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WORKING PAPER 81-26

THE ROLE OF PENSION FUNDS  
IN HOUSING FINANCE

BY

KENNETH T. ROSEN

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THE ROLE OF PENSION FUNDS  
IN HOUSING FINANCE

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# THE ROLE OF PENSION FUNDS IN HOUSING FINANCE\*

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## Introduction

The rapid growth of public and private pension plans since World War II has made them one of the largest and most dynamic sources of capital in the United States. Pension fund financial assets rose from \$58 billion in 1960 to \$489 billion\*\* in 1980. Yet, despite this large and dynamic role in the overall capital market, pension funds have played only a minor role in a sector of the market that is the major user of private capital, the residential mortgage market. Of all the major financial intermediaries, pension funds have allocated the smallest proportion of their assets to residential mortgage investments. Private

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\*Information on pension funds was obtained through: 1) a detailed analysis of all available data on pension funds and their investment portfolios (primarily SEC, Federal Reserve Board, and Labor Department data), 2) an in-depth set of personal and telephone interviews with approximately twenty pension fund managers and investment advisors to pension funds, and several mortgage bankers and top-level corporate executives, and 3) an extensive review of the literature, both academic and popular, on pension funds and pension fund management.

\*\*Excludes an additional \$165 billion in pension fund reserves held by life insurance companies and \$76 billion in U.S. government retirement liabilities.

pension funds hold less than 4 percent, and state and local retirement funds less than 5 percent of their assets in residential mortgages. Moreover, even this small proportion has been declining since the mid-1960s. Looked at another way, in terms of their importance to the mortgage market, pension funds account for less than 2 percent of both home and total mortgages outstanding.

This relative neglect of residential mortgage investment is of major significance if one considers that the major problem of the housing finance system is a periodic shortage of residential mortgage capital. Since one of the key characteristics of pension plan contribution schemes is the great stability of their net fund flows, it would appear that if pension funds took a larger role in providing residential mortgage capital, they could help stabilize the flow of funds to this sector and so moderate cyclical instability in residential construction.

It is realized that the prime purpose of the pension funds is to provide benefits to present and future pension recipients. The portfolio allocation and performance of pension fund assets can have profound implications for the level of pension benefits and for the corporations' or agencies' funding requirements. In this paper we shall point out ways in which residential mortgage investment might be considered as a useful addition to a pension portfolio aimed at meeting the needs of pension managers and recipients.

The traditional arguments against mortgage investment by pension managers revolve around economic factors such as an insufficient spread between mortgage and bond yields, default risk, lack of liquidity, lack of staff expertise, administrative costs, and inadequate inflation protection. There is an element of truth in each of these arguments, yet careful examination reveals that the mortgage-backed investments issued by GNMA and FHLMC are indeed a fairly competitive and desirable investment. Assuming that this analysis is correct, and given the increasing instability of the economic environment, it would be worthwhile for pension funds to reexamine the potential role of the residential mortgage and mortgage-backed security in their investment portfolios.

Although economic factors are often cited as the reason for pension fund neglect of the mortgage, a careful analysis suggests that these factors account for only a small portion of the observed portfolio allocation. The explanation for this apparent paradox is the unique institutional arrangement by which pension funds are administered. The great bulk of retirement funds are administered by the trust departments of about twenty-five commercial banks headquartered in New York, Chicago, and several other large cities. The strong influence of the commercial bank trust departments on pension fund investment decisions has led many funds to overemphasize, perhaps, short-run performance and short-term portfolio gains. This, in turn, has led to a heavy emphasis on investment in



corporate stock and to a lesser extent in corporate bonds. Mortgages are not viewed favorably because the trust administrators feel "uncomfortable" and unable to "manage" these investments. Many managers are not familiar with the mortgage as an investment vehicle. Also, they may not be aware of the wide variety of mortgage-backed instruments now available. If this view has any validity, and there are substantial institutional and informational constraints on the allocation of pension reserves, an extensive education effort to broaden the portfolio choice considerations of pension funds may be warranted. In addition, it would be desirable to substantially increase corporate involvement in pension fund management. Finally, the possibility of government intervention to increase the mortgage investments of pension funds has been raised by a number of Congressional leaders and state government officials. As we enter a period of increasing capital scarcity it becomes more likely that government may be tempted to intervene in the allocation of capital flows. The portfolio imbalance of pension funds may encourage this tendency toward government intervention in the pension fund sector.

The purpose of this paper is to examine in depth the role of the mortgage in the pension fund portfolio, and also to explore the actual and potential role of the pension fund in the housing finance system. Our analysis will draw on a comparison of the situation in the United States and Canada.

A comparative study appeared useful because aggregate portfolio statistics suggest that Canadian pension funds have invested a considerably larger share of their assets in mortgages than have the U.S. pension funds.\* The insights and comparisons obtained from the Canadian experience are generally interspersed throughout the text, although the institutional material on the extent of Canadian pension fund investment in mortgages and in the Canadian housing finance system have been relegated to the Appendix.

The paper has several parts: first, we present an overview of the structure and growth of pension funds and also of the housing finance system in the United States. We go on to analyze the quantitative importance of the mortgage to pension fund portfolios on a disaggregated basis and the importance of pension funds to sectors of the capital market. We then specify the portfolio choice of pension funds as a function of the characteristics of the mortgage and of institutional

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\*Information on the Canadian pension funds was obtained through a series of interviews arranged by Michael Boyd of Morguard Trust Company, the largest mortgage banking firm in Canada. Interviews were held with the managers of large pension funds such as those of Canadian Pacific, Air Canada, and the City of Ottawa, with Canada's largest private mortgage insurance company (MIC), with top government officials in regulatory and housing agencies, and finally with a number of private pension investment advisers. Also, additional insight was obtained from papers by David Das Gupta and Harry Weitz.

constraints. Next we describe the various institutional mechanisms for matching pension funds and mortgages. We then briefly examine the potential magnitude of pension funds as stabilizing influences on housing; and finally we suggest some potential methods for increasing pension fund participation in the housing market. In the Appendix, we present the Canadian institutional setting as a basis for comparison with the U.S. experience.

### Structure and Growth of the U.S. Pension System

Pension fund reserves have been one of the most rapidly growing sectors of the U.S. capital market. Pension reserves have risen from \$58 billion in 1960 to \$489 billion in 1980.\* This represents an annual growth rate of 11 percent. Today over one-third of the U.S. work force is covered by pension plans.

There are many explanations for this rapid growth in private pension reserves. The prime purpose of pension plans is to provide income support during retirement. Two factors have substantially increased the length of this expected

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\*Federal Reserve Flow of Funds.

retirement period. The first is the expansion in life expectancy, and the second is the sharp decline in workforce participation after age 65. Together they have combined to increase sharply the ratio of retirement years to work years. The average worker can now plan on about fifteen years of retirement, and this has naturally fostered employee desires to insure an adequate income for this period by supplementing governmental Social Security benefits with private pension payments. Doubt about the long term viability of the social security system has reinforced this trend. The employer has generally responded favorably to this desired fringe benefit. Basically, a pension plan is an arrangement whereby an employer makes provision for continued payments to an employee after retirement. From the point of view of both the employee and the employer a pension is a deferred wage payment plan. The firm's contributions to the plan's assets are tax exempt. In addition, its pension liabilities are not included in the balance sheet of the firm and do not comprise a legal claim on its assets.\* The firm must segregate the assets of the fund, however, and these assets can be used only for benefit purposes.

The funding (accumulating assets to meet benefit obligations) of a plan depends on the contribution level of the firm. This

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\*The Pension Reform Act of 1974 altered this situation to some extent. In the event of any default on the part of a private pension plan, 30 percent of the net worth of a company may be attached by the Pension Guaranty Corporation. Also increasingly financial analysts are incorporating unfunded pension liabilities into their valuation of firms.

level is based on actuarial assumptions about employee mortality, employee turnover (and vesting provisions -- nonforfeitable rights to a pension), retirement age, present and expected salary and wage scales, the interest rate, and death and disability benefits. Two types of funding are commonly used, the accrued benefit cost method and the level-funding method. The accrued benefit cost method calculates the contribution cost as the value of an annuity for each employee which would provide for retirement payments. The level-funding method uses actuarial methods to calculate the present value of aggregate projected benefits. Contributions to meet this aggregate benefit requirement are spread equally over time.

There are four basic categories of pension plans in the United States: insured private plans, noninsured or trusteed plans, multi-employer union plans, and state and local retirement plans. Table 1 shows the asset growth of three categories of plans over time.

An insured plan is one administered by an insurance company, which provides a guaranteed return to the plan. An insured plan works, in essence, like an annuity. The pension plan's assets are often mingled with other insurance company assets and are invested accordingly. They can also be segregated into separate accounts and so be individually managed by the insurance company. Insured plans account for about 37 percent of private pension plan assets.

TABLE 1

ASSET OF ALL U.S. PRIVATE & PUBLIC PENSION FUNDS

(Billions of Dollars)

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	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1979</u>
Private	\$51.9	\$86.5	\$138.2	\$216.9	\$321.3	\$362.7
Insured	18.8	27.3	41.2	71.7	119.1	139.2
Noninsured	33.1	59.2	97.0	145.2	202.2	223.5
State & Local	19.6	33.1	58.0	104.7	148.5	178.9

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Source: SEC Statistical Bulletin and Monthly Statistical Review.

The major share of pension reserves, however, are in the private noninsured and the multi-employer or union plans. These plans account for 63 percent of private pension reserves. The noninsured or trustee plans are either self-administered by the individual company or are administered by a trustee, usually a commercial bank trust department. The trustee exerts varying degrees of control over the management of the plan, depending on the plan's charter and the degree of corporate involvement. The hundred largest private noninsured plans control nearly one-half of all reserves of such plans.

Multi-employer funds are those covering employees of two or more financially unrelated corporations. These systems are found primarily in industries where small firms are dominant and employee mobility is high. They are usually set up as a result of collective bargaining with a union. Multi-employer funds may be run by unions or at least be greatly influenced by unions.

The final source of pension fund reserves is provided by state and local retirement funds. These plans are set up to provide retirement benefits to state and local employees. At the end of 1979 they had \$178.9 billion in assets.

#### The U.S. Housing Finance System

Two types of institutions specialize in mortgage loans to the housing market. These are the savings and loan associations and

mutual savings banks, which account for over 50 percent of home mortgage loans outstanding. Savings and loan associations, alone, account for about 44 percent of home mortgage loans, nearly double their postwar market share. The importance of mutual savings banks in the mortgage market has declined to some extent since the mid-1960s. (See Table 2.)

Both institutions attract funds primarily through time deposits. A considerable effort had been made to increase deposits held in longer-term certificates, through 1978. Ceiling rates are set on passbook accounts and certificates of deposit under the provisions of Regulation Q. Interest rates are set by the market except when they exceed Regulation Q ceilings. During the past two credit crunches, open capital market rates rose substantially above these Regulation Q ceilings, and this led to the disintermediation of funds out of thrift institutions (savings and loans and mutual savings banks). This, in turn, led to a scarcity of mortgage funds and a sharp curtailment of mortgage lending.

On the asset side, thrift institutions are restricted to allocating their holdings primarily to mortgage loans. Most mortgage loans originated in the United States have a fixed interest rate that cannot vary over the life of the mortgage, which is normally amortized over twenty-five to thirty years. As a result, thrift institutions are in the position of borrowing "short" and lending "long." When the normal yield relationships invert, the thrift institutions face substantial cash flow,



TABLE 2  
SOURCE OF HOME MORTGAGE FUNDS IN THE UNITED STATES  
(Percentage Distribution)

	<u>1945</u>	<u>1955</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1979</u>	<u>1980</u>
Households	28.90%	10.02%	5.52%	7.83%	7.64%	7.50%	7.42%
State and Local Govts.	0.00	.78	1.01	.64	.86	1.00	1.60
U.S. Govts.	4.81	3.32	1.82	2.09	1.41	.32	.38
Commercial Banking	15.46	17.08	14.28	14.21	15.68	16.82	16.80
Savings and Loans	27.73	34.00	44.25	41.83	45.62	45.31	43.68
Mutual Savings Banks	10.19	12.58	14.12	14.15	10.19	7.45	6.83
Credit Unions	.16	.20	.27	.27	.40	.43	.45
Life Insurance	12.40	20.01	13.89	9.00	3.59	1.77	1.92
Mortgage Pools*	-	-	-	1.02	6.10	12.02	13.29
Private Pension Funds	0.00	.36	1.56	.62	.14	.12	.12
State and Local Government Retirement Funds	-	-	-	.98	.59	.42	.40
Finance Companies	.34	1.55	2.10	1.95	1.18	.99	1.00
REITS	0.00	0.00	0.00	.20	.28	.08	.08
Sponsored Credit Agencies	-	-	1.18	5.21	6.32	5.77	6.03
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

Source: Federal Reserve System, Flow of Funds Accounts, 1945-1972; and Annual Total Flows with Year-End Assets with Liabilities, 1965-1974, 1969-1979, 1980.

