(5/25/71 origin)

June 15, 1971 - 669

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Monetary Restraint and Housing in Selected Foreign Industrial Countries

by

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NOTE

This is a collection of study papers on the relationship between monetary restraint and housing in selected industrial countries -- Belgium, Canada, France, Germany, Italy, and the United Kingdom. These country studies, which should be considered preliminary in nature, were written during the summer of 1970 -- some of them subsequently revised -- by members of the European and British Commonwealth Section, Division of International Finance.

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I. Monetary Conditions and Housing in Belgium

This study seeks to determine whether changes in monetary conditions -- both easing and tightening -- in Belgium affect the level of activity in the housebuilding sector more severely than most other sectors, and to develop explanations for the findings. It should be emphasized that this is a preliminary attempt, and the findings should be considered tentative.

It was possible to find several appropriate statistical series covering the period from 1955 through the third quarter of 1969. Two sets of data have been used to measure changes in the degree of monetary restraint. One is the money stock (currency and demand deposits), which reflects changes in monetary conditions on the supply side. It was also thought appropriate to employ an interest rate series as an indicator of the degree of monetary ease or restraint as determined by both the demand and supply of liquid funds. The composite yield on long-term government bonds issued before December 1962 was selected for this purpose, rather than a rate on short-term Treasury bills, partly because continuous series for the latter are not available going back to the mid-1950's, and partly because the money market in Belgium is restricted to financial institutions and does not compete directly for funds from business firms or individuals.

There is a continuous monthly series, not seasonally adjusted, for residential building permits beginning with 1955. A discontinuous, unadjusted monthly series for housing starts is available for the year

1960-65 and for 1967 to date. To measure housing production that might be sensitive to changes in monetary conditions, use has been made of both permits and starts. Conceptually, the series for starts may be the better measure of the level of housebuilding activity as a function of current demand, since the series for permits suffers from the defect that some permits may not be actually translated into starts. However, for two reasons permits have been used, along with starts, as one measure of housing production. First, housing starts may themselves be an imperfect indicator to the extent that they are affected by delays and speed-ups caused by weather or other noneconomic factors. Secondly, in the specific case of data for Belgium, the series for permits has the advantage, relative to that for starts, in covering a substantially greater number of years.

Housing permits and starts have exhibited much greater year-to-year fluctuation than has industrial production whether during periods of monetary restraint or monetary ease. However, greater fluctuation in one sector of industry than in industry as a whole is a usual occurrence, because of offsetting fluctuations within industry as a whole, and may not be the result of a greater-than-average sensitivity of the individual sector to changes in monetary conditions.

Regression analysis was used to determine if there was any significant relationship between changes in monetary conditions on the one hand and fluctuations in housing production relative to total production on the other for the period as a whole, including both periods of monetary easing and monetary tightening. The excess

fluctuation in housing permits and the excess fluctuation in housing starts were each regressed linearly on year-to-year changes in quarterly data for the money stock and long-term government bond yields. Excess fluctuation is here used to mean the percentage change in quarterly data for permits or starts less the percentage change in industrial production for that quarter; the excess fluctuation is positive when housing permits or starts either rise more or decline less than industrial production, and is negative if the housing series declines more or rises less than industrial production. Regressions of this type were made with no lags, and also with lags of one and two quarters, in the two series measuring the excess fluctuation of housing production. Those regressions involving permits were made from observations in the period 1955-69, while those involving starts employed observations during the years 1960-65 and 1967-69. (The 1969 data end with the third quarter.)[1/]

As regards the regressions in which no lags were used, the regressions of changes in the monetary variables with the excess fluctuation in housing permits yielded values of r^2 very close to zero. Those relating the changes in the monetary variables to the changes to the excess fluctuation in housing starts produced higher positive values of r^2, viz., .12 and .10, but still not high enough to be significant at the .05 level.

1/ It should be emphasized that when this test was run the most recent (and what turned out to be the most severe) period of monetary restraint in Belgium was underway and has not been included in the tentative findings since data were not available at the time the statistical testing was undertaken.

The introduction of lags of one or two quarters in the regressions did not help to produce meaningful results. The r^2 values were nearly zero in all eight cases; the highest positive r^2 was .03, which was far from significant.

The above investigation is only a tentative attempt to measure the relative sensitivity of housing to both easing and tightening of monetary conditions. Based on data which exclude the most recent period of monetary restraint, they suggest that housebuilding in Belgium is not more sensitive to changes in monetary conditions than are the other branches of industry, on the average for the period as a whole. This investigation, however, does not provide any evidence regarding the sensitivity of housing to changes in monetary conditions for any one particular episode of monetary restraint or monetary easing.

One aspect of the financing of housebuilding that distinguishes the Belgian mortgage market is the relatively high proportion of the financing that comes from individuals. This source financed an average of 45 per cent of total housebuilding outlays in the years 1954-64, according to an OECD study.1/ The percentage varied in this period from a low of 40 per cent in 1954 to a high of 51 per cent in 1962. This large source of finance from individuals may contribute to a more stable flow of funds into housing because individuals' propensity to invest in housing as compared with other assets (e.g., securities,

1/ Organization for Economic Cooperation and Developments, The Financing of House Building in Some of the Countries of the OECD, Paris, November 4, 1968, p. 78.

bank deposits) is probably not much influenced by changes in the overall availability of credit or in the general level of interest rates. The relatively high proportion of housing finance that is supplied by individuals is at least to a considerable extent related to the typically rather low value of mortgages granted in relation to the property involved. The Caisse Generale d'Epargne et de Retraite (General Savings and Pension Fund), the most important mortgage institution in Belgium, makes ordinary mortgages equal to only 50 to 65 per cent of the value of the property, and the percentage is probably not higher for other savings banks and other mortgage lenders in the private sector. In the case of the CGER's "social housing" mortgages (i.e., for low cost housing at subsidized interest rates), the value of the mortgage rises to 70 per cent of the property value except where the mortgage is guaranteed by the State (in which case the proportion is 100 per cent).

Financial institutions provide a large fraction of the funds that go into housing; their share averaged 51 per cent of the total sources of housing finance in the years 1954-64, according to the OECD study cited earlier. These institutions include the private savings banks, insurance companies, mortgage companies, the Caisse Générale d'Epargne et de Retraite, and a number of parastatal organizations whose sole purpose is to finance "social housing."

The Caisse Générale d'Epargne et de Retraite, a publicly controlled institution which holds more than one-half of total time and savings deposits in Belgium, finances housing in essentially three

ways. First, it grants ordinary mortgages -- in recent years only to its depositors -- at interest rates which are substantially lower than other market rates.[2/] Mortgages of this type have accounted of late for roughly 40 per cent of total new financing of housing (loans and bond purchases) extended by the CGER.[3/] Secondly, the CGER finances "social housing" (i.e., low-cost homes) by loans made directly to final borrowers (now rare, however) and by advances to its "approved societies," which in turn relend to the final borrowers. Such loans are made subject to strict limits on amounts and on the size of the dwelling and at highly preferential rates of interest. In May 1969 the interest rate on loans by the "approved societies" was 4.75 per cent compared with mortgage rates in the private sector reported to be generally between 7.5 and 8 per cent at the time.[4/] Loans made through the "approved societies" have generally comprised 25 to 30 per cent of the CGER's total extensions of new financing for housing in recent years.

The remainder of the CGER's activities as a source of housing finance consists of financing a variety of parastatal organizations which provide low-cost housing for rent or purchase. The CGER's support includes advances and the purchase of non-marketable bonds issued by some of these organizations, and this support seems to constitute most, if not all, of the financial resources at those organizations' disposal.

2/ In May 1969 the CGER's basic rate was 6.50 per cent.
3/ Caisse Générale d'Epargne et de Retraite, Compte rendu des operations, annee.... [annual report] for recent years.
4/ Ministère de la Santé Publique et de la Famille, La Politique Sociale du Logement en Belgique, Brussels: May 1969, p. 4.

The largest of these parastatal organizations is the Société Nationale du Logement (National Housing Society), which is controlled by the State and the nine Belgian provinces. It lends to its many "approved companies" (325 in number at the end of 1968), which build housing for rent at low prices, or quite rarely, for sale on easy terms.[5/] Another of the more important parastatal organizations is the Société Nationale de la Petite Propriete Terrienne, (National Sociey for Small Landed Property), which builds low-cost, multi-family housing for resale in rural areas to persons whose incomes are below a certain limit, at the very low interest rate of 3.25 per cent (as of May 1969).

Summaries of the CGER's financing of housing in 1964-68 are shown in Table 1.

In the years 1960-64, the loans made by the CGER for the construction of new houses and for home improvements, together with its purchase of bonds issued by parastatal housing organizations, averaged 42 per cent of the figures published by the OECD for total investment in Belgium in housing that was financed by financial institutions.[6/] Over the same period, outstanding mortgage loans of the private savings banks increased by an amount equal to 12 per cent of total housing investment, a figure which understates those institutions'

5/ At the end of 1968, 286 of these "approved companies" were co-operatives or corporations the capital of which was held by the State, the province, the municipality, public assistance commissions and individuals. Most of the rest were tenants' cooperatives.
6/ Loans for purchase of existing houses would not be a financing of investment for the country as a whole.

Table 1. Financing of Housing
by the Caisse Générale d'Epargne et de Retraite

(In millions of Belgian francs)

	1964	1965	1966	1967	1968
I. Total Financing by Type					
A. Purchase of bonds	1,732	1,950	1,938	1,849	3,111
B. Loans	7,629	7,436	8,132	8,786	10,710
Totals	9,361	9,386	10,070	10,635	13,821
II. Financing Classified by Purpose[1/]					
A. To build new housing	5,863	5,602	5,967	6,206	7,817
B. For renovations	242	263	322	385	505
Subtotals for above	6,105	5,865	6,289	6,591	8,322
C. To buy existing dwellings	2,705	2,855	3,209	3,500	4,268
Totals	8,809	8,720	9,498	10,091	12,590
III. Financing Classified by Recipient[1/]					
A. Loans to ordinary borrowers	4,150	3,620	4,489	5,287	6,328
B. Social housing					
1. Advances to "approved societies"	2,352	2,898	2,825	2,891	3,762
2. Direct loans	873	620	473	259	25
3. Financing of parastatal organizations	1,434	1,582	1,711	1,654	2,476
(Société Nationale du Logement)	(1,133)	(1,117)	(1,158)	(1,129)	(1,696)
(Others)[2/]	(301)	(465)	(553)	(525)	(780)
Subtotals for social housing	4,659	5,100	5,008	4,804	6,262
Totals	8,809	8,720	9,498	10,091	12,590

1/ Excludes loans to certain organizations for which breakdowns were apparently not available.

2/ Société Nationale de la Petite Propriété Terrienne, Fonds du Logement de la Ligue des Familles Nombreuses de Belgique, Crédit Immobilier aux Cheminots, Le Logis Militaire, l'Oeuvre Nationale des Invalides de la Guerre.

Source: Caisse Générale d' Epargne et de Retraite, Compte rendu, 1964-1968.

financing of such investment because the rise in outstanding mortgages measures new mortgages granted net of repayments of old ones. Thus, it is clear that the CGER and the private savings banks, together, accounted for well over one-half of all the financing of housing by financial institutions.

The Belgian government has long wished to encourage the construction of owner-occupied, single-family homes, and since 1948 has continuously extended grants for the construction or purchase of such homes. From 1948, when such grants were begun under the De Taeye Act, to 1960, the grants were given irrespective of the income of the homeowner, subject to a limit on the size of the homes, and in amounts partly determined by the number of children in the household.[8/] Since 1960, the grants have been conditional largely on income, and decline (eventually to zero) as the homeowner's income rises; adjustments in the amount of the grant are made for location and number of children, and the home must not exceed a certain size.[9/]

Largely because of these grants, the public sector provides a source of funds for financing private housebuilding in Belgium. The public sector's share in such financing averaged 4 per cent in 1954-64. In addition to grants for home construction, the other principal public sector outlays for housing have been interest subsidies, e.g., to the parastatal organizations which finance "social housing."

8/ Confédération Nationale de la Construction, Derrière la facade du logement, Brussels: 1970, p. 59.
9/ Ministère de la Santé Publique et de la Famille, La Politique Sociale du Logement en Belgique, pp. 7-16.

Public sector grants for the financing of housebuilding have not been influenced by monetary or cyclical developments. Their availability has probably helped in some small degree to stabilize the housing industry.

Robert M. Dunn, Jr. *

II. Monetary Restraint and Housing in Canada

The structure of the Canadian mortgage market is quite similar to that in the United States, and it is therefore not surprising that the construction industry in Canada faces financial problems related to monetary policy shifts which are also like those in this country. The existing shortage of housing in Canada is a significant political issue, and in recent years the government has made a number of attempts at structural changes in the mortgage market in order to encourage residential construction and ease the effects of tight monetary conditions. The Canadian housing industry is now in the midst of a sharp contraction, so that it is not obvious that the government's efforts have met with great success. The administration is publicly committed to the construction of one million residential units in the first five years of this decade, but housing starts will be well below 200,000 this year, and a sizable recovery will be needed if this commitment for 1970-75 is to be met. Because of the government's attempts to bolster the industry are quite recent, however, it is too soon to conclude that they will not provide the needed stimulus.

