THE SWEDISH REAL ESTATE CRISIS

by

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PREFACE

I have had the opportunity to visit Sweden many times since the early 1970s for teaching and research. Over this time, direct government intervention in the Swedish construction and real estate industry has gradually been reduced. Deregulation of the financial markets also occurred at the same time as the beginning of the real estate cycle in the middle of the 1980s. Nevertheless, large housing subsidies, the important role of local housing authorities, and rent controls remain. I thus welcome the opportunity to look again at Swedish real estate markets, with regard both to immediate short-run responses to the cyclical crisis and to longer-run proposals for real estate sector deregulation.

I have received help from a wide range of Swedish economists, government officials and statisticians, and industry participants. I would especially like to thank (but not implicate) those who provided detailed comments on earlier versions of the report: the SNS reference group and staff, Professors Peter Englund, Lars Jonung, and Ingemar Ståhl, Per-Åke Eriksson of the Ministry of Finance, Lars Nyberg of Föreningsbanken, Bengt Nyman of The Swedish Federation for Rental Property Owners, and Bertrand Renaud of The World Bank. Most importantly, Stefan Sandström of SNS has aided me at every stage of this project.

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PART 1 INTRODUCTION

The Swedish real estate market is now completing a major crisis, marked by plummeting prices and production, high vacancy rates, high loan default rates, and financial distress for major lending institutions. All types of commercial and residential construction suffered, although office buildings in the urban centers faced the steepest price declines. Table 1.1 provides an overview of the dimensions of the real estate crisis at its key dates. Here, as in many of the following tables and figures, the data have been obtained from Statistics Sweden (SCB [1993a] and SCB [1993b]) and the Bank for International Settlements [1994], including historical data and updates from both sources.

TABLE 1.1

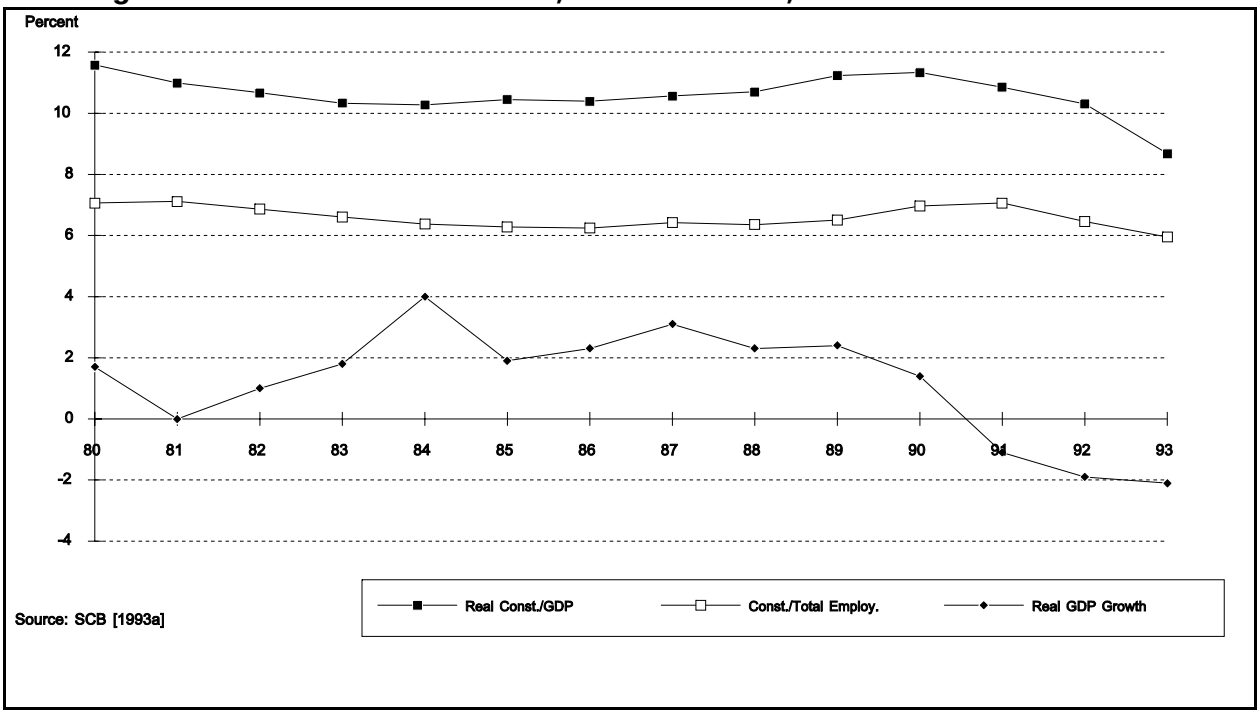
FEATURES OF THE SWEDISH REAL ESTATE CYCLE

		Initial Period	Start of Boom	End of Boom	End of Bust
		1980	1985	1990	1993
	CONSTRUCTION (Real Investment, 1985 Kronor, 1980 = 100)				
(1)	1-2 Family	100	62	88	39
(2)	Multi-Family	100	198	241	195
(3)	Commercial	100	93	107	84
	PRICES (Real Prices, Deflated by CPI, 1980 = 100)				
(4)	1-2 Family	100	70	97	72
(5)	Multi-Family	100	94	165	93
(6)	Commercial	100	244	422	144

Sources: (1) to (5), SCB [1993a] and SCB [1993b];
(6) Bank for International Settlements [1994].

The real estate crisis had a severe impact on the Swedish economy. Homeowners, local housing authorities, and commercial real estate investors all suffered major losses as asset prices fell and vacancy rates rose. The banks required government guarantees and, in some cases, financial support to offset their loan losses. All of these losses spilled over to the macro-economy by reducing aggregate demand, thus reinforcing the already strong recessionary forces in the Swedish economy. This is illustrated in Figure 1.1, which shows construction employment (as a percentage of total employment), real construction investment (as a percentage of real GDP in 1985 kronor), and the growth rate of real GDP.

Figure 1.1: CONSTRUCTION, EMPLOYMENT, AND REAL GDP GROWTH



The goals of this report are to:

- Analyze the causes of the Swedish real estate crisis;
- Determine the current status of the market and evaluate short-run policy remedies that could ease the current effects of the crisis;
- Suggest long-term solutions that would reduce the likelihood of a future occurrence;
- Evaluate the long-run housing needs and demand in Sweden.

The remainder of this introduction summarizes the important aspects of the methodology employed and the conclusions reached.

Coverage

This report covers the full range of Swedish real estate markets. A primary distinction is made between residential and commercial structures. Residential structures are further separated between 1-2 family and multi-family units. In principle, commercial structures could also be separated by such categories as office buildings, industrial structures, and retail stores. Data are not available, however, to carry out a detailed analysis of commercial structures by specific type.

Period of Analysis

The main analysis begins with the early 1980s, the time at which the basic forces creating the current crisis were initiated. We then focus on the boom period between 1985 and 1990, and the bust

period after 1990. Our long-run perspective for policy issues extends to the year 2000.

Theoretical Framework

A stock-flow model of the real estate sector (sometimes called an asset-price model) serves as the theoretical basis for the fundamental determinants of real estate construction and prices. The term stock refers to the outstanding stock of structures, for which demand and supply interact to determine asset prices. The term flow refers to the rate of new construction, which is determined by profit potential as measured by the ratio of asset prices to construction costs (also called Tobin's q). This type of model is generally accepted as the most descriptive and flexible for analyzing real estate markets. A more complete description of the stock-flow model is provided below in Part 2.

The Primary Hypotheses

Five major factors appear to have combined to create the Swedish real estate crisis:

- Real income growth;
- Real interest rates (nominal rates - expected inflation);
- Financial deregulation (loan availability);
- Tax rates applicable for mortgage interest deductions;
- Housing subsidies.

Table 1.2 summarizes the levels of these variables during the initial, boom, and bust periods respectively.

Table 1.2

FUNDAMENTAL FACTORS OF SWEDISH REAL ESTATE DEMAND

(Annual Averages in Percent)

	1981 to 1985	1986 to 1990	1991 to 1993
Real GDP growth	1.2%	3.1%	-3.1%
Real interest rate[a]	11.0%	-1.6%	15.2%
Loan/GDP ratio[b]	100%	137%	145%
Tax deduction rate[c]	64%	50%	30%
Housing subsidy/GDP[d]	3.78% [d1]	3.49% [d2]	3.64% [d3]

[a] Mortgage bond interest rate (Sveriges Riksbank) minus house price inflation rate (SCB [1993b]).
[b] Total credit extended/GDP; SCB [1993b].
[c] Average tax rate for interest deductions; Englund [1993a].
[d] Boverket [1993], p. 131; [d1] Average of 1980 and 1985; [d2] Average of 1985 and 1988; [d3] 1991.

Three major periods of Swedish economic activity can be distinguished over the last 15 years: poor conditions during the first half of the 1980s (1980.1), improved conditions during the second half of the 1980s (1980.2), and poor conditions again during the first years of the 1990s. With respect to the specific variables in Table 1.2:

- Real GDP growth was slow during 1980.1, due to low labor productivity growth, international trade imbalances, rising government deficits, and related problems. GDP growth accelerated during 1980.2, but the economy fell into a deep recession during the 1990s.

- Real rates of interest were high during 1980.1 due to relatively low inflation rates for consumer and asset prices. Real interest rates declined during 1980.2, reflecting lower nominal interest rates and much higher asset price inflation, but real rates of interest rose again during the 1990s.

- Credit market growth restrictions remained in place during most of 1980.1. These were removed during 1980.2 and credit/GDP ratios have remained high during the 1990s.

- Tax deduction rates for mortgage interest were high during 1980.1, declined during 1980.2, and declined further during the 1990s.

- Housing sector subsidies were high during most of the 1980s, following policies initiated during the 1970s. These subsidies are being reduced during the 1990s.

The variables in Table 1.2 can be described as the fundamental factors determining the demand for real estate. A real estate bubble is an alternative possible explanation for the Swedish real estate cycle. A bubble is operating when real estate demand is strong simply because investors expect asset prices to keep rising, even though

fundamental demand factors insure that sooner or later the bubble will burst. This study concludes that the Swedish real estate cycle can be explained by fluctuations in the fundamental factors alone.

Evaluation through International Comparisons

Determining the individual role of each of the fundamental factors in the Swedish real cycle is a major challenge. The main problem is that we have only a single observation--that is, one cycle. Sweden has not experienced a real estate cycle of the magnitude of the current one since the depression of the 1930s.

We use comparative international experience, focusing on the OECD countries, to help resolve this single observation problem. To illustrate the benefit of such comparisons, Figure 1.2 shows the peak and trough levels of 1-2 family house prices since 1986 (with 1986 = 100) for 10 OECD countries. House price volatility was highest in Sweden and Finland. (For Australia and the United States, nominal house prices have not fallen since 1986, so their peak and trough levels are the same).

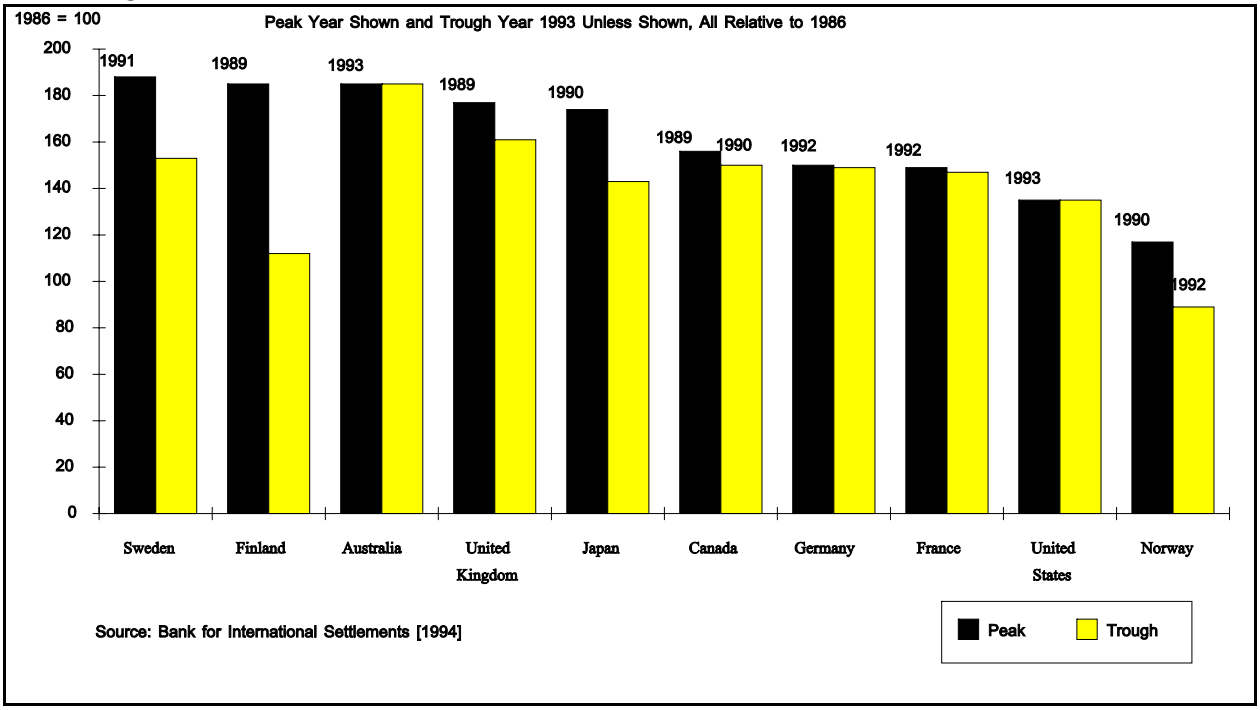
Conclusions and Recommendations Regarding the Real Estate Markets

The following is a summary of the main conclusions regarding the Swedish real estate cycle and the policy recommendations for the Swedish real estate markets. A more complete discussion of conclusions and recommendations is provided in Part 7.

Residential Real Estate Markets

Overbuilding during the real estate cycle occurred primarily in multi-family units (74,000 excess vacant units were constructed between 1991 and 1993) and in the non-urban areas of the country. The sharp decline in new units started in 1993 and 1994 is likely to reduce the number of vacant units, but will not rectify the structure-type and regional imbalances.

Figure 1.2: NOMINAL HOUSE PRICES, PEAK AND TROUGH LEVELS



New production will not significantly recover until rising demand is reflected in higher market prices for existing units. The recovery in demand, however, is constrained by weak macroeconomic conditions, high interest rates, and reduced levels of housing subsidies. Projections of housing demand and housing needs therefore indicate low rates of new housing construction through the year 2000. Investment in housing reconstruction, however, will be strong through the year 2000, since it is a substitute for new housing investment.

The real estate cycle has also left significant financial distress. Owners of 1-2 family homes have lost a large amount of their equity, and many are "locked-in" into their current homes. Many owners of multi-family structures--municipal housing authorities, cooperatives, and private landlords--face serious threats of bankruptcy.

From a policy perspective, three major forms of government intervention in the housing markets should be reevaluated:

(1) Sweden is now among the best-housed countries in the world, but the costly program of mortgage interest subsidies continues. These subsidies create a serious burden for the government budget, while distorting the incentives for the quantity, location, and type of housing production.

(2) The semi-public municipal housing authorities produced excess amounts of multi-family housing during the housing cycle. Although

these agencies played an important role in eliminating past housing shortages, they are not effective in making new production decisions when housing demand and supply are already close to balanced.

(3) Rent controls are meant to achieve various goals, including diversity in urban centers, equity in access to desirable housing, and income redistribution. Rent controls, however, reduce housing production, lower maintenance standards, and create "grey" market activity. They are thus not an efficient means for achieving the goals. Given the current high vacancy rates in most rental markets, this is a practical moment to remove the rent ceilings.

Commercial Real Estate

The worst part of the commercial real estate crisis occurred in office buildings. Here there was substantial overbuilding, and significant new construction will not take place in the major cities for many years. Other commercial real estate, such as retail and industrial buildings, had less extreme amounts of overbuilding; the pace of their recovery will depend on the general macroeconomic environment in Sweden.

There are two proposals that would reduce the volatility and the costs of future cycles in commercial real estate markets. The first proposal is for the government to collect and disseminate more data regarding the conditions in commercial real estate markets, including the available supply, market prices and rents, and vacancy rates. The second proposal is to encourage a greater use of equity (rather than debt) financing for commercial real estate investments. In the United States, the rapid growth of REITs (Real Estate Investment Trusts) is a response to a similar need.

The largest costs of the commercial real estate crisis were lodged with the banks that had become the primary commercial real estate lenders. The government support programs for the banks have been carried out effectively, but the time has arrived to begin to dismantle the guarantees. There is also the need to introduce a better system of bank supervision and regulation, one which will take into account the deregulated and highly competitive markets in which the banks now operate.

Agenda for the Report

The organization of the remainder of this report is as follows. Part 2 develops and illustrates the stock-flow model that provides the basic analytic framework of the study. Part 3 analyzes the supply of housing, while Part 4 looks at the demand for housing. Part 5 studies the commercial real estate market, including the banking crisis. Part 6 provides projections of residential real estate construction through the year 2000. Part 7 provides a summary of conclusions and policy recommendations.

PART 2 THE STOCK-FLOW MODEL OF REAL ESTATE MARKETS

Our analysis of real estate markets is based on a stock/flow model structure, sometimes called the asset approach (see Poterba [1984]). The discussion in this section provides a summary of how real estate markets work according to this model. The description should be interpreted as applying to each part of the real estate markets: residential, commercial, and their components.

Stock Supply, Stock Demand, and Equilibrium Prices

The stock supply equals the existing quantity of real estate structures at a moment in time. The stock demand is determined by such variables as demographic factors, employment, income, real estate prices, real interest rates, subsidies, and tax factors. The equilibrium asset price is the price which equilibrates the demand and supply for the real estate stock. The model assumes that market prices rapidly converge to the equilibrium level.

Rental Supply, Rental Demand, and Equilibrium Rents

Rental space corresponds to the flow of real estate occupancy services provided by the real estate stock. The supply of rental space is directly proportional to the real estate stock, except for variations in the number of units held off the market for repair and maintenance. The demand for rental space is determined by households and business entities who require occupancy services.

Equilibrium rent levels balance the demand and supply in the market for structure services.[1] The equilibrium rent can, equivalently, be interpreted as the rent which provides asset holders with an adequate rate of return, taking into account the expected asset-price appreciation. However, there is evidence which indicates that rents do not always converge rapidly to the equilibrium level, thus causing vacancy rates to vary (see Rosen [1986]. We turn to this issue in the next section. The effects of rent controls are also discussed below.

Vacant Units

Vacant units are a normal feature of an efficient real estate market, since some renters will pay a premium to obtain immediate access to units. In other words, there is a natural vacancy rate, just as there is a natural unemployment rate in labor markets. Actual vacancy rates may temporarily rise above (or fall below) the natural level. In this case, market rents should fall (rise) until the vacancy rate returns to the natural level. Actual vacancy rates, however, sometimes remain well above the natural level for prolonged periods of time. This situation is especially apparent in commercial real estate markets, although it also sometimes occurs in multi-family residential markets. This is a puzzle for real estate economists. Moreover, in these cases, by definition, the market rents remain

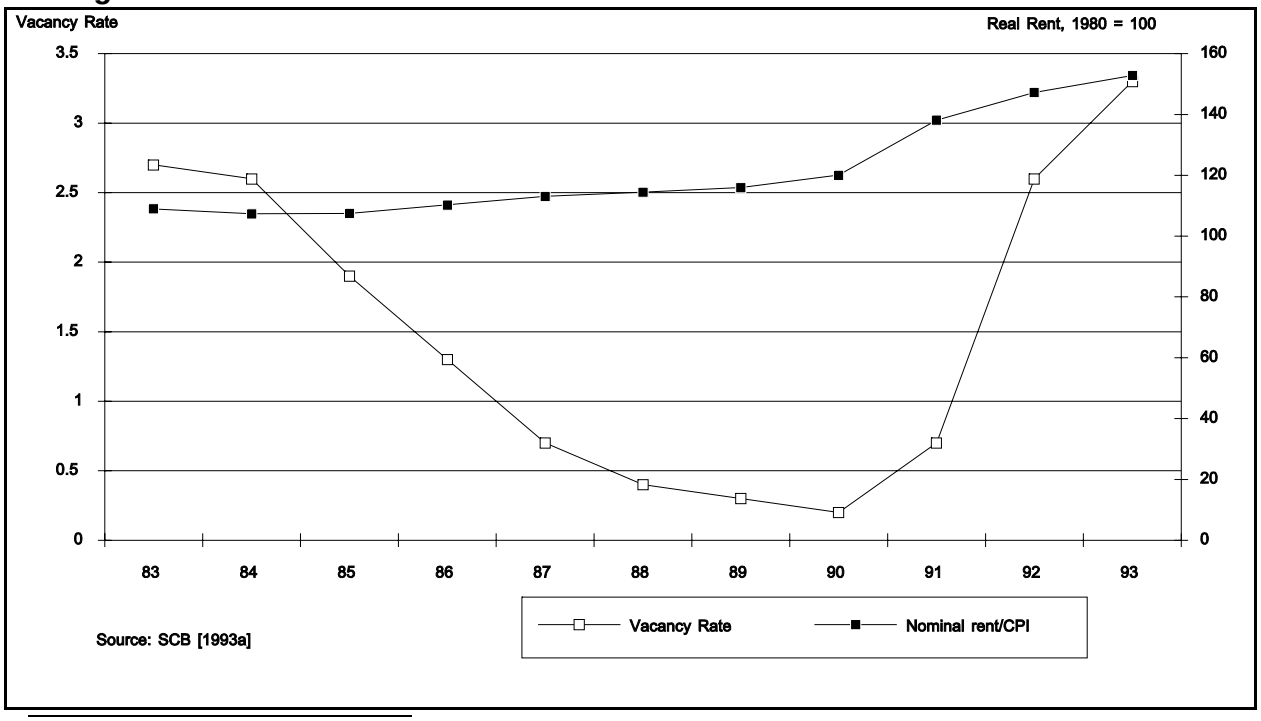
1 The demand and supply for structure services are equilibrated by rents, while the demand and supply for stock ownership are equilibrated by asset prices.

above the equilibrium level. The greater puzzle, therefore, is why market rents fail to fall in order to clear the market for space.[2]

Figure 2.1 illustrates this problem with vacancy rate and real rent data for multi-family units in Sweden. It is apparent in the period after 1990 that real rents continued to rise even though vacancy rates became very high. It is possible that this increase in rents reflects a return to equilibrium levels: rent controls constrained rent levels much less after 1990 due to the weak housing market conditions. However, it is also commonplace in countries without rent controls that real rents do not decline enough to eliminate high multi-family vacancy rates.

There are various explanations for sticky rents and sticky

Figure 2.1: MULTI-FAMILY VACANCY RATES AND REAL RENT LEVELS



2 This situation is not to be confused with rent controls, which keep rent levels below the market clearing level.

vacancy rates. For example, real estate owners with market power may maximize their revenue by keeping rents high, even if this creates high vacancy rates. It is not clear, however, why rents and vacancy rates should be kept at high levels sometimes and not at other times. Another explanation is that long-term rental contracts may lead to sluggish adjustment of rents (see Taylor [1979]). It is not clear, however, why rates on new long-term rental contracts would not reflect current market conditions. Whatever the proper explanation, sticky rents and sticky vacancy rates do occur in certain real estate markets.

Flow Equilibrium and Construction Activity

New construction activity is determined by the profit incentive provided by the ratio of the asset price of existing structures (per square meter) to the cost of new construction. This ratio is referred to as Tobin's q:

(2.1)

As q rises above 1, construction activity should expand. As q falls below 1, construction activity should fall, and net investment may become negative.

Tobin's q should equal the value of 1.0 in long-run equilibrium. Short-run factors, however, may allow asset prices to diverge temporarily from constructions costs, but the flow of new construction should then respond. For example, if q is temporarily

greater than 1, then new construction will rise, which augments the stock supply, and drives the asset price down. Similarly, if q is temporarily below 1, then construction activity falls and the asset price rises. In this way, the market reaches its long-run equilibrium with q equal to 1.

Tobin's q theory of investment thus has two primary results:

(1) In long-run equilibrium, the value of q converges to 1.0, implying that asset prices converge toward construction costs.

(2) In the short run, q may vary from 1.0, with high (low) values of q creating high (low) construction activity.

Figure 2.2 shows computed indexes of Tobin's q for multi-family housing structures in Sweden between 1980 and 1993. The asset price is the multi-family price index from SCB [1993a]. Two multi-family construction cost indexes are considered, both also from SCB [1993a]. The first is a factor price index and the second is a building cost index. The building cost index is based on the units actually constructed, and incorporates builder profits, factor productivity changes, and building quality changes that are not included in the factor price index. The building cost index should be more stable, because changes in profits, productivity, and quality tend to offset changes in the underlying factor costs.