\* These are primarily GNMA's. Private pension funds also own about 10% of GNMA mortgage pools, which represents slightly over 1% of home mortgage funds.

liquidity, and earnings difficulties. Recent proposed deregulation of the asset and liability structure of thrifts will change this relationship over the next decade.

The second major source of home mortgage loans is the commercial banking system. This system supplies about 17 percent of mortgages outstanding, a share that has remained relatively constant over time.

A third source of home mortgages comes from the life insurance companies, which account today for about 2 percent of home mortgages. Their role has fallen sharply since 1955 when they held over 20 percent of home mortgage loans outstanding.

A further source of mortgage loans are the sponsored credit agencies, primarily FNMA (Federal National Mortgage Association). These agencies hold 6 percent of outstanding mortgage loans, a rapid rise from a mere 1 percent in 1965 but virtually no increase since 1970.

The most rapidly growing segment of the mortgage market are government guaranteed mortgage pools, primarily GNMA (Government National Mortgage Association) passthrough securities. The program initiated in 1970 has guaranteed close to \$100 billion dollars in passthrough securities, representing 12 percent of mortgages outstanding. The growth in the importance of this program has been the most significant development in the mortgage market in the past ten years.

Finally, pension funds, the focus of this study, play a

TABLE 3

SOURCE OF TOTAL MORTGAGE FUNDS IN THE UNITED STATES  
(Percentage Distribution)

	<u>1945</u>	<u>1955</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1979</u>	<u>1980</u>
Households	33.64%	17.22%	10.54%	11.18%	8.97%	9.22%	8.80%
U.S. Govt.	3.89	2.77	1.72	2.22	1.68	.85	.97
State & Local Govt. General Funds	0.00	.53	.66	.97	1.60	1.55	2.06
Sponsored Credit Agencies	2.91	1.22	2.09	4.86	6.66	6.48	6.92
Commercial Banking	13.44	16.17	15.25	15.39	16.99	18.50	18.25
S & L Assocs.	15.13	24.18	33.86	31.66	34.76	35.67	34.68
Mutual Savings Banks	11.84	13.44	13.70	12.24	9.63	7.40	6.89
Credit Unions	.08	.13	.18	.17	.25	.28	.30
Life Insurance Companies	18.67	22.67	18.42	15.73	11.13	8.94	9.03
Private Pension Funds	0.00	.25	1.02	.89	.30	.26	.28
State & Local Retirement Funds	.05	.24	1.15	1.25	.94	.70	.68
Other Insur- ance Companies	.16	.12	.04	.04	.02	.02	.01
Mortgage Pools	-	-	-	1.01	4.26	8.85	9.83
Finance Comp- anies, REITS	.18	1.06	1.37	2.39	2.81	1.28	1.30
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

Source: Federal Reserve System, Flow of Funds Accounts, 1945-1972;  
and Annual Total Flows and Year-End Assets and Liabilities,  
1965-1974, 1969-1980.

very small role in the home mortgage market. They hold only .52 percent of all mortgage loans outstanding. (Including their holding of GNMA securities they hold 1.9 percent of mortgages outstanding.) In addition, the trend in home mortgage holdings by pension funds is down substantially since 1965. This may reflect a change in portfolio allocation as well as a substitution of some GNMA securities for direct mortgage holdings.

When we look at the sources of all mortgage funds (that is, commercial, industrial, and rental as well as home), we find that thrift institutions hold a smaller, and life insurance companies a larger, portion of all mortgages outstanding than they do of home mortgages. Table 3 provides a detailed breakdown of the sources of all mortgage funds. Pension funds play a slightly larger but still very minor role in the overall mortgage market.

In summary, the United States home mortgage market is dominated by thrift institutions. These intermediaries, because of their restrictive regulations and the type of mortgage loans they issue, have a poor matching of their assets and liability structures. This leads to cyclical fluctuations in deposit flows and in their ability to originate mortgage loans. The mortgage pools are the most rapidly expanding sector of the market, and at times are the major source of mortgage funds.

The Quantitative Importance of Mortgages to U.S.

Pension Funds

In analyzing the portfolios of pension funds it is useful to disaggregate the data as much as possible. We can, for example, examine separately the following types of funds: private plans, state and local retirement plans, private noninsured plans, the hundred largest plans, the largest corporate and public plans, union plans, and the funds of nonprofit organizations (such as TIAA - Teachers Insurance and Annuity Association).

Private plans (insured and noninsured) maintain 60 percent of all their assets in corporate shares. As indicated in Table 4, the proportion of corporate shares in the portfolio of private funds has increased rapidly since 1945. This shift toward corporate shares reflects, primarily, the less restrictive fund regulations and the increasing performance orientation of fund managers. Recently there appears to have been some increase in stock acquisitions, perhaps reflecting the better performance of equities in the past five years.

The second important type of holding for the private pension funds is in corporate bonds. Corporate bonds comprise nearly one-quarter of these plans' asset holdings. The trend, however, has been downward since the mid-1950s.

Finally, residential mortgages comprised only .7 percent of the pension funds' portfolios at the end of 1980. This is

TABLE 4

ASSET DISTRIBUTION OF U.S. PENSION FUNDS  
(Percentage Asset Distribution)

	<u>1945</u>	<u>1955</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1979</u>	<u>1980</u>
Demand Deposits & Currency	2.94%	2.27%	1.28%	1.00%	1.02%	.80%	.66%
Corporate Shares	7.69	33.33	53.70	60.78	60.69	57.60	59.80
U.S. Government Securities	32.66	15.92	4.16	2.72	7.29	10.73	11.05
1) Treasury	N.A.	N.A.	N.A.	1.90	5.04	7.77	8.22
2) Agency	N.A.	N.A.	N.A.	.82	2.25	2.96	2.83
Corporate Bonds	24.06	43.01	34.30	26.63	24.39	23.31	21.01
Commercial, Farm Mortgages	N.A.	N.A.	N.A.	1.09	.82	.72	.70
Residential Mortgages*	0.00	1.76	5.32	2.72	.82	.76	.70
Miscellaneous	32.66	3.70	4.36	5.06	4.97	6.08	6.08
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>
*(Residential Mortgages and Estimate of Holdings)	---	---	---	(3.92)	(1.68)	(3.96)	(4.10)

TABLE 4 (continued)

ASSET DISTRIBUTION OF U.S. PENSION FUNDS  
(Percentage Asset Distribution)

	STATE & LOCAL						
	<u>1945</u>	<u>1955</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1979</u>	<u>1980</u>
Demand Deposits & Currency	2.65%	1.62%	.96%	1.00%	1.34%	2.07%	2.02%
Corporate Shares	.27	1.18	4.86	16.75	23.19	24.37	26.74
U.S. Government Securities	58.29	43.91	22.71	10.95	7.44	17.94	19.49
1) Direct	N.A.	43.37	21.23	8.46	2.39	8.39	8.63
2) Agency Issues	0.00	.54	1.48	2.49	5.05	9.55	10.86
State & Local Obligations	32.58	25.31	7.91	3.32	1.83	2.24	1.97
Corporate Bonds	5.73	25.02	52.28	58.21	58.97	48.18	44.94
Commercial, Farm Mortgages	NA	NA	NA	1.64	2.07	1.85	1.68
Residential Mortgages	.69	2.96	11.29	8.13	5.06	3.35	3.16
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

Source: Federal Reserve System, Flow of Funds Accounts, 1945-1972; and Annual Total Flows and Year-End Assets and Liabilities, 1965-1974, 1969-1980

down from a peak of 5 percent in the mid-1960s. Even after making an approximate estimate of holdings of GNMA securities, the private pension funds' holdings of residential mortgages represent only 4.1 percent of their portfolios.

If we look at the asset allocation of private noninsured plans separately, we find a portfolio that is similar to that of all private plans although a somewhat smaller portion is held in stocks and a somewhat larger portion in corporate bonds . Between 75 percent and 80 percent of the portfolio is invested in corporate stocks and bonds, and only a small and decreasing portion is held in mortgage loans. Table 5 provides a detailed breakdown of the assets of noninsured private pension plans.

If we focus only on the portfolios of the 50 largest corporate sponsored private funds, we once more find an overall asset distribution fairly similar to that of all private pension plans. As Table 6 indicates, stocks make up a slightly smaller portion of the total fund assets for the 50 largest corporate funds than for private funds in aggregate. The 50 largest corporate funds have invested about 3 percent of their assets in real estate and mortgages, with equity investment in real estate dominating this portion of their portfolios. These 50 plans represent a wide variety of investment patterns. For example, Hughes Aircraft Company maintains 73 percent of its assets in equities and only 13 percent in fixed income investments, while General Dynamics holds 64 percent in fixed income investments and only 36 percent in equities. Also, although many of the funds have no investments in mortgages and real estate, Exxon, Shell Oil, and Bendix Corpora-



TABLE 5

DISTRIBUTION OF ASSETS OF U.S. PRIVATE NONINSURED PENSION FUNDS  
(Percentages)

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<u>Assets</u>	<u>1962</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1979</u>	(1st Qtr) <u>1980</u>
Cash & Deposits	1.50%	1.23%	1.72%	2.03%	3.82%	3.6 %
U.S. Government Securities	6.21	3.98	2.87	7.62	9.56	10.7
Corporate Bonds	37.47	30.04	23.78	23.71	22.76	26.5
Preferred Stock	1.50	1.10	1.53	.61	.49	.5
Common Stock	45.40	54.87	62.56	60.20	54.49	49.7
Mortgages	4.07	4.66	3.44	1.47	1.18	1.3
Other	3.85	4.12	4.11	4.36	7.70	7.8

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Source: SEC Statistical Bulletin.

tion have 12-13 percent in real estate investments.

State and local retirement funds, on the other hand, appear to have a much different investment strategy. They have invested 45 percent of their assets in corporate bonds and only 27 percent in corporate stock. This reversal of strategy can be attributed partly to legislative restrictions, and partly to the more conservative philosophy that derives from governmental management of public employee funds. The present allocation appears to be changing, however, as state and local retirement funds are attempting to build up their stock portfolios. The share of corporate bond holdings has stabilized. Much of the increase in corporate stock and bond investment has come at the expense of federal, state, and local obligations. With the easing of restrictive provisions, these funds fast rid themselves of such obligations. This response to market forces should be expected, since tax-exempt pension funds would derive little benefit from holding low-yielding, tax-exempt state and local bonds.

Mortgage holdings have played a fairly large role, relatively speaking, in the portfolios of state and local retirement plans. In 1970, they accounted for nearly 10 percent of the funds' assets. This represents a sharp rise since 1955 when they comprised only 3 percent of the funds' assets. In 1980, the mortgage share slipped to around 5 percent, but this was still high in comparison to the mortgage share for private funds.

TABLE 6

## ASSETS OF 50 LARGEST CORPORATE SPONSORED PENSION FUNDS (as of 9-30-80)

Rank	Corporate Sponsor	Total Assets (\$ millions)	Percent Asset Distribution					Others
			Equities	Fixed Income (Bonds)	Real Estate & Mortgages	Cash Equivalents		
1.	AT & T/Bell System	31100	56	30	2	12	-	
2.	General Motors	14123	60	32	2	6	-	
3.	General Electric	7184	64	18	5	12	1	
4.	Ford Motors	6442	70	19	1	10	-	
5.	U.S. Steel	5540	N.A.	N.A.	N.A.	N.A.	N.A.	
6.	International Business Machines (IBM)	5200	53	21	-	25	1	
7.	Dupont	4930	68	30	-	2	-	
8.	Exxon Corporation	4338	53	7	13	4	23	
9.	General Telephone and Electric	3000	65	19	1	15	-	
10.	Sears, Roebuck & Co.	3000	50	21	-	29	-	
11.	Shell Oil Co.	2814	63	25	12	-	-	
12.	Standard Oil (In.)	2759	68	12	3	13	4	
13.	United Technologies	2745	34	57	.4	7	1.6	
14.	Rockwell International	2730	N.A.	N.A.	N.A.	N.A.	N.A.	
15.	Boeing Company	2700	60	30	-	10	-	
16.	Eastman Kodak	2653	49	1	2	4	44	
17.	Mobil Oil	2623	40	55	-	5	-	
18.	Standard Oil (Ca.)	2288	55	23	7	15	-	
19.	Lockheed	2159	N.A.	N.A.	N.A.	N.A.	N.A.	
20.	Westinghouse Electric	2150	48	23	7	13	-	

TABLE 6 (continued)

ASSETS OF 50 LARGEST CORPORATE SPONSORED PENSION FUNDS (as of 9-30-80)

