (thousands)	Value of residential construction (billions)	
		1973 dollars	Current dollars
1960	1,296	37.3	22.9
1965	1,510	40.7	27.3
1970	1,469	37.9	31.9
1973	2,058	58.0	58.0
1977[b]	2,225	57.3	75.8
1980[b]	2,150	56.3	83.5

Source: Survey of Current Business, various issues; and Bosworth,
Duesenberry and Carron.

a. Excludes mobile homes.
b. Projected.

Table 5-4. Housing Starts and Value of Residential Construction

Year	Housing starts (thousands)		Value of residential construction (billions)	
	Single unit	Multiple unit	1958 dollars	Current dollars
1973	1132.0	913.3	32.9	57.2
1974	855.7	457.5	23.2	44.8
1975	766.2	334.6	17.9	37.5
1976	1215.2	493.8	24.5	54.3
1977	1230.1	882.7	30.9	72.5
1978	1189.5	1186.6	34.8	86.0
1979	1143.9	1147.3	36.4	96.4
1980	1028.3	1214.2	33.7	95.9
1981	1228.7	1114.7	35.0	106.0
1982	1255.2	1012.1	34.3	110.3
1983	1045.4	932.2	31.6	105.9

Source: Wharton Long Term Econometric Model, June 23, 1975 (Control).

by historical standards. The projected rate is very much higher than that actually characterizing this year (1975) and its realization obviously depends on a marked improvement in monetary conditions. Even with the very substantial increase in housing stocks which is projected, the share of housing investment in gross national product would be lower than in the 1950's. Apart from the assumption of a marked improvement in monetary conditions, one other important caveat applicable to the BDC figures relates to their current dollar projections of residential construction (Table 5-3). These projections were based on a very modest 4.5% annual average rate of general inflation during the 1973-80 period, with a declining trend in the latter part of the period to 3.0%, associated with a somewhat higher rate of increase in building costs. As a result, the current dollar figures are probably somewhat understated.[1]

The Wharton projections to 1980 of the number of housing starts and the trend in real residential construction (excluding mobile homes) are not too different from the BDC figures (Table 5-4). However, the current dollar estimates of residential construction show a more rapid increase to 1980 reflecting the higher rate of price and cost inflation projected. From 1981 to 1983 the Wharton projections point to a modest decline in real investment outlays on housing. The policy assumptions made in the Wharton model are consistent with a bond rate declining from 9.4% in 1975 to 7.3% in 1980 and 7.2% in 1983, and a prime commercial paper rate not much different from 6.0% over this period.

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[1] BDC consider that their monetary and other assumptions, which lead them to a 3% projected rate of price inflation by 1980 and a 4.5% long-term real interest rate, imply a 7.5% nominal long-term rate and a short-term rate of 6.5% for Treasury bills. The projected 4.5% real interest rate seems somewhat high to us while the projected 3.0% inflation rate may be somewhat low.

While these housing projections do not go beyond 1983, it is possible to obtain some perspective on the overall trend in residential construction for the rest of the 1980's from projections of the rate of household formation by the Bureau of the Census (Table 5-5). After a rapid expansion in the number of new households from the early 1960's to the 1970's, a decline is projected throughout the 1980's. This reduction in the rate of household formation suggests that demographic factors will tend to depress housing demand and that maintenance of a buoyant housing market will depend more than in recent decades on favorable developments in real income, relative prices and monetary conditions.

The financial requirements associated with the projected demand for housing to 1980 have been estimated by BDC (Table 5-6). Two different approaches are used for estimating the annual growth rate in the value of residential mortgages from 1973 to 1980, implying rates of 8.6% and 9.7%, respectively. However, since both results are based on an assumed relatively low annual growth rate of price inflation (4½% on average from 1973 to 1980 and 3% by the end of the period), even the 9.7% figure may err somewhat on the low side assuming monetary conditions ease. A 9.7% growth rate would be substantially below the rate during the 1970-73 boom but exceeds that in the 1960's. While this figure points to a substantial rise in residential mortgage demand to 1980 (and perhaps beyond that date in view of the slower than projected rate of growth in 1974 and 1975), it does not imply a correspondingly higher claim on saving because a large part represents refinancing of existing homes.