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Available statistics show that the Canadian housing industry was greatly affected by the tight monetary policies of 1966 and 1969-70. Although industrial production merely flattened out in these periods, the housing industry went through a sharp contraction on both occasions. In 1966, the number of houses under construction fell by about one-third from peak to trough, and the 1969-70 decline in housing starts suggests that this decline will be equaled or exceeded this year.

The types of institutions lending mortgage money in Canada are similar to those in the United States. From Table 1 it can be seen that the largest group of lenders is made up of trust companies (somewhat like our savings banks), loan companies, and similar institutions. Life insurance companies are the second most important private source of funds, followed by the commercial banks. In addition, a government agency, the Canadian Mortgage and Housing Corporation, makes direct mortgage loans for low income housing.

The constraint on the housing industry in recent years has not been a lack of resources or demand, but a lack of financing.[1/] This shortage produces both interest rates which many potential buyers of homes cannot afford and a non-price rationing situation

1/ Smith, L. H., "Postwar Canadian Housing Policy in Theory and Practice," Land Economics, August 1968, p. 342.

in which people who normally would have no difficulty getting credit are unable to find mortgage funds at the going price. The non-price rationing has been particularly important, and a number of recent government measures have been aimed at alleviating this problem.

With respect to the direct effect of interest rates on buyers, one recent study of the Canadian housing industry suggests that a 1 percentage point increase in the National Housing Authority (NHA) -- analogous to our FHA -- mortgage rate will cause a 12 per cent cut in housing starts the first year, another 13 per cent a year later, and a final 10 per cent in the third year after the increase.[2/] The extent of non-price rationing of mortgage funds varies directly with tight money and the height of interest rates, so these statistics may reflect both effects.

The non-price rationing effect of tight money occurs because mortgage rates have typically risen less rapidly than yields on other assets, encouraging financial institutions to avoid mortgages in favor of investments such as corporate bonds. This happens in part because mortgage rates are an "administered price" and adjust more slowly than auction prices to shifts in market conditions. In the past, however, the tendency of mortgage rates to lag behind market yields has been primarily the result of the operations of

2/ Smith, L. H., "A Model of the Canadian Housing Mortgage Market," Journal of Political Economy, Sept./Oct. 1969.

the NHA which acts as an insurer of mortgages. Until recently the NHA set maximum yields on mortgages which it insured, and adjusted these rates to market yields only after a long time lapse. The result was that in periods of tightening monetary conditions lenders simply withdrew from the NHA market and only conventional mortgages were available. Since conventional mortgages typically require much larger down payments, the drying up of the NHA sector of the market made it impossible for many people to purchase homes. Econometric studies of the Canadian housing market show that increases in bond yields relative to mortgage rates in periods of tight money have been an important factor in reducing housing starts.[3/] Another study showed that the non-price rationing factor has worked to restrict single unit housing much more strongly than apartment house construction. Institutional investors apparently give preference to large real estate firms in periods of tight money -- in order to protect continuing business relationships -- and potential purchasers of single family homes, who will not be repeat borrowers, are left without financing.[4/] Legal provisions on early repayment also tend to lead institutional lenders to favor apartment builders. By law,

3/ Smith, L. H., "A Model of the Canadian Housing Mortgage Market," JPE Sept./Oct. 1969, pp. 795-816; and "On the Economic Implications of the Yield Ceiling on Government Insured Mortgages," Canadian Journal of Economics and Political Science, August 1967, pp. 421-431.
4/ Smith, L. H., "A Bi-Sectoral Housing Market Model," Canadian Journal of Economics, November 1969, pp. 557-569.

borrows for single homes have been able to pay off mortgages without penalty after five years, while apartment house mortgage borrowers have no such protection. In periods of high interest rates lenders therefore tend to "lock in" as much money as possible at the high yields by avoiding single unit loans in favor of apartment house mortgages. The "lock in" period for NHA single unit loans has recently been lengthened to make them somewhat more attractive to lenders in periods of tight money. Another problem of mortgage availability in Canada has been that lenders have favored the suburbs of large cities at the expense of rural areas and central cities. Institutional lenders have avoided inner city loans for reasons of risk, while they do not have representatives in many rural areas to offer efficient loan service there. As a result the government-owned Canadian Mortgage and Housing Corporation has become the primary lender for low income housing in the cities. No information is available on any action being taken to increase mortgage availability in rural areas.

A housing shortage and the particular problems of the construction industry in times of high interest rates have prompted a number of government measures designed to stimulate the industry and to reduce its cyclical swings. Most of these actions have been made through the NHA and have been intended to make its insured mortgages more attractive to both lenders and borrowers. Since World War II there have been a number of reductions in the minimum

down payment and increases in the types of financial institutions which could lend on an insured basis. In recent years, however, the primary goal of government policy shifts has been to end the rigidity of NHA lending rates in order to attract funds from other uses and to reduce the extent of non-price rationing in periods of tight money. Prior to 1967 the maximum NHA rate was set by administrative decision and changes lagged behind shifts in market yields. In 1967 the maximum NHA yield was set at 1-1/2 per cent above the average market yield on government long-term bonds during the previous quarter. Even this restraint was recently dropped, and lenders are free of any legal restriction in setting rates on HNA mortgages. This should provide a significant improvement in the housing industry by reducing or ending non-price rationing in the mortgage market.

The termination in 1967 of the 6 per cent ceiling on bank loan interest rates should also help the housing industry by attracting commercial banks back to the mortgage market. They were major lenders during the 1950's but withdrew from the market at the end of the decade due to their inability to charge market yields on mortgages. Since 1967 the banks have been taking mortgages again in some volume. During 1970 the banks have been encouraged to remain in the mortgage market by direct appeals by Governor Rasminsky of the Bank of Canada. Moral suasion is a powerful tool in Canada because there are only 8 or 9 banks in the country and only 5 of those are of any national

significance. In addition, the Canadian banking system has never been burdened with an equivalent of the U.S. Regulation Q, so that there has never been a great run of funds out of the banks and savings institutions in periods of tight money. At times the banks attempted to hold down interest rates on time deposits through a gentleman's agreement but even this is now inoperative.

Canada has recently introduced 5-year renegotiable mortgages under NHA, and this is also intended to make mortgages more attractive to lending institutions. This provision means that the lender has the option of raising the interest rate on an insured mortgage every five years, and it protects lenders from being locked into loans at less than market yields. Renegotiation has always been legal on conventional mortgages but was relatively uncommon because it was illegal for NHA loans. Over one-half of the new single unit mortgages now being issued include a renegotiation provision. Two other changes have been made in NHA lending rules which are intended to encourage the construction industry. As previously mentioned the lock-in period during which a borrower cannot repay a mortgage has been lengthened for some mortgages. In addition, lenders are allowed to take an equity participation in some cases.

In summary, the Canadian government has been actively looking for ways to encourage the housing industry, and to this end a number

of changes have been made in the operations of the mortgage market. The housing industry is having a very difficult year despite these changes, but many of them are quite recent and it is too soon to judge their effectiveness.

Table 1. Housing Loans in Canada, 1964-70
(in millions of Canadian dollars)

Year and Month	National Housing Act Loans					Conventional Loans				
	Chartered Banks	Life Insurance Cos.	Trust, Loans & Others	CMHC a/	Total NHA Loans	Life Insurance Cos.	Trust, Loan & Others	Chartered Banks	Total	TOTAL LOANS
1964	9	163	181	417	770	484	328	--	812	1,582
1965	6	114	201	491	812	577	325	--	902	1,714
1966	--	85	106	574	765	374	200	--	574	1,339
1967	85	88	183	685	1,041	406	297	43	744	1,785
1968	250	251	331	456	1,288	362	517	83	962	2,250
1969	233	119	349	549	1,250	261	678	51	990	2,240
1969 June	28	18	37	41	124	30	64	10	104	228
Sept	20	6	27	44	97	15	32	3	50	147
Dec	15	3	21	140	179	7	33	1	41	220
1970 Jan	12	1	20	15	48	4	22	1	27	75
Feb	12	4	17	19	52	7	29	1	37	89
Mar	22	6	30	43	101	17	31	2	50	151
Apr	32	5	41	25	103	10	39	2	51	154
May *	24	5	57	33	119	15	52	2	69	188

a/ Central Mortgage and Housing Corporation. * Preliminary

Note: Data are on a gross basis; they refer to loans approved, and do not take account of cancellations or changes in loans after approval.

Source: Bank of Canada, Statistical Summary.

Jan W. Karcz

III. Monetary Restraint and Housing Activity in France

During the decade of the sixties residential construction activity in France appears to have been more affected by fiscal policy of the central government than by monetary policy of the Bank of France. This is hardly surprising since over two-thirds of residential construction in France receives either direct or indirect financial aid from the state. During the two major periods of fiscal restraint in the sixties, the number of private and public residential permits issued declined when budgetary appropriations for housing were reduced.

The relative immunity enjoyed during periods of monetary restraint by French private and public construction combined results from three factors. First, and by far the most important, the industry has relied -- and continues to rely -- on state support and state funds to an extraordinarily high degree. Second, and of lesser importance, the authorities have attempted to shield residential construction from the full impact of credit policies. At all times, special construction loans (prets speciaux á la construction) have been rediscountable at the Bank of France and not included in the rediscount quotas for individual banks. In addition, when credit expansion ceilings were imposed during periods of severe credit restraint (e.g., 1963-65 and 1968-70), some construction credits were exempted from the ceilings while others had more generous expansion terms than the average for all credits. Thirdly, during the 1960's, the private (or unassisted) segment of

residential construction sector has gradually increased in importance. A major part of private construction is geared to higher income groups, and the demand for private housing appears not to be very sensitive to interest rate changes.

The need for housing in France

There is a severe -- though not critical -- housing shortage in France. In 1968, the occupancy rate was about 3-1/2 persons per dwelling or about one person per room. However, over three-quarters of the country's stock of dwellings in 1968 was of pre-World War II vintage and a significant portion of these were considered inadequate.

For a long time -- and certainly since the end of the Second World War -- successive French Governments have accorded high priority to housing, and over a period of years a vast and cumbersome system of financial aid to housing has developed. At this juncture, virtually every Frenchman can obtain some sort of financial assistance when he purchases or builds a home; only the very rich do not qualify for such assistance. The pervasiveness of governmental activity in the housing sector probably contributed to the fact that France still does not possess a viable private mortgage market. Construction of residential housing (see Table 1), in recent years has not kept pace with minimum requirements, and the economic plan for the five

years 1971-1975 calls for a modest -- around 15 per cent -- increase in housing completions by the mid-point of this decade.

Table 1: France: Dwelling Unit Completions, 1963-1970
(thousands of units)

	1963	1964	1965	1966	1967	1968	1969	1970
Government assisted housing */	306	332	356	334	332	325	330	350
Unassisted housing	30	37	55	80	90	86	97	101
Total	336	369	411	414	422	411	427	451

*/ Government assistance includes total or partial financing, subsidy of part of interest cost, construction premiums, loans at reduced interest rates.

Sources: Ministere de l'Equipment et du logement up to 1966; since 1966: Secretariat au Logement.

In addition to an inadequately developed financial market (discussed below), the French housing industry suffers from several structural problems. The construction industry in France is very fragmented: in 1969 there were about 270,000 separate building firms employing some 1.5 million workers (or 7.5 per cent of the total labor force). This suggests that most firms are small and the majority below the optimum size.

Financing of housing in France

The French capital market has been inadequate for the country's needs for a long time now. Lack of savings as such is not the problem. France has a history of high rates of inflation as well as periodic devaluation of the franc, and in such a climate French savers' preference is having their savings in a form readily convertible into cash. This forces the savings bank system to maintain an unusually high level of cash reserves -- 25 per cent on the average in 1969. Thus a problem exists of transforming a large mass of what the French call "liquid savings", which are very short-term, into long-term funds available for investment and housing. Housing finance has been particularly affected by this shortcoming of the French capital market structure.

In these circumstances, the housing sector has relied heavily on state financial support. Funds are provided through the medium of a semi-public housing fund (Credit Foncier). In 1967 the authorities attempted to ease the funds shortage and facilitate trading in mortgages through creation of a mortgage market. Partly because 1967 was a year of recovery from a period of economic stagnation in France and partly because of the 1968 general strike the development of a mortgage market has not yet been achieved. As of the end of 1969 only 30 per cent of outstanding housing credits were granted by private banking and financial institutions. It should be noted that an undeterminable proportion

of these private credits also enjoy minor financial help from the state in the form of interest rebates.

(a) Public sector

By far the most important segment of French housing is the public sector, where construction of low-cost housing, Habitations a Loyer Modere (HLM), account for over a third of all new constructions. This segment is financed by loans from the central depository for savings banks, Caisse des Depots et Consignations, the institution through which short-term savings from the savings banks are channelled to longer term loans. Saving deposits at these banks earn interest at rates fixed by the Government. In February 1971 these rates varied between 4 and 4-1/2 per cent, depending on maturity; savers are also given a tax advantage as the first 1,000 francs of interest earned are tax-free.