Rank	Corporate Sponsor	Total Assets (\$ millions)	Equities	Percent Asset Distribution				Others
				Fixed Income (Bonds)	Real Estate & Mortgages	Cash Equivalents		
21.	McDonnell Douglas	2142	52	42	-	6	-	
22.	Bethlehem Steel	1900	65	28	-	7	-	
23.	United Airlines	1900	55	42	-	3	-	
24.	Atlantic Richfield	1750	30	40	-	30	-	
25.	Union Carbide	1713	50	34	1	15	-	
26.	Caterpillar Tractor Co.	1700	56	28	5	11	-	
27.	Texaco Inc.	1665	N.A.	N.A.	N.A.	N.A.	N.A.	
28.	Chrysler Corporation	1600	62	20	3	14	1	
29.	General Dynamics Corp.	1560	36	64	-	-	-	
30.	R.C.A. Corp.	1528	42	45	4	9	-	
31.	Hughes Aircraft Co.	1434	73	13	5	7	2	
32.	American Airlines	1406	55	23.5	-	21.5	-	
33.	Phillips Petroleum	1400	58	35	-	7	-	
34.	Gulf Oil Corporation	1365	45	25	-	16	14	
35.	Sperry Corporation	1297	43	13	-	18	26	
36.	Monsanto	1290	65	14	6	15	-	
37.	Goodyear Tire & Rubber	1245	61.1	30.6	8.3	-	-	
38.	Pacific Gas & Electric	1230	57	35	1	7	-	
39.	International Harvester	1190	39	26	9	10	16	
40.	Armco Co.	1172	50.3	26.6	6.0	17.1	-	

TABLE 6 (continued)

ASSETS OF 50 LARGEST CORPORATE SPONSORED PENSION FUNDS (as of 9-30-80)

Rank	Corporate Sponsor	Total Assets (\$ millions)	Equities	Percent Asset Distribution					Others
				Fixed Income (Bonds)	Real Estate & Mortgages	Cash Equivalents			
41.	LTV Corporation	1170	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
42.	Trans World Airlines	1150	55	40	-	5	-	-	
43.	Bendix Corporation	1100	50	38	12	-	-	-	
44.	Pan American World Airways	1084	49	42	-	9	-	-	
45.	Alcoa	1079	60	20	4	15	1	-	
46.	TRW Incorporated	1053	64.6	15.1	-	20.3	-	-	
47.	Signal Company	1040	64	20	-	16	-	-	
48.	Sun Company	1033	55	22	10	13	-	-	
49.	International Tel & Tel.	1009	60	30	-	10	-	-	
50.	Eastern Airlines	996	55	-	9	13	23	-	
Total		150274	56.8	27.6	2.9	10.5	2.2		

Source: Pensions and Investment Age, Jan. 19, 1981

TABLE 7

## ASSETS OF THE 25 LARGEST STATE AND LOCAL GOVERNMENT RETIREMENT FUNDS (as of 9-30-80)

Rank	Sponsor	Total Assets (\$ millions)	Equities	Percent Asset Distribution				Others
				Fixed Income (Bonds)	Real Estate & Mortgages	Cash Equivalents		
1.	California Public Employees	18055	21	54	25	-	-	-
2.	New York City Employees	13474	21	66	-	13	-	-
3.	New York State Common Fund	13308	19.7	54.2	14.7	11.2	-	-
4.	New York State Teachers	7914	31.6	60.6	.6	3.9	3.3	-
5.	New Jersey Division of Investment	7570	24	68	-	8	-	-
6.	Texas Teachers	5300	29	70	-	1	-	-
7.	Wisconsin Investment Board	5015	35	48	4	13	-	-
8.	Ohio Teachers	4742	37	52	1	11	-	-
9.	Ohio Public Employees	4561	30.2	62.2	.9	6.7	-	-
10.	Michigan State Employees	4559	17	67	-	16	-	-
11.	North Carolina Employees	4470	13	86	-	1	-	-
12.	Minnesota Investment Board	4122	37	48	-	15	-	-
13.	Florida Retirement System	4000	6	84	5	5	-	-
14.	Pennsylvania School Employees	3968	17.7	76.8	-	5.5	-	-

TABLE 7 (continued)

ASSETS OF THE 25 LARGEST STATE AND LOCAL GOVERNMENT RETIREMENT FUNDS (as of 9-30-80)

Rank	Sponsor	Total Assets (\$ millions)	Equities	Percent Asset Distribution				Others
				Fixed Income (Bonds)	Real Estate & Mortgages	Cash Equivalents		
15.	Washington Public Employees	3126	23	77	-	-	-	-
16.	Los Angeles County Employees	2875	25	60	-	-	15	-
17.	Pennsylvania State Employees	2355	63.5	18.4	10.8	7.3	-	-
18.	Maryland Retirement Systems	2322	54	43	-	-	3	-
19.	Georgia Retirement Systems	2264	32	62	2	4	-	-
20.	Illinois Teachers	2196	28	65	-	7	-	-
21.	Alabama Retirement System	2153	2.7	90	.2	7.1	-	-
22.	Colorado Public Employees	2059	23.6	68.9	-	6.6	-	-
23.	South Carolina Employees	1952	27.5	72.5	-	-	-	-
24.	Arizona Public Employees	1713	18.4	50.8	7.8	23.0	-	-
25.	Oregon Public Employees	1700	34	66	-	-	-	-
Totals		125773	24.9	61.7	5.8	6.8	.8	

The larger role of mortgages in state and local plans can perhaps be explained by the more conservative investment strategy of these funds, by the legislative restrictions on their portfolio investments, and by the desire to invest a portion of their assets in "socially desirable" projects.\*

As shown in Table 7, the asset distribution of the 25 largest state and local government retirement funds is extremely close to that of the state and local plans in aggregate. These 25 funds have about 25 percent of their assets invested in equities, 62 percent in fixed income, and 6 percent in real estate and mortgages. The great majority of the real estate and mortgages portion of their portfolios is invested in mortgages. The California Employees Retirement System, the largest of the public funds with assets of over \$18 billion, maintains the largest proportion of its assets in mortgages. About 25% of the California Public Employees portfolio has been invested in mortgages and mortgage securities including FHA, VA, and conventional mortgages and GNMA's. Recently the public employee

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\*There appears to be some national consensus that adequate and decent housing should be high on the list of national priorities. Given this social goal, investment in housing is perceived by many to be "socially desirable," and in particular more desirable than investment in other private sector activities. Whether this view is justified is a matter of value judgment, but it must be recognized that a number of actors in the economic system do hold this opinion. Recently several states, in particular Connecticut, have begun to more actively invest their pension assets in home mortgages.



pension fund for the State of Connecticut has decided to invest 1/3 of its new cash flow in mortgages. It appears that the strategies of California and Connecticut may signal a shift of funds to the mortgage market by public sector pension plans.

When we compare the portfolios of multi-employer and union funds with those of state and local funds, we find an even more diverse situation. Unfortunately the statistics available on an aggregate basis are somewhat dated (1964). These statistics were collected in a special survey made by the National Bureau of Economic Research (NBER) and are reported in Bartell.\* The numbers that are available, however, do indicate that in the past unions and multi-employer funds put more emphasis on mortgages as "socially desirable" investments. If we look at the portfolio allocations of the mid-1960s, we see that multi-employer and union funds had four times as large a share of their assets in mortgages as had private pension funds, and twice as large a share as state and local funds. In 1964, multi-employer and union funds had 19.2 percent of their assets in mortgages. Table 8 also shows that these funds had invested only one-quarter of their assets in stock (only one-half the share of all private funds), and 31.8 percent in corporate bonds.

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\*Robert Bartell, Jr., and Elizabeth T. Simpson, "Pension Funds of Multi-employee Industrial Groups, Unions, and Nonprofit Organizations," National Bureau of Economic Research, 1968.

TABLE 8

PORTFOLIO COMPOSITION OF MULTI-EMPLOYER AND UNION PENSION FUNDS  
IN THE UNITED STATES  
(Percentage Distribution)

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	<u>1960</u>	<u>1962</u>	<u>1964</u>
Corporate & Other Bonds	31.5 %	31.7%	31.8%
Corporate Stock	19.3	23.6	24.5
Mortgages	15.1	17.0	19.2
U.S. Govt. Securites	26.1	18.6	14.8
Other Assets	8.1	9.1	9.7

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Source: Robert Bartell, Jr., and Elizabeth T. Simpson, "Pension Funds of Multi-employee Industrial Groups, Unions, and Nonporfit Organizations," National Bureau of Economic Research (1968), Tables I-7 and I-10.

Much more recent evidence is available, as shown in Table 9, on the assets of the largest union funds. Each of these funds, excluding the Boilermakers, Iron Shipbuilders, Blacksmiths Pension Fund, has a much greater proportion of its assets placed in fixed income investments (primarily corporate bonds) than in corporate equities. In aggregate, these 6 funds have a fairly large proportion of their assets (18.4 percent) invested in real estate and mortgages, but the Teamsters Central States fund, which has 21.6 percent of its assets invested in mortgages and 30.0 percent in real estate equity, accounts for the great majority of the total. Overall, as Table 9 indicates, most union pension funds have invested only a small portion of their portfolios in mortgages. Even those funds that do invest in mortgages tend to focus on nonresidential mortgages. The failure of most union funds to make substantial investments in mortgages can to some extent be attributed to the strong influence of the commercial bank trust departments and to their stock and bond orientation.

An additional insight can be gained by looking at the change in investment strategies for union funds over time. An analysis of the IBEW fund at the end of 1979 (Table 10) shows a shift away from mortgage investments since 1959. As with the corporate trustee funds, there has been a shift toward stock investments. However, the IBEW has 40 percent of its assets in mortgages. Several other union funds, on the other hand, have increased their portfolio share in mortgages.

TABLE 9

## ASSETS OF 6 LARGEST UNION/TAFT-HARTLEY FUNDS (September 30, 1980)

Rank	Fund Sponsor	Total Assets (\$ millions)	Equities	Percent Asset Distribution				Others
				Fixed Income (Bonds)	Real Estate & Mortgages	Cash Equivalents		
1.	Teamsters, Western Conference	3110	20	76	4	-	-	-
2.	Teamsters, Central States	2491	22.0	18.3	51.6*	1.3	6.8	6.8
3.	Electrical Workers, IBEW (Arlington, Va.)	878	7.5	79	9.5	4	-	-
4.	Boilermakers, Iron Shipbuilders, Black- smiths	800	60	40	-	-	-	-
5.	Bakery and Confec- tionary Workers Union	600	37.5	50.9	3	8.1	-	-
6.	Int'l Union of Operating Engineers	517	35	51.7	-	13.3	-	-
Totals			21.8	55.5	18.4	2.3	2.0	

\* 21.6% in mortgages and 30.0 % in real estate equity.

Source: Pensions and Investments, Jan. 19, 1981 and Money Market Directory 1980.

TABLE 10

PORTFOLIO ALLOCATION OF LARGE UNION FUNDS IN THE UNITED STATES  
(Percentage Allocation)

	IBEW (D.C.)				Carpenters & Joiners		
	1959	1973	1979	Change in % 1959-79	1959	1973	Change in %
Stocks	13.3	19.40	18.0	+ 4.7	20.0	20.24	+ .24
Bonds	3.4	15.08	17.0	+13.6	38.9	41.83	+ 2.93
Mortgage & Real Estate Loans	67.4	51.37	40.0	-27.4	3.2	25.24	+22.04
Real Estate	-	6.80	8.0	+ 8.0	-	-	-
Other	15.9	7.33	17.0	+ 1.1	37.9	12.67	-25.23
Fund Value (in \$ millions)	143.8	241.24	314.0	-	28.2	6.56*	
	Teamsters**				Plumbers & Pipe Fitters		
	1959	1973	1980	Change in % 1959-80	1959	1973	Change in %
Stocks	19.3	10.38	22.0	+ 2.7	20.8	52.35	31.55
Bonds	32.5	7.34	18.3	-14.2	45.4	32.07	-13.33
Mortgage & Real Estate Loans	8.3	55.55	21.6	+13.3	-	-	-
Real Estate	-	14.79	30.0	+30.0	-	-	-
Other	39.9	11.91	8.1	-31.5	33.8	15.56	-18.24
Fund Value (in \$ millions)	208.4	1189.06	2491.0	-	33.0	13.07*	

Source: Derived data from original Department of Labor Reporting Sheets, and Bartell and Simpson, op.cit, Pensions and Investment Age, Jan. 19, 1981.

\* Only partial portfolio covered in 1973.

\*\* Teamsters Central States Pension Fund.

The Carpenters and Joiners in 1973 had one-quarter of their funds in mortgages. (More recent data from the union could not be obtained). On the other hand, the Teamsters Central States fund under Labor Department scrutiny has reduced its holding of mortgages and real estate equities.