Figure 2.2: TOBIN'S Q FOR MULTI-FAMILY HOUSING

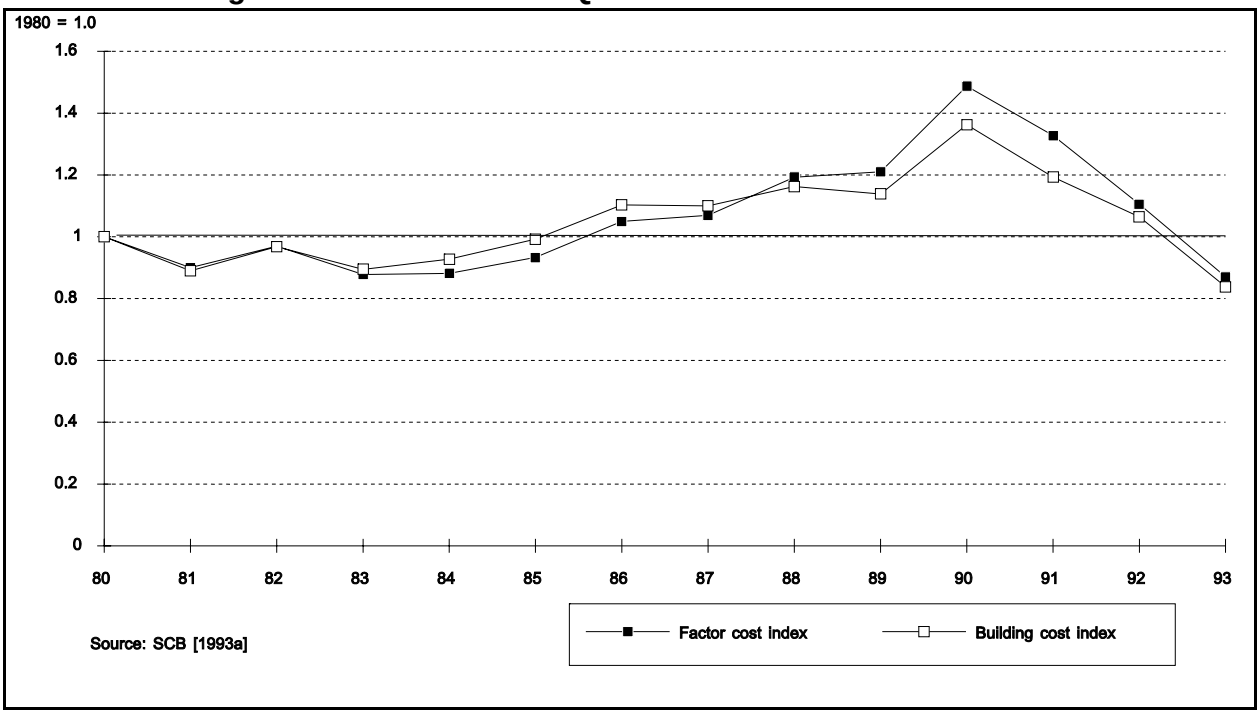
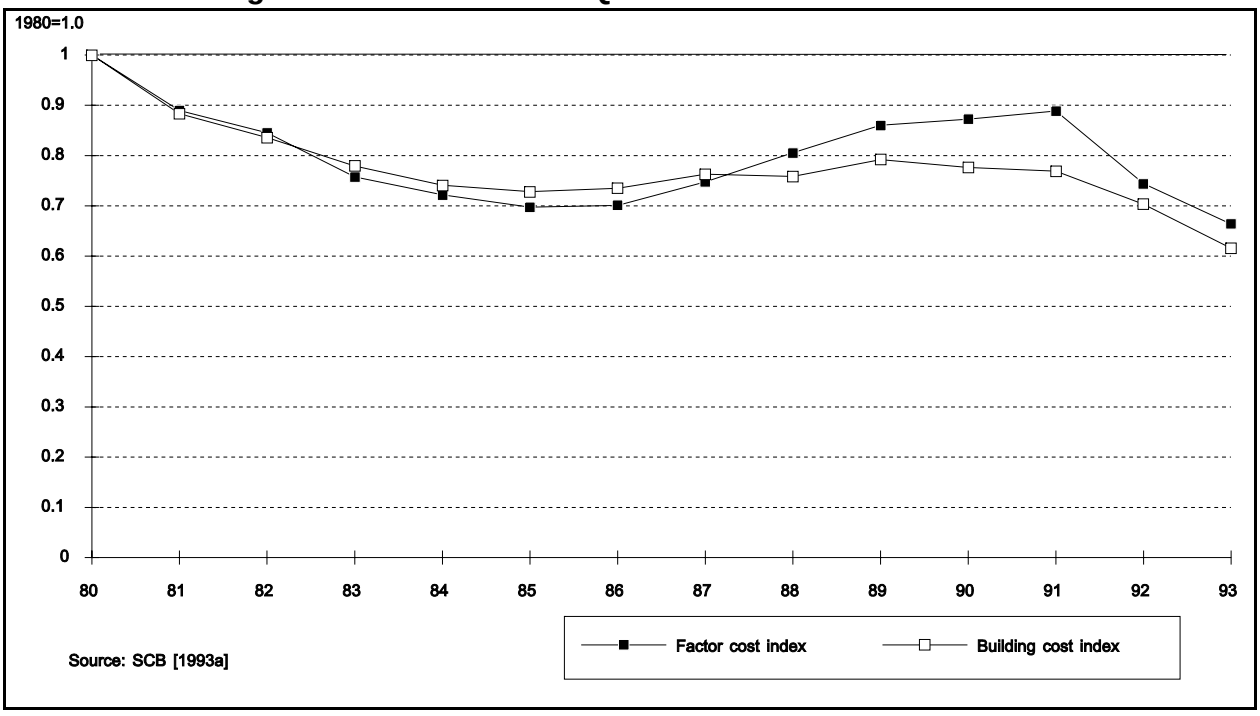


Figure 2.3: TOBIN'S Q FOR 1-2 FAMILY HOUSING



Since the market prices and construction costs are all indexes, the resulting series for multi-family Tobin's q are indexes, with 1980 equal to 1.0. It is plausible that 1980 is a year of equilibrium for housing construction, since construction was stable from 1976 to 1980. In figure 2.2, the q series based on the factor price index rises more rapidly in the late 1980s and falls more rapidly in the 1990s, as expected. Both indexes show that q rises above 1.0 between 1986 and 1992, which coincides with the period of rising multi-family construction. By 1993, the Tobin's q index is well below 1.0, consistent with the extremely low construction rates that occurred at that time.

Figure 2.3 shows comparable Tobin's q indexes for 1-2 family homes, based on 1-2 family home prices and 1-2 family cost indexes. Again, the q series based on the factor price index rises more rapidly in the late 1980s and falls more rapidly in the 1990s, as expected. Relative to multi-family structures, 1-2 family home prices rose less, and therefore the 1-2 family q values are lower. In fact, the 1-2 family Tobin q indexes remain below 1.0 for the entire period, consistent with the relatively low production rates for 1-2 family homes (see Figure 2.4).

Bengt Turner and Tommy Berger have recently computed Tobin's q values for 1-2 family houses for approximately 250 Swedish municipalities as of the end of 1993 (Turner and Berger [1994]). The house prices are determined from tax assessment records, updated

on the basis of recent price changes for 1-2 family homes. The new construction costs are based on actual production costs. Except for 7 municipalities in the Stockholm area, the Tobin's q values are all less than 1.0, with most in the range of 0.4 to 0.6. These results are thus broadly consistent with the 1993 Tobin q value in Figure 2.3.

Rent Controls

In some real estate markets in Sweden, rent controls depress rents below the equilibrium level, which then reduces the equilibrium real estate stock. This occurs because the depressed rents cause lower asset market prices, which in turn create a smaller incentive for construction activity.[3] At the same time, the excess demand for rental space may stimulate illegal "grey" market activity, when tenants receive payments for vacating their flats on behalf of other tenants. We discuss policy recommendations for rent controls in Sweden in Part 4.

Reconstruction

The stock/flow model can accommodate reconstruction activity of existing units for repairs, renovation, or conversion to alternative uses (such as commercial). The sum of reconstruction and new construction activity should be influenced by the same Tobin's

[3] Rent controls also reduce the quality of existing real units by reducing the incentive to maintain properties.

q incentives. Reconstruction, however, may serve as a substitute for new construction, because both increase the value of the existing housing stock.

Figure 2.4: COMPONENTS OF REAL 1-2 FAMILY INVESTMENT

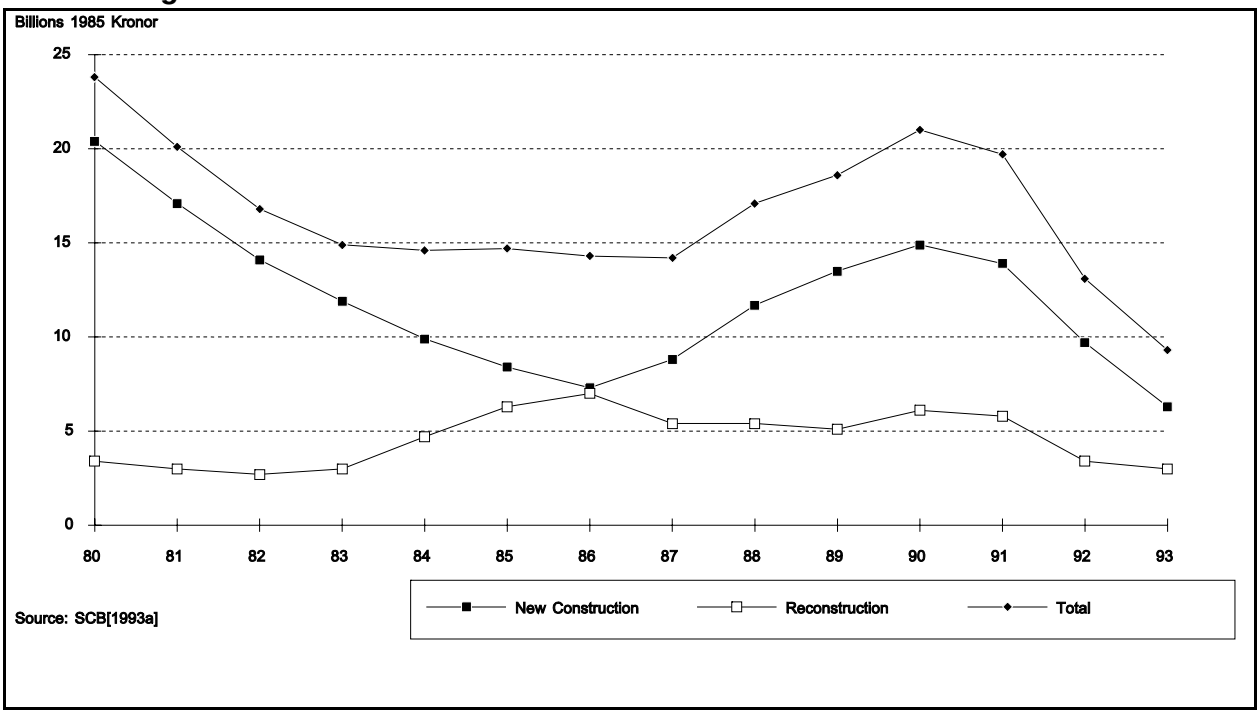
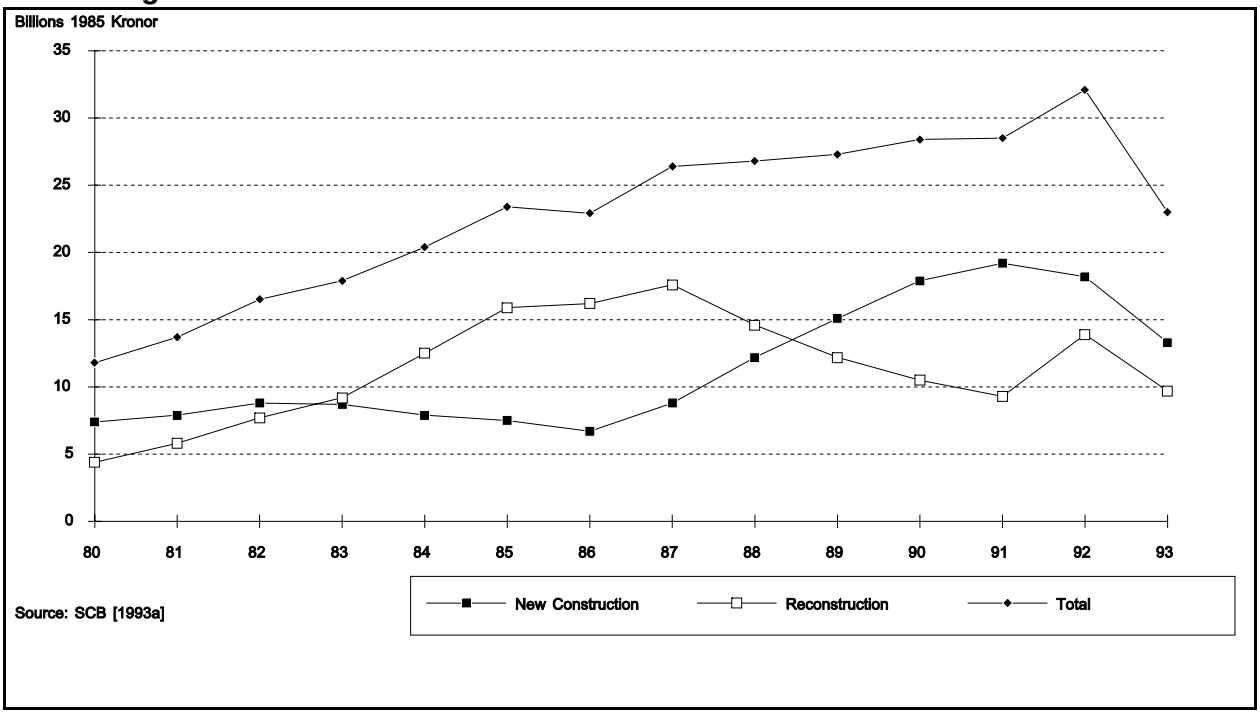


Figure 2.5: COMPONENTS OF REAL MULTI-FAMILY INVESTMENT



Figures 2.4 and 2.5 show the new construction and reconstruction components of 1-2 family and multi-family investment respectively in billions of 1985 kronor. It appears that the substitute relationship dominates, especially for multi-family housing. It is also noteworthy that new construction and reconstruction are approximately of the same order of magnitude for multi-family construction.

Housing Subsidies

Swedish housing is among the most subsidized in the world (see Boverket [1993], p. 125-136). There are three forms of subsidies, and each has its own effects on housing markets.

(1) Rent allowances are paid directly to low income households to lower their housing costs. Rent allowances increase the demand for housing space, which creates pressure for higher rents and asset prices, and thereby greater production.

(2) Mortgage interest subsidies are provided to purchasers of newly produced homes in the form of mortgage interest rates that are below market levels.[4] Mortgage subsidies directly stimulate new production, which accumulates into a larger stock of housing. Because the subsidies create a larger housing stock, they will cause market

[4] Mortgage interest allowances have also been provided for maintenance and improvement activity.

rents and the prices of existing houses to be lower than would otherwise be the case.

(3) Tax benefits are provided by allowing mortgage interest payments to be a tax deduction. The tax benefits create a larger housing stock, lower rents, and lower asset prices, just as with mortgage interest allowances. We evaluate the Swedish housing subsidy programs in more detail in Part 4.

PART 3 HOUSING SUPPLY

In this and the following part, we analyze and evaluate the Swedish housing markets. Our analysis is based on the stock-flow model developed in Part 2. We consider both 1-2 family and multi-family units. We focus on three periods of time: (1) 1981 to 1985 (the initial period), (2) 1986 to 1990 (the boom), and (3) 1991 to 1993 (the bust). The reasons for dating the beginning of the boom period at 1986 and the beginning of the bust period at 1991 will be clear as we analyze the Swedish housing data. We consider supply side and demand side factors separately as determinants of the housing cycle.

The supply side is considered first in this Part. The discussion focuses on the flows of housing production, the accumulated housing stock, and vacancy rates. Vacancy rates, of course, are the result of the interaction of housing demand and supply. Housing demand, in this context, equals the number of households (that is, the number of occupied housing units). In this Part, we treat the number of households as predetermined.

The demand side is considered in the following Part 4. There we treat housing production and the accumulated housing stock as predetermined. That discussion focuses on the influence of demand factors on Swedish housing prices. We will pay special attention to how Swedish housing subsidies determine demand in the aggregate, by structure type, and by geographic area.

The primary goal in this part is to determine the extent of the overbuilding that occurred during the housing cycle. Starting in the initial period, we first analyze the warranted expansion in housing construction. We then evaluate whether the actual housing construction during the boom was consistent with these initial conditions. Lastly, we analyze the results of the bust, in order to evaluate the current status and future prospects for Swedish housing markets.

Housing Stocks

We begin with the housing stock data in Table 3.1, based on the Swedish census, taken every five years. We will refer to these data as either the stock data or the census data. Table 3.1 shows the data for 1975, 1980, 1985, and 1990. We are fortunate that the years 1985 and 1990 coincide with the beginning and the end of the real estate boom respectively.

Part A of Table 3.1 refers to all housing units. Line 1 shows the housing stock--the number of existing, year-round, units. Line 2a shows the number of households, defined as groups of people living together in housing units. Line 2b shows secondary occupancy, created by households that occupy more than one year-round unit. Line 2c shows total occupancy, the sum of lines 2a and 2b. The difference between the stock and total occupancy, shown in line 3, is the number of vacant units. Line 4 shows the vacancy rate, defined as the ratio of the number of vacant units to the housing stock.

Table 3.1

HOUSING STOCK

(Year-Round Units In Thousands)

		1975	1980	1985	1990
A: All Units					
[1]	Housing Stock	3530	3670	3863	4045
[2a]	Households	3324	3497	3670	3830
[2b]	Secondary Occupancy (see text)	124	119	123	180
[2c]	Total Occupancy ([2a] + [2b])	3448	3616	3793	4010
[3]	Vacant Units	82	54	70	35
[4]	Vacancy Rate	2.3%	1.5%	1.8%	0.9%
B: 1-2 Family					
[1]	Housing Stock	1469	1626	1778	1874
[2a]	Households	1447	1616	1759	1861
[2b]	Secondary Occupancy (see text)	0	0	0	0
[2c]	Total Occupancy ([2a] + [2b])	1447	1616	1759	1861
[3]	Vacant Units	22	10	19	13
[4]	Vacancy Rate	1.5%	0.6%	1.1%	0.7%
C: Multi-Family					
[1]	Housing Stock	2061	2044	2085	2171
[2a]	Households	1877	1881	1911	1969
[2b]	Secondary Occupancy (see text)	124	119	123	180
[2c]	Total Occupancy ([2a] + [2b])	2001	2000	2034	2149
[3]	Vacant Units	60	44	51	22
[4]	Vacancy Rate	2.9%	2.2%	2.4%	1.0%
D: Addendum					
[1]	Population	8208	8317	8358	8590
[2]	Headship Rate ([A2a]/[D1])	40%	42%	44%	45%
[3]	Persons per Household (1/[D2])	2.47	2.38	2.28	2.24

Source: SCB [1993a].

Overbuilding is indicated when new construction causes the vacancy rate to rise above its natural level. As shown in Part A of Table 3.1, however, the vacancy rate actually fell substantially between 1985 and 1990. Moreover, the 1990 vacancy rate is lower than any of the earlier values. There is thus no indication of aggregate overbuilding of housing through 1990.

Parts B and C of Table 3.1 provide housing stock data for 1-2 family and multi-family units respectively. The data on secondary occupancy, shown in Part A of Table 3.1, however, are not available separately for the structure types shown in Parts B and C. Therefore, we have allocated the secondary occupancy between the two structure types, by assuming that all of the secondary occupancy occurred in multi-family units. Our conclusions do not depend on this assumption (see footnote 1). The resulting vacancy rates for the two structure types fall substantially between 1985 and 1990. Furthermore, both vacancy rates in 1990 are lower than for any earlier year, with a minor exception for the 1-2 family vacancy rate in 1980.[1] Thus, the conclusion for structure types is the same as for the aggregate: there is no sign of overbuilding between 1985 and 1990.

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1 The 13,000 vacant 1-2 family units computed for 1990 in Part B of Table 3.1 could in fact be units of secondary occupancy. If we transfer 13,000 units from multi-family secondary occupancy to 1-2 family secondary occupancy, this reduces the 1990 1-2 family vacancy rate to 0.0% and raises the 1990 multi-family vacancy rate to 1.6%. The 0.0% vacancy rate for 1-2 family units is clearly lower than the values for all earlier years. Even the 1.6% vacancy rate for multi-family units is lower than the values for all earlier years. The conclusion of no overbuilding is thus independent of the allocation of units for secondary occupancy.

Table 3.2

REGIONAL HOUSING STOCK

(Year-Round units, in Thousands)

Year		1975	1980	1985	1990
A. Stockholm Area					
[1]	Housing Stock	1010	1032	1083	1127
[2a]	Households	930	967	1018	1039
[2b]	Secondary Occupancy	32	31	30	47
[2c]	Total Occupancy	962	998	1048	1086
[3]	Vacant Units	48	34	35	41
[4]	Vacancy Rate	4.8%	3.3%	3.2%	3.6%
B. Gothenburg Area					
[1]	Housing Stock	527	539	555	574
[2a]	Households	484	504	520	536
[2b]	Secondary Occupancy	14	13	11	17
[2c]	Total Occupancy	498	517	531	553
[3]	Vacant Units	29	22	24	21
[4]	Vacancy Rate	5.5%	4.1%	4.3%	3.7%
C. Malmo Area					
[1]	Housing Stock	340	345	355	365
[2a]	Households	310	319	331	340
[2b]	Secondary Occupancy	11	10	10	15
[2c]	Total Occupancy	321	329	341	355
[3]	Vacant Units	19	16	14	10
[4]	Vacancy Rate	5.6%	4.6%	3.9%	2.7%
D. Rest of Sweden					
[1]	Housing Stock	1653	1754	1870	1979
[2a]	Households	1600	1707	1801	1915
[2b]	Secondary Occupancy	67	65	72	101
[2c]	Total Occupancy	1667	1772	1873	2016
[3]	Vacant Units	-14	-18	-3	-37

[4]	Vacancy Rate	-0.8%	-1.0%	-0.2%	-1.8%
	Source: SCB [1993a].				

Part D of Table 3.1 provides additional information regarding the functioning of the housing market between 1985 and 1990. Line 2 shows the headship rate, defined as the number of households divided by the population. The Swedish headship rate has been rising steadily since 1975, and the increase between 1985 and 1990 appears quite normal. The inverse of the headship rate, population divided by the number of households, shown in line (3), is likewise steadily falling over this period. These trends in the Swedish data are similar to those in the United States. The one difference is that the Swedish headship rates are slightly higher, indicating a tendency for the Swedish population to split itself into a larger number of households.[2] This is a likely result, at least in part, of the Swedish housing subsidy programs that we analyze below.

Table 3.2 shows regional data comparable to Part A of Table 3.1. The regions are the metropolitan areas of Stockholm, Gothenburg, and Malmo, as well as the rest of Sweden. There is a small degree of variation among the three metropolitan areas, with Gothenburg having the highest and Malmo the lowest vacancy rates in 1990. A more significant regional variation is represented by the lower--even negative--vacancy rates for the rest of Sweden. The negative vacancy rates arise because the sum of households and secondary occupancy

2 Headship rates, of course, vary significantly across different age groups. Thus, different population age structures will cause different aggregate headship rates across countries. The analysis of headship rates on a cross-country basis is an interesting area for future study.

exceeds the total number of housing units for the rest of Sweden, an apparent statistical discrepancy. Between 1985 and 1990, the vacancy rates are falling for all of the regions, with a small exception for Stockholm. A multi-family vacancy rate survey, shown below in Figure 3.2, however, indicates that the 1990 vacancy rate in the Stockholm area was actually 0.0%. The regional data thus also imply there was no overbuilding in Swedish housing markets between 1985 and 1990.

Housing Flows

Housing flows correspond to the change in the stock of housing over time. Part A of Table 3.3 translates Part A of Table 3.1 to a flow basis. Housing flows arise in three forms, the net change in the stock, newly completed units, and removed units. They are related:

$$(3.1)\quad \Delta K = C - R.$$

where ΔK = net change in the stock of housing,

C = newly completed units,

R = units removed from the stock.

In Table 3.3, the newly completed units (line 1) are SCB data, the units removed (line 2) are derived using equation (3.1), and the

net change in the stock (line 3) is the first difference in the housing stock from Part A of Table 3.1.[3]

We also use the vacant unit identity, which indicates that the change in the number of vacant units equals the net change in the stock minus the change in total occupancy:

$$(3.2)\quad \Delta V = \Delta K - \Delta O.$$

where ΔV = net change in the number of vacant units,

ΔO = net change in total occupancy.

In Table 3.3, the values for the change in total occupancy (line 4) and the change in vacant units (line 5) series are the first differences of the corresponding values in Part A of Table 3.1. Parts B and C of Table 3.3 show comparable flow data for 1-2 family and multi-family units respectively.

These data show no evidence of aggregate overbuilding between 1985 and 1990. The total number of vacant units is falling between 1985 and 1990, and the total number of units completed is virtually the same for the periods ending in 1985 and 1990 (209,000 versus 207,000). The evidence of no overbuilding of 1-2 family units is equally strong. The evidence for multi-family units is more mixed,

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3 Table 2.3.1 in SCB [1993a] provides slightly different estimates of the number of units removed, apparently because different (but not published) estimates of the number of completed units are used.

since the number of vacant units declines, but production rises in the 1990 period.

Table 3.3

HOUSING FLOWS

(In thousand of units)

5-Year Period Ending In:		**1980**	**1985**	**1990**
A: Total Units				
[1]	Units completed	271	207	209
[2]	- Units removed	131	14	27
[3]	= Net change in stock	140	193	182
[4]	- Change in total occupancy	168	177	217
[5]	= Change in vacant units	-28	16	-35
B: 1-2 Family Units				
[1]	Units completed	196	117	96
[2]	- Units removed	39	-35	0
[3]	= Net change in stock	157	152	96
[4]	- Change in total occupancy	169	143	102
[5]	= Change in vacant units	-12	9	-6
C: Multi-family units				
[1]	Units completed	75	90	113
[2]	- Units removed	92	49	27
[3]	= Net change in stock	-17	41	86
[4]	- Change in total occupancy	-1	34	115
[5]	= Change in vacant units	-16	7	-29

Source: SCB [1993a].

Table 3.4

HOUSING UNITS COMPLETED

(Annual Averages in Thousands)

Period	1981 to 1985	1986 to 1990	1991	1992	1993
A: 1-2 Family Units Completed:					
Total	23.5	19.2	28.7	19.5	9.4
Stockholm Area	3.0	2.3	2.7	2.1	1.6
Gothenburg Area	1.8	1.8	2.2	2.1	1.4
Malmo Area	1.3	1.2	1.6	1.5	0.9
Rest of Sweden	17.4	13.9	22.2	13.8	5.5
B: Multi-Family Units Completed:					
Total	18.1	22.6	38.2	37.8	25.7
Stockholm	5.0	5.0	6.1	5.9	5.8
Gothenburg	1.4	1.5	2.1	2.8	1.9
Malmo	0.9	1.0	1.6	2.5	1.6
Rest of Sweden	10.7	15.1	28.4	26.6	16.4
C: All Units Completed:					
Total	41.6	41.8	66.9	57.3	35.1
Stockholm	8.0	7.3	8.8	8	7.4
Gothenburg	3.2	3.3	4.3	4.9	3.3
Malmo	2.2	2.3	3.2	4	2.5
Rest of Sweden	28.1	29.0	50.6	40.4	21.9

Source: SCB [1993a].

Housing Units Completed and Started

A drawback to the data in Tables 3.1, 3.2, and 3.3 is that no post-1990 observations are available for the census data.[4] These tables therefore provide no information on the conditions created by the real estate bust after 1990. This problem is partly solved by Table 3.4, which shows units completed by structure type and regions for annual periods extending to 1993.

Table 3.4 shows the average annual number of units completed, for the five year periods already analyzed, and for the individual years 1991, 1992, and 1993. Parts A, B, and C show 1-2 family, multi-family, and all units completed respectively. The housing production numbers for the periods 1981 to 1990 are the same as those in Table 3.3, except that the data in Table 3.4 are presented at annual average rates. We focus our attention on the post-1990 data.