BDC conclude that under the economic policy assumptions made "the lending institutions are able to meet the assumed demand for residential

Table 5-5.   Rate of Household Formation (1960-1980)

Period	Absolute Change (In millions)		Percent Change From Previous Period	
	Series 1	Series 2	Series 1	Series 2
1960–1965	(4.5)		(8.4)	
1965–1970	(5.6)		(9.8)	
1970–1975	7.2	6.5	11.5	10.4
1975–1980	7.2	6.7	10.3	9.6
1980–1985	6.9	6.4	8.9	8.4
1985–1990	5.8	5.4	6.9	6.6

Source: Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25, No. 476.

Table 5-6.   Value of Residential Real Estate and Mortgage Stock, End of Selected Years, 1960-80

Description	1960	1965	1970	1973[a]	1980[b]
Value of residential real estate (billions of dollars)	488	631	864	1,165	2,181
Ratio of real estate debt to value	0.332	0.396	0.391	0.409	0.388[c] 0.416[d]
Residential mortgage stock Value (billions of dollars)	162	250	338	476	847[c] 908[d]
Annual rate of growth from this year to year in next column (percent)	9.1	6.2	12.1	8.6[c] 9.7[d]	...

Source: Bosworth, Duesenberry, and Carron,

a. Preliminary.
b. Projected.
c. Assumes a debt-value ratio flow for each component of residential structures (the flow method described by BDC).
d. Assumes a 1973 debt-value ratio for each component of residential structures (the stock method described by BDC).

mortgage credit with very little intervention by the government agen-
cies." This conclusion is based on the projected changes in liabilities
and assets of financial institutions presented in Table 5-7. BDC esti-
mate that if inflation and market interest rates are both raised by
about 2% annually, the stock of mortgages would be $40 billion to $75
billion below the 1980 levels shown in Table 5-6 so that the annual rate
of growth in the stock of mortgages for 1973 to 1980 would be reduced
by roughly 1%.

To conclude this part of the paper, we agree with the general BDC
thesis that so long as inflation is reasonably well contained and mone-
tary conditions are not too stringent, the demand for mortgages in the
early 1980's will be fairly strong but will not pose excessive problems
to the lending institutions. If economic demands are generally strong
over most of the rest of this decade (once we are over the hump of the
present recession), the maintenance of both an acceptable level of in-
flation and moderate ease in the money markets may well require a more
successful policy of fiscal restraint.

Table 5-7. Changes in Liabilities and Assets of
Financial Intermediaries,[a] Selected Periods, 1961-80

(Billions of dollars, average annual flows)

Description	1961-65	1966-70	1971-73	1974-80[b]
Commercial banks				
Deposit accounts	19.6	25.7	58.9	76.4
Assets				
Residential mortgages	2.4	2.6	9.5	7.3
Credit market holdings[c]	14.0	20.9	43.6	54.1
Consumer credit	3.9	4.8	11.9	15.5
Savings and loan associations				
Deposit accounts	9.7	7.2	27.1	46.7
Assets				
Residential mortgages	8.9	7.3	24.1	38.1
Credit market holdings[c]	1.7	1.5	6.6	9.4
Mutual savings banks				
Deposit accounts	3.2	3.8	8.3	17.5
Assets				
Residential mortgages	3.2	2.0	3.6	13.7
Credit market holdings[c]	0.0	1.5	3.7	4.5
Life insurance companies				
Reserves[d]	5.2	5.9	10.6	17.5
Assets				
Residential mortgages	1.9	0.9	−0.9	−0.7
Credit market holdings[c]	4.1	5.9	12.7	19.1
Addenda				
Residential mortgages, total[e]	17.7	17.6	46.1	61.9
Federal Home Loan Bank advances	0.8	0.9	1.5	1.3
Federal National Mortgage Association purchases of residential mortgages	−0.1	2.8	6.4	2.2

Source: Bosworth, Duesenberry and Carron.

a. Excludes noncredit market assets and liabilities except residential mortgages and consumer credit.
b. Projected.
c. Includes bonds, corporate stock, commercial mortgages, government securities and bank loans; excludes residential mortgages and consumer credit.
d. Policy reserves are deducted from reserves.
e. Includes government and privately held mortgages as well as those held by financial institutions.