Loans granted for HLM housing are low-interest, in some cases as low as 2.6 per cent, but generally they average 3-1/2 per cent -- well below the 13 per cent now charged by private mortgage lenders. The differential between the rates charged on HLM loans and the rates paid on savings deposits represent a state subsidy. Since a part of the interest earnings is tax-free, the subsidy is in fact higher than the difference between interest rates on saving deposits and HLM loans.

Most HLM housing units are rented, but this is gradually changing. Nearly 8 per cent of all new housing units built under

the scheme in 1970 were bought outright. Income limits for qualification for renting or buying HLM housing are very generous, and in 1970 over 85 per cent of all households in France qualified for the scheme.

A separate scheme for buying or building principal (as opposed to summer or vacation) homes is the housing-savings scheme (epargne-logement). Under this scheme, a saver opens a special account either with a savings or with a commercial bank. The account earns interest at a relatively low rate (2 to 4 per cent, depending on the variant chosen). The saver becomes eligible for a housing loan after the account has been in existence for 18 months and the accumulated earned interest reaches Frs 300. The amount of the loan granted depends on the maturity (up to 10 years) and the amount on the amount of interest earned. Generally, loans cover 70 per cent of the purchase price, the remaining 30 per cent being provided by the balance on the savings account inclusive of accumulated interest. In addition to the loan, the saver receives a premium, depending on the amount saved and the interest accumulated, of up to a ceiling of Frs. 6,000. Furthermore, all interest earned under the housing-savings scheme is free of personal income tax.

(b) Semi-public sector

Financing for about one-third of residential construction in France is provided by a semi-public institution, Credit Foncier, a sort of central mortgage bank. This institution raises funds in

part through public bond issues and in part through private bond placements with insurance companies, commercial banks and other financial institutions. Some bonds are occassionally placed with the Caisse des Depots.

Credit Foncier and its subsidiary, Comptoir des Entrepreneurs, grant direct mortgage loans and special intermediate construction loans. These loans are readily rediscountable with the Bank of France and are not included in the restrictive discount ceilings for commercial banks. Special construction loans made by commercial banks are also endorsed by Credit Foncier, a step which makes them discountable with the central bank.

Credit Foncier loans are for up to 20 years in maturity, and in 1970 carried an interest rate of 5.5 per cent. On the other hand, the yield on publicly issued bonds last year averaged 7-1/2 per cent and the difference between the borrowing and lending rates is made up by the Treasury. The differential is made up by interest rebates, and substantial construction premiums are also granted for project wholly or partially financed by Credit Foncier.

(c) The Private Sector

There are some 35 mortgage institutions in France including the major commercial banks. However, none of those that specialize in granting mortgage credit is of a significant size.

These institutions grant conventional type loans, although the length of them is considerably shorter than in the United States --

usually 10 to 12 years and never over 15 years. Some, but not many, loans have a variable interest rate, with the Bank of France's discount rate being the determinating factor. This practice is not widespread and may become even rarer since the Bank of France recently announced that in the future it will not change its discount rate frequently.

Since 1967 the private housing sector has been assisted by a newly created Mortgage Market (marché hypothecaire) which came under the supervision of Credit Foncier. At first, the market functioned smoothly with Credit Foncier acting largely as a regulating agency, but when credit conditions were tightened in 1968, Credit Foncier increasingly was forced to come to the market's rescue as a discounter and lender of last resort. In an effort to stimulate mortgage financing by financial institutions Credit Foncier has been recently refinancing mortgage loans at penalty rates -- a practice which partially explains the very high interest rates in the market. The mortgage market remains very thin and will require careful nurturing by the authorities if it is to become important in French housing activity.

The impact of two major applications of monetary restraint

During the decade of the sixties there were two periods when monetary restraint was significant and prolonged. The first period was from late 1963 to about mid-1965, when the Stabilization Program was in effect. The second started late in 1968 and lasted through mid-October 1970. This was a part of the deflationary program

that followed the 1968 strikes and the subsequent franc devaluation in August 1969. During the first period budgetary appropriation for housing were severely cut, but during the second period fiscal restraints did not affect spending on housing.

In both periods efforts were made to shield, at least partially, the housing sector from the effects of the credit squeeze. Credit expansion ceilings for the various kinds of housing credits were more generous than for other types of credits, and in some cases credit expansion ceilings were removed considerably earlier than was the case for, say, investment credits.

Probably because fiscal restraint during the first Stabilization Program had more incidence on housing appropriations, the volume of housing completions in the public and semi-public sectors combined declined in 1966 (from the year earlier), showing a lagged response to fiscal restraint. However, private sector completions in 1966 rose significantly and for 1966 as a whole, total completions were marginally higher than in 1965.[1/]

The impact of the 1968-1970 restraint was different, Budgetary appropriations for housing were not significantly lowered in 1969 and 1970 and housing completions of the aided sector rose sharply in 1970 -- by 6.1 per cent compared with 1.5 per cent in 1969.

1/ It should be emphasized that these conclusions are far from definitive, being based on annual data for private and public dwelling completions. More sophisticated data indicating, for example, seasonally adjusted quarterly starts by type of ownership are unfortunately unavailable.

By contrast, in spite of the preferential treatment program afforded to the housing sector by the monetary restraint program, the unaided sector completion did react fairly strongly to the general shortage of credit. In 1969, housing completions in the unaided sector rose by 12.8 per cent over 1968, but the rate of increase declined to only 4.1 per cent in 1970. For the year 1970 as a whole, housing completions in all sectors -- public and private -- increased by 5.6 per cent over 1970 (the rate of increase in 1968 was 3.8 per cent). This increase, and in fact the record number of housing completions in France, was achieved in spite of the very severe monetary restraint that prevailed through all of 1969 and most of 1970.

Preliminary data for the first quarter of 1971 suggest that housing completions in the unaided sector have accelerated somewhat, probably reflecting easing of credit restrictions for housing funds that were introduced in mid-1970.

Conclusions

The impact of monetary restraint on total housing activity -- public and private -- in France appears to be small. In part, this is due to the fact that monetary authorities attempt to ensure an adequate flow of funds into the housing sector during periods of general restraint. But, more significantly, given the fact that the public sector plays such a dominant role in housing in France, monetary restraint has little affect on this major category of housing activity. Fiscal restraint, which usually accompanies monetary restraint in France, tends to affect housing activity much more strongly if appropriations for the housing sector are cut.

The shallowness of the capital markets is perhaps the most crucial weakness of the French economy. Even in periods of expansive monetary and fiscal policies some system of credit rationing is necessary to ensure a barely adequate supply of long-term funds. The housing sector, being accorded one of the highest degrees of social priority, is afforded an extraordinarily high amount of state assistance. But the results in terms of new housing units built since the end of World War II are not outstanding and a viable and competitive private mortgage market remains unachieved.

Bernard J. Rudman *

IV. Monetary Restraint and Housing in Germany

Residential construction in Germany appears to be little affected during periods of credit restraint. Apart from the very tight credit situation of 1969-70, 1966 was the most recent period of tight credit in Germany. Housing construction, as indicated by authorizations, was not particularly affected during these periods of monetary restraint (see Table 1).

An institutional framework which promotes a relatively stable flow of financial resources into the financing of housing and a system of fiscal incentives which substantially mitigates the impact of increased interest costs on the demand for housing are the primary factors accounting for the relative insensitivity of housing to credit restraint in Germany.[1/] This paper discusses the institutional factors which promote the stable flow of funds and describes the fiscal incentives which encourage this flow as well as offsetting the increased financing costs of housing.

Sources of funds

The amount and sources of funds used to finance housing construction during the 1965-68 period, and estimates for 1969 and 1970, are

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1/ The Bundesbank has made this point on several occasions in its Monthly Report. Conversations with some German economists familiar with the situation lend support to this view.

Table 1. Dwellings Authorized in Germany, 1958-1970
(In thousands of dwelling units, seasonally adjusted)

Year	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Yearly Total
1958	129	132	147	139	547
1959	140	151	148	147	586
1960	151	147	147	159	604
1961	159	160	158	152	629
1962	163	154	157	155	628
1963	144	145	145	141	575
1964	148	148	151	154	601
1965	146	156	160	160	621
1966	160	147	171	138	585
1967	131	134	133	137	534
1968	141	133	134	131	538
1969	134	140	141	143	559
1970	146	150	163	--	--

Source: Original data from Wirtschaft und Statistik, monthly issues; seasonal adjustment by Board staff.

shown in Table 2. The data thus cover the periods of credit restraint of late 1965-1966 and 1969-70. These statistics suggest a few observations, of which the following seem to be the most pertinent:

1) In 1966, when credit restraint was rather severe, the amount of funds lent for mortgage purposes by private financial institutions actually increased slightly. This might reflect commitments made during a prior period of easier liquidity conditions. If there is a delayed response, however, the fact that the amount of financing provided by private financial institutions decreased only moderately in 1967 is significant. Moreover, in the 1970 tight credit situation, a slight increase in private institutional finance from a very high 1969 level is estimated to have occurred.

2) The amount of public funds channeled into housing has declined steadily since 1965. This was due, in part, to a change in the method of providing public assistance from large direct grants to interest and amortization subsidies.

3) The German building and loan associations (Bausparkassen) grew increasingly important as sources of funds.

There are three major sources which provide funds to the residential mortgage market: specialized financial institutions, the

Table 2. Financing of Residential Construction in Germany, 1965-1970

(In billions of DM)

	1965	1966	1967	1968	1969 1/	1970 1/
Class of lender						
Mortgage banks	4.1	3.4	3.7	4.6	4.8	4.4
Savings banks	4.2	4.3	4.2	4.9	5.4	5.0
Building and loan associations	3.9	4.2	3.4	3.3	5.3	6.2
Private insurance enterprises	1.8	2.1	1.9	1.9	2.1	2.4
Public insurance enterprises	--	0.3	0.3	0.2	0.2	0.3
Total financial institutions	14.0	14.3	13.5	14.9	17.8	18.3
Public authorities	5.0	4.6	4.1	3.5	2.7	2.5
Total	19.0	18.9	17.6	18.4	20.5	20.8

1/ Estimate.

Source: Deutsche Institute für Wirschaftsforschung, Wochenbericht (No. 7, February 12, 1970, and No. 6, February 4, 1971).

public authorities (both Federal and State) and the private resources of individual builders and construction companies.

The financial institutions which provide funds to the German housing sector are mortgage banks, savings banks, building and loan associations and insurance companies. It is of immediate interest that the supply of funds from these institutions decreased only marginally in 1967 after increasing somewhat in 1966, when credit restraint was most severe. The basis for this relative insensitivity is that, aside from the mortgage banks, inflows to other specialized institutions are not directly affected by tight financial conditions. These inflows are largely contractual in nature, and because of fiscal incentives promoting long-term savings, there is little "deposit arbitrage" from these institutions into other sectors of the German financial market.

The one type of institutional lender not enjoying contractual inflows -- the mortgage banks -- acquire loanable funds through the flotation of long-term bonds (Pfandbriefe). German commercial banks as a group are the major purchasers of bonds issued on the domestic capital market and as a result, the bond market has always been strongly affected by credit policy, the influence becoming evident through the banks' security purchases. They cut their purchases more rapidly and substantially than their lending to individual borrowers and at times are even net sellers in the market.2/ The reduced absorptive capacity of the capital market

2/ See Capital Markets Study, Vol. III, "Functioning of Capital Markets," OECD (Paris, 1960), page 223.

during periods of monetary restraint results in a lessened ability of the mortgage banks to acquire funds for lending. The data below indicate the rather sharp decrease in net issues by German mortgage banks during the period of tight credit in 1966. This reduced inflow to the mortgage banks was an important reason why the mortgage banks were then the only institutional suppliers of residential housing funds to reduce their lending. The fact that the interest charged by the mortgage banks tends to rise faster than the interest charged by their institutional competitors also probably played a part in their reduced share of the total mortgage market.

Net Issues of Bonds by Mortgage Banks
(DM millions, nominal value)

Quarter	1965	1966	1967
I	1,482	864	800
II	876	563	774
III	897	561	836
IV	830	524	909

Source: Bundesbank Monthly Report, various issues.

Contractual inflows of insurance enterprises are little influenced by changes in monetary policy. During the period of credit restraint, however, purchases of mortgages by insurance companies actually increased rather sharply over the previous year, and any lagged impact that occurred in 1967 was very slight (see Table 2). This suggests that the insurance companies either found mortgages as attractive as other investment options (such as business loans or purchases of long-term securities), or that they were willing to invest in lower-yielding mortgages in order to increase their market share.

German savings banks (Sparkassen)-- as their name implies -- hold primarily savings deposits, although about one-fifth of their liabilities are sight or time deposits with less than three months maturity. The noteworthy aspect of the savings banks is their use of the variable mortgage rate, which is discussed below.