For both structure categories and the total, the production rates in 1991 and 1992 exceeded the average annual production rate for the boom period, 1986-1990. This indicates that production continued high after 1990, even though there were strong signals that the boom was ending. There are at least two explanations.

(1) Housing production requires relatively long planning and construction periods, so it is not surprising that production continued high even though the demand fundamentals were

4 The next census would normally be scheduled for 1995, but currently there is uncertainty whether it will be carried out.

deteriorating. Furthermore, the lag effects should be more pronounced for multi-family housing, and, as shown in Part B, multi-family production was particularly strong through 1992 and even into 1993.

(2) By 1990, there were expectations of a forthcoming reduction in housing subsidies. This created an incentive to produce units before the subsidies were reduced.

Table 3.4 also shows the geographic distribution of housing units completed for the three major metropolitan areas of Sweden and the rest of Sweden. The pattern between 1991 and 1993 for these regions are all similar to the pattern for the country as a whole. The regional data emphasize, however, the importance of the rest of Sweden relative to the three metropolitan areas for housing production. In 1991, the highest year, production in the rest of Sweden represented over 75% of total Swedish production for all housing units. This takes on particular significance when we consider the regional pattern of housing demand in the following Part 4.

Given the lags in housing production, it is useful to analyze units started as well as units completed. A comparison of units started and units completed by structure type are shown in Table 3.5. For the period 1981 through 1990, units started and units completed are relatively close, because most of the lag effects disappear when these data are averaged over a 10 year period. A

comparison of units started and completed from 1991 to 1993, however, provides more useful information.

During 1991 and 1992, for each structure type and the total, the number of units started are only slightly lower than the number of units completed. This implies that large numbers of units were being started as late as 1992, well after the real estate bust was apparent. This could reflect a further planning lag, in which units were planned in 1990 and the project had to go forward, but construction was started only in 1991 and 1992.

In contrast, in 1993 there is a sharp decline in the total number of units started. Only about 10,200 total units were started in Sweden in 1993, and current reports indicate a similar rate of units started for 1994. The average rate of total started units for the period 1991 to 1994, including a rate of 10,200 for 1994, is about 33,450 units annually. This is below the average of 37,100 units started during the initial period from 1981 to 1985, suggesting that any excess aggregate production during 1991 and 1992 has already been offset by the major decline in total units started during 1993 and 1994.

A similar analysis applies to the structure types. The proportionate decline in 1-2 family units started in 1993 is even greater than the aggregate. For multi-family units, the evidence is more mixed, since the number of units started in 1991 and 1992 was very high and the proportionate decline is less in 1993. We next turn to further evidence regarding multi-family units.

Table 3.5

HOUSING UNITS STARTED AND COMPLETED

(Annual Averages in Thousands)

Period	1981 to 1985	1986 to 1990	1991	1992	1993
A: 1-2 Family Units					
Units Started	20.1	21.7	22.1	19.2	2.9
Units Completed	23.5	19.2	28.7	19.5	9.4
B: Multi-Family Units					
Units Started	17.0	28.0	34.7	37.4	7.3
Units Completed	18.1	22.6	38.2	37.8	25.7
C: Total Units					
Units Started	37.1	49.7	56.8	56.6	10.2
Units Completed	41.6	41.8	66.9	57.3	35.1

Source: SCB [1993a].

Figure 3.1: MULTI-FAMILY VACANCY RATES

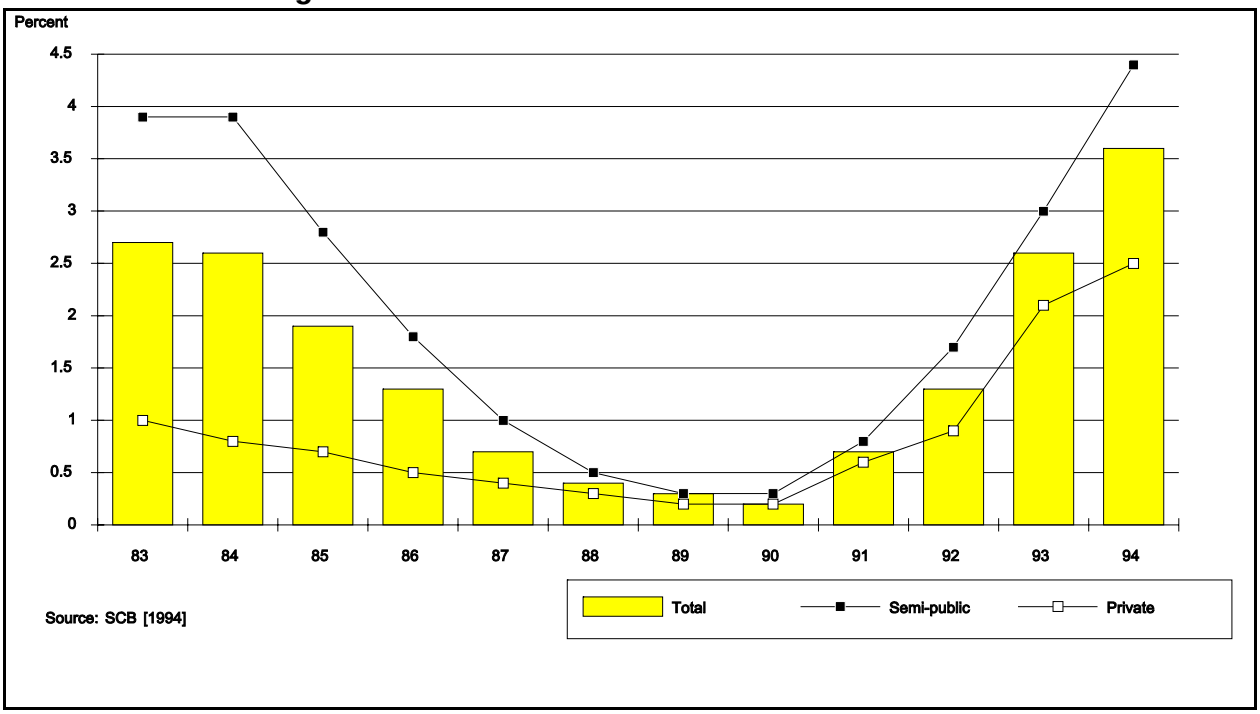
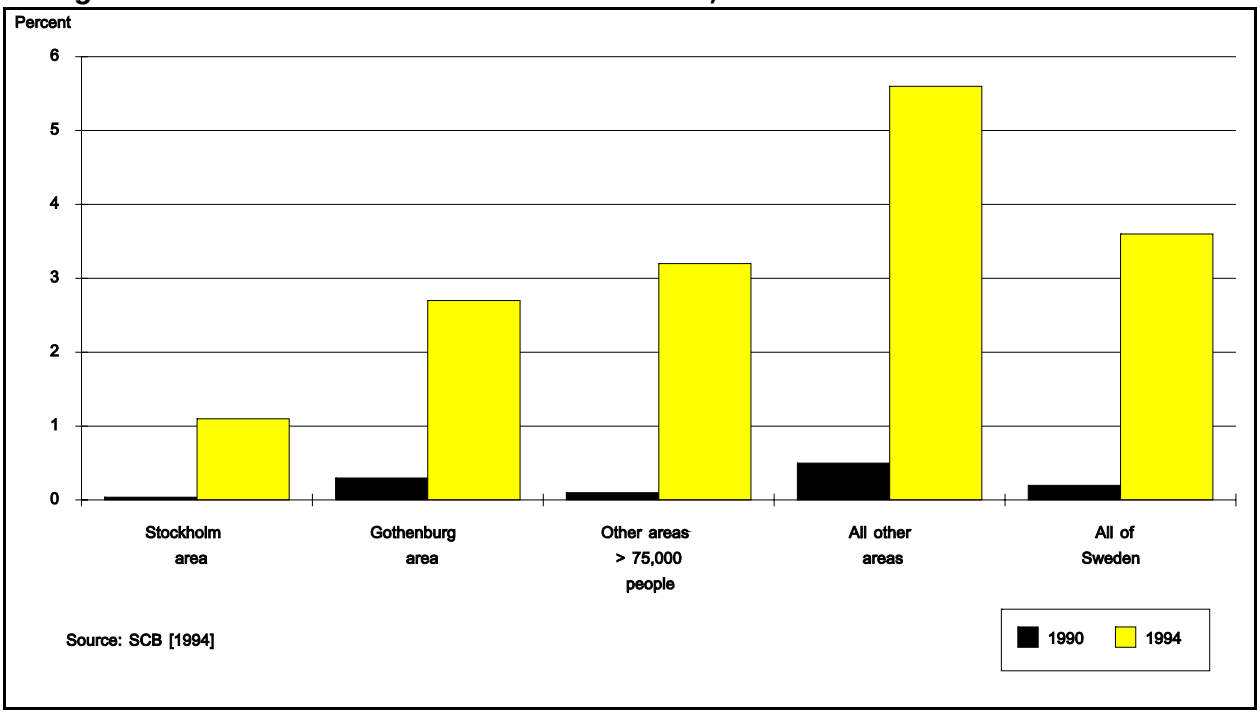


Figure 3.2: REGIONAL VACANCY RATES, MARCH 1990 AND MARCH 1994



The Evidence from Multi-Family Vacancy Rates

The SCB carries out an annual March (and September) survey (SCB [1994]) of multi-family vacancy rates which we can use to supplement the census data. The survey covers all "semi-public" and a sample of privately owned multi-family units. Figure 3.1 shows the pattern of vacancy rates from this survey for the two ownership groups and the total.[5] There are four key points:

(1) The 1990 multi-family vacancy rate from the survey is somewhat lower than the estimate provided by the 1990 census data (the 1990 survey estimate is 0.2%, whereas the census estimate in Table 3.1 is 1.0%).

(2) The vacancy rates of semi-public units substantially exceed the vacancy rates of privately owned units.

(3) The vacancy rates declined steadily until 1990.

(4) The vacancy rates rose by 3.4 percentage points (from .2% to 3.6%) between March 1990 and March 1994.

The vacancy rate increase of 3.4 percentage points between 1990 and 1994 translates into 74,000 additional vacant units. This can be interpreted as the cumulative amount of excess multi-family production that occurred during these years. However, as shown in

5 The vacancy rate for privately owned units in March 1992 may be slightly under-estimated (see SCB [1993c].

Part B of Table 3.5, there has been a precipitous decline in the number of new multi-family units started during 1993 (and by current reports 1994). Specifically, 72,000 multi-family units were started during 1991 and 1992, while less than 15,000 units were started in 1993 and 1994 (assuming the 1993 and 1994 start rates are equal). Thus, a substantial part of the excess number of multi-family units completed during the 1990 to 1994 period has already been offset by the recent decline in units started (which will appear as a forthcoming decline in units completed).

Figure 3.2 shows vacancy rate survey data for four regions and all of Sweden for March 1990 and March 1994. It is apparent that the increase in vacancy rates between 1990 and 1994 is inversely related to the urban density of the areas. The Stockholm area has the smallest increase (from 0.0% to 0.9%), whereas areas with less than 75,000 people have the largest increase (from 0.5% to 5.4%). Thus, the excess production during this period primarily occurred in the smaller municipalities in Sweden.

Conclusions Regarding Swedish Housing Supply

(1) There is no evidence of overbuilding in the Swedish housing sector between 1985 and 1990. In particular, Tables 3.1, 3.2, and 3.3 show that essentially all vacancy rates fell between 1985 and 1990. This holds true for the Swedish aggregates, as well as for vacancy rates disaggregated by structure type and by region.

(2) Between 1990 and 1994, multi-family vacancy rates rose significantly, as shown in Figures 3.1 and 3.2. For all of Sweden, the multi-family vacancy rate rose from 0.2% to 3.6%, the equivalent of 74,000 additional vacant units. The increase in vacancy rates was inversely related to urban density.

(3) Housing units started (as opposed to units completed) declined sharply in 1993 (Table 3.5) and the decline is continuing during 1994. It thus appears that a major part of the aggregate excess production created during the real estate boom has already been offset by the dramatic declines in housing units started during 1993 and 1994.

Nevertheless, significant excess supply remains on a disaggregated basis in two forms. First, significant numbers of vacant units remain in the smaller municipalities in Sweden, whereas the urban areas, especially Stockholm, face balanced or even tight housing conditions. Second, significant numbers of vacant units remain in the multi-family sector, whereas the market for 1-2 family units shows no apparent excess supply. We consider these regional and structure-type imbalances further when we analyze housing demand in the following Part 4.

PART 4 HOUSING DEMAND

Our analysis has so far emphasized the supply-side decisions regarding housing production. In this section, we consider the factors that influence the demand for housing. In particular, we focus on various explanations for why Swedish housing prices rose as dramatically as they did in the late 1980s and then fell as rapidly as they did in the early 1990s.

The Rise and Fall of Swedish Housing Prices

Figure 4.1 shows the dramatic pattern of nominal housing price indexes for 1-2 family and multi-family structures. Between 1980 and 1990, multi-family prices rose by 240 percent and 1-2 family prices rose by 100 percent. Multi-family prices then fell about 35% from the 1990 peak, and 1-2 family prices fell about 20 percent from the 1991 peak.

Figure 4.2 shows the same house price series on a real basis, using the consumer price index (CPI) as the deflator. Since there was continuing consumer price inflation during the period, the real house prices, of course, rise less and fall more than the corresponding nominal prices. For example, we see in Figure 4.2 that the levels for both series of real home prices in 1993 are actually below the corresponding 1980 real values. Generally speaking, the real prices are the more revealing, and we will focus our attention on them.

Figure 4.1: HOME PRICES, NOMINAL

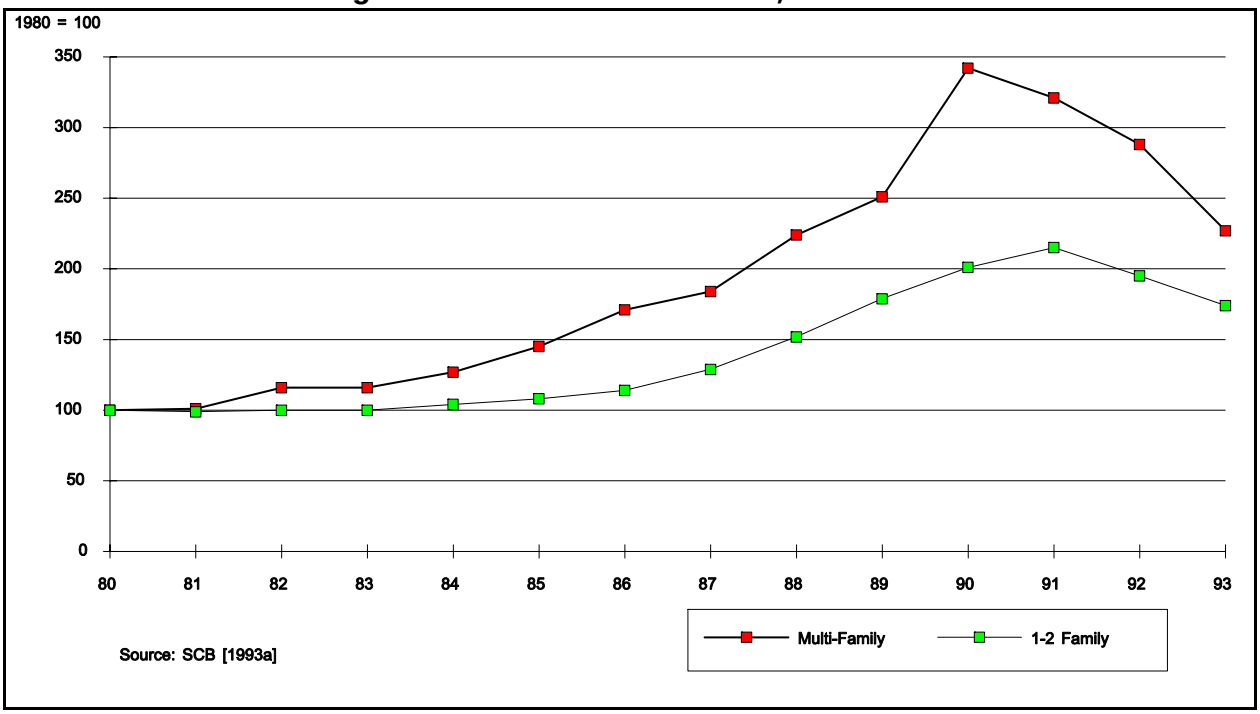


Figure 4.2: HOME PRICES, REAL

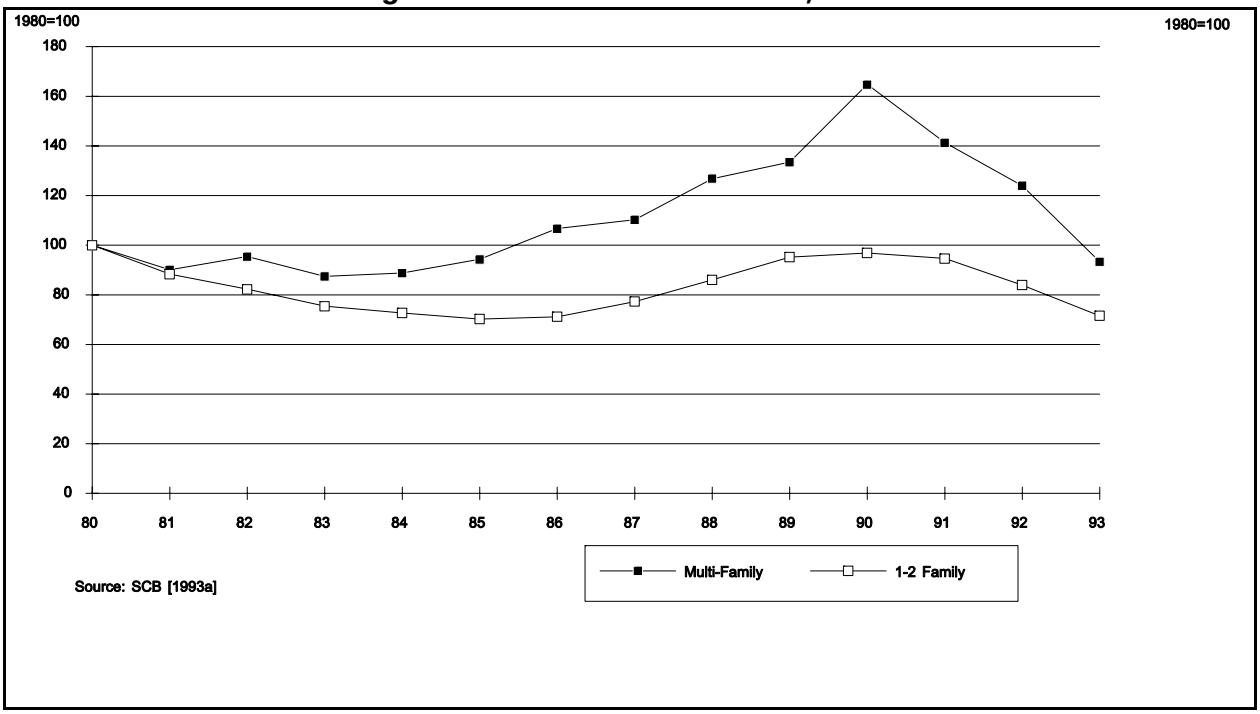


Figure 4.3: HOME PRICES, REAL, PERCENTAGE CHANGE

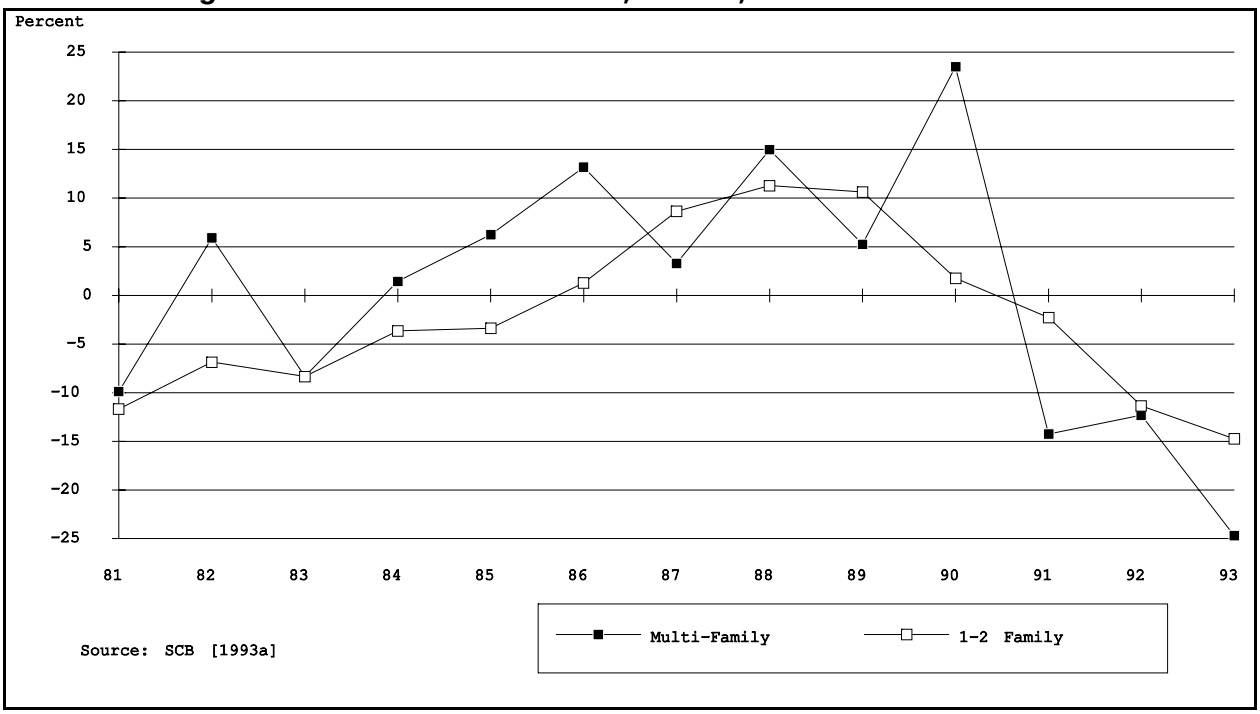


Figure 4.3 shows the annual percentage changes in real Swedish home prices which correspond to the levels shown in Figure 4.2. The low or negative price changes in the early 1980s may be attributed to the expectations of lower tax deduction rates (which reduce the tax benefit to housing). The house price inflation rates, however, steadily rose during the decade. Multi-family appreciation reached an annual rate of almost 25 percent during 1990. The positive production signal provided by the large increase in multi-family prices in 1990 may help explain why the production rate for multi-family units remained so high through 1991 and 1992.

The Determinants of Real Housing Demand

We now consider what factors may have been responsible for the major cycles in Swedish real home prices between 1980 and 1993. We begin by specifying an equation for the demand for the real housing stock:

$$(4.1)\quad H^D = f[\frac{P_H}{P_C}, \frac{Y}{P_C}, \mu, R-\pi, \tau, \omega].$$

with

H^D = *demand for real housing stock,*

P_H = *nominal house price,*

$\dot{P}_H$ = *change*

Since the left side variable in equation (4.1) is real housing demand, the right side variables should also be in real terms. We therefore deflate nominal house prices and nominal GDP by the consumer price index (CPI) and specify the real interest rate by subtracting expected inflation from the nominal interest rate. The unemployment rate,

tax rates, and housing subsidies are all percentages, and therefore are comparable to real variables.

In equilibrium, housing demand and housing supply are equal: *(4.2)* $H^D = H^S$.2where H^S is the supply of the real housing stock. We then combine (4.1) and (4.2) and solve for the real housing price:

(4.3) $\frac{P_H}{P_C} = g[H^S, \frac{Y}{P_C}, \mu, R - \pi, \tau, \omega]$.3

Equation (4.3) is the reduced form relationship for the real housing price as a function of the housing stock and the variables determining real housing demand. Using this equation, we now look at the Swedish data for the period 1980 to 1993.

The Data Set

Table 4.1 provides a set of data that corresponds to equation (4.3). Columns (1) and (2) show real home prices, using the CPI as the deflator, for 1-2 family and multi-family structures. These are the same series used in Figure 4.2. The following notes define the demand variables by column number and briefly describe the effects we expect each variable to have on real housing prices.[1]

[1] In describing the effects of each variable, we assume that everything is held the same except for the variable being discussed.

TABLE 4.1 DETERMINANTS OF SWEDISH HOUSING DEMAND: 1980 TO 1993

	HOME PRICES		SUPPLY	MACRO		REAL INTEREST RATE (Inflation based on:)			TAX RATES	CREDIT
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
	Real 1-2 Family	Real Multi Family	Total Housing Stock	Real GDP	Unemploy. rate	CPI	1-2 Family Prices	Multi Family Prices	Interest Deduct. Rate	Loan To GDP Ratio
	Index: 1980 = 100				Percentage Points					
PART A: ANNUAL VALUES										
1980	100.0	100.0	100.0	100.0	2.0	-1.7	8.3	-0.4	71.8	93.0
1981	88.3	90.1	101.3	97.6	2.5	1.4	14.4	12.4	72.5	95.9
1982	82.3	95.4	102.5	98.5	3.2	4.3	11.7	-2.1	73.2	100.6
1983	75.4	87.5	103.6	101.1	3.5	3.0	12.1	12.1	66.0	101.0
1984	72.7	88.8	104.5	104.9	3.1	3.2	7.1	1.6	59.0	100.4
1985	70.2	94.3	105.3	106.1	2.9	4.0	7.6	-2.8	50.0	100.8
1986	71.1	106.7	105.9	111.3	2.7	5.0	3.7	-8.7	50.0	110.9
1987	77.3	110.2	106.6	115.4	1.9	7.8	-1.2	4.4	50.0	116.6
1988	86.0	126.8	107.6	118.7	1.6	5.6	-6.4	-10.3	50.0	130.5
1989	95.2	133.4	108.8	123.4	1.4	5.2	-6.1	-0.4	50.0	143.1
1990	96.9	164.8	110.2	123.3	1.6	3.9	1.9	-22.0	50.0	149.9
1991	94.7	141.3	111.9	120.0	2.9	2.4	4.9	18.0	30.0	145.7
1992	83.9	123.9	113.3	116.6	5.3	9.5	21.1	22.1	30.0	149.2
1993	71.5	93.3	114.1	112.2	8.2	5.5	21.0	31.4	30.0	139.1
PART B: CUMULATIVE POINT CHANGE: FIRST YEAR OF PERIOD TO LAST YEAR OF PERIOD										
'80-'85	-29.8	-5.7	5.3	6.1	0.9	5.7	-0.7	-2.3	-21.8	7.8
'85-'90	26.6	70.5	4.9	17.3	-1.3	-0.1	-5.6	-19.3	0.0	49.1
'90-'93	-25.3	-71.5	3.9	-11.1	6.6	1.6	19.0	53.4	-20.0	-10.8
PART C: CUMULATIVE POINT CHANGE: FROM FIRST PERIOD AVERAGE TO LAST PERIOD AVERAGE										
'81-'85 to '86-'90	7.5	37.2	4.4	16.8	-1.2	2.4	-12.2	-11.7	-14.1	30.5
'86-'90 to '90-'93	-1.9	-8.9	5.3	-2. 2	3.6	0.3	17.3	31.2	-20.0	14.5

Sources: See text discussion.