6. Summary and Conclusions

The extremely depressed state of the housing markets both during the recent recession and the current very early stages of recovery--periods when housing would normally be expected to be relatively buoyant--has reinforced concerns about the adequacy of the present institutional arrangements for financing housing. Obviously, a substantial part of the depressed state of the housing markets reflects the continued inflation in housing prices relative to other prices, in conjunction with a price elasticity of demand for housing of at least -1 and probably higher. Another substantial part reflects the dampening effect of high and at least until recently generally rising interest rates, which in turn are attributable to the high rate of inflation (both experienced and expected) and to the unusual degree of reliance on monetary rather than fiscal policy for containing inflationary pressures. Thus, much of the weakness in the housing markets has nothing to do with financing arrangements and depends for its resolution on dampening inflationary forces both in the housing and other markets, and on a more appropriate monetary-fiscal mix for implementing Government policy.

However, deficiencies in private institutional arrangements for financing housing probably have also contributed significantly to the weaknesses in housing investment over the past two years. Some of these deficiencies which are discussed in our paper have primarily a cyclical impact on the housing markets, others a secular impact. All of them reflect either the fragmented nature of private home mortgage markets compared to the markets for most other financial instruments (unless specific steps are taken to increase mortgage liquidity) or the adverse consequences of financing long-term assets, such as mortgages, with short-term liabilities, such as saving deposits, especially in a period of substantially rising interest rates.

Specialized housing financing intermediaries, notably the savings and loan associations, appear to have played an important role over the postwar period in counteracting the fragmented nature of the residential mortgage markets, and have probably been instrumental in lowering the required net yield differential (after costs) between residential mortgage rates and other capital market rates of comparable risk. Their ability to attract adequate funds to finance new housing, however, has been adversely affected in recent years by their asset-liability maturity structure, during a period when chronically rising interest rates increased borrowing costs with no commensurate increase in income from their mortgage portfolio, and by their higher deposit costs than those paid by commercial banks. (Commercial banks were able to maintain their competitive position while paying lower interest rates because of the greater range of services they offer and,unlike their competitors, they have access to low cost demand deposits).

To remedy the potential dangers of the seriously imbalanced asset-liability mix held by specialized housing finance intermediaries, we concur with the conclusion of the Study of the Savings and Loan Industry that additional flexibility in the asset-liability structure of these institutions is desirable. Perhaps the two most important areas for additional flexibility are consumer credit (the Study of the Savings and Loan Industry recommended up to 10% of assets be permitted) and a limited form of checking accounts. However, unlike the Hunt Commission's Report, we suggest that the initial steps taken in the direction of flexibility guard against the possibility of a severe adverse impact on the housing market.
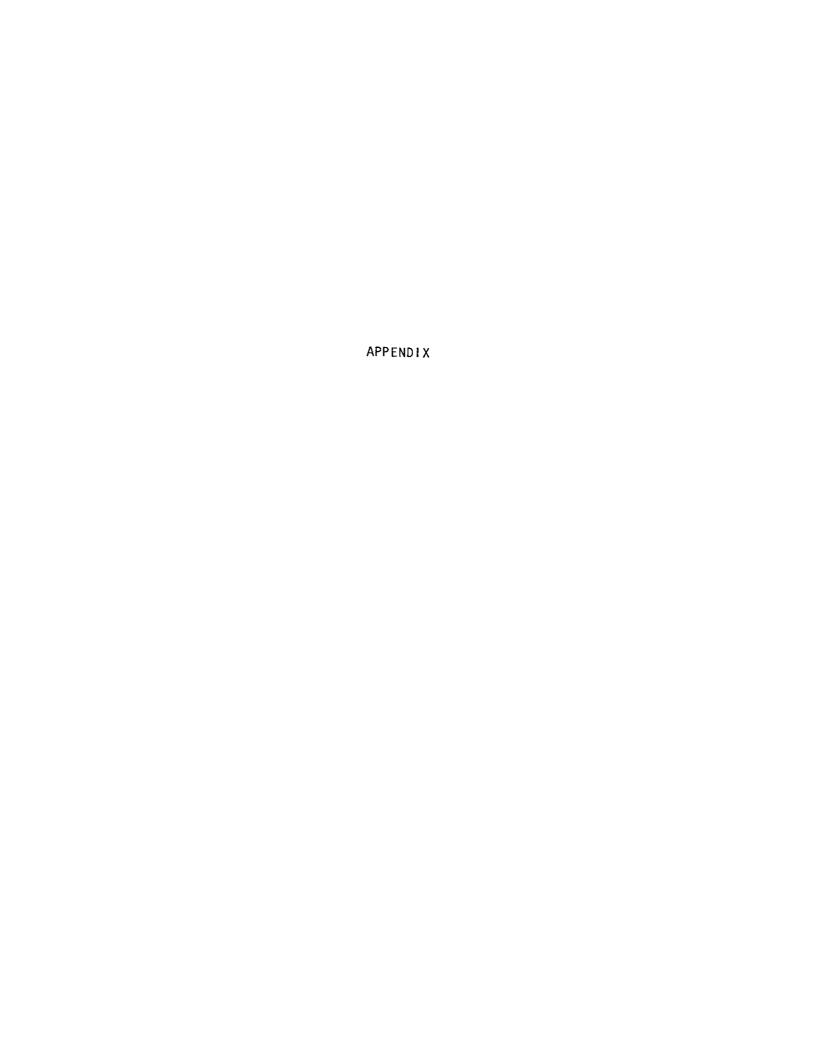
Another mechanism for improving housing markets, which has expanded rapidly in recent years, is private mortgage insurance. Such insurance has efficiently filled a gap not covered by Governmental programs and has significantly reduced liquidity and default risks to the specialized housing financing institutions, but not the interest rate risk associated with a seriously unbalanced asset-liability structure.