German building and loan associations (Bausparkassen), are rather unique among German financial institutions. The essential idea of the Bausparkassen is that an individual wishing a low-cost housing loan builds up a deposit which earns a low return relative to that of a savings deposit at a savings bank; and this deposit is built up until it equals a certain proportion of the desired loan, whereupon the depositor becomes eligible for a relatively low-interest housing loan. Both the deposit and lending rates of the Bausparkassen are set independently of the general financial situation and are rarely changed. The depositor is willing to earn a low return on his deposit in exchange for the assurance that a low-cost mortgage loan will be granted once the minimum eligibility deposit has been attained. Aside from 1967 -- when deposit formation was influenced by a change in the law dealing with fiscal incentives to encourage savings -- the Bausparkassen have enjoyed a steady growth in their deposits and business in the last decade. By their very nature, therefore, they are totally unaffected by changes in the cost and availability of credit in German financial markets.

Fiscal incentives to savings. The major fiscal incentives currently in force, which encourage long-term savings in the Federal Republic -- and which thereby contribute to a steady flow of long-

term funds into the institutions which finance residential construction -- are outlined below.

I. Premium savings (Premium Savings Act of May 5, 1959, as amended February 21, 1968)

1. Individuals who agree to leave money with a savings institution for 6 years receive a state premium of between 20 and 30 per cent of the amount saved, depending upon the number of persons in the family.
2. There are three general types of savings under this plan:

   a) General savings agreements with a lump sum deposit;

   b) Installment agreements, with monthly or quarterly deposits for period of 6 years;

   c) Securities savings agreement, whereby securities purchased in the year of the agreement remain on special deposit account for 6 years.

II. Building savings agreements (law as amended February 21, 1968)

1. Saver may choose either to:

   a) Receive a state permium on his savings, ranging from 25 to 35 per cent, depending upon the size of the family, but not exceeding DM 400 per annum; or

   b) have savings counted as a "special expenditure" for tax purposes and therefore tax deductible.

2. The amounts saved, plus any premiums received, may be withdrawn after 7 years--and can be used for any purpose.

III. Life insurance: premiums paid for life insurance are deductible as a special expenditure, for income tax purposes.

The points to be emphasized from this outline are that 1) the incentives are not only substantial but also induce longer-term savings, thereby making liquidity considerations much less important to the lending institutions and also discouraging any disintermediation into other forms of financial investment; and 2) there are specific incentives to encourage savings for home-building purposes which are more attractive than for general purpose savings.

The Bundesbank has noted that savings for building purposes is more attractive to the saver than "general purpose" savings because of the options available. Unlike most other forms of government assistance to savings, a saver can choose between a bonus, which is more attractive to lower income groups, and the tax deduction, which is advantageous to persons paying large sums in income tax. According to the Bundesbank, the bonuses or deductions available by saving for building purposes at a building and loan association are higher in almost every case than those available to savers under the "general purpose" scheme. Furthermore, the Bundesbank concludes that

> ". . . the extent of assistance may make a savings contract for building purposes appear rewarding even if the intention of actually taking a mortgage loan (at the lower rate available) has been dropped or perhaps never seriously existed in the first place. The Income Tax and Housing Bonus Laws stipulate that persons saving in order to build a home of their own may avail themselves of government assistance '. . . with a view to obtaining building loans.' Evidently, the government concessions are so substantial for such savers that they are satisfied with a relatively low rate of interest on their deposits." 3/

3/ "Building and Loan Association Business in Recent Years," Bundesbank, Monthly Report, April 1970, p. 12, (Vol. 22, No. 4).

In other words, the Bausparkassen are to some extent fulfilling an intermediation function as well and thereby providing more funds to the housing sector--because of the fiscal incentives available to savers at these institutions.

Cost factors. The point suggested above in describing the financial institutions supplying funds to the residential mortgage market in Germany is that the availability of finance for housing is little affected during periods of credit restraint. The increasing costs of mortgage financing during a period of credit restraint no doubt do have some impact on demand for housing. These costs differ, however, according to the institution supplying the funds and are also substantially offset by government assistance.

As noted earlier, the interest charged by building and loan associations for mortgage loans is generally stable, and independent of money and capital market rates because of the special position of these institutions. The loans of these institutions are limited, however, to eligible borrowers, i.e., those prospective homebuilders who have accumulated a sufficient balance in their savings accounts and attained the 1-1/2 years minimum eligibility period. A depositor can make one or a series of large deposits in order to qualify for the mortgage loan relatively quickly. At the other extreme, the lending rates of the mortgage banks are based on the cost of obtaining funds in the capital market, which reacts rather quickly to monetary tightness, so that increases in interest rates in financial markets are reflected fairly rapidly in the mortgage loan rates charged by the mortgage banks.

The reaction of savings banks and the life insurance companies to increases in interest rates is less clear. It appears that there is a lag between an increase in lending rates by the mortgage banks and the increase in rates charged by savings banks and life insurance companies, as the latter attempt to improve their market share at the expense of the mortgage banks. There are, however, no published rates on mortgage loans granted by savings banks and life insurance companies, making it difficult to ascertain the increased costs of borrowing from these institutions during periods of credit restraint.

The savings banks--alone among the financial intermediaries lending in the mortgage market--use a variable rate clause in their mortgage loan contracts. The mortgage lending rate is closely related to the interest rate paid by the savings banks on savings deposit "subject to the legal period of notice" or "basic savings deposits," i.e., deposits which, up to DM1,000, can be paid out in any one month with previous notice, with larger withdrawals requiring three months' notice. In response to a questionnaire from the Bank for International Settlements concerning the structure of interest rates in Germany, the Bundesbank offered the following comments concerning the deposit rate in savings banks:

> "In order to avoid changes in interest on loans, the savings banks try to keep the basic savings deposit rate as constant as possible. In view of the comparatively high degree of liquidity of these deposits, the interest paid on them is, as a rule, rather modest; usually the rate is very little above, and in periods of credit restriction sometimes appreciably below, the Bundesbank's discount rate. Savings deposits subject to the legal

> period of notice thus provide a source of relatively cheap money for the savings banks (and the other banks accepting savings deposits). This in turn enables the savings banks to quote cheaper mortgage terms than the issuing institutions (i.e., the mortgage banks and some "mixed" savings banks which accept deposits and issue bonds); at the same time, the great inflows of "cheap" funds in the form of savings deposits subject to the legal period of notice permit the savings banks to offer comparatively high interest rates on other liabilities. It thus comes about that the savings banks in some areas of lending exert a downward pressure on interest rates, whereas they push them upwards in wide areas of business on the liabilities side." 4/

It may be added that rises in interest rates for mortgages appear to be substantially offset by various fiscal measures.

In addition to providing various inducements to encourage savings flows into the housing sector, the German public authorities also give direct assistance to homebuilders. During most of the post-war period, Government support was in the form of direct loans and grants. More recently, the emphasis has been more on subsidies to help meet interest and amortization payments. This shift from direct loans and grants to subsidies has allowed a given amount of public funds to exert a wider impact than when utilized primarily in the form of large grants. Thus, although the absolute amount of public funds going directly into housing has decreased, it is not clear whether the effectiveness of government assistance to the housing sector has been reduced.

For home owners in higher income brackets, interest payments on mortgages are tax deductible as a "special expenditure" under German income tax law. According to an OECD study, this tax deduction is the

4/ Bank for International Settlements, The Structure of Interest Rates, (Basle, 1968), pp. 28-29.

"fullest existing in any European country."[5/] For lower income groups, the public subsidies help offset the impact of higher interest rates on those receiving this type of assistance. For builders, government guarantees of loans and tax concessions are available. Accelerated depreciation allowances are also available to individual builders and construction firms. It is noteworthy that the suspension of accelerated depreciation allowances by the German government in July 1970 specifically excludes housing. On a number of occasions, the Bundesbank has criticised the existence of these public housing incentive measures because they insulate housing from the effects of tight credit policy measures, and thereby intensify demand and price pressures in the housing sector.

Conclusion

This brief study of the German experience suggests the inportance of the use of fiscal measures by the German authorities to promote a stable flow of funds into institutions which provide mortgage loans. The requirement that savings remain on deposit for a long-term period in order to qualify for premia also discourages any substantial outflows from German thrift institutions during periods of tight money and thus permits these institutions to continue issuing mortgage loans.

5/ "The Financing of House Building in Some of the Countries of the O.E.C.D.," (Paris, November 1968), p. 60.

V. Monetary Conditions and Housing in Italy

This study of the sensitivity of housing to changes in monetary conditions in Italy both during periods of monetary easing and monetary tightening, covers the period from 1954 through the second quarter of 1968. The reason for the omission of the past two years is that special factors unrelated to monetary policy or general economic conditions had an enormous effect on the housing industry beginning about mid-1968, and inclusion of data for that period would have tended to obscure the relationships under investigation.[1/]

The choice of a statistical series that would reflect the degree of monetary ease or restraint being practiced by the authorities posed some problems, and it was decided to use two series. One of these is the series for "means of payment," a monetary aggregate very similar to the money stock.[2/] This series probably measures, as well as any monetary aggregate, the degree of monetary ease or restraint present on the supply side. Interest rates measure the

1/ New and stricter regulations, entailing increased costs, were applied to new housing construction in most Italian towns under a law that took effect September 1, 1967. But the new law did not apply to housing 1) for which a building permit was obtained before September 1, 1968; 2) on which actual construction was begun before Setpember 1, 1969; and 3) which was completed before September 1, 1970. The new law generated a boom in housing that qualified for the old regulations. Thus, the issuance of building permits was greatly swollen in July-August of 1968 as builders acted to "get in under the wire," only to sink to very low levels in later months. In the same way, housing starts soared in the summer of 1969 and then slumped.

2/ "Means of payment" is composed of currency in circulation (including currency in bank vaults, generally excluded from money stock series), and demand deposits at banks.

degree of monetary ease or restraint that results from supply-demand interaction; thus, the interest rates that borrowers in a given sector of activity must pay reflect monetary "tightness" stemming from competing demands for liquid funds on the part of other sectors of activity, as well as the scarcity of funds available to the economy as a whole. An interest rate series was therefore also chosen as a measure of monetary ease or restraint. The series picked is one for yields on long-term bonds issued by State financial enterprises which lend to industry and for public works.3/

The most desirable statistical measure of the level of housebuilding activity as a function of current demand would be a seasonally adjusted monthly series for housing starts, but in Italy the housing starts series (which is not seasonally adjusted) goes back only to 1966. There is an unadjusted monthly series for residential building permits which goes back to the first quarter of 1954, and this has been taken as a proxy for housing starts and employed as a measure of housing production. This series is deficient in that it covers only provincial capitals and towns of over 20,000 inhabitants, or about 60 per cent of total building permits issued. (A recently constructed series for total building permits, in all communities of Italy, goes back only to 1965.) The permits series is in terms of the number of rooms to be built, and while this is less satisfactory than a series giving an estimated value, at constant prices, of the construction to be carried out,

3/ The choice of a long-term rate over a short-term rate was partly dictated by the absence in Italy of an organized money market and of short-term rates indicative of changes in monetary conditions.

it is more satisfactory than a series for merely the number of permits issued, which would fail entirely to reflect the size of the residence.

As in all countries, housebuilding activity in Italy has fluctuated much more than industrial production as a whole. This was particularly noticeable during the 1963-64 period of monetary restraint in Italy when housing activity declined sharply while industrial production remained relatively level. It is to be expected, of course, that any one sector of industry would exhibit greater output fluctuations than the rest of industry taken together, because within the latter the fluctuations of the separate sectors partially offset one another.

The present study attempts to determine whether the greater degree of fluctuation shown by the series for residential building permits for the entire period, including both periods of monetary easing and monetary restraint, can be related to changes in monetary conditions. It should be emphasized that the statistical test used is only a provisional attempt to measure the relationship between monetary conditions and variations in housing activity during both periods of monetary restraint and monetary ease, and the findings derived therefrom should be considered preliminary.

For this purpose, a series has been developed to measure "excess fluctuations in housebuilding" by taking the year-to-year percentage change in quarterly residential building permits (not seasonally adjusted) and subtracting from it the year-to-year percentage change in quarterly industrial production (excluding construction) for

the same quarter. The series for excess fluctuation in housebuilding has, for each quarter, a positive sign when building permits rise more or decline less (year-to-year) than industrial production, and a negative sign when permits rise less or decline more than industrial production.

Excess fluctuation in housebuilding was regressed linearly on the year-to-year percentage changes in both long-term bond yields and means of payment, with no lag and with lags of one and two quarters in the series for excess fluctuation in housebuilding. The period is from 1954 QI to 1968 QII. All the regressions on bond yields produced very insignificant values of r^2. As regards those involving means of payment, the regression with no lag yielded an r^2 of .09, which is significant at the .05 confidence level but not at the .01 level. The r^2 value was .16 with a one-quarter lag and .19 with a two-quarter lag, high enough to be significant. But in each case, most of the variation in the dependent variable remains unexplained.