[3] Total housing stock is an index of the number of housing units based on the data in Table 3.1.[2] Larger stock values should lead to lower real housing prices.

[4] Real GDP is a measure of real income, which should be positively related to real housing prices. Nominal GDP is deflated by the CPI and set to a 1980 = 100 index to maintain consistency with the other real variables. Source: SCB [1993b].

[5] The unemployment rate also measures macroeconomic influences on real housing prices. Higher unemployment rates should be associated with lower real house prices. Source: SCB [1993b].

[6], [7], and [8] These columns provide three alternative measures of the real interest rate. Higher real interest rates should lead to lower real house prices. The measures all use the mortgage bond interest rate as the nominal rate (Sveriges Riksbank), minus alternative estimates of the rate of expected inflation. In each case, the expected inflation rate is estimated by the contemporaneous inflation rate.[3] Column (6) use the consumer price index (SCB

[2] The series is based on the housing stock benchmarks for 1980, 1985, and 1990 shown in Table 3.1. The additional annual values were derived from equation (3.1), interpolating the values for the units removed from the same benchmark data.

[3] This assumes that the inflation expectations show perfect foresight, not always a realistic assumption. The conclusions do not depend on this assumption because we are not carrying out a regression analysis. In econometric studies in which the dependent variable is house price inflation, use of a real interest rate based on expected house price inflation can lead to spurious correlation.

[1993b]), column (7) 1-2 family house prices (SCB [1993a]), and column (8) multi-family house prices (SCB [1993a]). For housing investors, it may be more appropriate to compute the real rate in terms of one of the house price inflation rates, since these inflation rates are the basis for the capital gains they will (or will not) receive.

[9] The interest deduction rate is the rate for interest deductions of the average Swedish taxpayer, as developed in Englund [1993a]. Since higher rates raise the value of the mortgage interest deduction, we expect that higher rates will be associated with higher real housing prices.

[10] The total loan to GDP ratio, based on the total credit extended by Swedish lenders, is a measure of credit availability. Higher values indicate easier credit, which should lead to higher real housing prices. Source: Sveriges Riksbank.

The Determinants of Real Housing Prices

Part A of Table 4.1 shows the basic annual data from 1980 to 1993. It is tempting, but not practical, to carry out a regression analysis of the influence of these 10 factors on real housing prices. As is evident from the table, we have a richness of variables, a deficiency of observations, and a potentially serious simultaneity bias problem as well. Englund [1993b], however, using a longer time span and fewer and more aggregated variables, has carried out such an analysis, and we will compare our conclusions with his.

We found it expedient, instead, to group and analyze the data using the key periods of the Swedish house price cycle: (1) 1980 to 1985 (the initial period), (2) 1985 to 1990 (the boom) and (3) 1990 to 1993 (the bust). This is carried out in Part B of Table 4.1. For each period, we compute the change that occurs for each of the demand variables, and compare it with the corresponding change in Swedish house prices. The changes are measured in percentage points and give the cumulative change within each period. The real price for 1-2 family houses, for example, fell 29 points between 1980 and 1985, then rose 26 points to 1990, and then fell 25 points to 1993. Multi-family prices have the same pattern, but with a much greater amplitude, on the order of 70 points.

Looking across the three time periods in Part B, it is apparent that the changes in each of the demand variables is properly associated with the corresponding changes in the house price variables in the expected direction. For example, real GDP rose by 17 points in the boom period ('85 - '90), fell by 11 points in the bust ('90 - '93), and rose by the intermediate amount of 6 points in the initial period ('80 - '85). The association is equally tight for all the other variables. Indeed, among the 33 cells in Part B, there are only two minor discrepancies from the expected result.[4]

[4] The first exception concerns the real interest rate based on the CPI index (column 6), which had its highest value in the initial period, not during the bust. This is a further basis for using one of the other measures of the real interest rate. The second exception concerns the housing stock, which grow more slowly during the bust. It is not surprising, of course, to find that the stock of housing grew slowly during the bust.

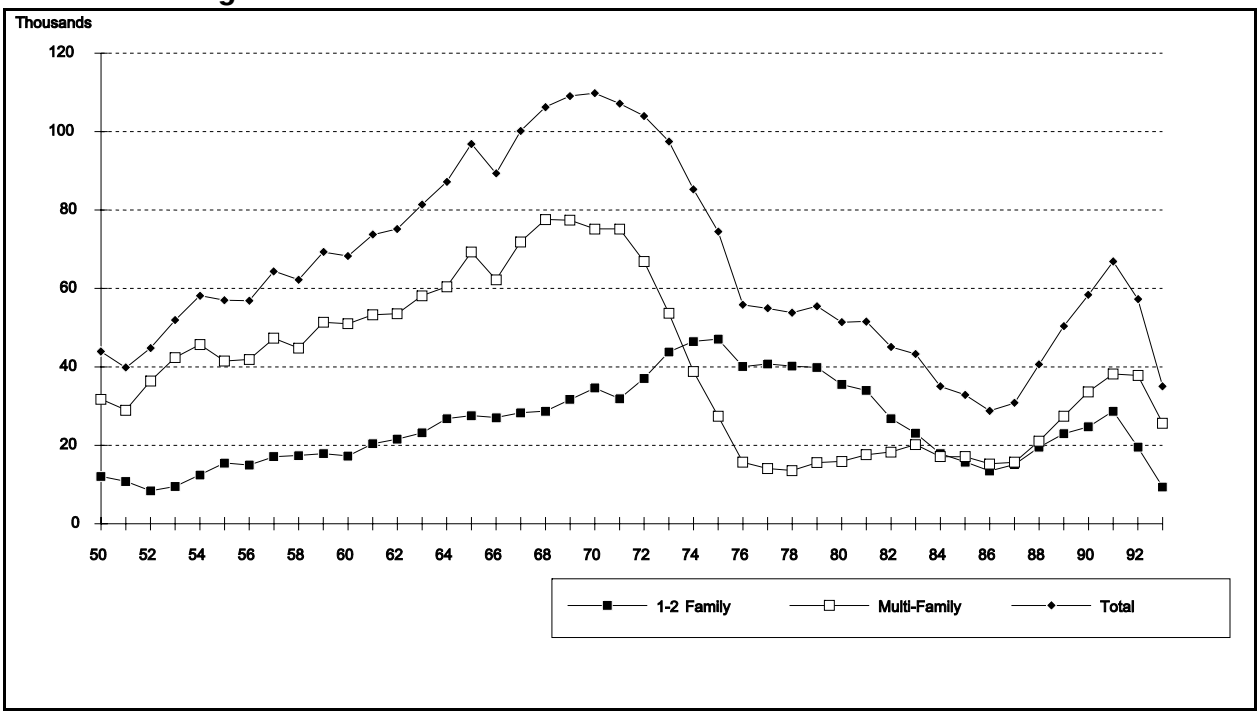
The results in Part B of Table 4.1, however, could be distorted because they use only the end points. To evaluate this, Part C of Table 4.1 shows the cumulative changes between the average values in each of the periods. For example, in column (1), we subtract the average level of the 1-2 family house price series during the 1981 to 1985 period from the average level of the price series during the 1986 to 1990 period. The first row in Part C is thus the change in each average value from the initial period to the boom period, and the second row is the change from the boom period to the bust period. Since the data in Part C are constructed from averages rather than from end points, the changes will generally be smaller than the changes in Part B. Nevertheless, Parts B and C have the same implications.

Our analysis thus leaves little doubt that the demand variables--macroeconomic factors, real interest rates, tax deduction rates, and credit conditions--combined to create the volatile pattern of Swedish housing prices over the last ten years. The conclusions in Englund [1993a] and [1993b] are broadly consistent with these results. Englund, however, uses nominal rather than real housing prices, and computes real rates of interest based on the consumer price index rather than on house prices. He is also more cautious than we are in accepting the GDP slump after 1990 as one important factor (among several) leading to the house price bust.

Housing Subsidies

Swedish housing policy was initiated during the depression of the 1930s (see Bengtsson [1993]). In the mid-1960s, the "million home program", was launched with the goal of producing 100,000 units a year for ten years (see Jonung [1994]). Since that time, the details of the housing subsidy programs have changed, but the basic goals for housing production have remained. Figure 4.4 shows the pattern of housing units completed in Sweden since 1950.[5]

Figure 4.4: HOUSING UNITS COMPLETED SINCE 1950



[5] Until 1967, there was a mortgage interest rate subsidy program, but from 1968 this was replaced with a non-subsidized lending system, which was replaced in 1975 with a new mortgage interest rate subsidy program, which continues into the 1990s.

Swedish housing continues to be among the most subsidized in the world. The main components of Swedish housing policy are now rent allowances, mortgage interest rate subsidies, and tax benefits (see discussion above at the end of Part 2 and Hendershott, Turner and Waller [1993]). Since 1990, policy actions have been initiated to reduce these subsidies, and further reductions are likely. It is thus important to evaluate how a reduction in these programs is likely to influence Swedish housing markets.

Figure 4.5 shows housing subsidies as a percentage of GDP in 1985 for Sweden and 7 other OECD countries. The total Swedish subsidies are the highest, and the components are the first or second highest. Effects of the subsidies are shown in Figures 4.6 and 4.7. Figure 4.6 is a scatter diagram of the number of housing units per 1000 people versus the subsidy/GDP ratio. Sweden has the highest values for both variables. Figure 4.7 shows the housing space (M^2) per person versus the subsidy/GDP ratio. Again, Sweden has the highest values for both variables.

Figure 4.5: HOUSING SUBSIDIES AS A PERCENTAGE OF GDP

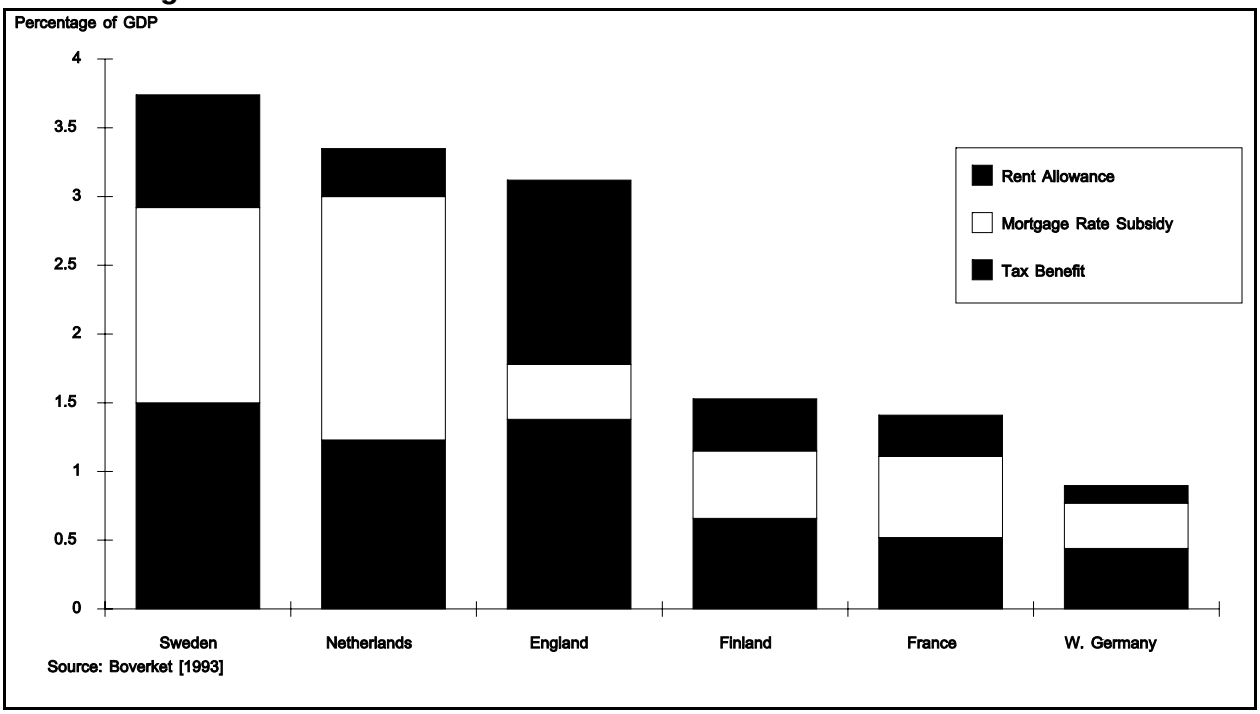


Figure 4.6: HOUSING SUBSIDIES AND HOUSING UNITS

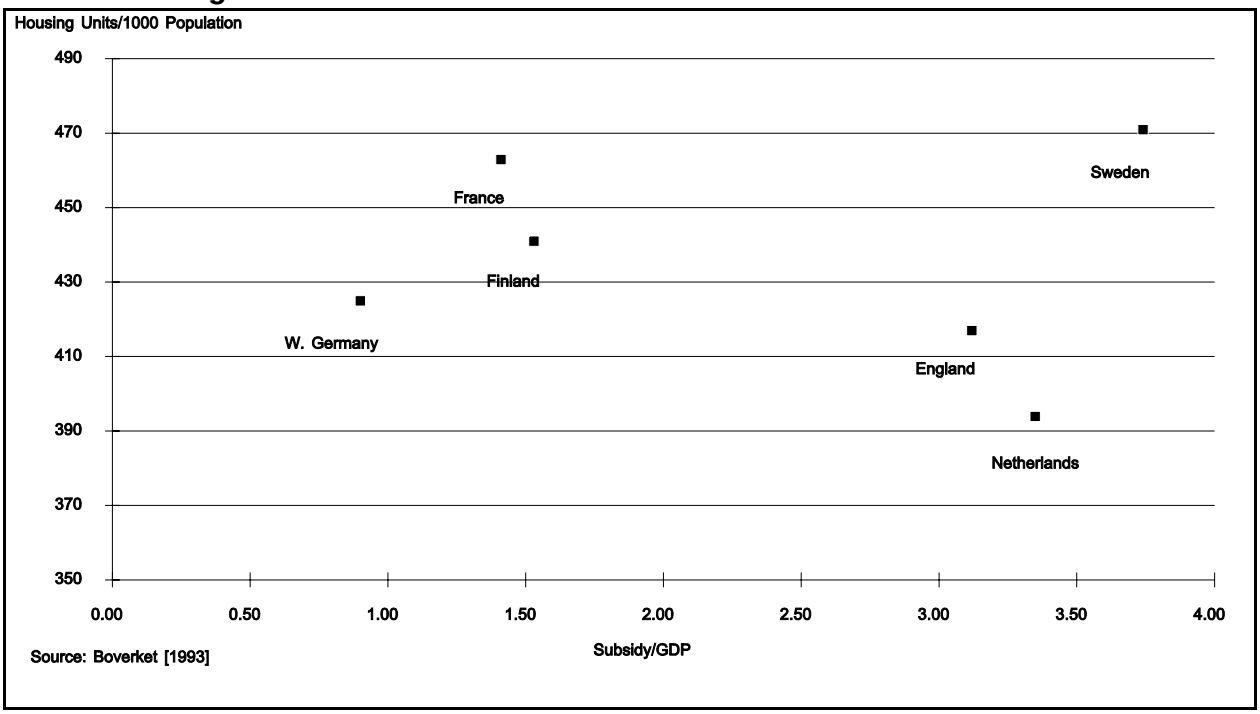


Figure 4.7: HOUSING SUBSIDIES AND SPACE PER PERSON

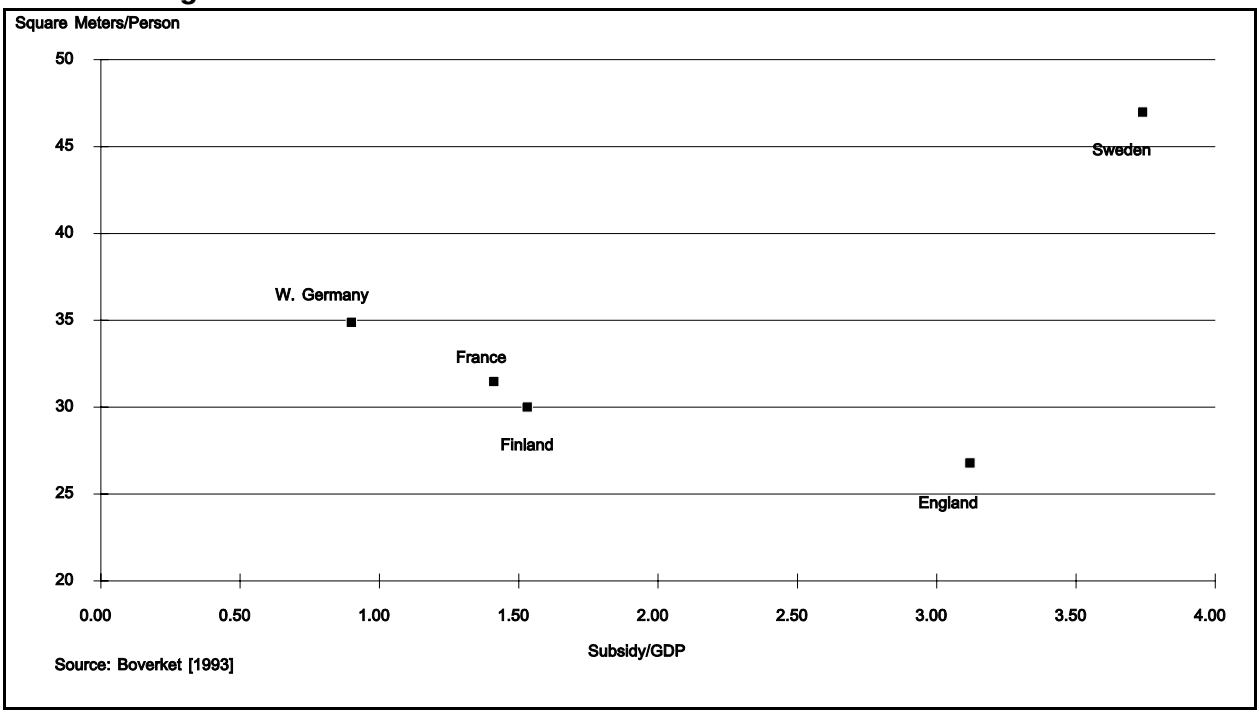
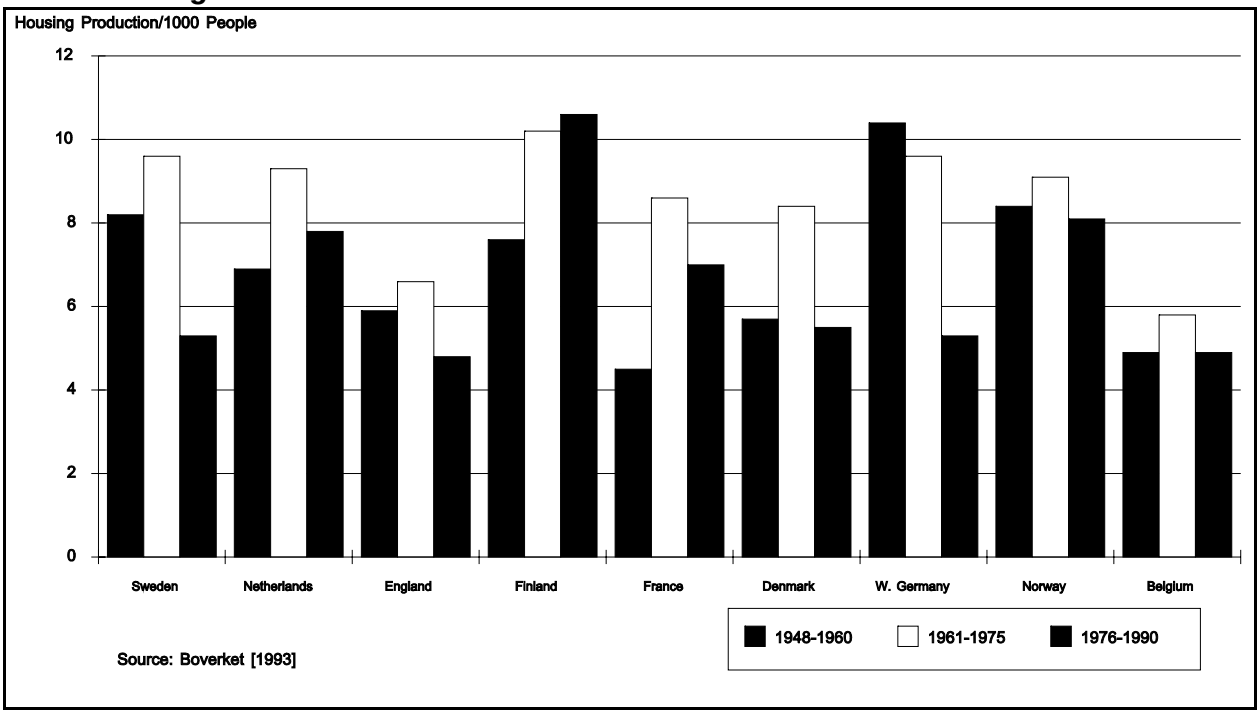
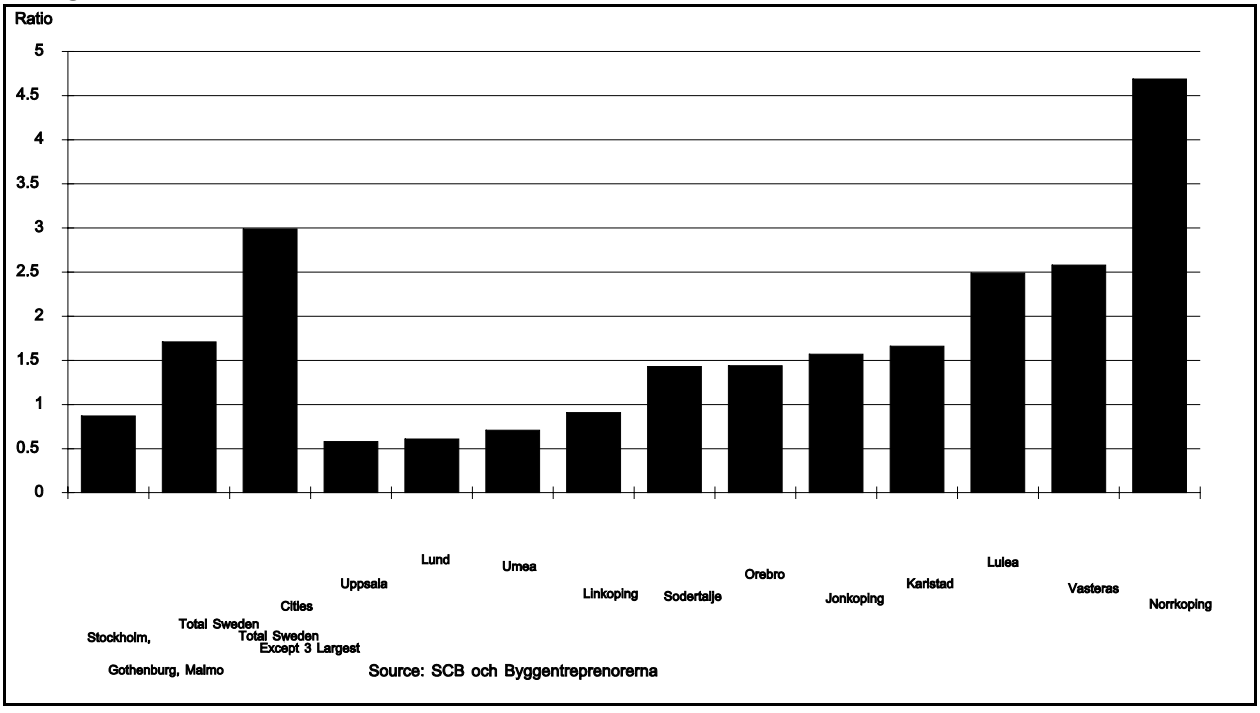


Figure 4.8: HOUSING PRODUCTION FOR OECD COUNTRIES



There is thus little doubt that the large number of housing units and the large amount of space in Sweden are the result of the housing subsidy policies. Figure 4.8 provides additional information about the timing of Swedish housing production. The annual housing production per 1000 people was very high in Sweden during the first two periods, 1948 to 1960 and 1961 to 1975, but was substantially lower in the latest period, 1976 to 1990. The declining effectiveness of the subsidies for raising housing production could be the result of the constraining influence of the accumulated stock of already produced units.

Figure 4.9: HOUSING COMPLETIONS/POPULATION GROWTH IN THE 1980S



Housing Subsidies and Geographic Location of Production

While the subsidy programs have increased the aggregate amount of Swedish housing, they may have also distorted the incentives regarding the location of this housing. A view of this is provided in Figure 4.9. This chart shows the ratio of the number of completed units to the net change in population for a cross section of Swedish cities during the decade of the 1980s. To put these numbers in context, recall from Table 3.1 that the headship rate in Sweden (the ratio of households to population) is about 0.45. For all the Swedish cities shown, the completion/population change ratio is higher--in most cases, much higher--than this value. The extreme city shown is Norrkoping, in which 4.69 housing units were built for each new person. Not shown is an even more extreme case, Sundsvall, in which 8,234 units were constructed, even though the population actually fell by 500 people. One city, of course, could be an aberration, or a forecast mistake, but there appears to be a systematic tendency to build too much housing where it is not needed.

Housing Subsidies and Structure Choice

Approximately 54% of all Swedish housing consists of multi-family units. Figure 5.10 shows the percent of total new housing construction that has been represented by multi-family construction since 1950. It is apparent that large amounts of multi-family housing were constructed in the 1950s and 1960s, and then again in the late 1980s and early 1990s. Among the multi-family

units, approximately 40% are currently owned by semi-public local housing authorities, about 28% are owned by cooperatives, and the remainder are privately owned.