The information on nonprofit organizations, as in the case of union and multi-employer funds, is somewhat dated. The most recent aggregate data available, from the NBER survey, indicate that over one-quarter of the portfolios of nonprofit organizations were allocated to the mortgage market in 1964. This is consistent with the wider "social objectives" that these organizations perceive themselves as pursuing. Nonprofit organizations tend to have a much smaller share of their assets in corporate stock. A detailed breakdown of the pension portfolios of nonprofit organizations is available in Table 11.

One recent piece of evidence is available on the pension portfolio of the largest of the nonprofit pension funds, TIAA (Teachers Insurance and Annuity Association) and CREF (see Table 12). At the end of 1979, this fund had accumulated over \$14.6 billion in assets. More than 26 percent of its portfolio was invested in mortgages; however only .8 percent was invested in home mortgages while 25 percent was invested in industrial, office building, and commercial mortgages. Thus, while TIAA appeared to find the mortgage an attractive instrument, residential mortgages did not play a major part in its portfolio. This example illustrates how crucial it is to distinguish between residential and nonresidential mortgages when examining aggregate statistics. Unfortunately, most of the statistics are not

TABLE 11

PORTFOLIOS OF TOTAL PENSION FUNDS FOR NONPROFIT ORGANIZATIONS  
IN THE UNITED STATES

(Percentage Distribution)

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	<u>1958</u>	<u>1960</u>	<u>1962</u>	<u>1964</u>
Corporate & Other Bonds	44.1%	42.3%	40.9%	38.5%
Corporate Stock	16.2	17.6	20.5	23.0
Mortgages	27.8	27.8	27.2	28.1
U.S. Govt. Securities	6.3	6.3	4.9	4.3
Other Assets	5.6	6.0	6.5	6.1

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Source: Bartell and Simpson, op. cit., pp. 34 and 36, from NBER Survey

TABLE 12

PORTFOLIO COMPOSITION OF TEACHERS INSURANCE  
AND ANNUITY ASSOCIATION FUND AND COLLEGE  
RETIREMENT EQUITIES FUND  
(Percentage Distribution)

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	<u>December 31, 1979</u>
Bonds	25.33%
Stocks	44.38
Mortgages	26.15
Government Insured (Residential)	.79
Conventional (Industrial, Commercial Office buildings, Stores)	25.36
Real Estate	2.69
Cash & Other	1.45
<u>TOTAL ASSETS</u>	\$14.66 billion

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Source: 1979 TIAA annual report



separated in this way.

Combining the portfolio of the 100 largest union, public, and corporate pension funds we find that assets are fairly equally distributed in stocks and bonds, with only 4.5% in real estate and mortgages. (See Table 13). Overall, multi-employer, union and nonprofit organizations believe that they have a wider objective function than private corporate pension plans. As a result, what they perceive as "socially desirable" investments, such as mortgages, plays a much larger role in their investment portfolios. In general these organizations have perceived this wider range of investments to be in the direct interest of their present and future pension recipients.

#### The Importance of Pension Funds to Sectors of the Capital Market

It is useful, in addition to examining the portfolio composition of pension funds, to take another view and analyze the importance of pension funds to various segments of the capital market. Table 14 presents two measures of the role of pension funds in U.S. financial markets: first, pension fund holdings as a percentage of the total assets of a particular class; second, the percentages of the total flow of financial assets of a particular class which are acquired by pension funds.

In terms of assets outstanding, pension funds have played an increasingly important role in the corporate stock and bond markets.

TABLE 13

ASSET DISTRIBUTION OF 100 LARGEST AMERICAN PENSION FUNDS  
(Public and Private)

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	<u>September 30, 1980</u>
Equities	40.3%
Fixed Income (Bonds)	45.2
Real Estate and Mortgages	4.5
Cash Equivalents	8.8
Others	1.2
<u>TOTAL ASSETS</u>	\$309.5 billion

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Source: Derived from Pensions and Investment Age, January 19, 1981

TABLE 14

## ROLE OF PENSION FUNDS IN U.S. FINANCIAL MARKETS

Percentage of Total Financial Assets Held by Pension Funds (Private and Public)

	<u>1945</u>	<u>1955</u>	<u>1965</u>	<u>1975</u>	<u>1979</u>	<u>1980</u>
Corporate Equities	.18	1.96	5.65	12.66	14.46	14.34
Corporate & Foreign Bonds	3.01	17.10	31.78	30.79	31.02	30.83
U.S. Gov't Securities	.96	3.28	3.87	3.33	6.27	6.80
Total Mortgages (includes GNMMAs)*	.05	.49	2.17	1.44	1.61	1.65
State & Local Gov't Securities	5.73	5.94	2.62	.85	1.28	1.23
Demand Deposits & Currency	.14	.42	.70	.90	1.32	1.35

Percentage of Total Flow of Financial Assets Acquired by Pension Funds (Private and Public)

	<u>1945</u>	<u>1955</u>	<u>1965</u>	<u>1975</u>	<u>1979</u>	(1st Qtr) <u>1980</u>
Corporate Equities	7.03	26.95	98.91	76.63	338.46	179.20
Corporate & Foreign Bonds	10.89	38.13	44.37	23.62	35.40	33.86
Mortgages (includes GNMMAs)*	.33	.94	4.89	.52	2.37	1.71
State & Local Gov't Securities	7.22	6.58	- 3.74	6.21	0.00	1.42
Demand Deposits & Currency	3.33	1.66	.76	- 1.92	5.17	NA

\* Holdings of GNMMAs are estimates.

Source: Federal Reserve System, Flow of Funds Accounts, 1945-1972; 1st Quarter 1980; and Annual Total Flows and Year-End Assets and Liabilities, 1965-1973, 1969-79, 1969-80.

In 1955, they had less than 2 percent of the corporate stock outstanding. Today they hold 14 percent. During the same time period their share of all corporate bond holdings increased from 17 percent to 31 percent. In other markets their importance is not great, as measured in terms of holdings of assets outstanding. Pension funds hold at most 2 percent of all mortgage loans, and so appear to be a minor actor in the mortgage market.

In terms of the flow, or year-to-year changes, in financial assets, the pension funds take on an even more dominant role in the corporate equity and bond sectors. Since the mid-1960s they have been the most important institutional investors in corporate stocks. Further, since they tend to concentrate their activity in a select number of "growth" or "performance" stocks, they probably have a large influence on the price of securities.\* The pension fund influence on the corporate bond sector is less extensive but still major. In other sectors of the market, such as mortgage acquisitions, the pension funds appear to be a minor influence. They have not supplied more than 4 percent of mortgage flows.

Turning to state and local retirement funds, we can see

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\*Numerous references have been made in the financial literature to the "two-tiered" stock market of the late 1960s and early 1970s. There is a general consensus that the high price-to-earnings ratios of a small number of stocks, usually labeled "growth" or "performance" stocks, were due to the concentration of institutional holdings in these securities.

that bonds consistently comprise the largest share of flow acquisitions. Between 50 percent and 80 percent of public pension fund flows are distributed to the bond market. However, stock investments have been making up an increasing portion of state and local fund acquisitions. Their share of the pension flow has risen from 10 percent in 1965 to the range of 30-50 percent today. Mortgage acquisitions have shown a declining trend. In 1965 they made up 20 percent of pension fund acquisitions, but at the present time there is virtually no net acquisition of mortgages by state and local funds. Acquisitions of mortgage loans do, however, appear to be sensitive to interest rates on these instruments.

In summary, the aggregate figures for both private and state and local retirement funds indicate that mortgages are not considered a major investment alternative by most U.S. funds.

#### CHARACTERISTICS OF MORTGAGES AND PORTFOLIO CHOICE

The observed portfolio allocation of pension funds results from the interaction of the objective functions of employees, employers, portfolio managers, and the government. The elements that enter into these choice functions can be divided into institutional factors and the economic characteristics of the mortgage vis-a-vis other assets. Institutional factors include

the choice of fund management, the philosophy and orientation of the fund managers, the extent to which "social objectives" are considered important in fund allocations, and any legislative or other restrictions that may be placed on portfolio choice. The economic characteristics of the mortgage that may influence portfolio choice include yield, liquidity, risk, information-transaction costs, and the ability of the mortgage to serve as a hedge against inflation.

#### Institutional Factors

There was a general consensus among the people interviewed that institutional factors dominate the investment policies and portfolio choices of pension funds. The factor that appears most important is the delegation of the managerial responsibility for the investment of the fund assets. Most companies have delegated this authority to banks and to investment managers and advisors. Over 75 percent of noninsured private pension plans are managed by commercial bank trust departments or through a similar trustee relationship. Not only is this management authority delegated to bank trustees but in general companies devote little effort to overseeing the trustee's performance. According to a survey conducted by Greenwich Research Associates, the corporate officer responsible for supervising fund management (usually the financial

vice president or treasurer) spends little time on fund matters.\* The survey indicates that 78 percent of these executives spend less than three days per month on pension fund business.

This delegation of much of the responsibility for fund management allows the commercial bank trust department to have a significant influence on portfolio choice. "The great bulk of corporate retirement funds are administered by the trust departments of about twenty-five banks headquartered in New York, Chicago, and other large cities."\*\* These organizations are, for the most part, oriented toward securities (stocks and bonds). They generally lack knowledge of the mortgage as an investment possibility. As a result, their portfolio choices tend to be in areas with which they are familiar. As one fund manager stated: "You do what makes you comfortable...which means stocks and bonds."

In addition to this problem of orientation, which works to the disadvantage of the mortgage, the delegation of investment management authority creates a second problem. Evaluation of management performance requires the development of a set of "performance" measures. These measures most often emphasize short-term portfolio

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\*Greenwich Research Associates, Annual Executive Report on Large Corporate Pension Funds, 1974. Based on 545 detailed interviews with senior executives in large corporations. A more recent survey indicated that corporations are spending greater time supervising their pension obligations.

\*\*Paraphrase quotation from a number of interviews.

gains rather than providing an evaluation based on long-term risk-adjusted returns. The focus on short-term "performance" has contributed to the emphasis by many managers on "growth" stock investments. There is evidence (especially for the past several years) that the "management" of pension fund assets whereby large investments are made in a small group of growth stocks has not led to optimal investment performance. (See the next section on yield.) It also appears that "management" will not lead to an improvement in investment performance vis-à-vis a randomly selected stock portfolio. A study of the performance of the bank managers of the AT&T pension fund stock portfolios suggests that while "banks achieve competitive results (with other managers), few have exceeded the average over long periods of time."\* Thus, it seems that short-term performance may not provide an appropriate objective function for the management of pension fund assets.

An additional objective function, which a number of trustee pension funds have utilized, relies more heavily on social considerations. Several labor unions, nonprofit organizations, and state and local retirement funds allocate a substantial portion of their assets to what they perceive as "socially desirable" investments.\*\* These include holdings of mortgages on

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\*William Burns and Richard Kleman, "Performance of Bank Managers of Trust Funds," The Wharton School, University of Pennsylvania, August 1973

\*\*We do not mean to imply that those funds that rely more heavily on "social considerations" sacrifice yield. As will be shown in the next section, this is not necessarily the case.



residential properties and also include the holding of commercial and industrial properties. Many of these pension funds are either self-managed or are managed by a trustee who is required to respond to the organizations' strong social objectives. The active role of some unions, nonprofit organizations, and state and local governments in pension fund management contrasts with the usual practice of most corporate managements. This differential involvement in the investment decision process, and the different objective functions of these two types of organizations, explain in part the differences in portfolio composition between the funds.

Indirect evidence for this institutional explanation of the portfolio composition of pension funds can be obtained by examining the asset structure of the most closely similar intermediaries—the life insurance companies. Life insurance companies, like pension funds, have a long-term objective function, they have a relatively stable and predetermined inflow of funds, and they have actuarially determined liabilities (even though many of the nonpension liabilities of life insurance companies are fixed and not adversely affected by inflation). In addition, a fairly large portion of these companies' funds represents insured pension fund accounts. A priori, one would expect to see a somewhat similar asset structure for both intermediaries.\* Tables 15 and 16 present

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\*As in the case of pension funds, the portfolio composition of life insurance companies partly reflects institutional characteristics particular to the industry. State and charter regulations and other institutional constraints such as usury laws may substantially influence these companies' portfolio choices.

TABLE 15  
 UNITED STATES LIFE INSURANCE COMPANIES  
 (Percentage Distribution of Assets)

	<u>1945</u>	<u>1955</u>	<u>1965</u>	<u>1975</u>	<u>1979</u>	<u>1980</u>
Corporate Shares	2.27%	4.14%	5.92%	9.46%	9.54%	11.13%
Corporate Bonds	25.71	42.15	39.65	37.71	41.17	38.23
Mortgages- Home	5.25	20.10	19.20	6.29	3.66	3.94
Mortgages- Other	9.85	13.41	19.74	25.60	24.69	24.08
Policy or Other Loans	4.46	3.86	4.98	8.76	8.18	8.78
Government Securities (Federal, State & Local)	48.49	12.09	5.60	3.79	4.66	5.05
Other	3.95	4.25	4.90	8.55	8.10	8.79

Source: Federal Reserve System, Flow of Funds Accounts, 1945-1972; and Annual Total Flows and Year-End Assets and Liabilities, 1965-1973.