Based on these tentative statistical findings, it does not seem that residential construction for the entire period, including both periods of monetary easing and monetary tightening, is much more sensitive than the average sector of industry to changes in monetary conditions. These findings are not too surprising since, during the period covered, 1954-68, Italy experienced only one period of severe monetary tightening, viz., 1963-64. During most of the rest of the period, changes in monetary conditions were much more

limited. One would expect that the impact of changes in monetary conditions on housing would be most likely to occur where sharp reversals in monetary conditions took place. And in fact, during the one period when monetary conditions shifted drastically from relative ease to severe restraint in 1963-64, the impact of monetary restraint on housing was very noticeable.

The way in which residential construction in Italy is financed may contribute to moderate the impact of changes in monetary conditions on the variability of housing activity, even though only the most rudimentary and undetailed information is available on this topic. One of the salient features of the financing of housing in Italy is the surprisingly high percentage that is provided by individuals. This percentage, which has been subject to substantial year-to-year variation, ranged in the years 1959-68 from a low of 47 per cent of total investment in housing to a high of 71 per cent, according to figures on the financing of housing furnished by the Italian Statistical Institute. The average percentage in this period was 54 per cent. (See Table 1.) Information is not available on the incomes, wealth, and other economic activities of the individuals whose funds are invested in housing. But it seems reasonable to assume that the relative tightness of general monetary conditions would not greatly affect their decisions whether to put funds into housing as compared

Table 1. Italy: Sources of Financing of Investment in Housing
(in billions of lire, at current prices)

		1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
I.	Individuals	691	647	668	821	1,183	1,794	1,500	1,333	1,226	1,418
II.	Financial institutions:										
	A. Commercial and savings banks: short-term	64	141	187	273	260	84	186	169	336	361
	long-term	52	48	78	91	129	128	113	171	112	89
	B. Special Credit Institutes:										
	1. For Land and Building Credit	85	129	227	321	329	277	287	396	460	638
	2. Other	8	13	21	11	13	8	2	8	14	2
	C. Real estate companies	6	15	15	56	56	44	47	32	23	29
	D. Insurance and social security institutes	49	58	60	78	104	108	114	119	169	158
III.	Public authorities	255	209	163	117	88	104	157	160	176	206
	Total	1,210	1,260	1,419	1,768	2,162	2,547	2,402	2,388	2,516	2,901

Source: Istituto Centrale di Statistica, as reported by U.S. Embassy, Rome.

with other investments, i.e., that they would prefer investment in housing over other investments as much during periods of monetary restraint as during periods of monetary ease.

One important reason for the very high percentage of housing funds that is supplied by individuals is the generally small value of mortgages obtainable in Italy in relation to the value of the property. The Istituti Speciali di Credito Fondiario e Edilizio (Special Credit Institutes for Land and Building Credit), the most important institutional source of mortgage credit in Italy, lend in amounts equal to only 50 per cent of the value of the property in the case of mortgages on existing property.[4/] In the cases of building credit (loans for the construction of buildings), the percentage is normally 50 per cent[5/], and generally is not permitted to exceed 75 per cent[6/], of the value of the land and the building to be constructed.

Another characteristic of the sources of finance in Italy may contribute to moderate the impact of changes of monetary conditions on fluctuations in housing production. In Italy, the banking system is an important institutional source of funds for housing. Short-term

4/ OECD, The Financing of House Building in Some of the Countries of the O.E.C.D., Paris, November 4, 1968, p. 15.

5/ "Building Credit in Italy," Banco di Roma, Review of the Economic Conditions in Italy, Vol. XVIII, No. 3, May 1964, p. 138.

6/ Glauco Della Porta, "The Italian Banking System: Part V," Banco di Roma, Review of the Economic Conditions in Italy, Vol. XIV, No. 6, November 1960, p. 640.

construction loans and mortgages on existing property extended by banks averaged 15 per cent of total investment in housing in 1959-68. Most of these loans were extended by savings banks, as opposed to commercial banks in the narrow sense. But in Italy the two types of banks are much less differentiated than in most countries. Savings banks accept demand deposits as well as time and savings deposits; more important for present purposes, on the assets side savings banks engage heavily in commercial banking, and mortgages are a relatively small part of their total assets. The savings banks are in fact prohibited from placing more than 15 or 20 per cent of their resources in mortgage loans.7/ Because, unlike savings banks and savings and loan associations in the United States, their earnings do not derive principally from mortgages which, on average, are always many years old, periods of high interest rates do not inhibit Italian savings banks in their competition with commercial banks for deposits. A second factor helping the savings banks to obtain deposits has been the interbank cartel agreements placing limits on deposit interest rates. Although some violations occurred, these agreements were generally adhered to until the late 1960's. The agreement broke down in early 1970.

The Special Credit Institutes for Land and Building Credit are the most important institutional source of housing finance, and provided funds averaging 15 per cent of total housing finance in 1959-68. There are seventeen such institutes, of which nine are

7/ OECD, op. cit., p. 16.

autonomous "special sections" attached to banks (five commercial banks and four savings banks);[8/] all extend building credit as well as mortgages on existing property. The institutes finance themselves almost entirely by the issuance of mortgage bonds (cartelle fondiarie).

The efforts of the Special Credit Institutes for Land and Building Credit to mobilize funds for the housing industry have been facilitated by certain institutional practices and attitudes, which have favored the issuance of mortgage bonds and have to a great extent protected the placement of such bonds from the adverse pressures of tight money and high interest rates. According to the Bank of Italy,[9/] the issuance of mortgage bonds--which are of long maturity, the maturities being "matched" with those of the mortgage loans granted--has been accompanied by a "tacit repurchase clause," and in fact the Institutes have in recent years repurchased some of their own bonds on the market to keep prices from falling too far. In particular, during the period of severely restrictive monetary policy from mid-1963 to mid-1964, the drop in mortgage bond prices was only a fraction of the sharp decline in prices of other bonds. This experience gave mortgage bonds a reputation for being a relatively safe investment. As a result, investors have been willing to accept much lower yields on mortgage bonds than on other bonds, particularly when the bond market has been tight and yields on other bonds have been high.

8/ Statistics on these autonomous "special sections" are not included in Italian banking statistics but in the statistics for the special credit institutes, of which there are several types.

9/ Bank of Italy, annual report for 1969, p. 303.

Martin J. Kohn

VI. Monetary Restraint and Housing in the United Kingdom

Construction of private residential housing in Britain has apparently been sensitive to monetary conditions from the late 1950's to the present.[1/] More specifically, home building for the private sector is thought to have been significantly affected by changes in the availability of credit, both to prospective house purchasers and to the construction firms which build houses. Why primate residential housing construction has been particularly vulnerable to credit availability problems is discussed below. This study will also report findings on the importance of credit factors relative to other influences on private housing construction. Another question to be touched upon is whether private residential construction is clearly more vulnerable to changes in monetary conditions or in monetary aggregates than other major sectors of the economy. The matter of official attitudes and policy toward private home building will also be explored. In particular, attention will be directed to the question of whether the government in recent years has sought to offset the restrictive effects on private home building of monetary tightness or whether it has been willing to allow private housing construction to take the consequences of tight money.

1/ Private construction is understood to include homes built for purchase by the private sector and consists almost entirely of units intended for occupancy by the buyer. There is very little private residential construction for rental purposes in the United Kingdom. Rental housing is built almost exclusively for local authorities.

Credit Availability Problems: The Demand Side

The principal source of loans to buyers of both new and used houses in Britain are the building societies, the equivalent of our savings and loans associations. The societies, of which there were 504 at the end of 1969, accounted for 80 per cent of total lending for purchases of private homes in the United Kingdom and about 70 per cent for the purchase of new homes in 1969. The other sources of loans to home buyers are insurance companies, local authorities and, to a lesser extent, commercial banks. The rates which the building societies charge on mortgage loans and those they pay to their shareholders and depositors are, to all intents and purposes, set by the Building Societies Association. The societies are not legally bound to follow the recommendations of the Association but, in fact, these recommendations are promptly followed by the vast majority of the building societies.

A distinguishing feature of building society mortgages is that they are variable, that is, the rate of interest charged on existing mortgages can be changed.[2/] The justification for variable mortgages is that the ability of mortgage lending institutions simultaneously to compete for funds and remain solvent depends on their right to alter both the rate they pay and the rate they charge in response to changes in yields elsewhere. Nevertheless, over the years, there has been a clear pattern of changes in interest rates paid by the

2/ Variable mortgages in Britain are discussed in Appendix I.

building societies lagging behind changes in other short-term rates. This has caused sizable fluctuations in the net flow of funds to the building societies, the inflows diminishing when rates on alternative investment outlets are rising, increasing when other rates are falling.[3/] This is illustrated in Chart 1, which plots net inflows of principal into the building societies against the differential between Bank rate and the rate paid on building society shares on a quarterly basis since 1960. Bank rate has always been higher than the rate on building society shares because the latter is net of taxes. The building societies pay a so-called composite tax rate, now 32 per cent.[4/]

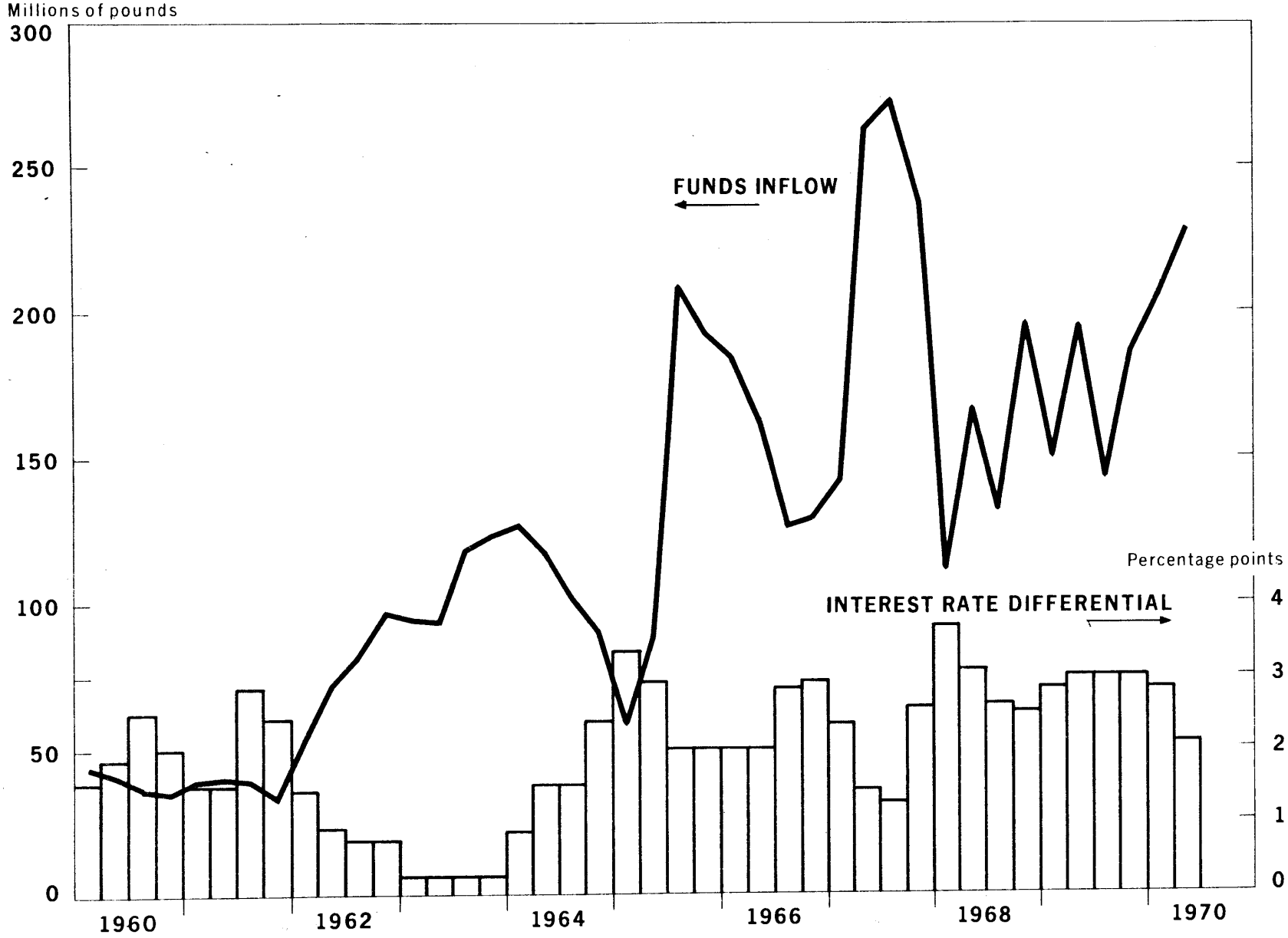
Since the size of the inflows into the building societies largely determines the amount of funds available for lending, it is a reasonable assumption that variations in the difference between the rates paid on building societies' liabilities and the yields on substitute investments affect private home building activity. In periods of tight money, when short-term rates were rising, the building societies have often had to ration credit to prospective home buyers, thereby reducing effective demand for new and used housing. The question of statistical verification, or at least of supporting evidence, of the correlation between the inflows into the building societies and home building activity is discussed below.