The Swedish housing subsidy program has favored multi-family construction primarily through benefits provided to the semi-public municipal housing authorities. These benefits have included a tax-free status, favorable mortgage interest rate subsidies, and the possibility of preferred treatment in land use and construction permits. Tenant-owners in cooperative multi-family housing have received subsidy benefits comparable to those provided owner-occupiers of 1-2 family units. On the other hand, private multi-family units have been the least subsidized among all the forms of Swedish housing (see Hendershott, Turner and Waller [1993]).

Figure 4.11 provides a scatter diagram showing the density of population versus multi-family housing as a percentage of total housing, for Sweden and 7 other OECD countries. It might be expected that the less densely populated countries would have less multi-family housing. Sweden stands out in the figure, however, as the next to least densely populated and the most intensive in multi-family housing.

Figure 4.10: MULTI-FAMILY HOUSING COMPLETIONS, PERCENT OF TOTAL

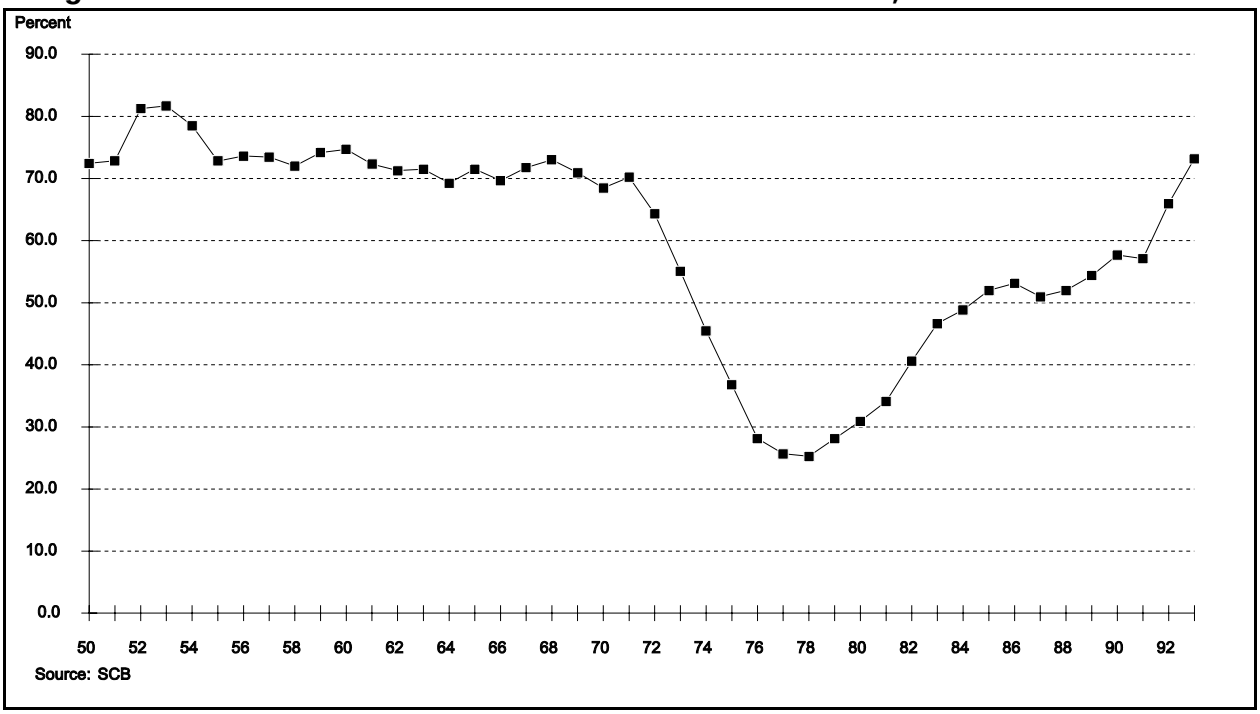
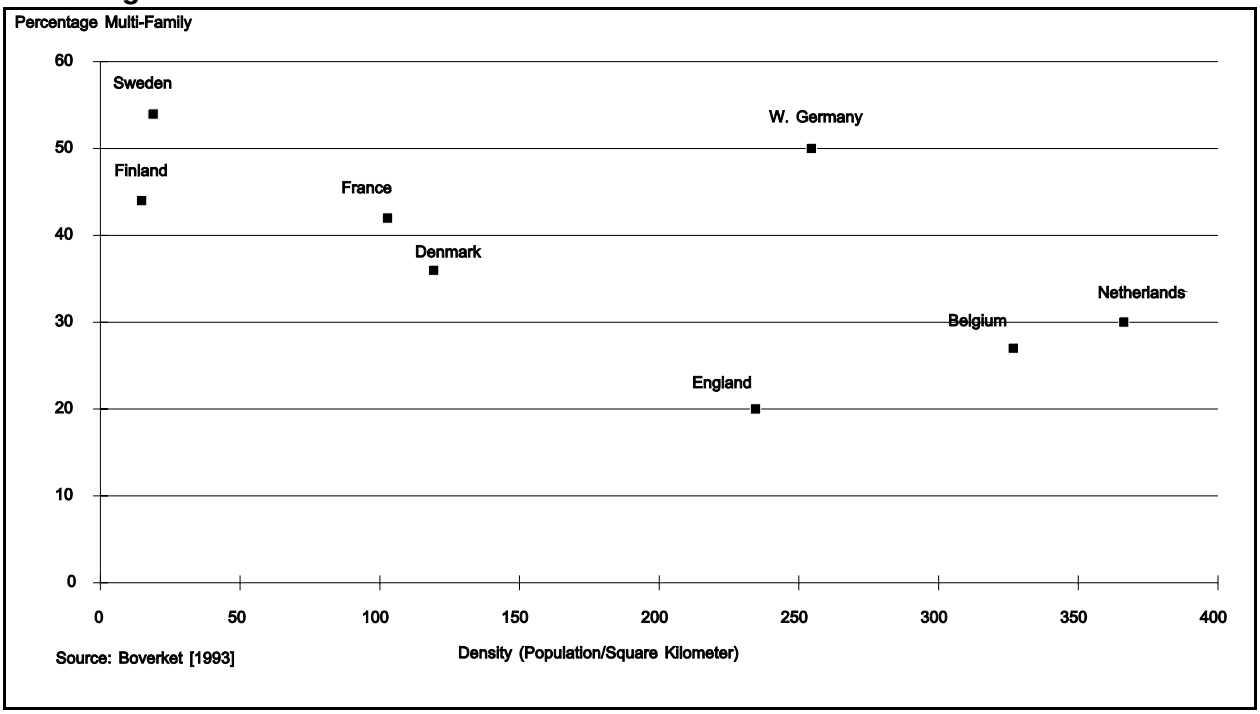


Figure 4.11: POPULATION DENSITY AND MULTI-FAMILY HOUSING



The Effects of Reducing the Mortgage Interest Subsidy Program

The mortgage interest subsidy program is likely to be the most sharply cut among the housing subsidy programs. This program provides the purchaser of a newly constructed unit a schedule of subsidized mortgage loan rates over the life of the mortgage. The immediate effect of reducing these subsidies will be to reduce the amount of new housing production. Lower production will then lead to a lower housing stock over time. When housing production and the housing stock reach their new equilibrium levels, the price of existing homes will equal the cost of new construction (i.e. Tobin's q equals 1). Reduced subsidies thus create higher equilibrium prices for existing homes, since the reduced subsidies create higher construction costs net of the construction subsidies.[6]

The demand for housing will also fall due to the reduced subsidies, although precise estimates are difficult to obtain (see Turner and Berger [1993]). It has been suggested, however, that the reductions in the subsidy programs are likely to reduce the demand for housing by approximately 20%. Whatever the specific amount, the reduced demand will equal the reduced housing stock in the new equilibrium.

The short-run dynamic effects of the reduced subsidies are more complex to evaluate than their equilibrium consequences.

[6] The relevant construction cost for Tobin's q is the "bricks and mortar" cost minus the present value of the mortgage interest subsidies. When the subsidies are reduced, the net construction costs rise, and higher prices for existing homes follow.

Specifically, it appears that a significant amount of the high housing production in the early 1990s was carried out in anticipation of subsidy reductions. Thus, temporarily rising supply faced falling demand, creating a short-run decline in home prices. It is perhaps no coincidence that 1-2 family home prices fell by 25% between 1990 and 1993 (see Table 1.1 above).

Credit Conditions and Existing Home Sales

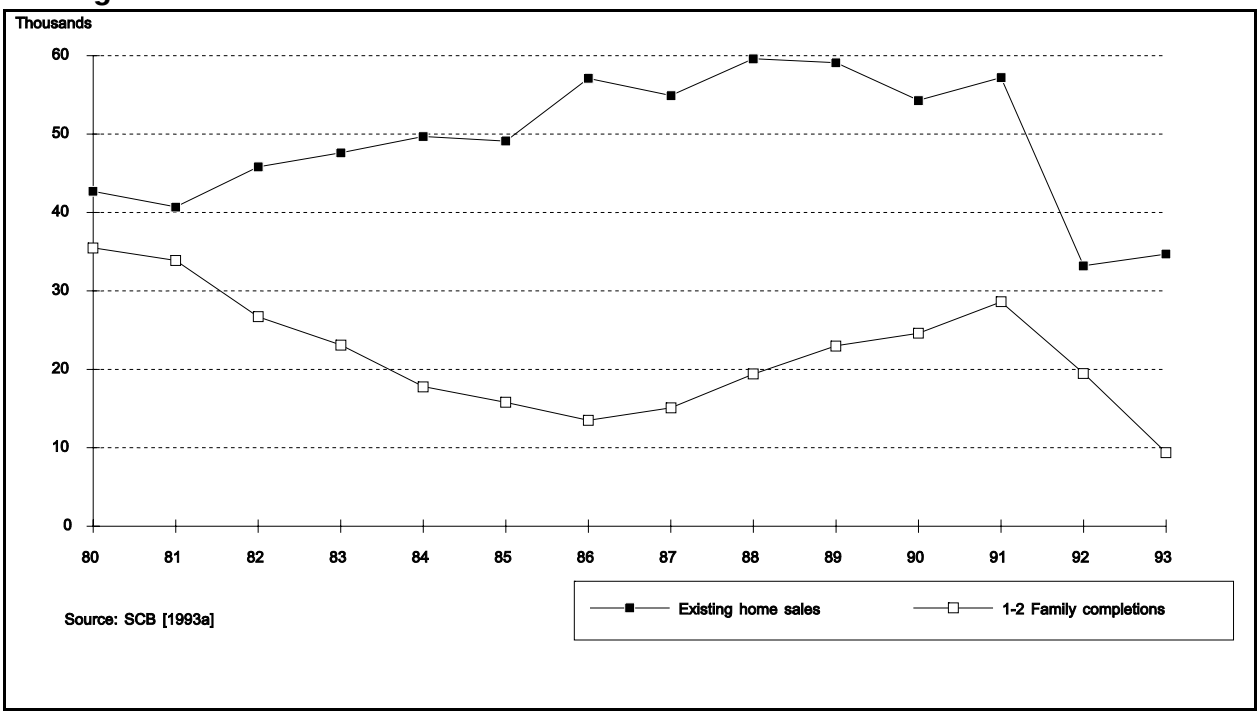
The dramatic decline in Swedish housing prices has created serious financial problems for all owners of residential real estate. The owners of 1-2 family houses and multi-family structures, however, face different problems.

1-2 Family Homeowners

For the owners of 1-2 family homes, the primary problem is that they have lost a substantial amount of the equity they had invested in their homes. Many of the boom period purchasers now even face negative equity. They are not likely to default on the loans, however, since Swedish lenders have recourse to all of their assets, not just the housing collateral. The result is that these households are locked into their existing home because they do not have the equity funds to meet the downpayment requirements on a new home.

Figure 4.12 shows a graph of the sales of existing homes and 1-2 family completions. There is a dramatic decline in existing home sales after 1991, both in absolute value and relative to 1-2 family completions. It is likely this situation will continue until housing prices recover sufficiently to allow homeowners an opportunity to move.[7]

Figure 4.12: EXISTING HOME SALES AND 1-2 FAMILY COMPLETIONS



[7] It is unusual that existing home sales and 1-2 family completions moved in opposite directions during the first half of the 1980s. This could be the result of the existing credit controls and/or of the mortgage interest subsidies provided for new housing production. In the Unites States, in contrast, new housing construction and existing home sales tend to move closely together.

Multi-Family Unit Owners

There are three major ownership classes for multi-family housing: private ownership, municipal housing authorities, and cooperatives. Each of these classes suffered serious losses due to the real estate crisis. The Swedish Federation for Rental Property Owners estimates that 1,100 private owners of rental properties became bankrupt in 1993. The status of the municipal authorities and the cooperatives creates further problems.

The municipal housing authorities are the largest owners of multi-family buildings. As non-profit organizations, they must charge high enough rents to cover their mortgage and operating costs. Particularly for those agencies that constructed units near the peak of the cycle, this may not be possible, given that higher rents are likely to cause higher vacancy rates. One major authority south of Stockholm is already in bankruptcy.

Cooperative ownership is also common for multi-family buildings. The cooperative association is the mortgage borrower, and the individual members make their payments to the association. Given the weak market conditions, many cooperative members are discovering that there are less expensive housing alternatives on the market. They therefore depart the cooperative, leaving the remaining members to bear their share of the mortgage payments. This is an unstable system, since the incentive to depart grows stronger with each

departure. It appears that the bankruptcy of many building cooperatives remains a serious threat.[8]

Conclusions Regarding Swedish Housing Demand

(1) The price fluctuations that occurred during the Swedish housing boom appear fully consistent with contemporaneous changes in the demand side factors. During the boom period (1985 to 1990):

(a) Real GDP was growing and unemployment rates were falling.

(b) Real interest rates were declining.

(c)Tax deduction rates for mortgage interest were not reduced.

(d) Loan supply expanded at a rapid rate.

(e) Housing subsidies were maintained at relatively high levels.

During the bust (1990 to 1993), these conditions all went in exactly the opposite direction. As a result, there is no need to refer to a real estate bubble in order to explain the Swedish house price cycle.

(2) A cyclical recovery in housing demand would normally lead to rising prices and production, with the specific timing depending on the macroeconomic conditions in Sweden. The current and forthcoming reductions in Swedish housing subsidies, however, make a significant recovery in housing demand much less likely.

[8] There are also cooperatives consisting of 1-2 family homes, and they face the same threat.

(3) The geographic distribution of recent Swedish housing production suggests that supply and demand were not adequately linked; the subsidy programs are a likely culprit. The long-run solution, of course, is to remove the subsidy programs that provided the incentives to produce unneeded housing. A short-run expedient would be to provide people and jobs an incentive to move to the already existing housing, but this seems unlikely given that the government already has serious budgetary problems.

(4) The large share of multi-family units in Swedish housing represents an imbalance comparable to the geographic problem. The imbalance is likely to be alleviated in the short run, since the municipal housing authorities are unlikely to produce many new units very soon, given the current market conditions. In the long-run, however, any biases toward multi-family construction by the municipal housing authorities should be eliminated.

(5) Rent controls remain an important element in Swedish housing markets, although, due to the weak market conditions, they are currently effective only in certain urban areas. In general, rent controls lead to lower production, poor maintenance, and grey market activity. Furthermore, the current system of Swedish rent controls, with the ceilings determined by the rents set on "comparable" units owned by the local authorities, leads to its own inequities when it comes to finding "comparables" for units which are special due to location, structure, or amenities.

On the other hand, rent controls are a response to serious social concerns regarding diversity in the community and fairness in access to housing in urban centers. Nevertheless, the current system of Swedish rent controls is a blunt instrument for achieving these goals. An alternative strategy would be to start with the goals and then determine the most efficient instruments of housing (and income redistribution) policy to achieve these goals. Given that the rent controls are generally not binding under the current market conditions, this is a practical time to remove them.

(6) Finally, to end with macroeconomic considerations, there are always important links from the macroeconomy to the housing sector and vice versa. We have already noted that the housing crisis was no doubt magnified by the Swedish recession after 1990. On the other hand, the recession was similarly magnified by the slowdown in the housing sector. Furthermore, housing is often a sector that leads an economy out of a recession, but with the current depressed conditions in Swedish housing markets, the housing sector is unlikely to provide a macroeconomic stimulus in the near future.

PART 5 COMMERCIAL REAL ESTATE

Commercial real estate markets in Sweden have just passed through a major boom and bust cycle. The cycle for real property prices (deflated by the CPI) is shown in Figure 5.1. The index (1980 = 100) for office building prices (in Stockholm) reached a high point of 452 in 1989, then fell to 144 by 1993. The index for industrial buildings (in all of Sweden), another category of commercial real estate, in contrast, only reached 105 in 1990 before declining. The various categories of commercial real estate thus appear to have performed very differently. The primary problems and issues are in office buildings. In particular, according to commercial real estate sources, industrial buildings and retail stores faced much lower vacancy rates than observed in the office building sector.

The cycle for real construction investment is shown in Figure 5.2. The index (1980 = 100) for nonresidential investment reached a peak of 109 in 1989 before declining. Nonresidential investment was thus substantially less volatile than residential investment. This comparison is somewhat distorted, however, because escalating land prices were an important part of the office building boom, but this does not show up in the real investment figures. Nevertheless, this emphasizes that the dramatic effects of the commercial real estate cycle are in prices, not production.

Figure 5.1: REAL PROPERTY PRICES

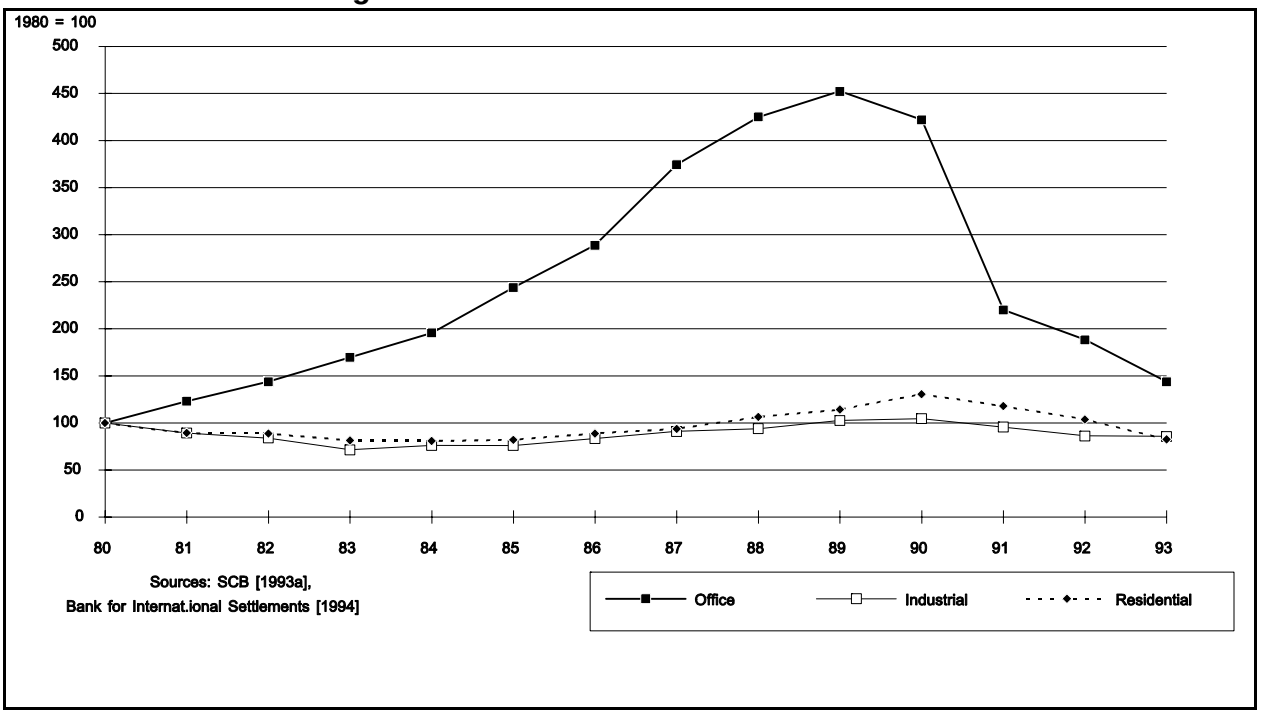
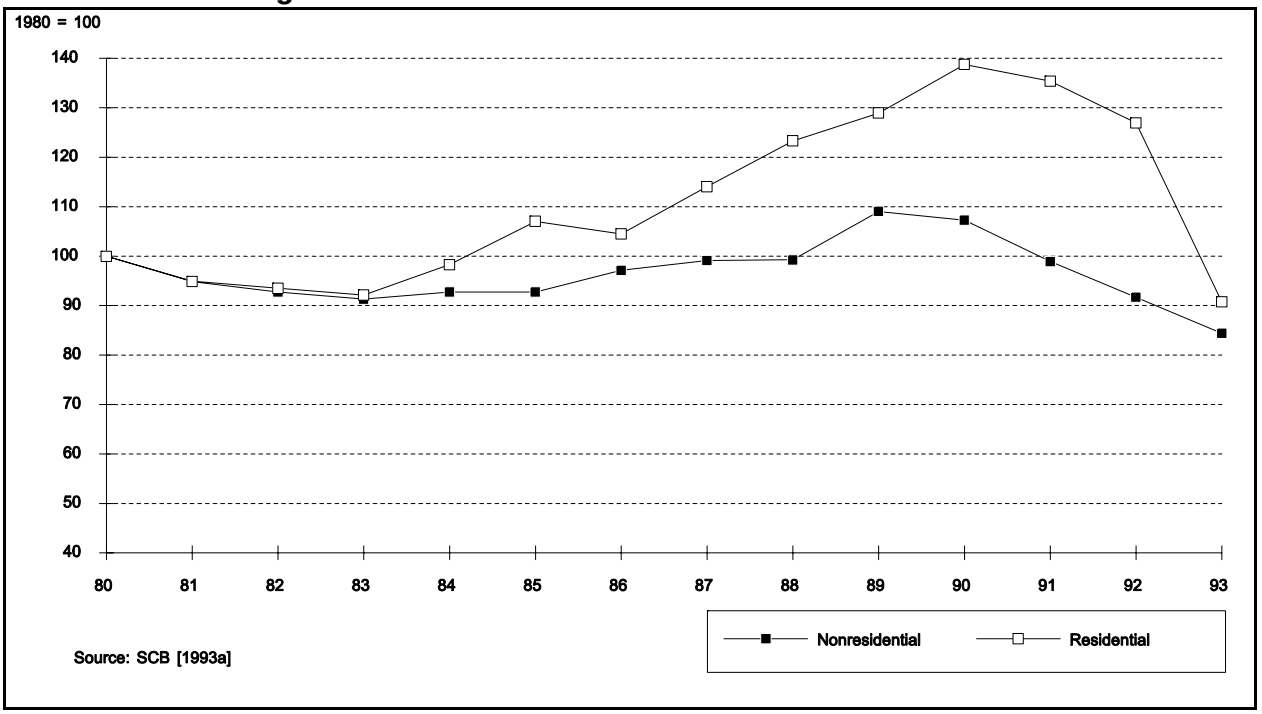


Figure 5.2: REAL CONSTRUCTION INVESTMENT



In this part, we analyze the causes and consequences of the commercial real estate cycle in Sweden. First we introduce the fundamental economic factors in commercial real estate markets. The next section analyzes the demand for office space over the cycle. Then we focus on the special role that credit played in the cycle. The last section summarizes our conclusions and policy recommendations.

Economic Fundamentals of Commercial Real Estate

Commercial real estate markets can be analyzed with the same basic stock-flow model developed in Part 2 and applied to the housing markets in Parts 3 and 4. In brief, asset prices tend to equilibrate the demand and supply for the real estate stock, rents tend to equilibrate the demand and supply for building services provided by the stock, and new construction activity responds to the profit opportunities created by the ratio of the asset prices to construction costs. In addition, since rents do not always rapidly reach the equilibrium level, vacancy rates may also vary as the demand and supply for space change.[1]

Commercial real estate markets, however, have some special features which should be noted when applying the stock-flow framework:

[1] Rosen [1986] applies the stock-flow model to the San Francisco office building market. Generally, however, there are few academic studies of commercial real estate markets.

(1)Commercial markets deal with a relatively small number of very large properties; that is, the commodity is lumpy.

(2)The construction period for a commercial project, from planning to completion, is long, perhaps several years.

(3)Information regarding future demand and forthcoming supply is often difficult for market participants to obtain.

(4)As a result of factors (1) to (3), the opportunities for speculative profits can be large.

(5)Investment activity depends greatly on credit availability.

As a result of these factors, investor profit expectations and credit availability are the two key components to be considered for a commercial real estate cycle. We now apply these concepts to the market for commercial office buildings.

The Market for Commercial Office Buildings

Office building demand is driven primarily by the space requirements for office workers. As of 1985, there were generally high expectations regarding the growth rates for office building space. For one thing, the sectors of high office space demand--finance, real estate, consulting--were all growing rapidly. For another thing, the space requirements per worker were growing, perhaps due to the expanding demand for computers and similar office equipment.

Table 5.1

OFFICE EMPLOYMENT AND SPACE REQUIREMENTS

(Compound annual growth rates)

Employment:	1980-1985	1985-1990	1990-1992
Office	2.5%	3.5%	1.6%
Government	1.2%	0.3%	-1.7%
Total	0.4%	1.0%	-2.9%
Space per worker	2.4%	1.5%	Not available

Sources: Employment: SCB [1993b],
Space per worker: Maisel [1989].

Table 5.1 provides information on the demand for office space in Sweden as the basis for these optimistic expectations. Office workers are defined here as employees in finance, insurance, real estate, and business services. Swedish office employment was already expanding more rapidly than government and total employment by 1985, and its growth reached the rapid rate of 3.5% annually between 1985 and 1990. Since 1990, the growth rate of office employment has slowed, but less so than the other categories. On the other hand, the government sector in Sweden is shrinking, and government office workers have been large users of office space.

The space per worker data in Table 5.1 is based on American office workers (see Maisel [1989]). As of 1988, Maisel estimates the average space per office worker to be 21.9 square meters (236 square feet). In contrast, the average office space per worker in Sweden is in excess of 30 square meters, perhaps the highest amount in the world (see Stockholms stad [1994]). This is a negative factor with regard to future growth. The trend toward working at home will also reduce the necessary space per worker at offices.

The expectation in 1985 of growth in office space demand was reinforced by rising office rents. Figure 5.3 shows the trend in nominal office rents for Stockholm and an average of other major European cities. Office rents were rising steadily in Europe all during the 1980s, and even more rapidly in Stockholm. The growth in office rents ended in Stockholm in 1989, and rents then declined sharply between 1989 and 1993. The decline in the rest of Europe was similar, but less sharp.