Mortgage-backed bonds, which were issued for the first time this year on a relatively small scale, constitute still another device for improving liquidity of the mortgage market. However, the costs involved are relatively high and these bonds like private mortgage insurance do not reduce interest rate risks to mortgage lenders.

This last risk, which poses perhaps the major remaining problem to the specialized housing financing institutions, could be largely reduced by the substitution of a variable-rate mortgage for the traditional fixed-rate mortgage. Such variable-rate mortgages have recently been instituted on a large scale in California, but we do not yet have access to the results of this experiment. Variable-rate mortgages are more complex instruments than the fixed-rate mortgages so that it is important that they be associated with appropriate protections for the relatively unsophisticated borrower. However, in the economic environment of the foreseeable future, variable-rate mortgages would seem to be a desirable instrument for reducing the higher interest rate risk facing the specialized lending institution. Even from the viewpoint of the borrower, the ideal mortgage instrument would not be a fixed-rate mortgage but a combination of fixed-rate and variable-rate mortgages that corresponded to the proportions of income, including imputed value of rents, which are nominally fixed and variable over time.

Mortgage rate insurance could also be used to protect mortgage lenders against the risk of sharp increases in interest rates. However, it is clear that such a risk cannot be substantially reduced through diversification so that any system of interest rate insurance would have to rely ultimately on some form of Government participation and is therefore outside the purview of this paper. Nevertheless, we should mention that such insurance might be regarded as a substitute for variable-rate mortgages, but we have not carried out an analysis of the relative efficiency of these two approaches to the same basic problem.

Finally, the paper summarizes the main developments over the post-World War II period in the level and quality of housing and in the ways housing has been financed. It also attempts, partly on the basis of other studies, to provide some perspective on the trend in housing investment and the associated financial requirements over the next decade. We conclude that so long as inflation is kept within reasonable bounds and money is not unduly tight, the private demand for housing and mortgages will on the average be fairly strong until the early 1980's and then will probably be somewhat weaker in that decade as a result of an anticipated decrease in the rate of household formation.

APPENDIX

Appendix A.   Changes in the Private Market Since the Second World War--Census and Related Data

Since the end of the Second World War, the growth in average family disposable income has permitted housing consumption expenditures by the "typical" household to increase significantly. (Of course, even though improvements in housing consumption have been substantial on average, undoubtedly the lower end of the income spectrum still faces severe problems). It should be noted at the outset that the choice of housing consumption and changes in housing consumption patterns are complex phenomena. For example, housing consumption decisions usually involve complicated choices and trade-offs between shelter and location variables, such as proximity to work, quality of local schools, socio-economic nature of the neighborhood, and so forth. The focus of the discussion in this appendix will not attempt to explain the exact nature of these complex processes which determine the quantity and quality of housing consumption. Our analysis will be less ambitious, and will provide a series of snapshots of housing consumption over time that relate to quality-quantity changes.

The condition of the housing stock in the United States has improved dramatically from 1950 to 1970. Table A-1 indicates, using Census data, the extent of the change in the quality of the total housing stock. In general, the housing stock is newer and better: The percentage of units which lack adequate plumbing has decreased by eighty percent between 1950 and 1970; the percentage of units that are overcrowded or dilapidated has fallen by about half. Table A-2 suggests that there exist significant differences in the kind and type of housing across regions of the U.S. For example, the Northeast region of the country contains the highest proportion of multi-family units with five or more units per structure, and the largest proportion of older housing stock (30 years or more). The South has the largest proportion of single-family dwelling units, and the largest proportion of units lacking adequate plumbing.