TABLE 16

CANADIAN LIFE INSURANCE CORPORATIONS

(Percentage Asset Distribution)

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	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1972</u>	<u>1979</u>
Bonds & Stocks	51.3%	45.7%	42.5%	46.4%	47.9%
Mortgages, Loans & Sales Agreements	42.4	48.4	50.6	46.0	38.7
Policy	4.3	3.5	5.0	4.6	4.3
Other Assets	<u>2.0</u>	<u>2.4</u>	<u>1.9</u>	<u>3.0</u>	<u>9.1</u>
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: Bank of Canada, Statistical Summary, and Canadian Housing Statistics.

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the asset distribution for U.S. and Canadian life insurance companies. The figures show that these companies have a far larger share of their assets in mortgages than do noninsured pension funds. In the United States, the share of life insurance assets allocated to mortgages has run as high as 40 percent and currently stands at 28 percent. There has also been a substantial shift in the type of mortgage held. The percentage of assets in home mortgages has dropped from a peak of 20 percent in 1955 to 4 percent today, while the proportion of assets held in other mortgages has risen from 13 percent in 1955 to 24 percent in 1980. The data on Canadian life insurance companies show similarly large mortgage holdings: nearly 40 percent of Canadian life insurance company assets are held in the form of mortgages.

This admittedly indirect evidence, for a type of intermediary whose objective functions and characteristics are somewhat similar to pension funds and which in fact holds and invests large portions of pension money, suggests that it is the institutional nature of the management of the funds that leads to the observed portfolio allocations.

A final set of factors that have influenced portfolio choice in the past have been legislative and charter restrictions on the investments of funds. Many state and local retirement funds use to be prevented from investing in common stock or mortgages. The mortgage restriction applied primarily to conventional, not FHA-VA insured, holdings. Since the late 1950s the restrictions have,

over time, slowly been removed, and these changes in portfolio restrictions have allowed more diversified investments. A similar, though less extensive, set of restrictions (usually in the fund charter) also affected private pension investments. On the basis of our interviews we found that the majority of public and private funds seemed to face only minor restrictions on their investment portfolio.

An additional legislative factor affecting the investment decisions of pension funds is the Employee Retirement Income Security Act of 1974 (ERISA). ERISA established two basic guidelines for pension fund management. The first, known as the "prudent-expert" rule, requires the fiduciary to act towards the pension trust as a prudent man would toward his own property. Since a prudent man would only participate in an investment area if he possessed a high level of expertise, the fiduciary must be an expert or hire an expert. The second guideline requires the pension fund to diversify its investments. This can be interpreted as meaning that the pension fund manager must look at all acceptable forms of investments including mortgages and real estate equity. While the "prudent-expert" rule and diversification requirement can be seen as implying that pension funds should examine the possibility of investing in mortgages and real estate, a number of restrictions established by ERISA may prevent pension funds from entering certain types of real estate opportunities. In net terms, ERISA could prove to be either positive or negative for

pension fund investment in real estate and mortgages depending on the legal and investment manager interpretations it receives.

Turning briefly to the Canadian institutional setting (see the Appendix for the details), we find a close similarity to that in the United States. Most funds are managed by bank trusts and investment advisers. There is some feeling, however, but no firm evidence, that more Canadian funds are self-managed. The majority of funds managed by trusts have an orientation toward securities, as in the United States. Traditionally, this has meant more bond investments, but stocks are receiving an increasingly large share of Canadian fund portfolios, again as in the United States. It is also true that many provincial funds in Canada have had restrictive investment policies. Today, however, there are generally few restrictions on fund investments.

### Economic Factors

Yield: Yield refers to the total rate of return (capital gains or losses plus interest payments) on the portfolio of the pension fund. The general objective function of most funds is to maximize yield on their portfolio, given the level of risk they are willing to assume. Thus they will attempt to maximize yield within a given risk class.

It is clear from the aggregate statistics presented in the first portion of this paper that most pension funds have attempted to maximize yield or total return through investment in common

stock. Considerable investments have also been made in corporate bonds, and a very small amount in mortgages.

Table 17 shows the comparative returns for various investments over the period 1964 to 1979. From these figures it can be seen that the mortgages compared favorably in terms of return over the ten-year period, from 1964 to 1973. If we compare an FHA-insured mortgage with an AAA bond (roughly equivalent in risk and capital loss characteristics), we find that the mortgage yield, on the average, is 100 basis points more than the bond. If, however, we look at the distribution of yields over time (see Table 18), we see a sharp decline in the spread between mortgage interest rates and high-quality bond interest rates through 1978 and a sharp increase in 1979-1980. The decline in this spread in the late 1960s and early 1970s may account for the net disinvestment of mortgages by the pension funds. Nonetheless, over this ten-year period, the relative yield of the mortgage has been higher than that of high-quality bonds.

The yield spread between mortgages and high-grade corporate bonds in Canada is roughly similar to that in the United States. Table 19 provides figures on annual interest rates for Canada. The mortgage in Canada does appear to be competitive with the high-grade corporate bonds.

The mortgage is also a reasonably attractive investment, even if we make a comparison with the performance of stock portfolios. The performance of equity investments was poor in

TABLE 17

EQUIVALENT LEVEL ANNUAL RATES OF RETURN

	<u>1964-1973</u>	<u>1969-1973</u>	<u>1975-1979</u>
Bank Regular Equity (stock) *	5.2%	- .2%	12.2%
Insurance Company Separate Equity (stock) Accounts *	4.7	-1.3	13.1
Standard & Poor's 500 *	6.0	2.0	14.4
Mortgage Portfolio ** (FHA Insured)	5.8	7.0	7.9
AAA Bonds **	4.6	6.2	7.4
PRISA *** (A real estate equity portfolio)			9.3

AVERAGE ANNUAL RATE OF RETURN  
COLLEGE RETIREMENT EQUITIES FUND

1953-1973	7.19%
1963-1973	3.82
1969-1973	1.30
1975-1979	13.50

\* A.S. Hansen, Inc., Employee Benefit Fund Investment Performance 1964-1973. 1975-9 data from TIAA-CREF 1979 Annual Report.

\*\* Includes capital gains (losses) due to interest rate changes, calculated on the basis of changes in the present value of the mortgage or bond and assuming a ten-year remaining life.

$$\text{Present value} = \int_0^{10} R(t)e^{-rt} dt$$

$$\text{or in the discrete case} = \sum_0^{10} \frac{R(t)}{(1+i)^t}$$

\*\*\* Prudential Insurance, PRISA 1980 Annual Report.



TABLE 18

## U.S. INTEREST RATES: MORTGAGES VS. HIGH QUALITY BONDS

	(1)	(2)	(3)	Spread	
	<u>FHA Insured</u>	<u>Conventional</u>	<u>AAA Bonds</u>	<u>(1)-(3)</u>	<u>(2)-(3)</u>
1960	6.24	6.08	4.41	1.83	1.67
1961	5.86	5.81	4.35	1.51	1.46
1962	5.75	5.71	4.33	1.42	1.38
1963	5.46	5.84	4.26	1.20	1.58
1964	5.45	5.78	4.40	1.05	1.38
1965	5.47	5.74	4.49	.98	1.25
1966	6.38	6.14	5.13	1.25	1.01
1967	6.55	6.33	5.51	1.04	.82
1968	7.21	6.83	6.18	1.03	.65
1969	8.26	7.66	7.03	1.23	.63
1970	9.03	8.27	8.04	.99	.23
1971	7.70	7.60	7.39	.31	.21
1972	7.52	7.45	7.21	.31	.24
1973	8.19	7.78	7.44	.75	.34
1974	9.55	8.71	8.57	.98	.14
1975	9.19	8.75	8.83	.36	-.08
1976	8.82	8.76	8.43	.39	.33
1977	8.68	8.80	8.02	.66	.78
1978	9.70	9.30	8.73	.97	.57
1979	10.87	10.48	9.63	1.24	.85
1980	13.42	12.25	11.94	1.48	.31
Average				1.00	.75

Source: Federal Reserve Bulletin, 1960-1981.

TABLE 19

## CANADIAN INTEREST RATES: MORTGAGES VS. HIGH QUALITY BONDS

	(1)	(2)	(3)	Spread	
	<u>NHA Insured</u>	<u>Conventional</u>	<u>Bond Rate</u>	<u>(1)-(3)</u>	<u>(2)-(3)</u>
1960	6.75	7.25	5.56	1.19	1.69
1961	6.75	7.00	5.47	1.28	1.53
1962	6.50	6.95	5.71	.79	1.24
1963	6.50	6.91	5.26	1.24	1.65
1964	6.25	6.88	5.51	.74	1.37
1965	6.25	6.83	5.64	.61	1.19
1966	6.75	7.57	6.26	.49	1.31
1967	7.00	7.88	6.99	.01	.89
1968	9.12	9.18	7.94	1.18	1.24
1969	9.37	9.69	8.79	.58	.90
1970	10.23	10.53	9.30	.93	1.23
1971	8.81	9.34	8.64	.17	.70
1972	8.98	9.37	8.39	.59	.98
1973	9.25	9.52	8.45	.80	1.07
1974	11.23	11.60	10.83	.40	.77
1975	10.90	11.35	9.34	1.56	2.01
1976	11.86	11.86	9.37	2.49	2.49
1977	10.29	10.40	8.70	1.59	1.70
1978	10.20	10.31	9.17	1.03	1.14
1979	10.95	11.20	9.84	1.11	1.36
Average				.94	1.32

1974-1979 are for July.

1960-1973 are for June.

Source: CHMC, Canadian Housing Statistics

the early 1970s, though it has been quite good since 1975. The shift in investments to stocks in the early 1970s was made in the expectation that gains from capital appreciation would result in actuarial gains, which in turn would reduce required corporate contributions. To some extent, this expectation was not justified. Some of the rise in the price of stocks owned by funds was caused by the concentration of acquisitions in a small group of growth stocks; thus a portion of the paper gain of the pension funds was in a sense illusory. The bear market experience of 1974-1975 unfortunately demonstrated this fact to fund managers. Since 1976 stock investments have looked far more attractive than any fixed debt investment. On the other hand, the mortgage yield has continued to exceed that of high quality bond yields.

Our analysis has shown the mortgage has compared favorably in the past ten years with other debt or equity investments. It is always un-wise to project the experience of the recent past into the future, but it does seem likely that the economic instability of the late 1960s and the 1970s will prevail over the next ten years. In this sort of economic climate it is probable that the high-quality mortgage, the mortgage-backed security, and equity investment in real estate will provide a total return similar to or better than that from other investments.

Liquidity: Liquidity is defined as the ability to convert an asset into cash on short notice without risk of major loss. The liquidity needs of pension funds depend on the predictability of

the cash outflow requirements of the fund relative to the new cash inflows. Thus the payment requirements of the fund should serve as the fundamental basis for determining the need for liquidity. Since most pension funds have a net inflow of funds, the time horizon of most funds should be long. If lack of liquidity carries a premium in yield, then pension funds should be in the best position to take advantage of this premium.

Although many pension funds have no fundamental need for liquidity, some managers express a liquidity preference because of their desire to "manage" the portfolio. They wish to take advantage of market swings and arbitrage possibilities; to shift from asset to asset to maximize gain. As a result, pension fund managers devote considerable effort searching for underpriced securities to obtain capital gains. All economic evidence, however, shows that successive price changes of securities are random.\* The "random walk" hypothesis implies that securities' price changes are like a series of random numbers that follow no predictable pattern, and that prices reflect unbiased estimates of the true intrinsic value

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\*Evidence on the "random walk" can be found in: Paul H. Cootner, ed., The Random Character of Stock Market Prices (Cambridge, Mass.: M.I.T. Press, 1964); Benoit Mandelbrot, "The Variation in Certain Speculative Prices," Journal of Business, October 1963; and E.F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work," Journal of Finance, May 1970.

of the security. Given the large number of analysts and individuals examining each piece of information, one must also believe that traded prices reflect all presently known information.

Yet, even if the need for liquidity is accepted, the mortgage is not as liquid as is often assumed. Amortization gives it built-in liquidity: the repayment stream rather than presenting a problem actually provides a high degree of liquidity. Added to this, the average life of a mortgage, because of prepayments, is twelve years not twenty-five as specified in most contracts. Finally, the presence of FNMA provides the market with considerable more liquidity than existed in earlier periods. Although FNMA and FHLMC (Federal Home Loan Mortgage Corporation) do not provide a true secondary market (since they will not purchase mortgages originated more than one year before their purchase), they do provide some liquidity to the mortgage market.