3/ Interest rate differentials do not provide the whole explanation for flows between building society shares and other investments. Expectations about capital values also influence such flows. The assets which reportedly are in practice the closest substitutes for building society shares are government securities, local authority bonds and mutual fund shares.

4/ Calculated by dividing what the building societies pay in taxes by the sum of that amount and what they pay to shareholders.

CHART 1

UNITED KINGDOM: INTEREST RATE DIFFERENTIAL AND FUNDS INFLOW



INTEREST RATE DIFFERENTIAL: Bank rate minus rate on building society shares.
FUNDS INFLOW: Net inflow of principal to building societies, seasonally adjusted.
SOURCE: Financial Statistics

There are several reasons for the lag between changes in building society share rates and other short-term rates. For one thing, there has been governmental pressure, at least under the Labor government, not to raise rates that home buyers must pay on their mortgages. Defending the home buyer from higher interest charges may be good political strategy, but blocking rises in mortgage rates also prevents raising rates to shareholders and depositors so as to keep building societies competitive with rival investment outlets. But political pressure is by no means the whole story. The building societies themselves are reluctant to raise or lower rates unless they are reasonably certain that the movement in other rates will not reverse direction. Such changes are administratively costly and inconvenient, involving recomputation of rates on outstanding mortgages and notification of mortgage holders of the change. Also, when the change is from a lower to a higher rate, there is the obvious possibility of antagonizing borrowers, though until 1969 rate increases did not cause serious public relations problems. Borrower discontent was largely avoided because mortgage maturities were routinely extended when rates were raised, thus making it unnecessary to raise the amount of the borrower's monthly payments. Recently, however, interest rates having risen so far and so fast that extending maturities has become less feasible, since in many cases not even the full amount of the interest due will be paid unless the monthly payment is increased. The current standard rate on building society mortgages is 8-1/2 per cent, which has been in effect since April 1969.

When short-term rates head downward, the building societies delay in following suit, not only because of doubts as to the duration of the trend but because the development of an interest rate spread which is to their advantage gives them the opportunity to build up their supply of loanable funds.

Credit Availability Problem: The Supply Side

Construction firms in Britain tend to be small and are heavily dependent on credit in their operations.[5/] But building firms are among the least favored customers of the banking system. This is both because of the building firms' lack of size and the riskiness of their operations. Most construction of houses for sale to the private sector is done on a speculative basis, that is, construction is undertaken without orders or commitments from buyers.

Furthermore, tight credit conditions--at least in recent years--generally take the form of orders from the authorities to the banks to observe ceilings on loans, these orders being accompanied by directives specifying which sectors are to receive preference in obtaining loans. Since private home building has been excluded from the priority borrower category, at least under the various ceilings imposed since 1965, it is a reasonable assumption, given the reluctance of the banks to lend to residential construction firms in the first place, that credit rationing has affected private home building particularly severely.

5/ "44 per cent of output is produced by firms with under 25 persons (1958 Census)." A.R. Nobay, "Short-term forecasting of housing investment: a note," National Institute Economic Review, August 1967, p. 47.

Information on loans specifically for residential construction is not available, so it is not possible to test this assumption directly. Furthermore, it would be difficult in any event to determine with certainty the extent to which home builders were frustrated by insufficient credit from banks and to what extent their reduced borrowing simply reflected their response to decreased demand from home buyers because of credit availability (or other) problems experienced by the home buyers. In spite of these difficulties, though, one author has produced some evidence--quite fragile but interesting--indicating that residential construction for private buyers has been held down by lack of bank credit to construction firms, independently of demand for housing.

Supporting Evidence

Our main source on the importance of credit availability is an article by M.J. Vipond, "Fluctuation in Private Housebuilding in Great Britain, 1950-1966," which appeared in The Scottish Journal of Political Economy, June 1969 (XVI:2). A principal finding of the article was that the direction of change in home-building activity in a given year, as reflected in completions of houses, conformed to one's expectations on the basis of the movement in Bank rate in the preceding year. This proved to be the case, in Vipond's findings, in all but one of the 12 years from 1955 to 1966. Bank rate was used as a proxy for credit conditions on the grounds that it reflected changes in credit availability to both home buyers and home builders.

Two other variables--growth in personal income and growth in housing costs--were tested in the same manner, but in neither case did the direction of change in completions match the direction of change to be predicted from the behavior of these two variables as frequently as was the case with changes in Bank rate.

The Vipond article also attempts to ascertain which of the two credit availability variables--the one on the demand side or the one on the supply side--had the greater impact on home-building activity. The author concludes that, while both are significant, the credit problems of building firms probably have the greater effect. This conclusion is based on the relationship of increases in housing prices to increases in housing construction costs. Vipond notes that in 1961 and 1965 the gap between the rate of increase in prices and the rate of increase in costs widened very substantially, but that the rapid out-pacing of cost rises by price rises was accompanied by only a very small increase in housing starts in 1961 and a decrease in starts in 1965. This suggests, Vipond says, that the weakness in home building sprang from deficiencies in supply rather than demand. Such deficiencies do not prove that credit was in short supply; the low rate of starts in 1961 and 1965 may be explained as a misreading by builders of the course demand would take in those years. However, Vipond notes that the spread between the rates of increase in prices and costs continued to be substantial in 1962 and 1966, with housing

starts in each of those years falling from the total in the preceding year. This implies not that builders miscalculated but that they were unable to adjust supply to demand.

Developments since 1966 lend further support to the Vipond thesis that credit conditions are the predominant influence on private home building. Movements in personal income and housing costs in 1966-68 would point to decreases in completions in all three years 1967 through 1969. Decreases in private completions did in fact occur in 1967 and 1969; but there was a sharp rise in 1968. This pattern--of fall, rise, fall--is consistent with the behavior of monetary aggregates. Reflecting changes in interest differentials, inflows into building societies rose very sharply in 1967, before falling in 1968; furthermore, during most of 1967, the banking system was free of a ceiling on advances, the only time since 1965 that this was true. Thus, construction organizations were in a more advantageous position to obtain bank loans in 1967.

The decline in 1969 in housing starts--which presumably are linked to monetary conditions with far less lag than are completions--indicates that monetary tightness continued to hamper home-building activity in 1969. During 1969, the banks were under severe pressure to restrict the amount of their lending and to limit loans largely to expedite exporting and other activities directly benefitting the balance of payments. In 1969 the net inflow of principal into building societies did increase somewhat from 1968 (though the total, even in current prices, was well below the

inflow in 1967) despite the persistence of a large differential between the rate paid on building society shares and other short-term rates. This adds to the evidence supporting the Vipond hypothesis that the more critical of the two credit availability effects is that relating to builders' difficulties in getting loans.

Seasonally adjusted housing starts fell in the first quarter of 1970, but have rebounded since then. Again, changes in monetary conditions seem to have been a decisive (though not the sole) factor. Two Bank rate reductions, one in March, the other in April, unaccompanied by any changes in the building society rate to shareholders, helped promote a surge in deposits in the second quarter. Furthermore, the ceiling on bank advances, which had become something of a dead letter since the autumn of 1969, anyway, was formally abolished in April and replaced by a less formal, less restrictive one. Non-monetary influences have also contributed, however. For instance, weakness in the stock market has also stimulated the recent flow into building society shares.

The close correlation between private home-building activity and monetary conditions is confirmed by some independent statistical work of the author's, presented in Appendix II. In particular, regressions, using quarterly data, show a significant relationship between private housing starts and the differential between the rate paid by building societies to their shareholders and other short-term rates, as reflected by Bank rate.

Sensitivity of Other Sectors to Monetary Conditions

Private home building appears to be more sensitive than other sectors to monetary conditions. This is not to say that other sectors do not experience fluctuations in their activity. Cyclical swings are certainly evident in other sectors of capital investment. However, there is no evidence that swings elsewhere are as peculiarly the product of monetary factors, such as credit availability, as in private residential construction. Such factors as profits and capacity appear to play a much more decisive role in non-private residential investment. It is worth noting that, despite the severity of the monetary squeeze over the last year and a half or so, private investment other than housing has been more or less stable, while private housing investment steadily declined.6/

The Labor Government's Attitude toward the Vulnerability of Private Housing to Credit Squeezes

The Labor government (1964-69) did not treat private housing activity as an objective of counter-cyclical policy, as they did, for example, automobiles and other consumer durables, for which instalment buying regulations were tightened when the government wished to restrain demand and eased when stimulation of the economy seemed called for. For instance, legal downpayment minima for car purchases

6/ In the fourth quarter of 1968, non-housing investment rose very sharply and then steeply declined in the following quarter. This fluctuation was not cyclical, however; it resulted from the termination of specially favorable investment grants at the end of 1968. In anticipation of this change, much investment which ordinarily would have occurred later was advanced to the end of 1968.

were constantly moved up and down for purposes of demand management, as were the maximum permissible repayment periods. The government, however, did not assume similar powers to manipulate home buying.

At the same time, though, the government did very little to stimulate private home building or to offset the restrictive effects on that sector of tight money. One reason is that the tribulations of the private home building sector were offset by steady increases (until 1969) in publicly built residential housing--that is, in construction of multi-unit rental dwellings.[7/] While the Labor government was in office, public residential construction increased every year until 1969,[8/] when it declined by 4 per cent in real terms, mainly reflecting the government's post-devaluation policy of sharply restricting the rate of increase in total public expenditures.[9/] Even with the drop in 1969, public residential

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7/ It might be thought that the construction industry qua industry would be indifferent to the division of residential construction between the private and public sectors, caring only about the total demand for residential construction. However, not surprisingly, large firms predominate in public housing construction, while construction of private housing--largely single unit homes--is mainly the province of the small firm. Thus, the prolonged slump in private residential construction has hit the small builder particularly hard. Furthermore, the recession in public housing in 1969 very probably caused larger firms to more actively seek out business in the private sector to the detriment of the small builder.

8/ In fact, public residential construction increased every year from 1960; in 1960, it was the same as it had been in 1959.

9/ Nevertheless, public residential construction as a proportion of total residential construction, measured in 1963 prices, rose from 52 per cent in 1968 to 55 per cent in 1969. The share of public residential construction has risen steadily since 1961, when it accounted for only 35 per cent of total residential construction.

construction was 36 per cent higher in 1969 than in 1964. Private residential construction, on the other hand, was 18 per cent lower in 1969 than in 1964, the peak year. (These figures refer to changes in overall activity measured in constant prices, not to the number of starts or completions.) Thus, while private home building has fluctuated, largely in response to monetary conditions (or so it appears), the Labor government was evidently not disposed to arrest a downward trend.

Another reason for the apparent lack of concern is that housing in general seems to have become a much less sensitive social and political issue. Even with the reduced level of activity in the private sector, the housing stock has been increasing rapidly enough so that housing shortages are now thought of as being limited to specific regions rather than being pervasive, nationwide phenomena. There is even talk that in a few years' time the building societies, far from being unable to furnish sufficient credit to home buyers, will have to seek other outlets than mortgages for their funds.

One should not overdo the Labor government's lack of concern for private home building. In fact, they took at least two steps which can be interpreted as intended to encourage it. In 1968, the "option mortgage" arrangement was initiated. This plan enables a home buyer to borrow, for periods up to 30 years, at 2 percentage points below the going rate on building society mortgages, provided he does not deduct his interest payments from his taxable income. Interest payments on mortgages normally are tax deductible. Where

a building society makes an option mortgage loan, the government pays a subsidy to the building society equal to the difference between the rate actually charged and the rate charged on a conventional mortgage. The main objective of this innovation was to encourage house purchases by persons whose taxable income was either zero or so low that they would have derived little or no benefit from the deduction of interest payments on a conventional mortgage.

Additional arrangements were made, moreover, to make it easy for home buyers availing themselves of option mortgages to borrow 100 per cent of the value of the house--that is, to buy with no downpayment.[10/]

The other step was to make the building societies the only private savings institutions eligible to receive deposits under the save-as-you-earn scheme instituted last year. The SAYE scheme provides an effective rate of interest well in excess of what can be earned in other savings institutions for money deposited in equal monthly installments and left intact for at least five years.

These moves, however, have stimulated private home building only marginally. The impression remains that the Labor government accepted the slump in private home building as a necessary, but not intolerable evil, which--considering the priority of rectifying the balance of payments--should not be combatted too strenuously.

10/ In theory, the ordinary building society loan cannot exceed 80 per cent of the appraised value of the house. However, for payment of a small insurance premium, it is a simple matter to borrow up to 95 per cent of the appraised value. Conventional building society mortgages generally do not exceed 25 years. As already noted, they often are extended when interest rates rise. The average life of a mortgage is 8 or 9 years.

Appendix I. Variable Mortgages in the U.K.