Table A-1

Characteristics of the Housing Stock of the United States:
1950, 1960 and 1970
(percentage of units)

Characteristic	1950	1960	1970
More than 30 years old	45.7	46.5	40.6
Lacking plumbing[1]	35.4	16.8	6.9
Over-crowded[2]	15.8	11.5	8.2
Dilapidated[3]	9.8	5.0	4.5

[1]Housing units which lack one or more plumbing facilities or have facilities also used by occupants of another unit.

[2]Units with more than 1.00 person per room.

[3]Housing which is considered not to provide safe and adequate shelter and endangers health, safety or well-being of occupants; defects are so critical or widespread that the structure should be extensively repaired, rebuilt, or torn down.

Source: U.S. Department of Commerce, Bureau of Census,
         Census of Housing, 1950, 1960, 1970.

Table A-2

Regional Differences for Selected Characteristics of the
Housing Stock in United States, 1970
(percentage of units)

Area	Units in one-unit Structures	Units in Structures of 5 or More Units	Units over 30 years old	Lacking Plumbing	Median Number of Rooms	Median Persons per Unit
U.S. total (average)	69.1	14.5	40.6	6.9	5.0	2.7
North East	54.2	22.4	55.2	3.9	5.1	2.7
North Central	71.9	11.5	49.1	6.2	5.1	2.7
South	77.7	9.8	29.4	11.9	4.9	2.5
West	69.9	16.9	26.8	3.3	4.7	2.7

Source: U.S. Department of Commerce, Bureau of the Census, Census of Housing 1970.

As the housing stock has grown over time, there have been notable changes in the composition of the stock. The most significant of these changes, as indicated in Table A-3, is the growth of mobile home shipments from under 100,000 units per year in the 1950's to over half a million in the early 1970's. (Note that in 1974 and continuing into 1975 mobile shipments have fallen off dramatically.) Another systematic change in the housing production mix is the relative importance of multi-family dwelling units. In 1960, multi-family dwelling units were about 21 percent of all conventional housing starts; in the early 1970's they were about 45 percent of the total. (This, too, has declined dramatically in 1974 and 1975.)

In Table A-4, line 7, it can be seen that the median household size has been declining secularly. Put differently, the number of households have grown much faster than population. Part of the decline in household size is the result of falling birth rates. However, the rapid growth in real income has probably played a role in reducing household size. For example, as living standards have improved, it is likely many elderly, who in earlier years would have lived with their adult children, were able to afford to operate their own independent households.

With these caveats in mind, the data presented in Tables A-4 and A-5 are consistent with recent cross-sectional and time-series studies about the income and price elasticities for the demand for housing. In particular, there exists (an uneasy)concensus, epitomized by de Leeuw[1], that the income elasticity of

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[1]Frank de Leeuw, "The Demand for Housing: A Review of Cross-section Evidence," Review of Economics and Statistics, Vol. 53 (February, 1971), pp. 1-10 presents a fairly comprehensive review of the elasticity debate. A subsequent article by Geoffrey Carliner "Income Elasticity of Housing Demand," Review of Economics and Statistics, Vol. 55 (November, 1973) pp. 528-532 finds that the income elasticity is significantly less than one for renters and owners.

Table A-3

Private Housing Activity
(Housing Starts Millions of Units)

Period	Total (excluding mobiles)	One-family	Multi-family	Mobile Home Shipments
1950-1959 (average)	1.505	-	-	.091
1960-1968 (average)	1.434	.837	.463	.183
1960	1.252	.995	.257	.104
1965	1.473	.964	.509	.217
1970	1.434	.813	.621	.401
1971	2.052	1.151	.901	.497
1972	2.357	1.309	1.048	.576
1973	2.045	1.132	.913	.567
1974	1.338	.888	.450	.371

Sources: 1) Federal Reserve Bulletin, Board of Governors of the Federal Reserve System.

2) Economic Report of the President, 1975.