Also, investment in real estate equity is clearly far more illiquid than traditional stock investments. Typically, a pension manager cannot be confident of selling a property and receiving the purchaser's funds within a short time period. This lack of liquidity has been utilized as a major argument against real estate equity investments by pension funds. Yet, this argument only holds if a pension fund requires near-perfect liquidity, and most American pension funds clearly do not.

To summarize, then, the mortgage is not as illiquid as many would imply due to the existence of the secondary market and the

repayment stream. Most pension funds, however, do not have a major need for liquidity, and so should take advantage of any premium on illiquidity which the mortgage carries. The interest in liquidity among "managers" needs to be scrutinized carefully. To the extent that liquidity is perceived to be a problem, however, an active secondary market would encourage more investment in mortgages.

Risk:\* The role of risk in influencing portfolio choice should be well recognized by managers of investment funds. Risk is defined as uncertainty or the degree of dispersion of the future market value of one's portfolio. The basic assumption made about risk in financial markets is that directly or indirectly the market is dominated by risk averters. As a result, the market should provide premiums for risk bearing.

The optimal portfolio for a risk averter -- and pension funds must certainly be classified as risk averters -- should be a highly diversified one. The portfolio chosen should be efficient; that is to say, no portfolio with the same or higher expected return should have a lower dispersion (risk) and no portfolio with the same or lower dispersion should have a higher expected return. Thus, a comparison of returns across portfolios must adjust for the amount of risk incurred. If we apply these criteria of efficient and diversified portfolios, we could expect the mortgage (especially

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\*The first portion of this section relies heavily on Eugene Fama, Risk and the Evaluation of Pension Fund Portfolio Performance, Banks Administration Institute, Park Ridge, Illinois, 1969.

the FHA-VA insured mortgage) and real estate equities to play an important role in the portfolio of pension funds.

The risk involved in holding mortgages (or for that matter any fixed coupon debt instrument) can be separated into two classes: default risk and interest rate or market value risk.

1. Default risk refers to the possibility that the borrower, due to insolvency or other reasons, will not repay the principal or interest, or both on his outstanding debt obligations. For an FHA or VA - insured mortgage the default risk is mitigated by three factors: (1) the government guarantee or insurance, (2) the credit of the borrower, and (3) the value of the property. If an FHA -insured mortgage loan is declared in default (delinquent in three monthly payments), foreclosure action may begin. When a foreclosure sale occurs, the mortgagee usually takes title to the property and then assigns title to the FHA. The FHA will then settle the mortgagee's insurance claim through a cash payment. The cash payment will cover the outstanding unpaid balance of the mortgage and all payments made by the mortgagee since default. Two-thirds of the attorney fees and court costs are also paid by the FHA. The amount of loss involved in an FHA foreclosure will vary, but generally it is limited to one-third of the legal costs and about one month's interest on the loan. Thus, the default risk under FHA insurance is very small.

The default risk under the VA-insured loan is somewhat greater.

The foreclosure procedure is roughly similar to the FHA's. The Veterans Administration settles foreclosure claims in cash, and the payments include the principal and interest as well as the costs of foreclosure. However, the Veterans Administration has the option of limiting its guarantee payment to \$17,500, forcing the mortgagee to recover the remaining loss from the residual property value. As a result, the default risk of VA mortgages must be considered somewhat greater than that of FHA mortgages.

Turning next to privately owned insured mortgages, the risk of loss by default is slightly greater. Private mortgage insurance protects the mortgagee from the first 20-25 percent of the loss, relying on the underlying value of the property to provide the remaining protection from loss. This procedure has been generally accepted by the mortgage market -- witness the large shift from FHA insurance to private mortgage insurance (PMIs). However, PMI mortgages must be considered somewhat more risky than government-insured mortgage loans.

Finally, a large number of uninsured mortgages are issued for which the default risk is not covered. In such cases the probability of default is a function of the credit of the borrower and the underlying value of the property.

In recent years, the issuance of GNMA "pass-through" securities has provided a virtually riskless (from default) way to invest in mortgages. GNMA, an agency of the federal government, issues mortgage-backed, passthrough securities that guarantee the



holder both the principal and the interest due each month on the pool of mortgages, whether or not these have been received by the servicer. These "mortgage" securities thus have the same status as any government agency issue.

2. The second type of risk arised from interest rate fluctuations. The market value of a fixed coupon debt instrument will, of course, fluctuate with general market interest rates. In a period of rising inflation (the situation since 1965), nominal interest rates will rise and the market value of a mortgage will fall. This is true not only of a mortgage portfolio but also of any normal debt instrument portfolio; thus the mortgage cannot be considered inferior to a typical corporate bond in terms of interest rate risk.

The usual measure of market value risk is the standard deviation of the asset's total rate of return. The standard deviation basically measures the dispersion of the asset's rate of return around its expected return. This measure thus provides an indication of the variability of return on a particular asset. Table 20 compares the percentage standard deviation of total returns (capital gains and interest payments), for stocks, bonds, and mortgages.

If we base an assessment of risk on the standard deviation of returns (Table 20), it is quite clear that both mortgages and bonds are less risky than common stock investments. Thus, the higher overall return acheived by common stock in the period 1964-

TABLE 20  
PERCENTAGE STANDARD DEVIATION\* OF TOTAL RETURN

	Percentage		1964-1973	
	'64-'73	'69-'73	Minimum Return	Maximum Return
Stocks (S & P)	122.5%	223.8%	-11.11	21.25
Bonds (AAA)	61	51	1.33	10.28
Mortgages (FHA)	54	56	1.94	13.26

\*Standard Deviation = 
$$\sqrt{\frac{\sum_{t=1}^n r_{it} - E(r_i)^2}{n-1}}$$

1973 may be partly attributed to the need to bear more risk in making such investments. It is thus crucial to take this risk into account when evaluating various investment opportunities. If one believes in an efficient capital market, then the higher returns on common stocks represent, primarily, a premium on risk.

When we look at the risk characteristics of Canadian mortgages we find some substantial differences from the U.S. situation. In terms of default risk, it is true, the Canadian mortgage is quite similar. Government insurance, provided through NHA, is nearly equivalent to the FHA insurance provisions.\* There are also several private mortgage insurers (MICC being the largest) that function in a fashion similar to private mortgage insurers in the United States.

However, substantial differences arise in regard to interest rate risk. Most Canadian mortgages have a five-year, roll-over feature whereby mortgage interest rates are adjusted to current market rates. This system of course implies that the coupon is fixed for only a five-year period. This will lead to much smaller fluctuations in the market value of a mortgage portfolio, and so to less interest rate risk. Assuming that the mortgage holder does not wish to gamble on his ability to forecast interest-rate changes, the five-year variable-rate mortgage instrument would dominate a long term fixed coupon corporate bond (the usual bond

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\*The Canadian system is slightly different in that a 1 percent (of principal of the loan) insurance premium is paid at the time of loan closing, rather than the 1/2 percent premium that is paid on a monthly basis for FHA insurance.

instrument) in terms of the interest rate risk. From the point of view of the mortgage holder (as opposed to the borrower), the Canadian instrument would be clearly preferable. The new adjustable rate mortgages authorized in the United States may also reduce the interest rate risk to the mortgage holder.

As we have seen, the U.S. mortgage instrument (especially FHA-VA insured mortgages) seems to carry slightly less risk than the high-quality corporate bond. The GNMA "pass-through" security is even less "risky" and should be comparable to any federal agency debenture. In terms of interest rate risk, the Canadian five-year, roll-over mortgage seems to be superior to both the fixed payment U.S. mortgage instrument and to long-term high-quality bonds. In neither country can risk explain the relatively small scale of mortgage investment by the pension fund. The portfolio diversification implied by a risk-averting strategy should involve diversification over types of assets and not just diversification within one asset type. The fiduciary responsibility of corporations and pension fund managers is probably not entirely consistent with a heavy concentration of assets in relatively risky common stock and the neglect of less risky bond, mortgage, and real estate equity investments. Thus, in terms of risk characteristics and portfolio diversification, more of a fund's assets should be in mortgage investments and real estate equities.

Information-Transaction Costs: One of the traditional arguments against holding mortgages is that the mortgage instrument is more

difficult and complex to deal with than a corporate bond. Such arguments usually revolve around the costs of the initial transaction, the costs of servicing the mortgage, difficulties in assessing the quality and risk of the mortgage, and potential problems of nonpayment.

In essence, these arguments imply that the mortgage is a more heterogeneous instrument than a corporate bond or stock. Special expertise is necessary to evaluate the credit condition of the typical small borrower. Information on the risk of default and the true value of the underlying property is said to be costly to obtain. Finally, servicing costs are high relative to the gross yield on the mortgage.

There is certainly an element of truth to these statements, but in general the heterogeneity of mortgages and the homogeneity of corporate securities have been exaggerated. In the first place, an FHA-insured mortgage is quite homogeneous in terms of yield, liquidity, and risk characteristics. Second, the difficulties of originating or acquiring and servicing a mortgage are minimized by the existence of the mortgage banker. In essence, he is the broker who minimizes the information and transaction costs to the mortgage investor. Third, although the service costs on the mortgage are substantial, the net mortgage yield (after deducting this charge) still compares favorably with other assets. The service cost on a single family home mortgage is  $3/8$  to  $1/2$  percent of the principal amount of the value of the mortgage outstanding. On large multi-family projects the service cost falls substantially,

to .1 percent on projects over \$1 million. Finally, the mortgage offers only a slight disadvantage in terms of quality of information and expertise when compared with conventional securities. Certainly, the daily listing of stock and bond quotations,\* the large volume of published securities analyses reports and the securities credit rating services provide a source of information and expertise. However, the worth of this expertise and information vis-à-vis an FHA-insurance guarantee is debatable.

In summary we may say that there are some information and transaction costs to mortgage investing but they do not appear substantially greater than similar costs for conventional securities.

Inflation Hedge\*\*: A final argument against mortgage investment (or, for that matter, investment in any fixed coupon debt instrument) is that mortgages are not considered a good hedge against inflation. An asset would be a perfect inflation hedge if its nominal rate of return were perfectly correlated with changes in the price level (or conversely, if its real rate of

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\*The AMMINET system is an attempt to provide similar information for the mortgage market.

\*\*This section relies on unpublished papers by Richard Cohn, "Inflation Hedges for Pension Funds" (October 1974); and Zvi Body, "Common Stocks as a Hedge Against Inflation" (September 1974).

return were uncorrelated with inflation). The investment community has traditionally viewed common stocks as a good hedge against inflation, but this conventional wisdom has been severely tested in the past ten years. Alternative inflation hedges have been suggested, such as short-term securities, real estate equities, and the short-sale of common stock.

Assets that provide a hedge against inflation are of more than academic interest to pension funds, because inflation has greatly affected their liabilities. Since many retirement plans determine benefits on the basis of the last five years of work experience, and since many benefits are being indexed to the rate of inflation, the pension funds' liabilities are correlated with the rate of inflation. Pension funds should necessarily have a strong desire to hold assets that are inflation hedges.

On this measure the usual level-payment mortgage does not rate well. However, it is not at all clear that any investment has provided a good hedge in times of rapid inflation. Recent proposals have suggested that the shared appreciation and price-level-adjusted mortgages might provide a better hedge against inflation. These mortgages would prove quite suitable as hedges against inflation, and would probably lead to considerable institutional investment in the mortgage market.

Institutional Mechanisms for Pension Investment in  
Mortgages and Real Estate

There are a number of ways that pension funds can invest in the housing and real estate market. The most common mechanisms used by pension funds are (1) direct investment in mortgages, and (2) the holding of GNMA "pass-through" securities. In addition, they can invest directly in real estate equity or in corporations that hold real estate equity or debt. Recently a number of new instruments have been proposed which are similar to the GNMA pass-through security (described more fully later). This section attempts to characterize the wide variety of options available to the institutional investor.

GNMA Versus Direct Mortgage Holdings\*

The Government National Mortgage Association (GNMA) was established in 1968, primarily to provide subsidies for low- and moderate-income housing. GNMA was also given the authority to issue mortgage-backed securities, in hopes of attracting less traditional sources of mortgage funds to the housing market. This program was aimed particularly at the pension funds.

\*Material in this section is drawn from unpublished papers by Richard Marcis, "Mortgage-Backed Securities: Their Use and Potential for Broadening the Sources of Mortgage Credit;" and David R. Ganis, "Mortgage-Backed Securities," October 1973.



The most popular GNMA security is the "pass-through" certificate. Under this plan, GNMA guarantees the holder of the pass-through certificate both the principal and the interest due each month on the mortgage pool, whether or not it is actually received by the manager of the pool. Thus, the GNMA certificate is backed by the full faith and credit of the U.S. government.

The GNMA certificate really represents a share in a pool of FHA-VA insured mortgages. This pool is usually homogeneous in terms of interest rates, date of maturity, and type of dwelling. The pool of mortgages can be assembled by most FHA-approved mortgage originators. The issuer of the pool receives a servicing fee of 1/2 percent, of which .06 percent must be paid to GNMA.