A variable mortgage is one on which it is possible to change the rate of interest charged to the borrower during the life of the mortgage. In Britain, mortgages issued by the building societies--which annually account for about 80 per cent of the value of total lending for purchases of houses in the private sector and about 70 per cent for the purchases of new houses--are of the variable variety. The rationale for these mortgages is that, since the building societies must from time to time raise the rates they pay to their shareholders (and deposits) in order to compete for funds, they must also be allowed to raise the rates they charge their borrowers.[1/] Only in this manner, the argument runs, can the societies maintain a spread between borrowing and lending rates sufficient to keep solvent. In effect, the variable mortgage enables those who supposedly borrow short and lend long to borrow and lend short in actuality.

Variable mortgages have been the rule for building societies since the end of World War II. Before the war, the standard mortgage had a "calling-in" proviso, which permitted the lender to demand

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1/ Shares account for about 90 per cent of building society liabilities, deposits for the remainder. Interest on shares runs a quarter of a point higher than on deposits, since in theory--though not in actuality--shares are somewhat riskier and less convenient than deposits. Depositors have a prior claim on the assets of building societies. Furthermore, the rules governing withdrawals are somewhat more lenient with respect to depositors than shareholders, though in fact shares are highly liquid also. There being no practical difference between shares and deposits, it is not clear why deposits have not been discontinued. In this paper, shares should be understood to refer to both shares and deposits.

repayment of the principal before the mortgage matured. The calling-in proviso was rarely used in this manner, but it did permit the lender to compel renegotiation of existing mortgages at higher rates of interest. In the post-war period, calling-in type mortgages have been discontinued and replaced by variable mortgages.

In contrast to the building societies, insurance companies and local authorities--the other main sources of credit to homebuyers, the first mainly to the affluent, the second mainly to lower income earners--for the most part issued fixed rate mortgages through the mid-1960's.[2/] Local authorities, in fact, were forbidden by law to issue variable mortgages until 1957. Since the mid-1960's, however, rising interest rates have reportedly impelled both local authorities and insurance companies to make increasing use of variable rate loans to home buyers.

In general, interest rates on both building society mortgages and building society shares and deposits are set in accordance with the recommendations of the Building Societies Association (BSA), whose membership accounts for over 95 per cent of the total assets of all British building societies.[3/] The Association's recommendations are

2/ A.J. Merrett and Allen Sykes, Housing Finance and Development, London: Longmans, 1965, pp. 34-35.

3/ The spread between the rate on mortgages and the rates on deposits and shares must be sufficient to permit building societies to pay the composite income tax on interest payments (currently equal to 32 per cent of these payments before taxes); to meet management expenses; and to increase their reserves, defined as the excess of assets over liabilities. At the end of 1969, reserves of all building societies totalled £336 million, equal to 3.6 per cent of total building society assets of £9,336 million.

not legally binding but in fact are followed by the "majority of member societies."[4/]

Almost without exception, changes in rates paid on shares and rates charged on new mortgages are made either simultaneously or with only a short lag. Similarly, rates on both new and old mortgages are generally changed simultaneously, at least when rates are lowered. When rates are raised, holders of existing mortgages are given 28 days' notice before the new rate takes effect. Until recent years, the standard interval was three months.

There have been cases, though, when the lag between increases in rates on new and existing mortgages has exceeded the minimum permissible interval. Individual societies have delayed raising rates to holders of existing mortgages, particularly when previous raises have been relatively recent.[5/] In 1966-67, there was a delay of over seven months between the BSA's recommendation in May of a boost in mortgage rates from 6-3/4 to 7-1/8 per cent and the introduction in January of the higher rate on existing mortgages. This was an exceptional case, however, as the Labor government applied particularly strong pressure on the building societies to prevent any rise in rates.

4/ "The Report of the Inquiry into Building Society Reserves and Liquidity to the Building Societies Association," 31st October 1967, p. 1.

5/ It should be noted that, in theory, at any rate, building societies can make arrangements where changes in rates on mortgages would be automatic--for example, by linking the mortgage rate to some bellwether rate, such as Bank rate. (See Building Societies Association Circular No. 1214, 16 September 1965, p. 3.) Such arrangements are evidently very rare, however.

Apparently, most building societies raised the rate on new mortgages but maintained the same rate on old mortgages until it became clear in December that the BSA was not going to yield to the government. There was less urgency than usual about raising the rate on existing mortgages in the latter half of 1966 since the recommended rise in mortgage rates in May was not accompanied by a recommendation to raise rates to shareholders. In December 1966, the BSA, in reaffirming its May recommendation of a 7-1/8 per cent mortgage rate, also recommended a rise in rates on shares from 4 to 4-1/4 per cent, heightening the need to raise rates on existing mortgages.

The BSA's recommendation in April 1968 that both share and mortgage rates again be raised appears to have been accompanied by a suggestion that the building societies refrain from immediately charging the higher rates on existing mortgages.[6/]

Eventually, though, rates on existing mortgages have invariably been raised to equal rates on new mortgages, since the squeeze on building societies from an increase in rates paid to shareholders is only marginally eased by raising rates on new mortgages alone.

One of the questions frequently raised with respect to variable mortgages relates to their acceptability by the home buying public. It may therefore be instructive to ascertain why and how variable mortgages have won acceptance in Britain. In the first several years after World War II acceptability was no problem because rates were stable (and low). From 1952, however, rates began to rise, and the variable rate clause in mortgage contracts began to be invoked.

6/ See Bank of England Quarterly Bulletin, June 1968, p. 118.

(See Table 1.) This development evoked protests from mortgage holders, but borrower disconent was reportedly mollified in two ways. First, the BSA conducted an intensive publicity compaign to educate the public to the necessity of variable mortgages; and, second, and most important, the impact of higher rates was greatly mitigated by the fact that almost without exception, borrowers' monthly payments remained the same, the building societies collecting the higher interest through extension of the maturity of the original mortgage.

Until 1969, lengthening the life of the mortgage continued to be virtually the universal means of charging higher interest. However, the rapid rise in rates (from 6 per cent in 1964 to 8.5 per cent in 1969) produced a situation in which mortgages could no longer be automatically extended. Some mortgages were being extended to lengths well in excess of thirty years--the average initial length of a building society mortgage is between 20 and 25 years--and in many instances, maintaining constant monthly payments would have meant that borrowers were no longer even meeting interest payments on their mortgages.

What proportion of holders of building society mortgages were required to raise the amount of their monthly payments in 1969 is not known. However, an official of one of Britain's largest building societies told the writer that after the hike in the rate to 8-1/2 per cent in April of that year, monthly payments were raised for 60 per cent of the borrowers from his society.

Table 1

Interest Rates on Mortgages and Building Society Shares and Deposits Recommended by the Building Societies Association
(Per cent per annum)

Year and Month	Shares	Deposits	New Mortgages to Owner Occupiers
1952 April	2-1/2	2	4-1/2
1955 July	3	2-1/2	5
1955 November	3	2-1/2	5-1/4
1956 April	3	2-1/2	5-1/2
1956 July	3-1/2	3	6
1959 July	3-1/4	3	5-1/2
1960 June	3-1/4	3	6
1960 July	3-1/2	3	6
1961 May	3-1/2	3-1/4	6-1/2
1961 October	3-3/4	3-1/2	6-1/2
1963 February	3-3/4	3-1/2	6
1963 April	3-1/2	3-1/4	6
1965 February	3-3/4	3-1/2	6-3/4
1965 July	4	3-3/4	6-3/4
1966 May	4	3-3/4	7-1/8
1966 December	4-1/4	4	7-1/8
1968 April	4-1/2	4-1/4	7-5/8
1969 April	5	4-3/4	8-1/2

Source: Central Statistical Office, Financial Statistics.

Most revealingly, though, the same official noted that his society was not disposed to raise the payment when a borrower balked, even when this resulted in the borrower's no longer meeting his interest payment in full. About 2-1/2 per cent of this society's mortgage holders were in the position of paying less interest than was due. The society's expectation is that the home will eventually be sold, for a higher price than it was bought for, and that back interest will be paid out of the capital gain. (The average life of a building society mortgage is about nine years.) This flexibility, which for obvious reasons the society does not publicize, is a reflection of the reluctance among building societies as a whole to risk the antagonism which they are aware variable mortgages are capable of arousing among the home-buying public. The danger of widespread dissatisfaction is reduced when raising rates on existing mortgages does not raise the total current expenditure a borrower must make.

In a period of rising interest rates, however, the feasibility of extending maturities decreases. This could lead to the ironic situation where variable mortgages become less and less acceptable even as building societies' need for such mortgages increases. At the least, reliance on rises in monthly payments to collect higher interest will intensify the inflationary pressures which make variable mortgages necessary in the first place, since higher monthly housing payments will clearly generate demands for higher wages. There are 4.75 million households with mortgages in the U.K., so that a substantial portion of the population is affected by increases in mortgage payments.

For the time being, though, further increases in mortgage rates seem unlikely, as the authorities are relying on other measures than forcing up interest rates to keep money tight.

Even when it has been feasible to implement interest rate increases through the extension of mortgage maturities, the building societies have been hesitant about raising rates. This has been true partly because of apprehension over adverse public reaction. Furthermore, under the Labor government the building societies were generally under pressure not to raise rates. However, public relations and political considerations are not the whole story. The building societies are inclined to make rate changes--in either direction--as infrequently as possible because of the administrative problems and costs involved, such as recalculating payments schedules and sending notification of the changes to borrowers.

All of these factors explain why increases in mortgage rates have lagged behind increases in other short-term rates. When interest rates head downward, the building societies will obviously not irk mortgage holders by promptly reducing rates. However, even on the down side, there is a lag, as building societies defer rate cuts until they are convinced that the downward movement will not be quickly reversed. The delay also allows the building societies to build up their share and deposit liabilities, whose rate of increase is likely to have been slowed when interest rate differentials were less favorable.

The delayed response of mortgage rates to change in other interest rates has significantly contributed to fluctuations in private

home building. As already explained, since building society share rates and mortgage rates move more or less in tandem, one consequence of the stickiness in mortgage rates is that building society share rates have tended to be out of line with other short-term rates. As a result, inflows of funds into building societies have been uneven, causing a corresponding unevenness in the availability of credit to home buyers, which, in turn, helps produce swings in home building activity.

Insofar as the authorities considered fluctuations in private home building useful for purposes of economic stabilization, the stickiness of mortgage rates would not necessarily be disadvantageous. However, even though private home building in recent years has not occupied a priority position, there is no evidence that the government sought actively to discourage it at any time or manipulate it as a means of helping regulate aggregate demand. This being the case, the cyclical character of home building has probably not been viewed as desirable and therefore suggests that variable mortgages have very imperfectly served the purpose for which they are largely intended. Over the long run, they do protect the building societies from the danger of being squeezed by rising interest rates. However, primarily because of the failure of the building societies to adjust interest rates with appropriate speed--that is, primarily because variable mortgages have not been variable enough--variable mortgages have not prevented the emergence of short-run credit shortages which presumably could have been avoided with a rapid-response interest rate mechanism.

Appendix II. Testing the Significance of the Effect of Credit Availability Variables on Housing Starts 1/

In the text, attention was called to the hypothesis that credit availability, both to home buyers and to construction firms, constitutes the most important monetary influence on home building for buyers in the private sector. The regression analysis below is an attempt to ascertain whether private residential construction activity does bear a statistically significant relationship to credit availability.

Quarterly data from the first quarter of 1960 through the second quarter of 1970 were used. Seasonally adjusted private housing starts were chosen as the dependent variable representing private home building activity.2/ Two independent variables served as proxies for credit availability. One was the difference between a weighted average of Bank rate and the rate paid on building society shares, where the weights were the length of time a particular value of a rate was in effect during a quarter. This variable was intended to reflect availability of credit to home buyers. The assumption was that the spread between the yield on building society shares and other short-term rates (of which Bank rate is a proxy) was an important

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1/ This appendix represents a report of preliminary results. The author is doing further statistical work on this topic.

2/ It was assumed, in the absence of contrary evidence, that there had been no substantial changes in the quality and size of the houses built in the period covered. Housing starts were considered a more appropriate independent variable than some measure of overall private residential construction since our interest focused mainly on the impact of the independent variables on the undertaking of new projects.

determinant of the size of flows of funds into building society shares, which, in turn, are the prime source of building society loans to home buyers.3/

The second credit availability variable -- intended as an index of the relative difficulty faced by construction firms in obtaining loans -- consisted of an average of the mid-monthly seasonally adjusted value of clearing bank advances outstanding, in constant prices. Advances in current prices were deflated by gross domestic product in 1963 prices divided by GDP for the same quarter in current prices. In the period covered, bank lending has been almost continuously limited administratively by the Bank of England -- in the form of more or less informal guidelines until 1965 but thereafter, with the exception of much of 1967, by explicit ceilings. It was reasoned, therefore, that changes in lending reflected primarily constraints on the supply side, rather than movements in loan demand, and were thus suitable measures of changes in credit availability.

3/ The choice of the interest rate differential, rather than net flows into building societies, as the independent variable was based on the assumption that changes in the interest differential constitute the initial link in the chain of causation. However, other variables, such as share prices, also affect such flows, and in future work these variables should also be included. Furthermore, in future work, alternative regressions using the flows themselves in place of the variables which affect these flows should also be run, to determine if the change significantly affects the results. Finally, where the interest differential is included, it should perhaps be standardized in terms of the prevailing level of interest rates, since the effect of the same differential on flows into and out of building societies may vary with this level, presumably being less the higher the level.