Figure 5.4 shows the corresponding pattern of nominal office building asset prices for Stockholm and the European average. Swedish office building prices rose more rapidly through 1990--and then fell to a much greater extent thereafter. It is also apparent from Figures 5.3 and 5.4 that the increase in office building prices relative to rents was much greater for Stockholm than for the European average.

Figure 5.3: NOMINAL RENT INDEXES, STOCKHOLM AND EUROPE

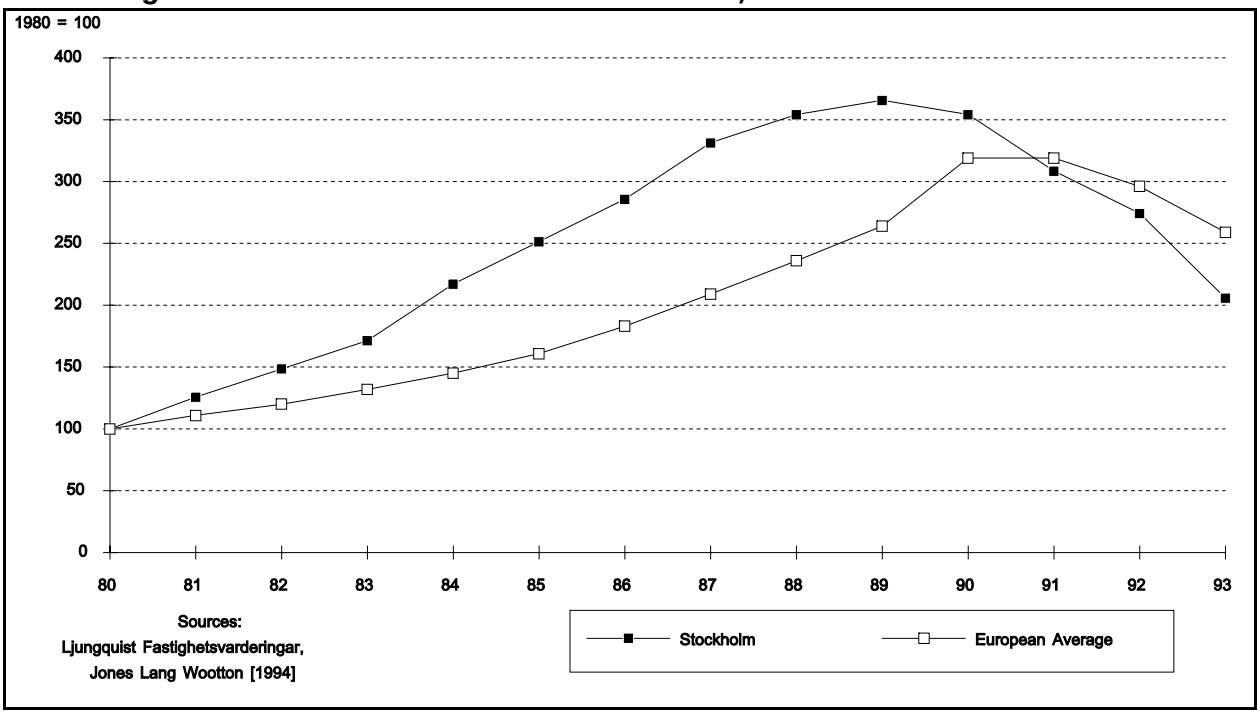


Figure 5.4: NOMINAL PRICE INDEXES, STOCKHOLM AND EUROPE

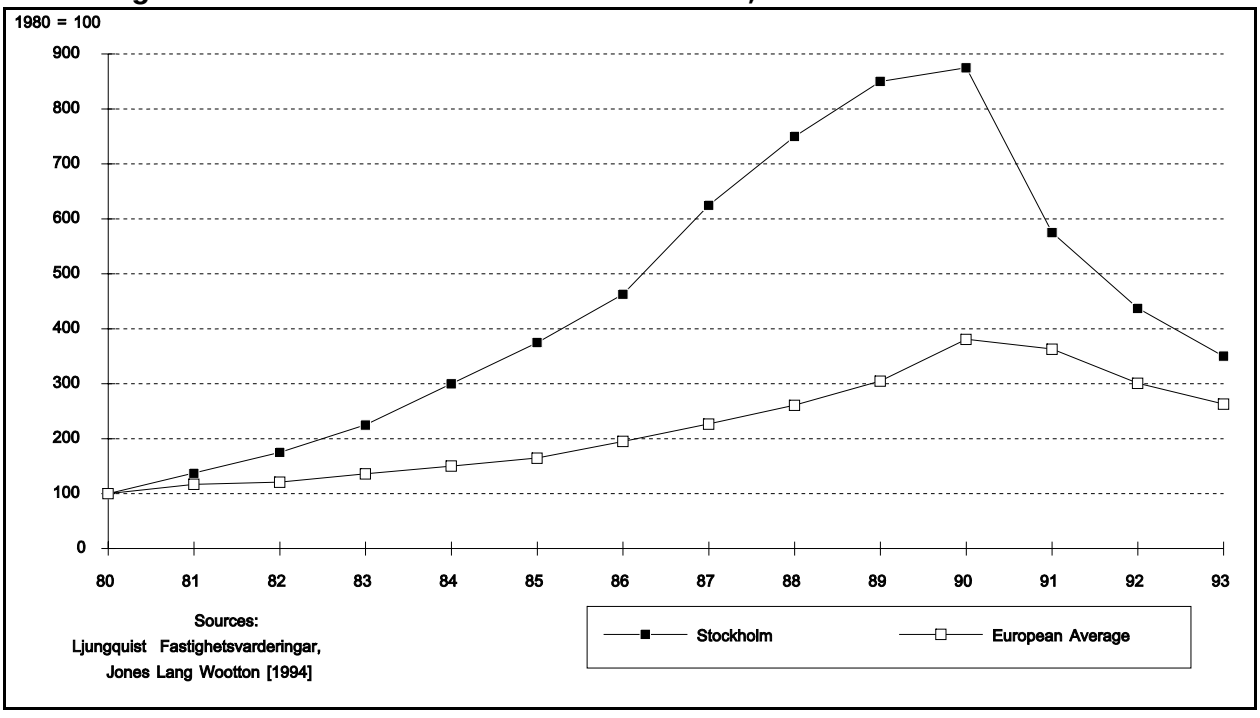


Figure 5.5: NOMINAL COMMERCIAL REAL ESTATE PRICES, VARIOUS CITIES

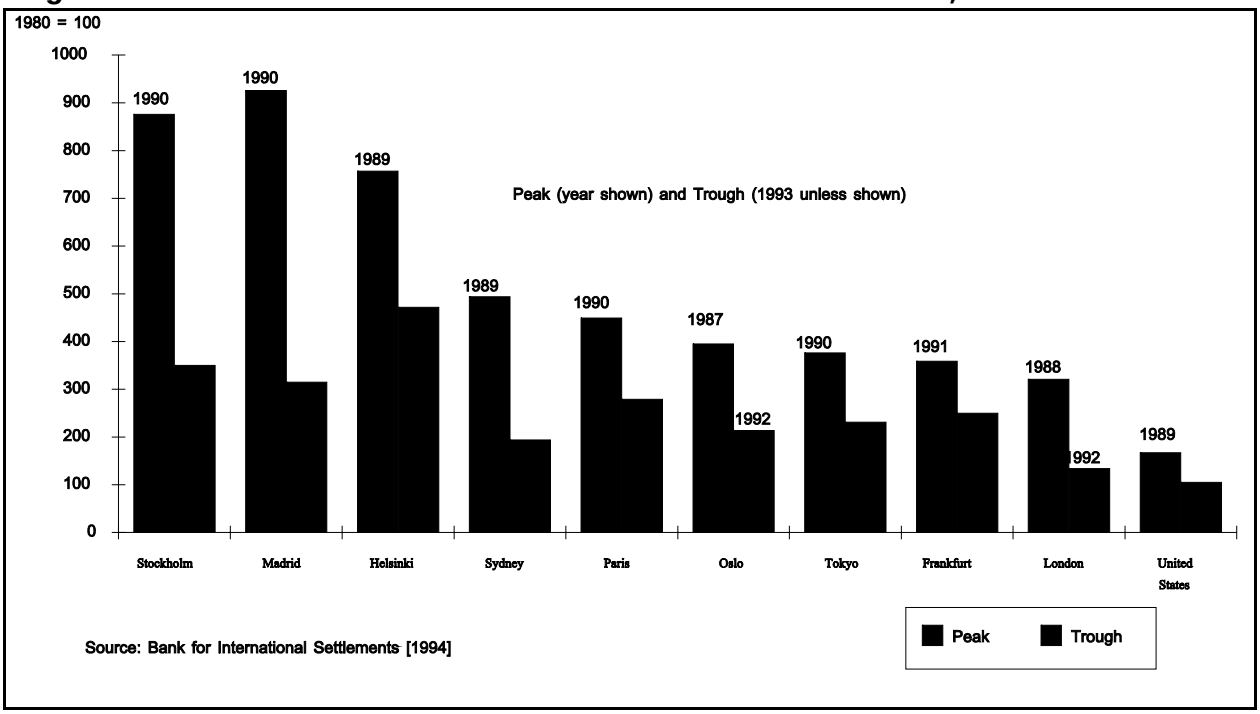


Figure 5.5 shows the peak and trough levels since 1980 for a cross section of 10 European cities, including Stockholm. It is clear that the office building boom was not a uniquely Swedish event. On the other hand, only in Madrid did office building prices rise more and fall more than in Stockholm.

We draw two main conclusions:

1. There was an economic basis for the high expected office building demand.

2. Office building prices in Stockholm grew substantially faster than in the rest of Europe.

The Role of Bank Credit in the Real Estate Cycle

First and foremost, the extreme form of the Swedish commercial real estate cycle was created by excessive bank lending. Of course, excessive lending was not the sole condition for the cycle. Both the general macroeconomic environment and the factors determining the specific demand for office space were independently deteriorating by 1990. Nevertheless, excessive lending stands alone as the critical necessary condition without which the dramatic real estate cycle would not have occurred. In this section, we analyze the role of bank lending in the real estate cycle.

We begin by developing a model and framework for analyzing the role of bank lending. Useful features for the model are that (1) it provides testable conditions which align with the facts,[2] (2) it integrates the role of fundamental factors with the evident speculative fever that occurred in these markets, and (3) it provides useful policy conclusions. In this part, we develop the case for the critical role of excessive lending, and then analyze policy proposals to provide protection against similar disruptions in the future.

[2] Discussions of the real estate crisis sometimes become tautological, because they confuse the observed effects of the crisis with its causes. Policy prescriptions that follow such an approach may deal with the symptoms of the last crisis, but allow another crisis to occur, perhaps with a slightly different pattern of symptoms.

The Wicksell/Fisher Theory Applied to Real Estate Markets

We will apply the Wicksell/Fisher cumulative process theory of business cycles to the real estate markets as our basic framework.[3] The Swedish real estate crisis, in fact, provides a textbook application of the Wicksell/Fisher theory. The following paragraphs describe the stages of the process, which are also illustrated with Swedish real estate and loan market data in Figures 5.6 to 5.9. The steps of the Wicksell/Fisher cumulative process, as applied to the Swedish real estate crisis, are as follows:

(1) Real estate markets are initially operating under favorable fundamental economic conditions, with demand high relative to the existing stock of real estate assets. In this setting, the banks decide (for reasons discussed at length below) to expand greatly the supply of real estate loans, offering loans at favorable contract terms and interest rates. This further expands the demand for real estate assets. Figure 5.6 shows the large increases in bank and other lending in Sweden starting in 1986.

(2) The rising demand for real estate drives up real estate prices. We have seen in Figure 5.1 the increase in commercial real estate prices that accelerated in 1986.

[3] See Knut Wicksell [1898] and Irving Fisher [1922] and [1933].

Figure 5.6: CREDIT EXTENDED AS A PERCENTAGE OF GDP

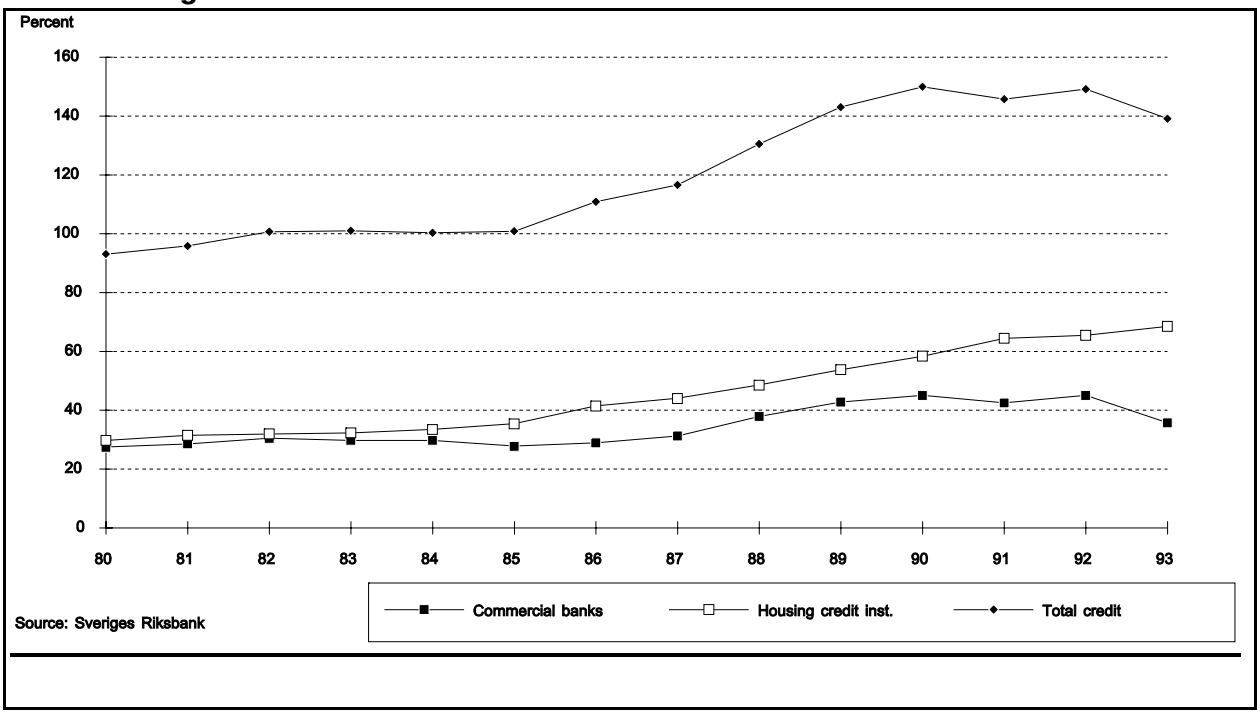


Figure 5.7: NOMINAL AND REAL MORTGAGE RATES

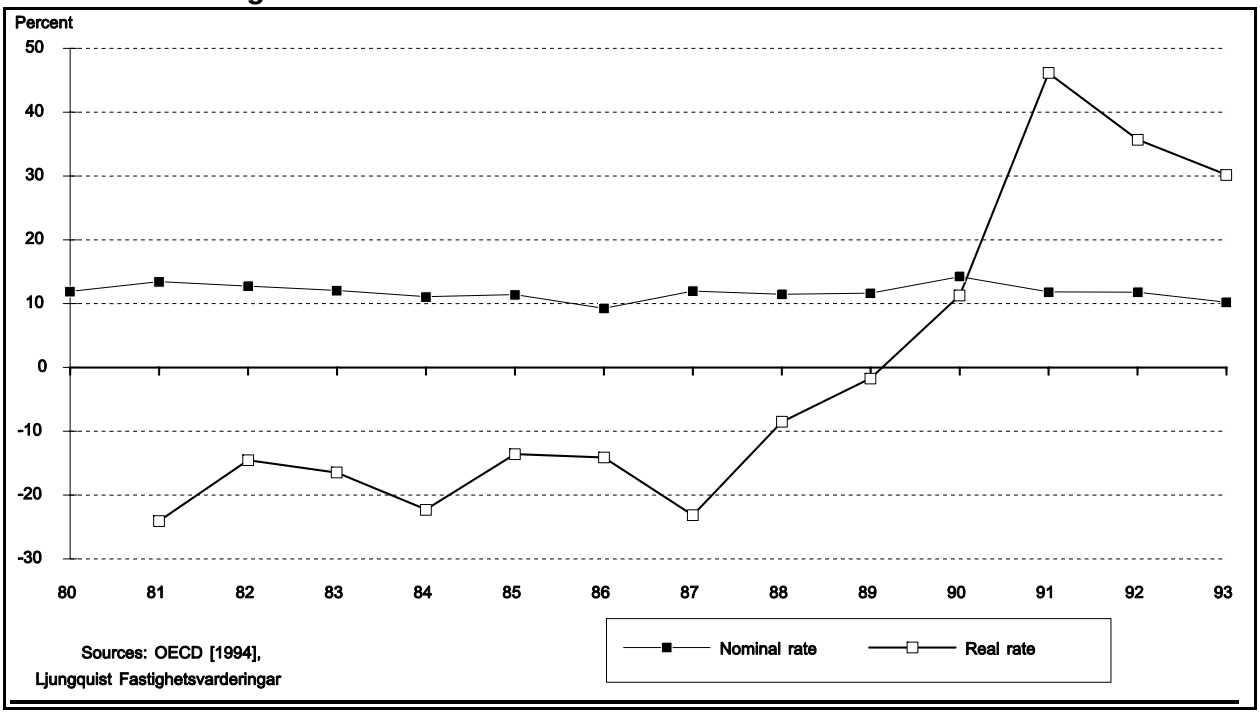


Figure 5.8: MACROECONOMIC CONDITIONS

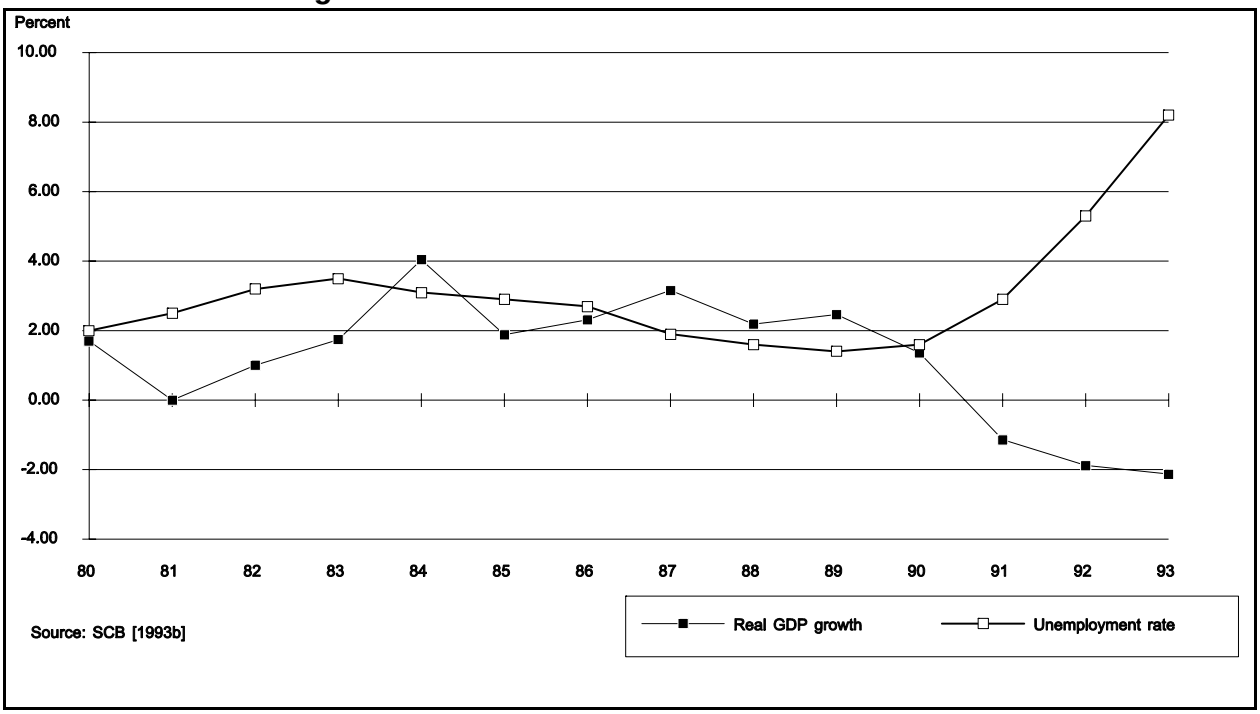
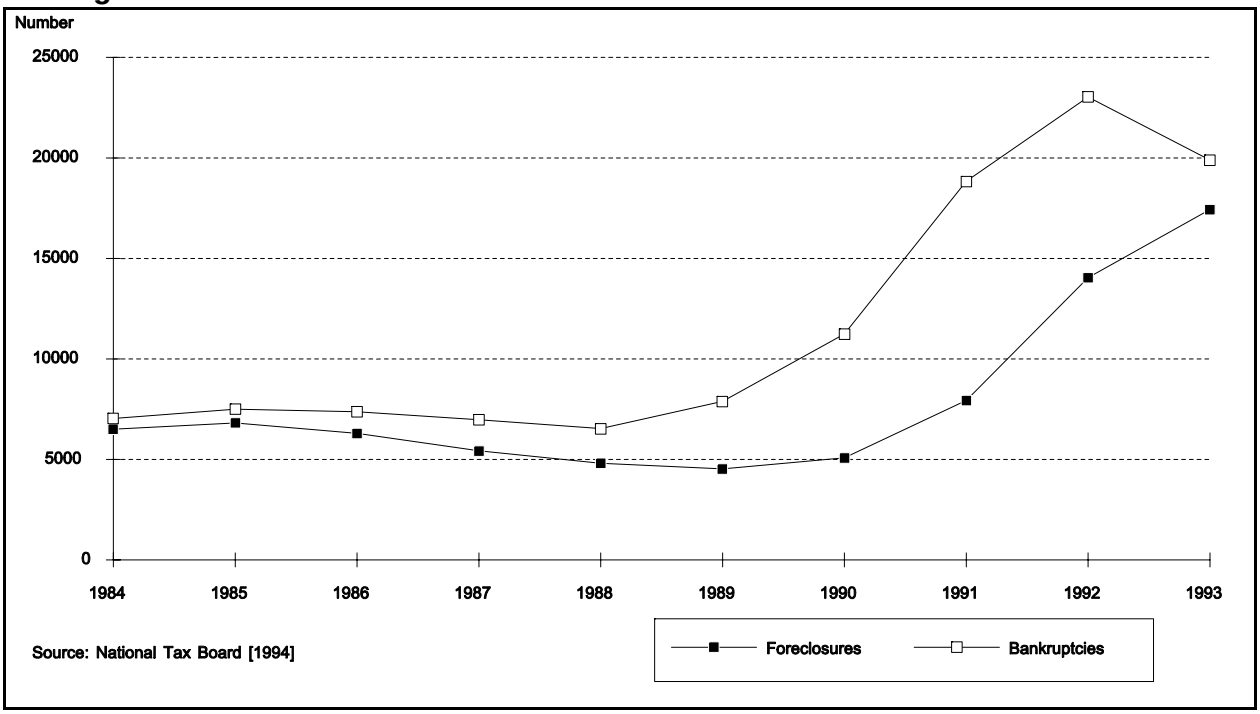


Figure 5.9: REAL ESTATE FORECLOSURES AND TOTAL BANKRUPTCIES



(3) The perceived real rate of interest on real estate loans falls even further as investors extrapolate the high current rate of asset appreciation to the future.[4] This expands the boom conditions, leading to rising rates of new construction and a self-fulfilling cumulative expansion. Figure 5.7 shows the negative real interest rates created by the high appreciation in commercial real estate property prices.

(4) Unfavorable changes in fundamental conditions reduce the demand for office space and real estate assets generally. The rate of asset appreciation thus slows, raising the real rate of interest in real estate loan markets. Figure 5.8 shows that the macroeconomic conditions, measured by real GDP growth and the unemployment rate, deteriorate rapidly after 1990.

(5) The increase in real interest rates reinforces the deteriorating fundamental conditions, leading to a cumulative contraction, with demand and prices spiraling downward together. We have seen in Figure 5.2 the rapid decline in residential and nonresidential real investment in structures after 1990.

(6) Financial distress rises, first among real estate investors, then with repercussions spreading to bank lenders, leading to a general collapse of real estate prices and construction activity.

[4] The real rate of interest on real estate loans is computed as the nominal rate of interest minus the same period's real estate price inflation rate.

The markets may remain in this depressed state for a long period of time. Figure 5.9 shows the rapidly rising number of real estate foreclosures and total bankruptcies in Sweden after 1990.

(7) Eventually, fundamental conditions improve, both in the economy generally and in the real estate markets specifically, thus initiating a new cycle of cumulative expansion.

The Wicksell/Fisher cumulative process explanation of the Swedish commercial real estate cycle is appealing for three main reasons. First, it rings true, as the graphs help to confirm. Second, the explanation integrates the speculative excesses that were observed in these markets with the basic role of fundamental factors. In other words, we can explain the optimistic expectations on the basis of fundamental factors, rather than on the less secure footing of an unmotivated speculative bubble. Third, the explanation identifies bank lending as the pivotal factor creating the cumulative expansion during the boom and the cumulative contraction during the collapse.

Although the Wicksell/Fisher framework identifies bank lending as the pivotal factor, the model does not address, at least in any detail, the willingness of banks to participate in this process. The banks, after all, are major losers in the process, and thus it is essential to understand why they behaved as they did. We now develop an explanation for bank behavior. We begin with a summary

of the evolution of the Swedish banking system from strict regulation to deregulation.

Financial Regulation and Deregulation[5]

Low and stable interest rates were the cornerstone of Swedish monetary policy beginning after World War II. To counter the resulting tendency for rapidly rising loan quantities, the Riksbank (Sweden's central bank) regulated lending activity with a variety of tools, including quantitative limits, liquidity requirements, moral suasion, and foreign exchange and capital flow controls. The extent of the regulatory control varied over the years, but reached a highly restrictive status during the 1970s, in part in an attempt to free resources for government housing programs and to help finance the government deficits.

In the early 1980s, the banking system also came under competitive pressure from forces that were developing in both Sweden and many other countries. These included:

New institutions. In many countries, nonbank intermediaries began to expand rapidly, taking advantage of the more severe restrictions placed on banks. In Sweden, the rapid growth of finance companies during the 1980s illustrates the process.

[5] The discussion in this and the following three sections is based on descriptions provided in Bank Support Authority [1993], Eklund, Lindbeck, Persson, Söderström and Viotti [1993], Englund [1990], Jonung [1994], and by the International Monetary Fund (IMF [1993]).