Table A-4

Household Characteristics: 1950, 1960, and 1970

Characteristic of Household	1950 All Households	1960 All Households	1970 All Households	1970 Central City	1970 Metropolitan Suburbs	1970 Non-Metropolitan Areas
Median Income for Families and Primary Individuals						
1) Owner -	$3,360	$ 5,900	$ 9,700	$10,100	$11,600	$ 7,500
2) Renter -	$2,800	$ 4,100	$ 6,300	$ 6,100	$ 7,700	$ 5,300
3) Median Home Value -	$7,400	$11,900	$17,100	$16,400	$20,800	$12,200
4) Median Value to Income Ratio -	2.09	1.92	1.79	1.72	1.86	1.72
5) Median Gross Rent -	$42	$71	$108	$107	$130	$84
6) Median Gross Rent to Income Ratio -	17.9%	19.7%	21.0%	21.8%	20.7%	19.5%
7) Median Persons per Household -	3.1	3.0	2.7	2.4	3.0	2.7
8) Median Number of Rooms -	4.6	4.9	5.1	4.7	5.3	5.1
9) Median Persons per Room -	less than 0.75	.59	.50	less than .50	.53	less than .50

Table A-5

Measuring Quantity Changes in Housing Consumption for Owner-Occupied and Rental Housing 1950, 1960, and 1970 Census Data

Census Year	Owner-occupied				Rented Housing			
	Median Home Value	CPI Ownership Index (1967=100)	Real (1967) Value of Homes	Quality Change Over Preceding 10 years	Median Gross Monthly Rent	CPI Rented Index (1967=100)	Real (1967) Gross Rent	Quality Change Over Preceding 10 years
1950	$ 7,400	67.6[1]	$10,947	-	$ 42	68.0	$ 62	-
1960	$11,900	86.3	$13,789	26%	$ 71	90.4	$ 79	27%
1970	$17,100	116.0	$14,741	7%	$108	105.7	$102	29%

[1] Estimated from CPI Homeownership Index and Total Housing Index.

demand for housing for homeowners is approximately unity, and that of renters

is less than one. On the other hand, the price elasticity for housing demand

is found to be probably less than -1.0. However, at our current state

of knowledge, these elasticity estimates should be accepted as tentative, not

definitive.

As we discussed in section 4 above, the true values of these elasticities

are crucial in determining the precision of housing analysis and its policy

implications. Therefore, it is worth discussing here the data limitations

usually contained in housing elasticity studies. First, for homeowners, fre-

quently the measure of income used does not reflect real permanent income[1]

because the implicit value of the flow of housing services is not included.

Assume, as is commonly the case, the study attempts to estimate

$$\log V = a + b \log (Y-H)$$

where

V = market value of the owner-occupied home (appropriately deflated into real

terms)

Y = "true" permanent income in real terms

H = real value of housing services (frequently omitted from the income measure

used in the estimation)

For simplicity, assume also that $H = \alpha V$; that is, housing services are pro-

portional to value.

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[1] Of course, there is an important deflator index number problem in the calcula-
tion of permanent income over time. Using the government price indices to
deflate current dollar values of permanent income probably understates the real
growth in permanent income over time. For example, see George J. Stigler,
The Theory of Price, Third Edition (New York: MacMillan Company, 1967), pp. 74-78.

In other words, there is a measurement error because V is proportional to H and H is negatively correlated with (Y - αV). This will affect our estimates of b.[1] Note "b" is the estimate of the income elasticity. If $n_{VY} = \frac{\partial V}{\partial Y} \cdot \frac{Y}{V}$ is defined to be the true home-value income-elasticity, then it can be shown that

$$b = \frac{n_{VY}\ (Y-H)}{Y - n_{VY} \cdot H}$$

Therefore, if $n_{VY} = 1$, b will equal 1, and the estimator for the elasticity yields an accurate estimate. However, if n > 1, it is found that b > n and if n < 1, it is found that b < n. That is, the income elasticity estimate b will be biased upward if the true elasticity is greater than unity, and biased downwards if the true income elasticity is less than unity.