Three other independent variables were used -- a time trend variable and two dummies. The purpose of the first dummy was to take account of the abnormally small number of housing starts in the first quarter of 1963, when construction activity was sharply reduced by unusually adverse weather conditions. The second dummy was intended to pick up the artificially inflated number of housing starts in the first and second quarters of 1967. A so-called "land betterment levy" was introduced on April 6 of that year, with houses started before that date being exempted from the levy. This led to a huge volume of reported starts in late March and the first week in April, distorting the figures for both the first and second quarters as a whole. Many of the starts in the weeks immediately preceding April 6 were virtually fictitious, often amounting to no more than the digging of a ditch, or some similar token activity, to permit a builder to claim that work had begun before the levy took effect.

The time trend variable was assigned a value of 100 in the first quarter of each time series and increased by increments of 100 in each succeeding quarter. The first dummy was assigned a value of one in the first quarter of 1963 and zero in all other quarters. The second dummy received a value of one in the first and second quarters of 1967 and zero in all other quarters.

Initially, nine regressions were run, with housing starts being regressed on all possible combinations of the two credit availability variables, where each credit availability variable was

(a) taken for the same quarter as housing starts, (b) lagged one quarter, and (c) lagged two quarters.

All independent variables in all nine equations were clearly significant -- only one of the 45 "t" ratios falling below 2.4. The two credit availability variables each had the expected sign in all nine equations -- negative in the case of the interest differential variable[4/] and positive in the case of the bank loan variable. The two dummies also had the expected sign in all instances -- negative in the case of the "weather" dummy and positive in the case of the "land-betterment-levy" dummy. The time variable was invariably negative.[5/]

The R^2's, adjusted for degrees of freedom, ranged from .38 to .69. In the three equations with the highest R^2's, the interest differential variable was lagged either one or two quarters and the bank lending variable was either for the same quarter or lagged one quarter. The three equations are given below:

(1) $$HS = \underset{(-1.21)}{160.0730} - \underset{(-3.85)}{.3581ID_{-1}} + \underset{(5.63)}{.2131BL} - \underset{(-4.43)}{5.5345T} - \underset{(-4.56)}{214.7393D_1} + \underset{(5.73)}{194.8131D_2}$$
$$R^2 = .6913 \qquad DW = 1.35$$

4/ Bank rate is invariably higher than the rate on building society shares, which is net of taxes. Thus, the smaller the differential, the more favorable is the position of building society shares relative to other short-term rates.

5/ The downward trend in private housing starts is attributable in part to a steadily increasing share of home building activity accounted for by the public sector (a trend already in evidence under the Conservative government before it was replaced by Labor in 1964).

$$(2)\quad HS = \underset{(-.48)}{-68.1504} - \underset{(-3.69)}{.3646ID_{-2}} + \underset{(4.67)}{.1856BL} - \underset{(-3.64)}{4.9133T} - \underset{(-4.52)}{216.4309D_1} + \underset{(5.82)}{201.4351D_2}$$

$$R^2 = .6832 \qquad DW = 1.60$$

$$(3)\quad HS = \underset{(-.81)}{-107.6456} - \underset{(-4.85)}{.4644ID_{-1}} + \underset{(5.22)}{.2046BL_{-1}} - \underset{(-4.06)}{5.1588T} - \underset{(-4.23)}{207.1577D_1} + \underset{(5.10)}{177.0521D_2}$$

$$R^2 = .6688 \qquad DW = .93$$

where HS = the number of seasonally adjusted housing starts in the private sector, in hundreds,

ID_{-1} = the interest differential, lagged one quarter, in percentage points,

ID_{-2} = the interest differential, lagged two quarters,

BL = the seasonally adjusted value of clearing bank advances, in £ million,

BL_{-1} = the seasonally adjusted value of clearing bank advances, lagged one quarter,

T = the time trend variable,

D_1 = the "weather" dummy,

D_2 = the "land-betterment-levy" dummy.

The figures in parenthesis below the coefficients of the variables are "t" ratios. DW is the Durbin-Watson statistic.

The fact that the best fits -- in terms of the size of R^2 -- were obtained when the interest differential variable was lagged and when the bank loan variable was used for the same quarter or lagged only one quarter conforms to expectations. A narrowing of the gap between the yield on building society shares and other short-term rates would be unlikely to immediately stimulate private residential construction (which, it must be remembered, is largely speculatively built in Britain). Before new construction was undertaken, builders would first want to see

whether in fact there was a pickup in the flow of funds into the building societies and perhaps would wish to reduce their inventory of unsold houses. In any event, there is likely to be a lag between the decision to increase new construction and the implementation of that decision in the form of new starts. A lag is also likely when interest rate movements are unfavorable to the building societies -- that is, when the interest differential widens -- with starts on home building previously contracted for delaying the negative impact to be expected from the prospect of diminished credit availability to home buyers.

As for the bank loan variable, one logically would expect its effect on starts to occur with little or no lag. The inability of construction firms to obtain credit presumably would cause an immediate curtailment of building activity, particularly the undertaking of new projects. Furthermore, bank lending might be expected to be a more or less coincident indicator of changes in the rate of overall economic activity and thus likely to reflect changes in private residential construction, a sector of the economy susceptible to large swings. (It is, of course, a weakness of the bank lending variable, in the context of this appendix, that it clearly represents far more than the availability of credit to construction firms.)

One problem with the initial set of nine regressions was the presence of a high degree of serial correlation, as evidenced

by the low Durbin-Watson statistics, which rose no higher than 1.60. (See Equation 2 above.) The same nine equations were thus run using the Cochrane-Orcutt iterative technique for eliminating serial correlation.

The R^2's in these equations ranged from .67 to .76, higher on average than in the initial set of nine. However, no longer were all variables significant. The interest differential variable was significant in only four equations, the three in which it was lagged one quarter and in one of the three where it was lagged two quarters. The bank lending variable was significant in all six cases where it was either used for the same quarter or lagged one quarter. It was not significant when lagged two quarters. The two dummies were significant in all nine equations, and the time trend variable in six. The three equations in which both the interest differential and bank lending variables were significant are given below. The first two of these equations were also the ones with the highest R^2's in this set of nine:

(4) $HS = \underset{(-.19)}{38.1383} - \underset{(-3.34)}{.3961ID_{-1}} + \underset{(3.07)}{.1831BL_{-1}} - \underset{(-2.61)}{5.0153T} - \underset{(-5.53)}{194.4285D_1} + \underset{(5.05)}{169.0090D_2}$

$R^2 = .7634$ DW = 1.87 Rho = .5544

(5) $HS = \underset{(.04)}{7.2926} - \underset{(-2.72)}{.3148ID_{-1}} + \underset{(3.11)}{.1651BL} - \underset{(-2.69)}{4.7487T} - \underset{(-5.12)}{203.9095D_1} + \underset{(4.99)}{181.0647D_2}$

$R^2 = .7305$ DW = 2.05 Rho = .4048

(6) $HS = \underset{(-.03)}{-5.9409} - \underset{(-2.54)}{.2922ID_{-2}} + \underset{(3.40)}{.1685BL} - \underset{(-3.00)}{5.0014T} - \underset{(-4.81)}{212.2049D_1} + \underset{(5.11)}{189.9480D_2}$

$R^2 = .7051$ DW = 2.00 Rho = .2622

The inferences to be drawn from the set of equations adjusted to eliminate serial correlation are that the lagged interest differential variable is significantly correlated with housing starts, while the bank lending variable bears a significant relationship to housing starts both simultaneously and with a short lag.

One limitation of the equations thus far discussed is that they do not allow for the effect of the two monetary variables over several periods. An equation using Almon lags was therefore also tried. In this regression, both the interest differential and bank lending variables were used for the same quarter as the dependent variable and were lagged four quarters, reflecting the assumption that the effect of both of these variables would not be felt on housing starts much more than a year later. The coefficients in the lag structure of both the interest differential and bank lending variables were assumed to lie along paths traced by second degree polynomials. This allows for the possibility that the effect of the two variables first increases and then decreases as the lag increases. This in fact was the assumption made with respect to the interest differential variable. As for the bank lending variable, it was not clear from the earlier regressions whether the impact decreased steadily as the lag increased or whether it rose and then decreased. The results of the regression follow:

(7)

	VALUE OF COEFFICIENTS					CONSTANT
	ID	BL	T	D_1	D_2	
Same Quarter	-.0497	.1648	-3.5692	-244.5384	202.8438	61.0794
	(-.60)	(2.58)	(-2.51)	(-5.30)	(5.57)	(.40)
One-Quarter Lag	-.1073	.0633				
	(-2.71)	(3.80)				
Two-Quarter Lag	-.1312	.0040				
	(-2.56)	(-.18)				
Three-Quarter Lag	-.1213	-.0369				
	(-2.08)	(-1.13)				
Four-Quarter Lag	-.0775	-.0356				
	(-1.84)	(-1.39)				

R^2 = .7420 DW = 1.61

The influence of the interest differential variable, though significant with a one-quarter lag, peaks with a two-quarter lag and is greater with a three-quarter than a one-quarter lag, the three-quarter lag coefficient being only slightly lower than the two-quarter lag coefficient. In the fourth quarter, the value of the coefficient drops sharply, though it does remain significant at the 95 per cent level (assuming a one-tail test is proper here).[6/]

The results for the bank lending variable suggest that the bulk of the effect is concentrated in the same quarter and that any lagged impact is exhausted after the first quarter. The coefficient

6/ We are using the words "higher" and "lower" in terms of absolute values. In algebraic terms, of course, the coefficient is at a minimum in the second lagged quarter and rises in the third and fourth quarters.

of the bank lending variable becomes meaninglessly negative and insignificant after the first-lagged quarter.

The remaining three variables -- which were not lagged, of course -- continue to be significant with the expected sign.

The R^2 indicates that about 75 per cent of the variance in housing starts is "explained" by the independent variables of the regression.

The Durbin-Watson statistic was again low enough to suggest a significant degree of serial correlation. Therefore, the regression was rerun with the Cochrane-Orcutt adjustment to eliminate serial correlation. The results follow:

(8)

	VALUE OF COEFFICIENTS					CONSTANT
	ID	BL	T	D_1	D_2	
Same Quarter	-.0910	.1331	-3.3600	-255.5289	184.0041	42.5829
	(-.98)	(1.68)	(-1.70)	(-5.34)	(4.77)	(.21)
One-Quarter Lag	-.1323	.056				
	(-2.39)	(2.83)				
Two-Quarter Lag	-.1439	.0080				
	(-2.02)	(.28)				
Three-Quarter Lag	-.1257	-.0186				
	(-1.65)	(-.4445)				
Four-Quarter Lag	-.0777	-.0213				
	(-1.45)	(-.65)				

R^2 = .7542 DW = 2.00 Rho = .2892

These results do not differ in any important way from those in the regression unadjusted for serial correlation. Most of the effect of the interest differential variable occurs with a one- to

three-quarter lag. The effect in the same quarter, though larger than in the preceding regression, is clearly statistically insignificant; and the effect in the fourth lagged quarter decreases sharply and is also statistically insignificant. The maximum effect in this regression, as in the preceding one, occurs with a two-quarter lag, though neither the increase in impact from the first to the second, nor the fall from the second to the third lagged quarter is large. The third-quarter coefficient, incidentally, is no longer significant at the 95 per cent level, though (again using a one-tail test), the t ratio of 1.65 is not far below the dividing line between significance and insignificance of 1.70 at 28 degrees of freedom.

The Bank lending variable follows exactly the same pattern as in the previous regression, most of its impact being concentrated in the same quarter and the remaining impact being exerted with a one-quarter lag. However, it should be noted that the same quarter coefficient is no longer significant, though the margin by which it fails to meet the level of 95 per cent significance is very small.

The time variable and the two dummies continue to have the expected sign, and the two dummies remain significant. The time variable is significant using the appropriate one-tail test.

The R^2's in the two regressions are almost the same.

Summary and Conclusions

The regression analysis reported in this appendix indicates that there is a significant relationship between private residential

construction, as reflected in the number of housing starts, and credit availability, both to home buyers and construction firms, as represented by the two variables chosen as proxies for these forms of credit availability.

For reasons outlined above -- on pp. 27-28 -- one would expect the interest differential variable, used as a proxy for credit availability to prospective home buyers, to exert its influence only with a lag. The findings of the various regressions suggest that the differential does have a significant influence on, or is significantly related to, housing starts with a lag spanning three to nine months, with the effect perhaps greatest in the middle section of this period. However, the differential impact as between individual quarters in this three-period lag does not appear to be great.

The bank lending variable, used as a proxy for credit availability to residential construction firms, appears to exert most of its impact on housing starts without a lag. Most of the evidence indicates, furthermore, that whatever delayed effect there is does not last more than one quarter.[7/] This was again in conformity with expectations.

7/ One point of contrary evidence is that in the initial set of nine equations the bank lending variable lagged two quarters was significant.