New markets. The Swedish money market grew rapidly. This market allowed high quality bank borrowers to meet their credit needs in the capital markets directly.

Off-balance sheet financing. Banks began already in the 1970s to act as brokers and earn fees for loan transactions that were carried out on an off-balance sheet basis. This allowed the banks to use their customer relationships, yet satisfy the regulations.

Globalization of financial transactions. On a global basis, the flow of information was expanding, the costs of financial transactions were falling, and capital and foreign exchange restrictions were being removed. Multinational firms also carried out more transactions directly for their own account. International competition thus increased for the Swedish banks.

As a result of the competitive forces pressing on the banking system, the decision was taken to deregulate the Swedish financial and banking system, just as the decision was taken in most other industrial countries. The Swedish deregulation took place in stages during the 1980s. The year 1986 is useful as a benchmark, given that loan rate ceilings were formally abolished in 1985. Sweden was actually among the last of the industrial countries to deregulate. The deregulation of the United States financial markets, for example, began as early as 1980.

Bank Lending under Deregulation

We have already seen in Figure 5.6 the effect of deregulation on total lending activity[6]. Figure 5.10 shows commercial bank lending as a percentage of GDP for Sweden and four other countries (see IMF [1993]). For each country, the left bar refers to the year in which deregulation was initiated and the right bar refers to the year that deregulation was deemed to be completed (by the IMF). It is apparent that Swedish bank lending as a percentage of GDP is within the general range of the other countries, although a bit lower. The change in Swedish lending due to deregulation, on the other hand, is somewhat greater than in the other countries.[7]

The expansion in bank lending created a major shift in bank portfolios, toward loans and away from other debt securities. Since loans generally have much shorter maturities than do traded debt securities, this had the benefit of lowering the interest rate risk the banks faced. The primary effect of deregulation on bank portfolios, however, was to expand the exposure to credit risk. This raises the question: why did banks use deregulation as an opportunity to take on increased credit risk.

[6] This picture may exaggerate the effects of deregulation, since some of the loan growth reflects the transfer of loan transactions to an on-balance sheet basis following the deregulation.

[7] The market share of total lending available to banks is continuing to fall in many countries as a result of further pressures on intermediation activity. Therefore, it is not clear what is the long-run equilibrium level of bank lending.

Figure 5.10: BANK LENDING AS A PERCENTAGE OF GDP

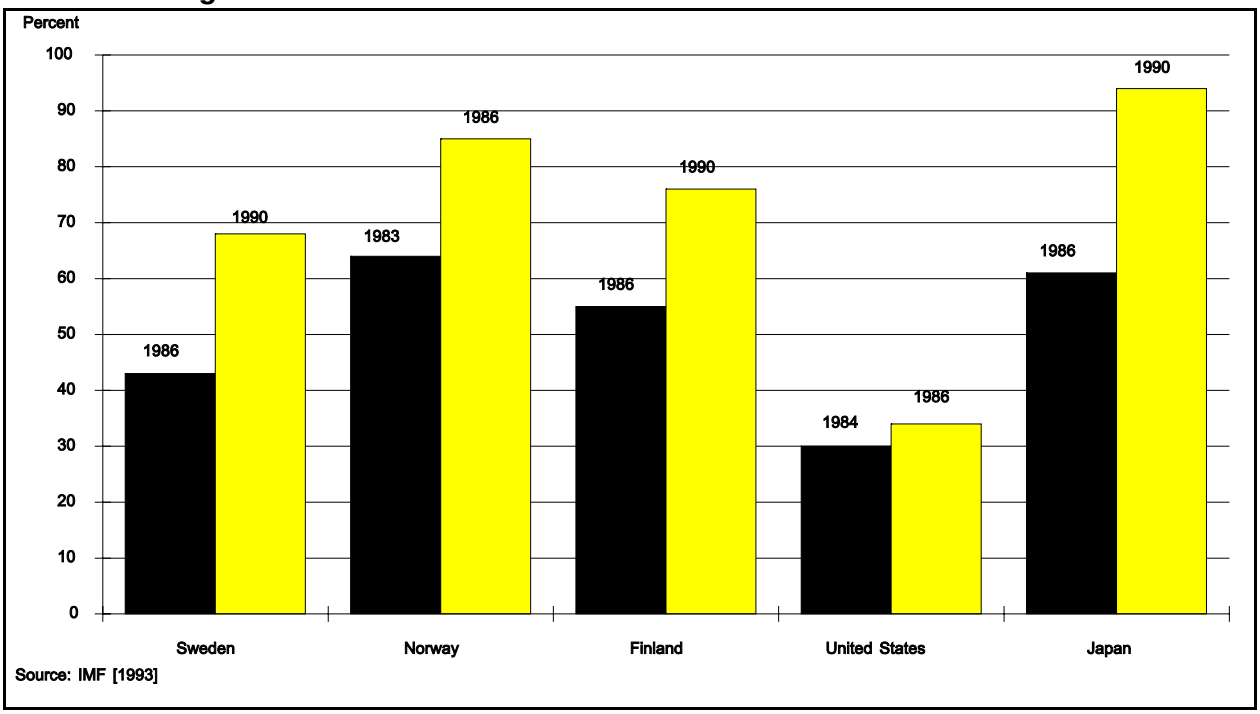
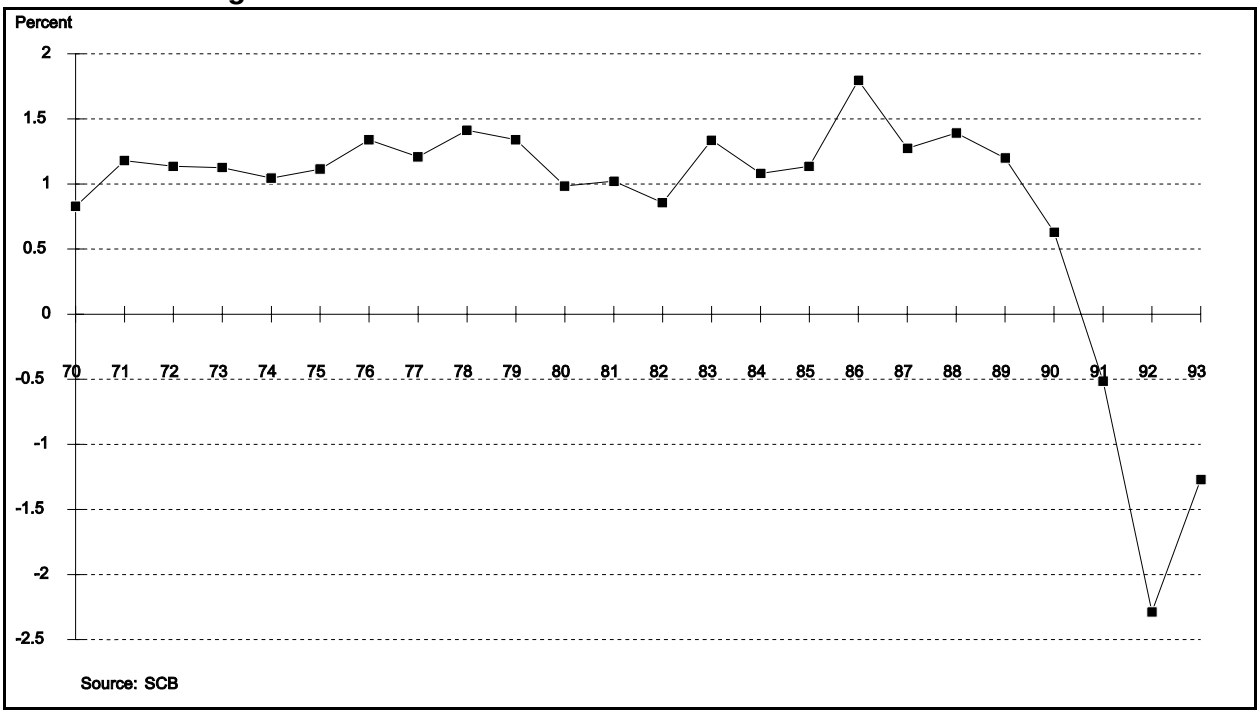


Figure 5.11: COMMERCIAL BANK RETURN ON ASSETS



Why Did Banks Raise Their Level of Credit Risk?

To answer this question, the key point to recognize is that deregulation was a policy borne of necessity. Prior to deregulation, bank profit rates were low as a result of the competitive pressures. Figure 5.11 uses the return on assets (ROA) between 1970 and 1993 as the profitability measure. A minimum goal for a bank's ROA is at least 1 percent: for a bank with a leverage ratio of 12.5 to 1 (that is, a capital ratio of 8%), a 1% ROA is the equivalent of a 12.5 percent return on equity (ROE).[8] It is evident from Figure 5.11 that Swedish bank profitability was relatively low during the early 1980s.

Banks used the opportunity of deregulation to raise profits by lending more. Riskier loans were probably also an inevitable consequence of this strategy. The marginal tiers of new loan customers are likely to be more risky as banks enter new loan markets. Riskier loans were probably also desired by the banks, if it meant they could raise their expected profits.

The Swedish bank experience appears not to be unique when compared with banking in other countries and at other times. Banks in most countries faced the same profitability problems, obtained similar expanded lending powers, and proceeded to lend (and lose)

[8] The return on equity is an alternative measure of bank profitability. The return on equity equals the return on assets multiplied by the leverage ratio (assets/equity).

large sums of money on risky loans. Considering other periods of time, we have already noted that the theories of Knut Wicksell and Irving Fisher, developed at the beginning of this century, took for granted the proclivity of bankers to expand lending during boom periods, and then later to regret it. For a more recent example, witness the major expansion of bank lending to developing countries that occurred at the beginning of the 1980s.

Our conclusion is that the expansion of risky lending by Swedish banks during the last part of 1980s was an inevitable attempt to raise bank profitability in the face of competitive pressures and expanded powers. In addition, as Eklund, Lindbeck, Persson, Söderström, and Viotti [1993, p. 15] put it, "This is clearly a systemic crisis, which may be regarded as a belated extra cost for many decades of credit market regulation."

Why Did Banks Expand Real Estate Loans In Particular?

Having argued that the competitive and deregulated environment of the late 1980s made the expansion of risky bank lending inevitable, it is appropriate to consider why the expansion in lending became so concentrated in real estate. Swedish bank statistics do not identify real estate loans as a separate lending category, so it is not possible to identify the percentage of new Swedish lending that was directed to the real estate sector. The lack of separate statistics for real estate lending may itself also indicate a problem. The available estimates, however, indicate that a substantial part

of the loan losses taken by Swedish banks can be attributed to real estate.

There are a number of reasons for the attraction of real estate lending to Swedish bankers during the period 1986 to 1990:

(1) Fundamental conditions in commercial real estate markets turned favorable, as discussed above. Real estate investors were enthusiastic and they transmitted this enthusiasm to the bankers.

(2) Swedish banks were significantly expanding their real estate lending. Given the need for new customers, this area seemed attractive. Similar strategies were also being adopted by banks in many other countries.

(3) Real estate lending can create a self-generated expansion of demand, because an initial loan expansion is likely to raise real estate demand and real estate prices (at least in the short run). As prices and activity rise, the demand for loans expands.

(4) Real estate lending in Sweden appears not to have been directly regulated.[9] Indeed, Swedish banking regulations gave a priority to collateralized lending, and real estate loans met this criterion. In contrast, in the United States for example, commercial banks were not even allowed to make real estate loans until the beginning

[9] It has been suggested that Swedish banks did operate with conservative "in-house" loan to value rules on real estate loans until about 1985. These were disregarded during the boom, but have been reinstated more recently.

of the century. Real estate lending activity for both commercial banks and Savings and Loan Associations (S&Ls) was deregulated during the early 1980s, but this activity has been re-regulated following the bank and S&L crises.[10]

The expansion in real estate lending thus appears to be a natural path for a banking system in need of new, profitable, and expanding lending opportunities.

Why Did Bank Supervisors Allow the Level of Credit Risk to Rise?

The actions of the Swedish bank supervisors, as well as that of the banks, can be questioned. Bank supervisors, after all, are responsible for bank soundness. Why did the supervisors allow loan quality to deteriorate? The answer, we suggest, is that the supervisors saw the world very much as did the banks. That is, the supervisors also saw deregulation as an opportunity for the banks to raise their profits through expanded lending.

Nevertheless, it did not require the benefit of hindsight to observe that the expansion in bank lending, and particularly the expansion in real estate lending violated several traditional rules of sound banking:

(1) Do not concentrate the loan portfolio in specific sectors of the economy (such as real estate).

[10] See Litan [1992] for an accessible summary of American banking regulations regarding real estate loans.

(2)Take great care when entering new loan markets and when dealing with new loan customers.

(3)Carefully evaluate the value of collateral and the cash flows that are available to service the loan.

Bank supervisors could have recognized the deviations from traditional banking practice that were occurring. Of course, the supervisors were probably as inexperienced as the bankers in dealing with competitive and deregulated loan market activities. It thus appears that the bank supervisory system, which functioned acceptably well for a highly regulated banking system, will need reform if it is to safeguard a banking sector operating under the pressure of a competitive system and the freedom of a deregulated environment.

The Bank Lending Crisis

The events of the Swedish bank crisis are well known to most Swedish readers, and have been chronicled in detail in Bank Support Authority [1993] and Macey [1994]. Here we will simply summarize the key facts relevant to our discussion.

The crisis was initiated in 1990 when the finance company Nyckeln suspended payments following major losses on real estate loans. A complicating factor was that, for many of Nyckeln's loans, the collateral was not directly real estate, but shares in a real estate holding company. Soon thereafter, the banks began to suffer major loan losses themselves, including losses on loans to finance companies. Between 1991 and 1993, the Swedish government provided

loans, capital injections, and guarantees to some of Sweden's largest banks. In December, 1992, the Swedish parliament passed a measure providing a blanket guarantee to cover deposits and other specified bank debts, their subsidiaries, and certain state-affiliated credit institutions.

By the end of 1993, the accumulated cost was about SKr74 billion, equal to about 5% of GDP (see OECD [1994]). Both Nordbanken and Gota Bank (including their separate "bad banks" Securum and Retriva) became fully state owned. Other major banks, including Första Sparbanken (now part of Swedbank) and Föreningsbanken, received major government support.

It appears that the bailout of the Swedish banking system has been carried out so far in an effective manner. It was essential that the bank guarantees be provided promptly and firmly, and they were. The various loans and equity injections appear to have been provided equally efficiently.

The policies regarding bad real estate loans deserve further praise. The banks have been allowed to hold the real estate collateral, or to transfer it to separate subsidiaries. They have also been given latitude to "workout" the problem loans with the developer, thus retaining the developer's interest and expertise in the project. Finally, the property taxes on commercial properties were abolished in 1993. These policies provided the Swedish commercial real estate markets a better chance to recover.

In the United States, in contrast, the government's cost for the Savings and Loan and commercial bank crises was raised by the decision to force the institutions to sell as much real estate as possible and as rapidly as possible. This necessarily deepened the decline in real estate prices, thus increasing the costs of resolution. Bank supervisors in the United States were also more inclined to force the banks to take over the properties than to allow workouts. At one point, American bank supervisors even required banks to hold loss reserves against still current loans, on the prospect that the loans might default at a later date. This behavior represents a principal-agent conflict. The bank supervisor--the agent--enhances his own reputation, or avoids responsibility for new problems, by enforcing very tough conditions on the banks. The strong enforcement, however, actually raises the overall cost of the bailout to the government.

Conclusions Regarding Swedish Commercial Real Estate

The commercial real estate cycle in Sweden has two primary causes: (1) a group of optimistic investors and developers who expected to profit from purchasing and producing commercial real estate, principally office buildings; (2) a group of equally optimistic bankers who were willing to lend them money for this purpose. The optimistic expectations of both groups were based on a plausible view of rising demand for office space. This was also a world-wide phenomena. The very large increases in office building

prices, however, made the Swedish cycle exceptional. We attribute the exceptional increases in property prices to the willingness of Swedish banks to expand their real estate loans, thus creating a cumulative process in which loans chased real estate and real estate chased loans.

The direct losses suffered by the real estate investors and developers certainly reduced their own wealth, but this does not provide a basis for any new government or policy interventions in these markets. There are, however, two recommendations which might reduce the likelihood of such cycles in the future:

(1) Real estate markets, and especially commercial real estate markets suffer from an information problem, namely that similar investments may be carried out simultaneously because developers are not aware of the plans of others. A similar idea has been used by Grossman [1988] and Gennotte and Leland [1990] to explain stock market crashes. The solution is to provide more mechanisms for information sharing. The collection and publication of more information on commercial property supply, rents, prices, and vacancy rates would be a good starting point.

(2) A switch from debt to equity as the primary source of real estate finance would reduce the deadweight costs that arise when default on debt securities creates bankruptcy. In the United States, the use of Real Estate Investment Trusts (REITs) is now expanding rapidly for this reason. The REITs are basically mutual funds that hold

real estate property. They function as tax-free conduits, since they pay no income taxes as long as all of their net rental income and capital gains are passed through to their shareholders. REIT shares trade on the stock markets.

Sweden already has publicly traded real estate companies, but they are taxable operating companies that carry out real estate construction and development activity. REITs, in contrast, are basically passive portfolio managers of real estate properties, which is the source of their tax-free status. The introduction of REIT entities in Sweden would likely provide new sources of capital for commercial and multi-family residential properties.

Turning next to the role of banks in the crisis, there are further policy recommendations. They fall in two classes, those regarding the completion of the bank bailout, and those regarding longer run bank regulation and supervision.

The major remaining bailout issue concerns the procedures and timing for removing the blanket guarantee. The guarantee, of course, provide an incentive (a moral hazard) for banks to carry out risky strategies, since the banks keep the profits if the strategy succeeds, while the government faces the costs if it fails. One can, however, exaggerate the propensity for such behavior, given that the shareholders (or government) have substantial equity at risk, and the managers have their reputations at stake. Nevertheless, two principles seem clear:

(1) Bank supervision should remain extremely vigilant as long as the government's blanket guarantee stays in place. In addition to reducing lending risks, tight supervision gives the banks incentive to accumulate enough equity capital to allow the guarantee to be removed.

(2) The blanket guarantee should be removed as quickly as possible. In the meantime, the banks should pay fees for the guarantee, and the fees should be higher the longer the time span and the lower the bank's capital ratio.

There are also two proposals concerning longer-term changes in bank regulation and supervision:

(1) Risk-based capital requirements should be rigorously enforced based on the Basle capital ratios. In particular, capital lost through bad loans should be replaced rapidly.

(2) Commercial bank real estate lending should be more carefully supervised, at least as long as the government's blanket guarantee remains in place. The supervision should focus both on the cash flow requirements for debt service and the loan to value ratios (LVR). In the United States, LVR ceilings were recently reduced from about 0.85 to 0.60. This is not a foolproof solution, of course, since appraisal values are not always accurate, but it goes a long way toward controlling the cumulative expansion process created by bank lenders and real estate investors.

PART 6 THE RESIDENTIAL REAL ESTATE OUTLOOK TO THE YEAR 2000

Swedish policy toward the residential real estate sector is in the process of a major reappraisal. Given the recent real estate crisis and the currently weak macroeconomic conditions in Sweden, expansionary real estate sector policies would normally be implemented at this point. On the other hand, the recent real estate crisis was due in important part to past subsidy policies, implying that the real estate markets will perform better with less government intervention. The large current government budget deficit also makes this an opportune moment to reduce real estate sector interventions.

To evaluate these fundamental issues of Swedish real estate sector policy, it is important to quantify the amount of new construction activity that is likely to evolve in the coming years. In this part, we develop projections for residential real estate construction to the year 2000, to help frame the forthcoming policy reappraisals. The methodology employed can be interpreted within the stock-flow model of real estate markets. The stock-flow model was already introduced in Part 2 and applied to the mortgage interest subsidy program in Part 5, but it is useful to review it here in the context of housing construction projections.

The Stock-Flow Model, Mortgage Subsidies, and Housing Projections

The effects of reduced mortgage interest rate subsidies on new housing construction can be summarized in a series of steps based on the stock-flow model:

(1) New housing construction responds to Tobin's q, defined here as the price of existing homes divided by construction costs net of the present value of the subsidies. Reduced subsidies would raise the net construction costs and thereby lower new construction activity, everything else being the same.

(2) As a result of reduced amounts of new construction, the stock of housing would fall relative to the level that would have otherwise occurred.

(3) The price of existing homes would adjust to maintain equilibrium between the stock of housing and housing demand. Thus, if the stock of housing declines, home prices would rise to the level necessary to cause a decline in the amount of housing demanded equal to the decline in the housing stock. The decline in the housing stock and the decline in the amount of housing demanded would occur pari passu. (The decline in the amount of housing demanded is a movement down the housing demand curve; the position of the housing demand curve itself does not change).

(4) In the new long-run equilibrium, three conditions are satisfied with respect to the effects of lower subsidies:

(a) The increase in the price of existing homes and the decline in the present value of the subsidies per home would be equal.
(b) The decline in the housing stock and the amount of housing demanded would be equal.
(c) The cumulative decline in housing construction would equal the decline in the amount of housing demanded.

In principle, the cumulative decline in housing construction can be measured by the decline in the amount of housing demanded relative to what it otherwise would have been at the final date. The decline in housing demanded, however, depends on the increase in housing prices and on the price elasticity of housing demand, and neither amount is currently known. The increase in housing prices could be estimated as the decline in the present value of the subsidies per home, but this information is also not available. The price elasticity of housing demand could be estimated with historical data for existing home prices and the amount of housing demanded, but the Swedish census provides housing data only at 5-year intervals.

Consequently, we follow a less ambitious path, which is to project the level of the amount of housing demanded on the basis of its two key demographic determinants, population and occupancy rates. Falling subsidies and rising house prices, of course, influence occupancy rates, but their effects are incorporated here only in a qualitative way. However, a sensitivity analysis of alternative occupancy rate assumptions is provided.

Population Projections

Swedish population projections by age are available from SCB annually for 1990 to 2000. More recently, actual population data for 1993 have become available. Table 6.1 shows revised projections based on the actual 1993 population data.[1]

The projected population change from 1990 to 2000 is 376,000 people, approximately 100,000 more people than the actual change from 1980 to 1990. A comparison of the population changes by age for the decades of the 1980s (actual) and 1990s (revised projection) shows little pattern, with some age groups projected to change much more during the 1990s, and others much less. Furthermore, more than half of the population change during the 1990s is accounted for by the age group under 15, a group not directly influencing household formations.

Given the complex pattern of population changes by age during the 1990s, it is unclear prima facie whether the projected population changes are likely to have a positive or negative influence on housing demand during the 1990s relative to the 1980s. Consequently, it is essential to apply a systematic methodology to transform the population data into a measure of housing demand. Two primary methods are available to accomplish this: housing demand by age and total

[1] The ratio between the actual 1993 value and the previously projected 1993 value for each age category was computed and then applied to the SCB population projections for the years from 1994 to 2000.

occupancy projections (sometimes referred to as household formations).

Table 6.1

REVISED POPULATION PROJECTIONS

(Population in Thousands)

Age Group	Actual 1980	Actual 1990	Project 2000	Change 1980-1990	Change 1990-2000
0-14	1615	1548	1770	-67	222
15-19	579	563	497	-16	-66
20-24	554	601	512	47	-89
25-29	579	616	606	37	-10
30-34	660	577	622	-83	45
35-39	622	585	627	-37	42
40-44	479	655	574	176	-81
45-49	434	613	587	179	-26
50-54	455	467	636	12	169
55-59	499	415	590	-84	175
60-64	479	424	436	-55	12
65-69	443	443	376	0	-67
70-74	382	394	364	12	-30
75-79	273	319	327	46	8
80-84	163	220	246	57	26
85+	100	150	198	50	48
Total	8316	8590	8966	274	376

Source: SCB [1993b] and author's calculations.

House Demand By Age

The housing demand by age method was developed in a study by Mankiw and Weil [1989] (MW), and recently applied to Swedish data by Heiborn [1993].[2] The demand for housing of each household is assumed to be an additive function of the demand by age of each of its members. Using a cross-sectional database indicating the housing assets and member ages of households, housing demand is estimated based on the age structure of the household:

$$(6.1)\quad H^D = \sum_{a=1}^{A} H_a \, N_a .$$

where

H_a *is the housing demand of individuals of age a,*

N_a *is the number of individuals of age a.*

Although the MW method is conceptually appealing, several serious problems arise in using it to project housing demand:

(1) The age demand parameters (H_a) subsume all other economic characteristics that are associated with the particular cohort of people in the cross-section sample used, but these characteristics may not apply to people of the same age in the forecasting period.

[2] Heiborn projected housing demand by age only to 1989.

For example, the housing demand of a forty year old person in 1980 may be much less than the housing demand of a forty year old person in 2000 because the person in the earlier cohort had a lower lifetime income (assuming that lifetime income has generally risen over time). This effect creates a strong downward bias in the MW demand projections.

(2) The database needed for the estimation is very special, since it must combine the age of household members with the value of the housing demanded. The result is that the data used are often from an earlier period and represent only a small sample.

(3) A rule of thumb must generally be used for rental units to translate the rent paid to the unit's asset value.

These drawbacks to the demand by age method led us to adopt the total occupancy projection method.

Total Occupancy Projections

Housing units are occupied by households, either as their primary residence or as a secondary residence. A household is a group of people living together in a shared housing unit, the basic element of housing demand. The headship rate is the ratio of the number of households to the population. Secondary occupancy occurs when a household occupies two (or more) housing units. The secondary occupancy rate is the ratio of the number of secondary units to the

total population. The total occupancy rate is the sum of the headship and secondary occupancy rates.

In Table 6.2, projections of future total occupancy are based on the future population and the future total occupancy rate. In line (1), the population estimate for 2000 is the aggregate population projection from Table 6.1 above. In line (2), the headship rate projection for 2000 is 45.0%, 0.4 percentage points above its 1990 value.[3] In line (4), the secondary occupancy rate projection for 2000 is 2.2%, 0.1 percentage points above its 1990 value. In line (6), the total occupancy rate projection for 2000, the sum of the headship rate and secondary occupancy rate, is 47.2%, 0.5 percentage points above its 1990. In line (7), the total occupancy projection for 2000, derived by multiplying the total occupancy rate by the population, is 4,232,000.

Line (8) of Table 6.2 shows the change in total occupancy, 222,000 units from 1990 to 2000. Lines (9), (10), and (11) separate the change in total occupancy into its three parts. From 1980 to 1990, headship rate growth was the most important source of occupancy growth. From 1990 to 2000, population growth is the primary source of occupancy growth, since the headship and secondary occupancy rates grow by relatively small amounts.