Second, for renter-households, real gross rent data consist of two components: rent paid for housing services, R; and rent paid for other services, N, which sometimes include apartment furnishings, utilities, and so forth. If Y is real permanent income, the rent-expenditure income elasticity might be estimated by the following relationship:

log (R + N) = a + b log Y

In this case "b," the elasticity estimate, will be found to be

$$b = n_{RY}\ \left(\frac{R}{R+N}\right) + n_{NY}\ \left(\frac{R}{R+N}\right)$$

where n_{RY} is the true rent-expenditure income elasticity and n_{NY} is the non-rent expenditure income elasticity. In general, if N < R and $n_{NY} \longrightarrow 0$, b will

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[1]There are other sources of measurement error which also affect these results. Thus, if Y-H is measured with random error, it would bias the absolute value of b downward; a similar statistical problem would occur if H is correlated with V, and the former is subject to random measurement error. For a fuller theoretical discussion of the statistical effects of errors in the measurement of variables in the sample data, see J. Johnston, Econometric Methods, Second Edition, (New York: McGraw-Hill Book Company, 1972), pp. 281-191.

yield a good approximation of n_{RY}. Therefore, to the extent related non-housing services expenditures are a function of permanent income and a large portion of gross rents, the rental housing elasticity estimate, b, will be over-stated.

Tables A-4 and A-5 illustrate important changes which have occurred in the characteristics of the typical household's housing consumption pattern through the period 1950 to 1970. While the overall Consumer Price Index (CPI) increased approximately 61 percent between 1950 and 1970, home-owning households' and renter households' incomes increased by 189 and 125 percent, respectively. This permitted both renters and homeowners to enhance their standards of living, including improving the quality of their housing consumption. A partial indication of this is the contemporaneous secular increase in the median number of rooms per dwelling unit and decrease in persons per household; these two factors jointly have reduced overall household crowding. Table A-5 presents a better (but still rudimentary) calculation for the change in the quality of housing consumption over the 1950 to 1970 period. For homeowners, the "nominal" median value of housing, as reported by the Census, is deflated by the CPI component for home ownership to yield real (1967 dollars) estimates of housing value. The changes in these "real" values for homes represent an estimate of the changes in the "quality" of housing consumption, and reflect about a 35 percent increase in the average owner-occupied household's housing consumption between 1950 and 1970.[1]

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[1] These calculations tend, in our opinion, to understate the true change in the real values of owner-occupied housing, especially in the 1960 to 1970 period. First, while studies, such as John Lansing and Leslie Kish, "Response Error in Estimating the Value of Housing," Journal of the American Statistical Association, Vol. 49 (September, 1954), pp. 520-538, and John F. Kain and John M. Quigley, "Measuring the Quality and Cost of Housing," Journal of the American Statistical Association, Vol. 55 (June 1970), pp. 532-548, have verified that, on average, Census self-assessments of housing values were relatively accurate for 1950 and 1960, it is likely that there may be a significant and systematic understatement of self-assessed housing values in the 1970 Census. We believe this is caused by the fact that in the latter part of the 1960's, rapid unanticipated housing appreciation occurred, and was not fully incorporated into a large portion of the self-assessment value estimates. Second, the CPI home-ownership component consists of three types of costs: i) Costs all homeowners

Similarly, for renters, the nominal gross rents, as reported by the Census, are deflated by the rental housing component of the CPI to estimate real (1967 dollars) gross rents. Estimated changes in the "real" gross rentals suggest that real housing consumption for a typical renter household between 1950 and 1970 increased about 65%.

However, the data for the typical renter or homeowner do not reflect important differences between the living conditions in central cities, suburbs of SMSA's and rural areas. The three right-hand columns in Table A-4 examine these inter-area differences in 1970 for renters and homeowners. In general, suburban incomes are higher than central city or rural (non-metropolitan) income levels. In our opinion, this breakdown by sub-areas does not reflect the full extent of differences in housing and allied consumption, especially for local public goods. To the extent housing is chosen because of locational advantages in the suburban areas, such as access to better schools, better police and sanitation service, etc., the Census data understates the relative differences between the suburbs and central cities as well as the suburbs and rural areas.[1] Furthermore, the median number of persons per room in the central city is probably lowered by the presence of single person households, which are relatively rare in the suburbs.

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pay annually and change according to current conditions, such as property taxes and insurance, ii) Costs that do not necessarily recur every year, such as maintenance and repairs, and iii) Costs that are usually determined at the time of home purchase, such as mortgage payments. Some of the elements contained in the last of these cost categories have increased significantly in recent years, and would tend to increase the CPI home-ownership component, but do not necessarily reflect the change of costs incurred by those homeowners who have not moved in relatively recent years. These two factors in concert will tend to understate the real value of housing in 1970, and, therefore, understate the true gain in 1970 housing consumption reported for owner-occupied dwellings in Table A-5.

[1] The data in Table A-4 is in 1970 (current dollars). Strictly speaking, there is an index problem which inhibits our ability to evaluate real inter-area differences.