The GNMA "pass-through" has a number of advantages over the direct holding of an FHA-VA insured mortgage. First, the GNMA certificate should lessen the problems connected with loan origination and administration which are involved in mortgage investment. This would be especially important for the handling of small single-family mortgages, and less important for mortgages on larger projects. Those pension funds that do invest directly in mortgages tend to concentrate on large residential and commercial projects. An instrument such as the GNMA "pass-through" seems to be the only feasible way to encourage pension investments in single-family mortgages.

The second advantage of the GNMA certificate over direct mortgage investment has to do with risk. With the GNMA instrument there is a full faith and credit guarantee of the government, no late payment problem, and no risk of loss on foreclosure. On the other hand, the FHA-VA instrument offers an indirect and incomplete recovery of losses on default and foreclosure situations.

The final advantage of the GNMA certificate is its marketability or liquidity. Daily price quotations and an active secondary market make the certificate seem more like a government agency security than a mortgage.

The one disadvantage of the GNMA security, as against the FHA-VA mortgage, is that the yield spread tends to be in favor of the latter. The higher yield of the FHA-VA insured mortgages results from precisely those characteristics that make GNMA attractive, greater liquidity and less risk. Each pension fund must make an assessment of its own liquidity and risk requirements before choosing among investment types.

It is also useful to compare briefly the GNMA certificate with a high-quality corporate bond. First, GNMA securities must be considered to carry a lower risk because of the government guarantee. Second, since GNMA payments are made monthly, the yield should be higher, due to compounding, than that of corporate bonds with a comparable coupon. The main disadvantage of GNMA is again the problem of yield spread. Most pension fund managers invest in GNMA securities only when GNMA

yields are above those of high-quality corporate bonds. Since the spread is often negative or small, investment in GNMA by the pension funds has been limited. Also, since GNMA certificates are relatively recent innovations, their long-term potential in attracting pension fund assets has yet to be tested. Nonetheless, 10-12 percent of all GNMA "pass-throughs" are held by pension funds. Again, the negative or small spread reflects the superior risk characteristics of GNMA as compared to a high-quality corporate bond.

Recently several additional instruments have been proposed in the United States to attract pension and trust funds and other institutional money.

A primary alternative instrument is the Federal Home Loan Mortgage Corporation (FHLMC) participation certificate (PC). Unlike GNMA, FHLMC directly issues mortgage participation certificates which represent undivided interests in specific pools held by FHLMC. Since 1971, the FHLMC, which is the major issuer of conventionally backed mortgage pools, has regularly conducted four separate programs for making commitments to purchase single-family and multi-family conventional mortgages on whole and participatory bases. This increased purchase activity is reflected in the incremental issuance of mortgage participation certificates, which in 1978-1980 were being issued at 4 - 6 billion dollar annual rate. FHLMC, which purchases mortgages nearly exclusively from savings and loan associations, serves as the servicer

and guarantor of timely payment of interest and principal. Mortgages in FHLMC pools are insured primarily by private mortgage insurance companies.

Another instrument, the mortgage-backed bond (MBB), is basically a bond issued by a savings and loan association on the open capital market, and is secured by mortgages. Neither the PC nor the MBB has a Treasury backing as in the case with the GNMA security. Both the PC and MBB are in the same mode as the GNMA "pass-through" certificates. They all attempt to make the mortgage into a bond-like instrument and therefore more attractive to institutional investors. The experience with these new investment vehicles is too recent for us to be able to assess adequately their ability to attract institutional funds to the residential mortgage market.

#### Direct Equity Investment

Direct Investments in real estate by the pension funds would appear to give the ideal matching between the liabilities and asset structures of the funds. Indeed, increasing use has been made of sale and leaseback arrangements by the funds.

There are, however, a number of problems with direct realty investment. There are, for example, quality and informational problems that require substantial expertise on the part of fund managers. It is very difficult to project earnings potential and the end value of properties. Transaction costs are high because of the difficulties of negotiation.

Real estate transactions are characterized by a lot of negotiation--something with which most pension managers are not familiar. In addition, because of their tax-exempt status pension funds cannot take full advantage of the accelerated depreciation and capital gains provisions that often induce real estate investment.\* Liquidity can also be a severe problem for direct real estate investment. Finally, this type of investment can provide little assistance to the home mortgage market because it is confined to the large residential and non-residential projects.

#### Equity and Debt Participation in the Corporate Framework

The major alternative to direct investment in real estate or investment in GNMA certificates is the purchase of equity or debt in real estate investment trusts (REIT). There are basically two types of REITs in the United States. An equity trust owns and operates commercial and residential property; a mortgage trust acquires real estate loans rather than directly investing in physical properties. Since 1960 when the REITs were given conduit tax treatment they have grown rapidly. They became especially important in the real estate market in the late 1960s and early 1970s.

The problem with the REITs is that the potential for abuse is built into their very structure. This is particularly

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\*They may even sacrifice a portion of their tax-exempt status when making certain types of leveraged equity investments.

true for REITs that specialize in construction loans. This type of REIT sells stock and then leverages each dollar of equity with \$3 to \$4 of debt borrowed from banks or the commercial paper market. It then adds a margin of between 200 and 600 basis points over the prime rate and lends to builders. Abuse can arise through the relationships of the managers or entrepreneurs to the REIT. They provide "services" to the REIT for which they collect a service fee of 25 percent of gross profits. This service fee-manager relationship has created an incentive for poor quality and shoddy deals.

An article in Forbes Magazine, entitled "Horror Story," alleged that "a good deal of the REIT industry has indulged for many years in unsound and possibly illegal activities... it is a massive industrywide pattern."\* With such a background, it would be wise for pension funds to be quite selective in this type of investment.

#### Pension Flows and Cyclical Stability

One of the major features of pension plan contribution schemes is that they provide regularity in savings flows. Stability of net fund flows is one of their key characteristics. Table 21 confirms that pension fund flows are among the most stable sources of savings funds. Flows of funds to private pension funds exhibit even more stability (defined as  $\sigma^2/\text{mean}$ )

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\*Forbes Magazine, February 1, 1975.

than do flows to life insurance companies. Pension flows to state and local retirement funds show somewhat less stability than those to private plans, but they are still more stable than flows to thrift institutions.

One would think, a priori, that this greater stability of savings flows would allow pension funds to provide a stable source of funds to the mortgage market. Examining the statistics in Table 21, however, shows that this is not the case. Pension investments in the mortgage market have been the least stable of any intermediary's investments. This instability results from the marginal nature of pension investments in this market. The mean quarterly investment by pension funds in the mortgage market is \$150 million. The maximum investment in any quarter was \$650 million. Thus, it is their marginal relationship to the mortgage market (as indicated by net disinvestment) rather than any basic instability of fund flows that produces their noted instability in mortgage investment.

If we are interested in trying to achieve the short-run stabilization of housing by increasing the mortgage lending of pension funds, the potential does not appear to be great. The funds would have to allocate over one-quarter of their flows of funds to this market in order to supply just 10 percent of the mortgage market needs. Since such a massive reallocation of portfolios is highly unlikely, the potential

TABLES 21 a and b

CYCLICAL INSTABILITY OF FLOWS TO FINANCIAL INTERMEDIARIES

	<u>Standard Deviation* as Percent of Mean</u>
Savings and Loans	80.30
Mutual Savings Banks	72.98
Life Insurance Cos.	38.32
Commercial Banks - Time Deposits	104.59
Private Pension Funds	37.93
State and Local Retirement Funds	62.12

CYCLICAL INSTABILITY OF MORTGAGE LENDING BY FINANCIAL INTERMEDIARIES

	<u>Standard Deviation as Percent of Mean</u>
Savings and Loans	55.98
Mutual Savings Banks	30.49
Life Insurance Cos.	24.10
Private Pension Funds	76.8
State and Local Pension Funds	68.9

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\* Standard Deviation is the usual measure of dispersion used in the literature.

Source: Derived Data.



for the short-run stabilization of the housing market by the pension funds is unfortunately not great.

#### Methods of Increasing Pension Fund Participation

The major obstacle to greater direct and indirect investment in mortgages is institutional and informational. The prime reason for the observed portfolio allocation is the trustee management system, which leads to commercial bank trust departments having great influence on investment decisions. These agents are most familiar with bond and stock investments and tend to shun mortgage investments. This institutional explanation is confirmed by three facts. First, those funds that have a more active management involvement (unions, non-profit organizations) tend to allocate more investments to those investments that they perceive as "socially desirable," such as residential mortgages. Second, life insurance companies, whose objectives are similar to pension funds, and who are the largest managers of pension funds other than banks, invest a far larger proportion of their assets in mortgages. Finally, a careful analysis of the economic characteristics of mortgages reveals that they are a relatively desirable investment.

There are several approaches that might be taken to increase the share of mortgages in pension portfolios. First, corporations should take a more active role in the management

of their pension fund assets. In view of the increased instability in the economic environment the new vehicles for investment in residential mortgages and the recent pension reform act, it may be appropriate for corporations to reexamine their present pension investments. Second, a much more substantial educational effort is required on the advantages of mortgage investment and on the advantages of using mortgage-backed securities such as GNMA, PCs, and MBBs. Finally, in light of increased instability of economic activity, the concept of diversification and portfolio balance may take on added importance in the future. As a result, there may be an increased desirability of diversifying pension fund portfolios over asset types. This might involve an examination of the overall distribution of capital assets in the economy. This distribution is indicated in Table 22.

TABLE 22

CREDIT MARKET DEBT OWED BY NON-FINANCIAL INSTITUTIONS  
AND MARKET VALUE OF CORPORATE EQUITY OUTSTANDING - 1980

	<u>Billions of Dollars</u>	<u>Percentage Distribution</u>
Total Credit Market Debt and Market Value of Corporate Equity	5664.5	--
Credit Market Debt	4093.1	72.26
U.S. Gov't Securities	742.8	13.11
State & Local Gov't Securities	325.5	5.75
Corporate & Foreign Bonds	414.6	7.32
Residential Mortgages	1084.2	19.14
Commercial & Farm Mortgages	353.6	6.24
Bank Loans	368.8	6.51
Consumer Credit	387.5	6.84
Open-Market Paper	42.1	.74
Other	374.0	6.61
Total Market Value of Corporate Equities	1571.4	27.74

FUNDS RAISED IN 1979

Total	373.3	--
U.S. Government	37.4	10.02
State & Local Gov't Securities	21.4	5.73
Residential Mortgages	119.1	31.90
Other Mortgages	40.3	10.80
Bank Loans	50.0	13.39
Consumer Credit	42.3	11.33
Open-Market Paper	10.9	2.92
Other	27.2	7.29
Corporate Equities	3.5	.94
Corporate Bonds	21.2	5.68

Source: Board of Governors of the Federal Reserve System,  
Flow of Funds Accounts, Assets, and Liabilities  
Outstanding, 1969-1980 and Flow of Funds, February 1980.

APPENDIX: THE CANADIAN PERSPECTIVE

Structure and Growth of the Canadian Pension System

The growth of pension reserves in Canada, as in the United States, has been very rapid. The value of Canadian pension fund assets has grown from \$4.7 billion in 1960 to \$20.3 billion at the end of 1973.\* This represents a growth rate of 14 percent per year since 1960. As in the United States, nearly one-third of the work force is covered by pension plans.

The structure of the pension system in Canada is quite similar to that in the United States. The private system is composed of both insured and trustee plans (similar to the U.S. noninsured plans). The insured plans, as in the United States, are run by life insurance companies and are used primarily by small firms. They account for 15 percent of pension plan members. Under an insured plan, a fund will contract with an insurance company to provide a guarantee that all the fund's benefit costs will be met (basically an annuity-type relationship). The payments of the pension fund will be mingled with other insurance funds. Usually there is no separation of investment funds or separate investment strategy. Although most funds are mingled in this way, insurance companies also offer "segregated funds" for those pension funds desiring that sort of arrangement.

\*More recent data for Canada were unavailable.

The largest source of pension funds in Canada, however, comes from trustee private pension plans. Over 60 percent of all pension plan members are covered by this type. The trustee plans can be divided into two categories, those that are self-managed (company-managed plans account for 20 percent of the total) and those managed by trust companies. As in the United States, there are a large number of very small funds. Asset holdings, however, are concentrated in a small number of large funds. There are 731 funds with over \$1 million in assets holding 95 percent of all private trustee fund assets, while 3,215 small funds hold only 5 percent of pension fund assets.

The final source of pension coverage in Canada comes from government consolidated revenue plans, which cover 22 percent of all pension plan members. These plans are generally nonfunded; contributions are paid into the consolidated revenue funds of the particular government and are used for general governmental purposes. As a result, these plans have no invested assets, and pension benefits are guaranteed by legislation. In essence, what these plans have done is to substitute a pension obligation for a government bond. They will thus have only an indirect influence on the capital market.