The total occupancy rate is projected to grow by only 0.5 percentage points from 1990 to 2000, even though the actual occupancy

[3] The 1990 value is the most recent number available from Swedish census data.

rate in Sweden rose by 3.2 percentage points from 1980 to 1990. However, there are several reasons why the total occupancy rate will rise slowly[4]:

Table 6.2

TOTAL OCCUPANCY, BASELINE PROJECTIONS

(Numbers in Thousands)

		Actual 1980	Actual 1990	Project 2000
1	Population	8316	8590	8966
2	Headship rate	42.1%	44.6%	45.0%
3	Households (1*2)	3497	3830	4035
4	Secondary occupancy rate	1.4%	2.1%	2.2%
5	Secondary occupancy (1*4)	119	180	197
6	Total occupancy rate	43.5%	46.7%	47.2%
7	Total occupancy (1*6)	3616	4010	4232
			Actual 1980 to 1990	Project 1990 to 2000
8	Change in total occupancy		394	222
Change in total occupancy resulting from:				
9	Change in population		119	176
10	Change in headship rate		218	37

[4] In a recent forecast of rental apartment demand in the United States in the 1990s, Salomon Brothers [1994] assumes that the age-specific headship rates will be constant.

11	Change in secondary occupancy rate	57	9
Source: SCB [1993a], SCB[1993b], and author's calculations.			

(1)Sweden's occupancy rate is among the world's highest.

(2)Occupancy rates tend to fall in difficult economic periods (the 1994 rate may already be below the 1990 value);

(3)The reduction in subsidies for new housing construction will raise housing costs and prices, thus deterring occupancy.

We refer to the total occupancy estimate in Table 6.2 as the baseline projection. Projections based on alternative total occupancy rate assumptions are provided below in Table 6.5.

Household projections can also be estimated with age-specific headship rates, defined as:

$$(6.2)\quad HR_i = \frac{HH_i}{POP_i}$$

where

HR_i = headship rate for age category i

HH_i = number of households with household head in age category i

POP_i = number of people in age category i.

Column (5) of Table 6.3 shows household projections based on the age-specific headship rates for 1990 (column 3) and the 2000 population projection (column 4). The projection for total households in 2000 is 3,985,000; taking into account the assumption of a 0.4 percentage point increase in the headship rates raises this projection to 4,021,000 households, close to the aggregate projection in Table 6.2. We will use the aggregate projection for simplicity.

Table 6.3

HOUSEHOLD PROJECTIONS, AGE-SPECIFIC HEADSHIP RATES

(Population and Households in Thousands)

	1	2	3	4	5	6
	Actual 1990	Actual 1990	Actual 1990	Project 2000	Project 2000	Project 1990-2000
Age Group	Popu-lation	House-holds	Headship Rate	Popu-lation	House-holds	Change in Households
15-19	563	25	0.04	497	22	-3
20-24	601	228	0.38	512	194	-34
25-29	616	320	0.52	606	315	-5
30-34	577	310	0.54	622	334	24
35-39	585	320	0.55	627	343	23
40-44	655	369	0.56	574	323	-46
45-49	613	364	0.59	587	348	-16
50-54	467	280	0.60	636	382	102
55-59	415	248	0.60	590	352	104
60-64	424	260	0.61	436	267	7
65-69	443	289	0.65	376	245	-44
70-74	394	280	0.71	364	259	-21
75-79	319	246	0.77	327	253	7
80-84	220	179	0.81	246	200	21
85+	150	112	0.75	198	148	36
Total	8590	3830	0.45	8966	3985	155

Source: SCB [1993b] and author's calculations.

New Housing Construction (Units To Be Completed)

New housing units constructed must equal the sum of the change in total occupancy, the change in vacant units, and the number of units removed. Thus, estimates of vacant units and units removed are necessary to form projections for new housing construction.

The aggregate Swedish vacancy rate in 1990 was 0.9%, the lowest level observed at least since 1975 (see Table 3.1). Although comparable vacancy rate data are not available after 1990, there is good evidence (see Figure 3.1) that multi-family vacancy rates rose substantially between 1990 and 1993. If the projected aggregate vacancy rate for 2000 is set equal to the 1990 rate, this requires that all the vacant units created from 1991 through 1993 be occupied by 2000. This would be a negative factor for new housing construction, since the only post 1990 construction that could be allocated to new vacant units would be the result of the higher housing stock in 2000. Instead, for the baseline projection, the vacancy rate in 2000 is projected to be 1.4%, the average of the observed values from 1980 to 1990 (see Table 3.1), which is 0.5 percentage points above the 1990 level.

The removal rate for Swedish housing during the decade of the 1980s was 1.1%. This rate appears low compared to the United States, but low removal rates would be expected in periods of low housing construction. For the baseline housing construction projection, the removal rate of 1.1% for the decade of the 1980s has been applied to the 1990s.

Table 6.4

HOUSING CONSTRUCTION, BASELINE PROJECTIONS

(Units in Thousands)

		Actual 1981 through 1990	Projected 1991 through 2000
1	Change in Total Occupancy	394	222
2	+ Change in Vacant Units	-19	24
3	+ Removed Units	41	45
4	= New Units Completed	416	291
Addendum		Actual	Projected
5	Stock	4045	4291
6	Vacancy Rate	0.9%	1.4%
7	Removal Rate (for decade)	1.1%	1.1%

Source: SCB [1993a] and author's calculations.

Table 6.4 shows the computations through which the change in total occupancy (from Table 6.2) is translated into an estimate of new housing construction. Line (1) shows the change in total occupancy from Table 6.2. Line (2) shows the projected increase in vacant units, assuming that the aggregate vacancy rate (line 6) reaches 1.4% in 2000. Line (3) shows the number of removed units, assuming that the ten year removal rate (line 7) remains constant. Line (4) is new units completed, showing 291,000 new housing units

for the period from 1990 to 2000, compared with 416,000 new housing units between 1980 and 1990.

The projection of 291,000 new housing units applies to the period from 1991 through 2000, but the actual number of housing units completed from 1991 through 1993 is already known. Line (1) of Table 6.5 shows the projection for cumulative housing completions from 1994 to 2000, 132,000 units, computed by subtracting the actual construction from 1991 through 1993 from the projected construction from 1991 through 2000. In line (2), the cumulative number of housing completions is restated as the annual average of 19,000 units.

Table 6.5

HOUSING COMPLETION PROJECTIONS

(Number of Units in Thousands)

	Housing Completions		Actual 1981 to 1990	Project 1991 to 2000	Actual 1991 to 1993	Project 1994 to 2000
A. Baseline Projection						
1	Total for Period		416	291	159	132
2	Annual Average		42	29	53	19
B. Alternative Projections (Change to baseline projection)						
3	Change occupancy rate 0.5 percent	Total change				45
		Average annual change				6
4	Change vacancy rate 0.5 percent	Total change				21
		Average annual change				3

5	Change removal rate 0.25 percent	Total change	11
		Average annual change	2
Source: SCB [1993a] and author's calculations.			

The projection of 19,000 housing completions annually from 1994 to 2000 is a relatively low value. It is noteworthy, however, that a large amount of new housing construction occurred in Sweden from 1991 to 1993, an annual average of 53,000 units, leading to rising vacancy rates. As a result, new units started in 1993 and expected to be started in 1994 are about 10,000 units annually. New units completed in 1994 and 1995 are likely to be of the same order of magnitude, well below the average annual projection of 19,000 units annually for the period from 1994 through 2000.

Nevertheless, the baseline projection for housing completions depends directly on the assumptions for occupancy rates, vacancy rates, and removal rates. Part B of Table 6.5 shows the changes in the number of housing completions that result from alternative assumptions:

(1) The baseline assumption of a 0.5 percentage point growth in the total occupancy rate is the most important factor determining the projection of housing completions. Occupancy rates could readily change by 0.5 percentage points more or less than the baseline assumption by 2000. As shown in line (3) of Table 6.5, each 0.5 percentage point change in occupancy rates in 2000 translates into a change in the construction projection of 45,000 housing completions,

the equivalent of 6,000 new housing units annually over the 7 year period from 1994 to 2000.

(2) The baseline projection assumes that vacancy rates will rise 0.5 percentage points above the 1990 level. Vacancy rates could readily change by 0.5 percentage points more or less than this baseline assumption by 2000. As shown in line (4) of Table 6.5, each 0.5 percentage point change in the vacancy rate in 2000 translates into a change in the construction projection of 21,000 housing units, the equivalent of 3,000 housing completions annually over the 7 year period from 1994 through 2000.

(3) The baseline projection assumes that removal rates during the 1990s equal the removal rates during the 1980s. Removal rates could readily change by 0.25 percentage points more or less than this baseline assumption by 2000. As shown in line (5) of Table 6.5, each 0.25 percentage point change in the removal rate translates into a change in the construction projection of 11,000 housing units, the equivalent of 2,000 housing completions annually over the 7 year period from 1994 through 2000.

In conclusion, the baseline projection for new housing construction is 29,000 units to be completed annually from 1991 through 2000, which implies 19,000 units to be completed annually from 1994 to 2000. In comparison, Boverket [1994] has forecast new construction of about 20,000 units annually for the rest of the decade.

Thus, the Boverket forecast, although based on a very different forecasting methodology, has virtually the same bottom line result.

Residential Construction Investment

It is useful to translate the projections of housing units completed to real investment values. As computed in the national income accounts, total housing investment consists of two components, new construction and reconstruction. The projections for the two components, summarized in Table 6.6, are developed separately.

Real investment in new construction corresponds directly to the number of housing units constructed, taking account of changes in the mix between 1-2 family units and multi-family units, and changes in housing quality and construction productivity. Figure 6.1 plots the series for housing units completed and real investment in new housing from 1980 to 1993. It is apparent that there has been no continuing trend in the ratio of the two series, although new investment temporarily rose more rapidly then units completed during the late 1980s. The average ratio of new investment (in billions of 1985 kroner) to housing units completed (in thousands of units) was 0.52 between 1980 and 1993, and this ratio has been used in Table 6.6 to convert units completed to new real investment. The resulting projection for real new residential investment is 10 billion 1985 kroner as the annual average for the period from 1994 through 2000.

Figure 6.1: HOUSING UNITS COMPLETED AND NEW HOUSING INVESTMENT

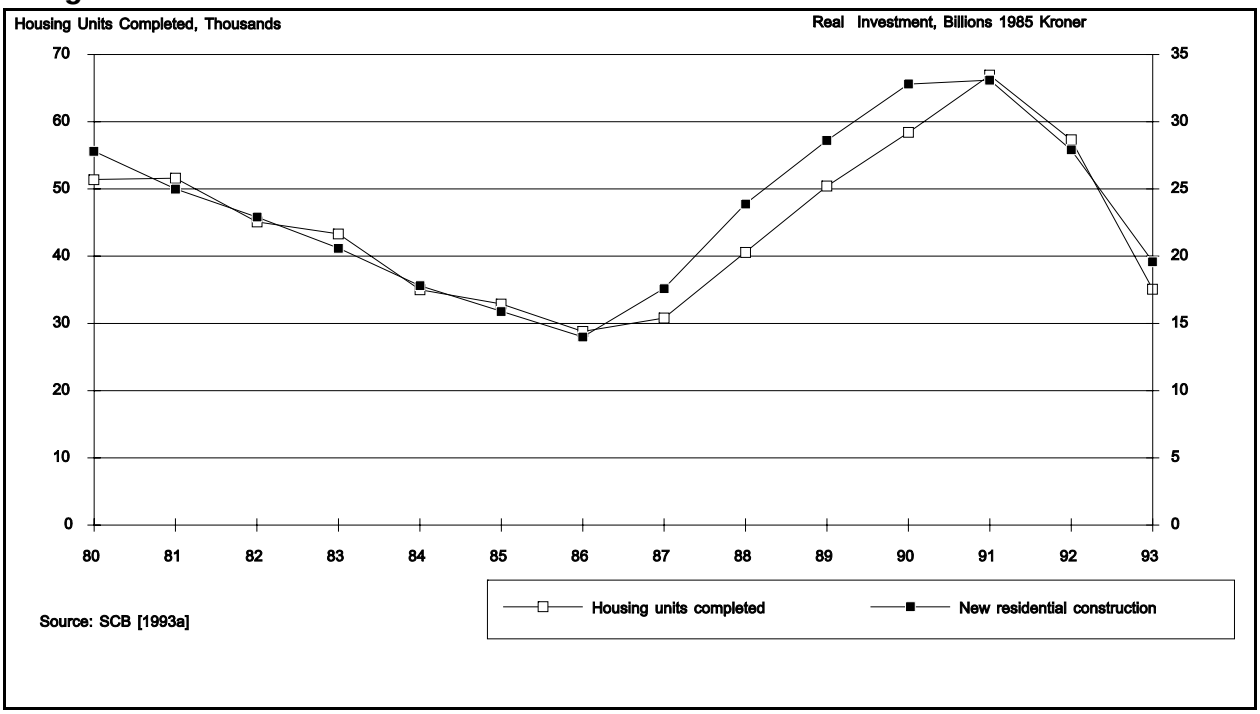


Figure 6.2: COMPONENTS OF REAL RESIDENTIAL CONSTRUCTION

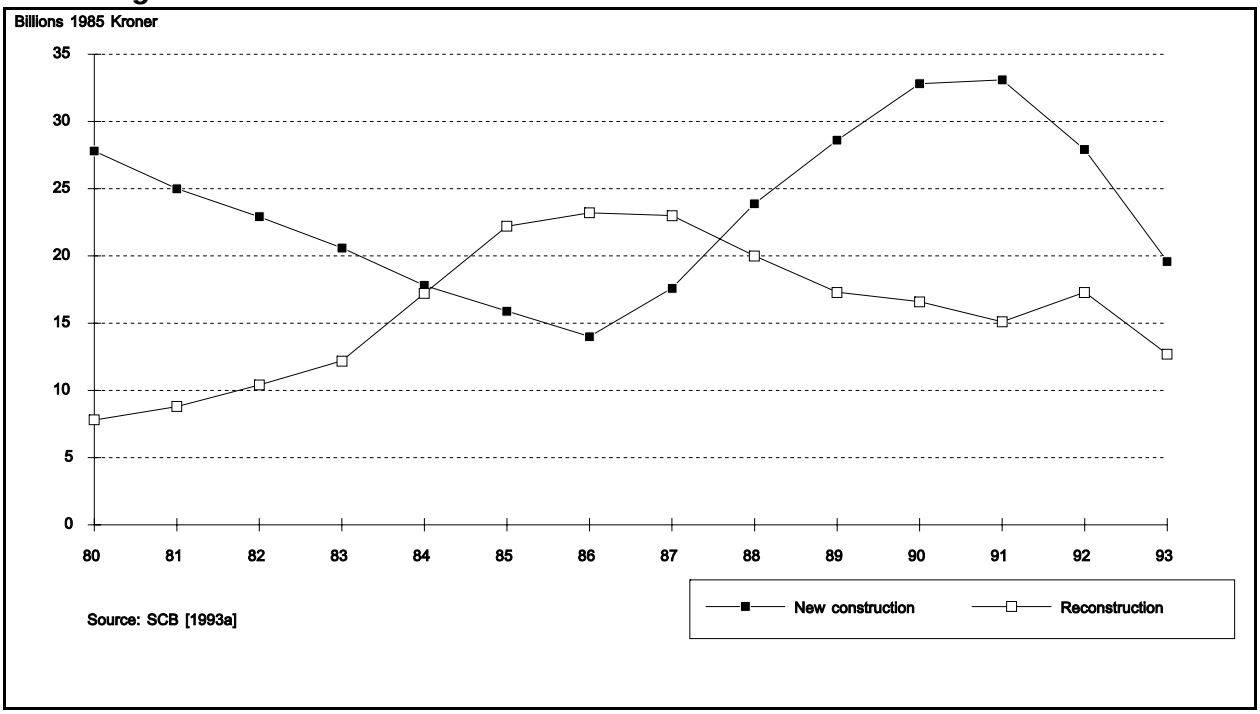


Table 6.6

REAL RESIDENTIAL INVESTMENT, BASELINE PROJECTION

(Annual Averages in Billions of 1985 Kroner)

	Actual 1981 to 1990	Project 1991 to 2000	Actual 1991 to 1993	Project 1994 to 2000
New Construction	25	15	27	10
Reconstruction	18	19	15	20
Total construction	43	34	42	30

Source: SCB [1993a] and author's calculations.

Reconstruction is the second component of total residential investment. Figure 6.2 shows the time series for new construction and reconstruction.[5] New construction and reconstruction appear to be strong substitutes for one another, with the exception of the most recent years of 1992 and 1993 when both series fell sharply. From 1980 to 1993, the average ratio of reconstruction to new construction was 76%.

It is expected that the same substitute relationship between new construction and reconstruction will continue to exist during the remainder of the 1990s. In order to calibrate the substitute relationship, the ratio of the real change in reconstruction to the

[5] Figures 2.4 and 2.5 show the same components of real investment for the categories of 1-2 family investment and multi-family investment separately.

real change in new investment was computed for two sub-periods, 1980 to 1986 (when new investment was steadily falling) and 1986 to 1991 (when new investment was steadily rising). The average of the absolute value of the two ratios was 77%. In Table 6.6, the projection for real reconstruction from 1994 to 2000 was determined by applying the 77% ratio to the 1993 real investment values. Given the low level of expected new construction, this creates a rather positive outlook for reconstruction investment.

In conclusion, our projection for total real residential investment from 1991 to 2000 is an annual average of 34 billion 1985 kroner, compared with an annual average of 43 billion 1985 kroner from 1981 through 1990 and 42 billion 1985 kroner from 1991 through 1993. The real residential investment projection from 1994 to 2000 is an annual average of 30 billion 1985 kroner. This is more optimistic than the corresponding projections for new housing completions due to the positive element introduced by reconstruction.

PART 7 SUMMARY, CONCLUSIONS, AND POLICY RECOMMENDATIONS

This part summarizes the discussion, conclusions, and policy recommendations of Parts 3 to 6 of the study. The housing market and commercial real estate market are discussed in turn.

The Housing Market Cycle

Swedish housing markets are now completing a major cycle which began in the middle of the 1980s. There was a significant impact on real prices, production rates, vacancy rates, sectoral imbalances, and financial distress. (References to the statistical sources in the main text are shown in parentheses).

Real Prices (Table 1.1). During the boom period from 1985 to 1990, real 1-2 family home prices rose 39% and real multi-family home prices rose 76%. Both real prices peaked in 1990, and by 1993 they had fallen back to almost exactly their 1985 levels.

Housing Production (Table 3.5). The boom in housing production occurred between 1986 and 1992, extending beyond 1990 due to the lags in housing production and expectations of forthcoming reductions in housing subsidies. From 1986 to 1992, the annual average production (units completed) was 21,000 1-2 family units and 27,000 multi-family units. In contrast, during 1993 only 2,900 1-2 family units and 7,300 multi-family units were started; current reports indicate equally low start rates for 1994. The low start rates in 1993 and 1994 will result in low production rates in 1994 and 1995.

Vacancy Rates (Table 3.1 and Figure 3.1). For both structure types, vacancy rates fell significantly between 1985 and 1990, reaching their lowest levels at least since 1975. From March 1990 to March 1994, however, the vacancy rates for multi-family units rose from 0.2% to 3.6%, the equivalent of 74,000 additional vacant units. (There are no data for 1-2 family vacancy rates after 1990). On the other hand, due to the small number of new multi-family units started in 1993 and 1994, the vacancy rates may soon begin to fall.

Regional Imbalances (Figure 3.2 and Figure 4.9). The aggregate market data conceal serious regional imbalances between housing demand and supply. In brief, insufficient amounts of the recent housing production occurred in markets with high demand--the primary metropolitan areas and the university centers--while substantial excess production occurred in areas with relatively low demand--namely, the rest of the country. Consequently, a short-run cyclical recovery is likely only in the urban centers.

Multi-Family Imbalance (Figure 4.10). Sweden's ratio of multi-family housing to total housing (about 54%) is one of the highest in the world, even though the population density is one of the lowest in the world. In comparison with most other countries, Sweden's high multi-family ratio is mainly the result of the high production carried out by the municipal housing authorities. This is a primary reason

that the housing collapse had its sharpest impact on multi-family units.

Financial Distress (Figure 4.11 and Figure 5.9) The collapse of housing prices has created a financial crisis for Swedish home owners and multi-family property owners. Since Swedish real estate lenders have recourse to the borrower's assets as well as the housing collateral, homeowners are reluctant to default, and thus find themselves locked into their current properties. This limits the mobility that might otherwise offset some of the regional and structure-type imbalances. Furthermore, all of the owners of multi-family structures--municipal housing authorities, cooperative units, and private landlords--face serious threats of bankruptcy. The costs of such bankruptcies, including the forced sale of units, could negatively impact all housing markets.

The Housing Market Outlook

The prospects for a short-run recovery in the housing markets are limited by a number of factors:

(1) The low current rates for new units started ensure low rates of new housing production at least through 1995.

(2) The large number of vacant units, especially in multi-family structures and in areas outside the urban centers, must be absorbed before a general recovery in new production will be warranted.

(3) Low Tobin q ratios will restrict new production until rising demand is reflected in higher market prices.

(4) A rapid recovery in housing demand is unlikely in view of the weak macroeconomic conditions, high interest rates, and reduced levels of housing subsidies.

From a longer-term perspective, looking out to the year 2000, the reduced levels of housing subsidies are likely to continue to constrain both the supply and demand for housing. Furthermore, the reduced subsidies are primarily directed toward new housing production, so that new production may remain especially low. In Part 6 of this study, total housing production was projected to be only 19,000 units annually from 1994 through 2000, compared with annual production rates of about 42,000 during the 1980s and about 53,000 from 1991 to 1993.

Housing Market Policy Recommendations

The Swedish housing and housing finance sectors appear to operate well when private firms and individuals are responding to the market incentives provided by house prices, construction costs, and vacancy rates. Of course, production will still sometimes occur in the wrong place or at the wrong time, but the costs of such errors will properly rest with the private owners, thus reinforcing the incentives for careful and efficient decisions.

Government policy, however, has intervened in the Swedish housing markets in three primary forms: housing subsidies, the activities of the semi-public municipal housing authorities, and rent controls. There is a strong case for reducing or eliminating each of these interventions.

Housing Subsidies. The program of Swedish housing subsidies achieved a major success in stimulating housing production to offset housing shortages in the periods after World War II. However, Sweden now ranks among the best-housed countries in the world, while the subsidies are creating a major burden for a government budget already in deep deficit. Furthermore, the subsidies now create highly distorted incentives, inducing new construction in the wrong areas of the country and of the wrong type. Given the ample housing supply in most areas of the country, this is the sensible time to eliminate the mortgage interest subsidy programs.[1]

Municipal Housing Authorities. During the housing cycle, the municipal housing authorities played a major--although not a unique--role in creating too much housing, in the wrong places, and of the wrong type. In a sense, these agencies were simply fulfilling

[1] The other two main components of the subsidy programs--rent allowances and mortgage interest tax deductions--raise more complicated questions that are beyond the scope of the present study. The rent allowances should be evaluated, in comparison with other policies, as efficient instruments for reaching the goals for income redistribution. The mortgage interest tax deductions should be structured in conjunction with property taxes and imputed rental income to create equality among the different forms of property ownership.

the terms of their charters: to produce housing, especially multi-family housing, in their local communities. While the municipal authorities may have been useful instruments for rapidly eliminating the housing shortages of past periods, they are not well designed to respond to market signals once a basic demand-supply balance has been achieved.

Although little new production is to be expected by the municipal authorities in the short-run, due both to housing market conditions and their own financial conditions, this is an appropriate time to restrict their right to produce new units unless there is a clear and demonstrable need in the community. The privatization of these agencies should also be considered.

Rent controls. Rent controls represent a continuing dilemma for Swedish housing policy. Rent controls were introduced to achieve certain goals, including the creation of diversity in urban centers, equity in access to desirable properties, and income redistribution. Rent controls, however, reduce housing production, lower maintenance standards and create grey market activity. They are thus an inefficient means for achieving these goals. The rent controls are currently not binding in most markets due to the weak conditions in rental housing markets, making this a practical moment in which to remove them.

Commercial Real Estate

The worst part of the commercial real estate crisis occurred in office buildings. Here there was substantial overbuilding, and significant new construction will not take place in the major cities for many years. The problem is made worse by the decline in the demand for office space, including the likely reductions created by a shrinking government sector. Other commercial real estate, such as retail and industrial buildings, had less extreme amounts of overbuilding; these markets will recover more in line with the general macroeconomic conditions in Sweden.

The losses suffered by commercial real estate investors and developers reduced their private wealth, but did not create any additional direct social costs. There is thus no need to regulate the real estate industry directly. There are two proposals, however, which could create more efficient markets.

The first proposal concerns the provision of better information concerning conditions in the commercial real estate markets, including data on the available supply, market prices and rents, and vacancy rates. In principle, this information could be collected and sold by specialized firms in the private sector, but this does not occur because the proprietary nature of such data cannot be protected. Instead, the market participants collect data individually, but in amounts well below the socially desirable levels. The situation calls for the government to collect and disseminate data on commercial real estate market conditions, given the inability of the private sector to do so.

The second proposal concerns the greater use of equity financing in commercial real estate, in order to reduce the deadweight costs of bankruptcy created when commercial real estate is primarily financed through borrowed money. Sweden already has publicly traded real estate companies, but they are taxable operating companies which develop and construct real estate.

In the United States, there has been dramatic growth in REITs (Real Estate Investment Trusts), which are basically mutual funds which hold a portfolio of real estate properties. They manage the properties in their portfolio, but have no development or construction activity, and thereby are granted the status of tax-free conduits, comparable to other mutual funds. The introduction of REITs in Sweden would provide a rapid infusion of equity capital into the commercial real estate market and provide small investors an opportunity to invest in commercial real estate portfolios at what might prove to be a low point in the price cycle.

The Banking Sector

The largest costs of the commercial real estate crisis were lodged with the commercial banks, the primary lenders on real estate projects. Key reasons the banks took on the risks of real estate lending include: (1) the need to expand loans in order to raise profit rates, (2) an underestimate of the risks associated with real estate lending, and (3) an absence of bank supervision by the regulators.

The Swedish government carried out a rapid and efficient bailout of the troubled banks. The time has arrived, however, to begin to dismantle the guarantees. There is also the need to introduce a better system of bank supervision and regulation, one which will take into account the deregulated and competitive markets in which the banks now operate. Specifically, high bank capital requirements should be enforced and limits should be placed on the loan to value ratios used in real estate lending.

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