#### The Canadian Housing Finance System

There are two main types of institutions in Canada that specialize in mortgage lending: trust companies and

mortgage loan companies. The trust companies have 64 percent of their assets in mortgage loans, while the mortgage loan companies have 78 percent in these assets. Trust companies have substantially expanded their role in the mortgage market in the past fifteen years (see table A-1).

Both institutions attract funds through demand and term deposits and guaranteed investment certificates (GICs). Among these instruments, the guaranteed investment certificate is the prime source of mortgage funds. The GIC is issued for a stated period of time, from one to five years. Interest rates vary with market conditions, but in general they are comparable to rates on certificates of deposit (\$100,00 minimum) in the United States. No ceilings such as Regulation Q are imposed on GICs or on any Canadian term-deposit accounts. GICs cannot be cashed in prior to maturity (except with a substantial penalty) and they are not negotiable. Mortgage loan companies, in addition, may issue debentures as well as deposits. The debentures, unlike GICs, are negotiable.

The prime assets of trust companies and loan companies are five-year renewable mortgages. Nearly all NHA loans (National Housing Act loans), akin to FHA-insured loans, are written on a five-year renewable basis to reflect current market interest rates. This roll-over, or variable interest rate, mortgage is amortized over twenty to thirty years, but the principal becomes due every five years. At that time the mortgage borrower can pay off the mortgage or extend the loan for the remainder of the amortization period; the balance due

TABLE A-1  
SOURCE OF CANADIAN MORTGAGES  
(Percentage Distribution and Dollars in Millions)

	1960		1965		1970		1973		1979	
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent
Trust Companies	472	5.08	1,975	10.81	3,829	12.71	7,194	15.61	25,000	21.09
Mortgage Loan Companies	698	7.51	1,839	10.07	2,868	9.52	4,753	10.31	9,400	7.93
Pension Funds	299	3.22	623	3.41	1,022	3.39	1,551	3.36	5,552	4.69
All Life	3,412	36.73	5,662	31.00	7,723	25.64	8,768	19.03	15,700	13.24
Chartered Banks	971	10.45	810	4.43	1,481	4.92	4,713	10.23	18,900	15.94
Credit Unions	390	4.20	695	3.81	1,353	4.49	3,360	7.29	14,400	12.15
Other Companies	97	1.04	276	1.51	382	1.27	438	.95	1,252	1.05
Government & Agencies	1,995	21.48	3,222	17.64	7,221	23.97	9,500	20.61	13,106	11.05
Corporate Lenders	524	5.64	1,930	10.57	2,052	6.81	2,416	5.24	3,545	2.99
Estates, Trusts, & Agency Funds of Trust Companies	431	4.64	1,232	6.75	2,188	7.26	3,390	7.37	11,700	9.87
TOTAL	\$9,289	100.00	\$18,264	100.00	\$30,119	100.00	\$46,083	100.00	\$118,555	100.00

Source: Canadian Housing Statistics, CMHC, 1973, 1979.

is re-amortized and the monthly payments changed to reflect current mortgage interest rates.

The five-year renewable term mortgage has, in combination with the five-year GIC, provided these Canadian institutions with an excellent matching of their asset and liability structures. Unlike the American savings and loans, which borrow short and lend long, the Canadian trust companies and mortgage loan companies both hold intermediate term assets and liabilities. As a result, the problems of disintermediation and a corresponding curtailment of mortgage lending appear to be less severe in Canada.

Trust and loan companies are the most specialized mortgage leaders, but life insurance companies are still one of the biggest single private lenders in the mortgage market. (See table A-1.) They account for over 13 percent of all mortgage holdings. Their role in the mortgage market has, however, been declining since 1960. This appears to be due to the rapid growth of other intermediaries rather than to the reallocation of their portfolios away from mortgages. Life insurance companies still allocate about 40 percent of their portfolios to mortgage investments.

Since the revision of the Canadian Bank Act in 1967, chartered banks have become a major force in the mortgage market. At present they hold 16 percent of the mortgage loans outstanding. (See table A-1.) These banks, like trust and loan companies, attract funds primarily through demand and term



deposits. Their distribution of deposits tends to be somewhat shorter in term than that of trust and loan companies.

Another major private source of mortgage funds has come from the employee credit unions. Since 1960 they have nearly tripled their share of the mortgage market. In 1979 they held about 12 percent of mortgages outstanding.

A last major source of funds to the Canadian mortgage market comes from the government and from government-sponsored agencies. These funds, primarily from CMHC (Central Mortgage and Housing Corporation), represent mainly subsidized loans to low- and moderate-income households.

Finally, we turn to the focus of our paper, pension funds. Pension funds account for about 4.7 percent of the mortgages outstanding in Canada. (See table A-1.) Their share of the mortgage market has grown slightly since 1960. Even the figure of 4.7 percent overstates their importance. Pension funds invest primarily in rental and commercial real estate, such as office buildings, shopping centers, and hotels. There is some investment in large rental housing projects, but there is virtually no new investment in single-family units. In sum, pensions are neither a dynamic nor an important source of funds to the housing market in Canada.

In sum, there are two major differences between the United States and Canadian housing finance systems. First, Canadian banks are not subject to Regulation Q-like restrictions, and second, the prime mortgage instrument is a five-year

roll-over or variable-rate mortgage. These two differences allow Canadian mortgage lenders to compete for funds and create a better matching of assets and liabilities. As a result, disintermediation is not a severe problem in Canada. As in the United States, however, pension funds play a minor role in the mortgage financing system.

#### Quantitative Importance of Mortgages to Canadian Pension Funds

A comparison of the holdings of Canadian and U.S. pension funds reveals some substantial differences in their investment policies. Canadian data are available on the holders of private and public plans. The holdings of the large private plans can also be disaggregated into those with inflexible (very restricted) investment policies and those with flexible investment policies.

Canadian private plans allocate a much smaller share of their portfolios to stock investments than do the U.S. funds. In 1972, only 38.5 percent of private Canadian pension plan assets were in stock (as compared to over 60 percent in the United States). As in the United States, however, there has been a rapid increase in stock acquisitions. Canadian funds allocate a substantially larger share of their portfolios to fixed-income investments, bonds, and mortgages. In 1972, 36.0 percent of their investments were in bonds, and 10.9 percent in mortgage loans. Since 1960, the allocation to bond investment has been down sharply. The mortgage share in private portfolios is five times the mortgage share in U.S.

private portfolios, and in addition the trend in mortgage investment has been up. If we include other investments in real estate (such as leasebacks), we see that nearly 17 percent of Canadian private pension investments are in the real estate market. This compares with a paltry 3-4.5 percent of U.S. private pension investments in mortgages and real estate. The portfolio distribution of private Canadian pension funds is presented in table A-2.

The aggregate statistics on pension fund portfolios can, however, suggest a misleading homogeneity on the part of these institutions. Pension plans with inflexible investment policies tend to put nearly all of their funds into bonds. Plans with flexible investment policies have a much more diversified portfolio. They put a fairly large portion of their assets in stocks and both conventional and NHA-insured mortgages. (See table A-3.) It is clear from the aggregate statistics that plans with flexible investment policies predominate in Canada.

Turning to public retirement plans, we find a close similarity in portfolio composition between Canadian plans and state and local plans in the United States. Canadian public plans allocate a slightly larger share to bonds (67.5 percent) and a slightly smaller share to stock investments (13.8 percent) than do the U.S. plans. Canadian public plans have nearly 10 percent of their assets in mortgages, a figure which is slightly larger than the present U.S. share in mortgage loans. The trend over time shows that Canadian public plans

TABLE A-2  
 ASSET DISTRIBUTION OF CANADIAN PENSION FUNDS  
 (Percentage Distribution)

<u>Private</u>	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1972</u>
Bonds	72.6%	54.9%	39.4%	36.0%
Stocks	11.1	21.0	34.1	38.5
Mortgages	7.8	9.1	8.0	8.4
(Mortgages with those in pooled funds included)	(7.92)	(9.62)	(8.8)	(10.8)
Real Estate and leaseback	4.0	4.5	6.9	5.9
Pooled Funds	4.5	10.2	11.3	10.2
Mutual Funds	<u>-</u>	<u>.3</u>	<u>.3</u>	<u>1.0</u>
TOTAL	100.00	100.00	100.00	100.00
<u>Public</u>				
Bonds	83.7%	78.3%	69.5%	67.5%
Stocks	1.1	5.7	10.9	13.8
Mortgages	9.3	10.1	10.9	10.3
(Mortgages with those in pooled funds included)	(9.4)	(10.3)	(11.3)	(10.8)
Real estate and leaseback	3.6	4.3	6.4	6.1
Pooled funds	.2	.7	1.6	1.9
Mutual funds	<u>2.1</u>	<u>.9</u>	<u>.7</u>	<u>.4</u>
TOTAL	100.00	100.00	100.00	100.00

Source: Derived data. More recent data on Canadian pension funds were unavailable.

TABLE A-3  
CANADIAN PRIVATE PENSION PORTFOLIO ALLOCATION  
OF FUNDS WITH ASSETS OVER \$1 MILLION

<u>Funds with Inflexible Investment Policies</u>			
	<u>1966</u>	<u>1968</u>	<u>1971</u>
Bonds	91.9	91.8	88.2
Stocks	0.0	0.0	0.0
Mortgages:			
NHA Insured	.2	.3	.8
Conventional	.7	.7	.4
Real Estate & Leasebacks	0.0	0.0	0.0
Pooled Funds	0.0	0.0	0.0
Other	7.2	9.0	10.6
<u>Funds with Flexible Investment Policies</u>			
	<u>1966</u>	<u>1968</u>	<u>1971</u>
Bonds	55.4	51.9	45.0
Stocks	23.4	26.5	32.5
Mortgages:			
NHA Insured	6.6	5.3	6.4
Conventional	5.1	5.2	5.3
Real Estate & Leasebacks	.7	.7	.5
Pooled Funds	5.1	5.7	5.7
Other	3.6	4.7	4.6

Source: Harry Weitz, Private Pension Reserves, Tables IV, V. (1974), unpublished. More recent data on Canadian pension funds were unavailable.

have made a sharp rise in stock investments and a decline in the share of bond holdings. The share of mortgage loans has increased to some extent, and other real estate investments have become an increasingly important element in their portfolios. (See table A-2 for a detailed distribution of assets of these plans.)

#### United States-Canadian Comparison

The United States has seen overall pension fund investments in mortgages declining since the mid-1960s. The Canadians, on the other hand, have experienced a stable or slightly rising level of pension investment in mortgages. The public sector portfolios of the two countries are roughly the same; but in the private sector, the Canadians allocate a five times larger share to mortgages than do their U.S. counterparts.

The reason for this differential trend and portfolio allocation is not entirely clear. It cannot be attributed to differential yield spreads or default risk characteristics. Nor can it be attributed to better liquidity or investment instruments in Canada. In fact, the secondary mortgage market purchases by FNMA and the GNMA pass-through securities should provide the U.S. mortgage with an advantage in terms of both liquidity and instruments. The Canadians still emphasize direct investment and do not yet have an active secondary market.

The Canadian government has taken both an active and an educational role in attempting to convince pension funds to allocate more money to housing. The government has conducted a series of seminars on the merits of the mortgage as an investment vehicle. In the early 1960s, CMHC (Central Mortgage and Housing Corporation) attempted to encourage pension fund investments in mortgages by auctioning off almost \$300 million of NHA-insured mortgages.

Government involvement in the United States has been somewhat less direct. A number of agencies have made strong efforts to encourage pension investments in mortgages: the GNMA security and other new instruments are aimed specifically at the pension fund and institutional investor.

In terms of institutional rigidity, the Canadians appear to be slightly less tied to trustee-managed funds. The largest holders of mortgages among pension funds are self-managed. This may in part explain the differential portfolio allocation.

Finally, in terms of private market initiative, the Canadians have been somewhat more successful than the Americans. Canada had virtually no mortgage banking industry until the mid-1960s. At that time Morguard Trust Company was started with the prime goal of matching pension funds with mortgage investments. It functions as a nationwide mortgage banker for pension funds, both originating and

servicing mortgages. A number of large pension funds have been integrally involved in the initiation of Morguard and a number of its related efforts.

The interaction between Morguard and the pension funds has been positive and self-reinforcing. There have been no major defaults on mortgages held by the funds. This major private market initiative thus appears to have played a crucial role in increasing pension investments in mortgages. Mortgage bankers in the United States have been generally less successful in this area.

It is useful, however, to put our assessment of the Canadian and American experience in perspective. Investment in mortgages in both countries has been small. New investment has been confined to large projects, usually of a commercial and nonresidential nature. Little new direct investment in single-family home mortgages has occurred. Only the GNMA-type security appears to provide a means for steering more pension money in that direction.





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