

Housing in Sweden: An Overview

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Introduction

With the Lindbäcks delegation's recent visit to the University of California, Berkeley during the week of October 16, 2017, this memo provides background information on the Swedish housing system and how it compares to the American context. Despite foundational differences in approach, the United States and Swedish housing systems share many key challenges with much to learn from each other. The memo is separated into two components: the first section covering the overall Swedish housing market chronicling its evolution and key tenets and the second section delving into the country's housing construction sector with a focus on modular building practices.

Swedish Housing Market Overview

Early History and Million Dwellings Programme

The Swedish Parliament (Riksdag) began directly intervening in the housing market beginning in the early 1900s, primarily as a matter of temporary crisis measures. In response to deteriorating housing conditions and a lack of new construction during the First World War, Riksdag approved temporary state support measures for new construction in 1917.¹ These measures were suspended by 1922 and it was determined that housing supply issues were to be left to the market. Once again in the early 1930s amidst a farming and unemployment crisis, additional measures were passed by Riksdag that included loans and subsidies for the improvement and new construction of rural housing. Much as in United States, historians suspect these initial policies were primarily intended to catalyze a stagnant economy rather than enhance housing conditions.

A more interventionist public sector emerged a couple of decades later amidst an acute housing shortage. Housing quality standards in Sweden were low by international comparison during the early- and mid-1900s.² Conditions became untenable by the mid-1940s as outbreak of the Second World War stalled new construction and forced many of the country's residents into both crowded and low-quality housing. This period coincided with rising birth rates – peaking in 1945 following the end of the war –further intensifying pressures on the limited housing stock.³ Political pressures mounted, forcing the state to intervene with subsidized loans to boost new construction and rent control to protect current tenants.⁴ These loans were only provided to companies with active municipal involvement – either through direct municipal ownership or under municipal control – and covered up to 100% of initial outlays, incentivizing the creation of local Municipal Housing Corporation's (MHCs) whose role would grow significant in subsequent decades.

Sweden's Social Democrats, in power from 1932 to 1976, advanced the country's social welfare approach to housing and adopted housing as a non-subservient priority. With a

¹ Hedman, "A History of the Swedish System of Non-Profit Municipal Housing."

² Ibid.

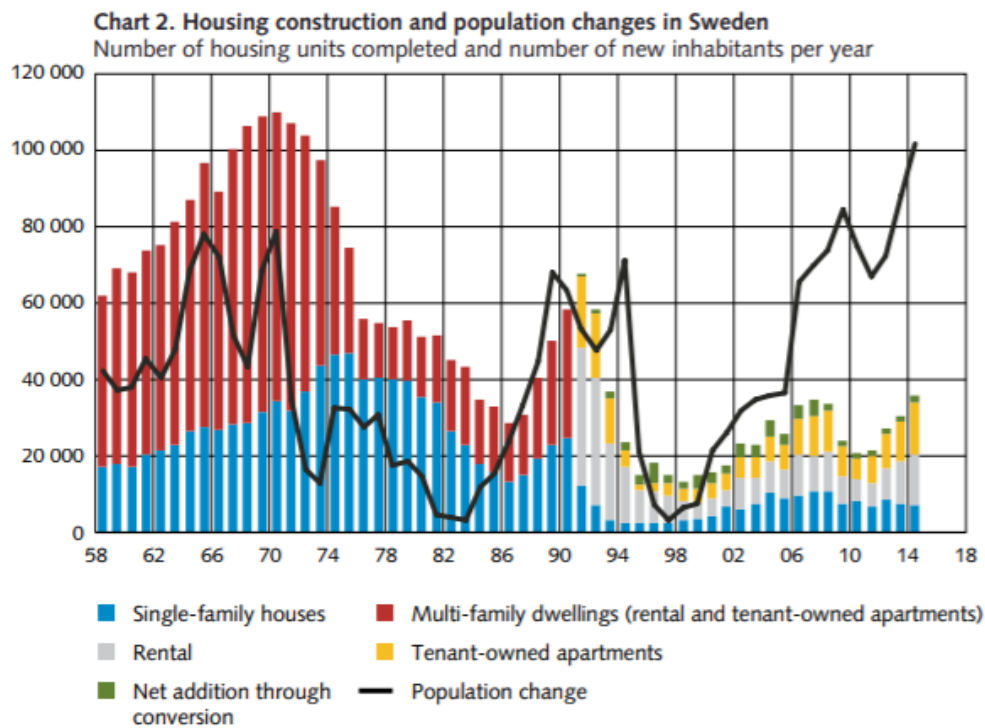
³ Swedish Association of Public Housing Companies, "SABO and Public Housing in Sweden."

⁴ Hedman, "A History of the Swedish System of Non-Profit Municipal Housing."

more interventionist state role established, political leadership envisioned its role as promoting universal “good housing”.⁵ Its focus was population-wide in scope, rather than selectively targeting needy subgroups. Publicly constructed housing units were therefore for everyone. Additionally, state housing support was to be directed through municipalities who in addition to state loans would later also be given tax advantages and large interest subsidies.

While housing production increased following the introduction of state support through the early 1960s, the housing shortage continued to worsen, attributable to a large baby boomer cohort aging into adulthood. The state embarked on an ambitious building program between 1965 and 1974 with the target of constructing one million new housing units (in a country of eight million people at the time) to ease the shortage.⁶ This rate of new construction relative to existing population is more than 2 times higher than the United States’ rate during the 10-year construction boom period from 2000 to 2009. Through generous 100% loan programs and interest subsidies/interest guarantees, Sweden achieved this goal.

Figure 1: Housing Production Relative to Population Change



Note. Prior to 1991, it is possible to distinguish between different forms of occupancy in apartment buildings.

Sources: Statistics Sweden and the Riksbank

Source: Emanuelsson, “Supply of Housing in Sweden.”

⁵ Hedman, “A History of the Swedish System of Non-Profit Municipal Housing.”

⁶ Hansson, “City Strategies for Affordable Housing.”

Sweden's Grand Restructuring

In 1991, the newly elected center-right government coalition began dismantling the social democratic housing policy in favor of a more neoliberal approach. These efforts encompassed two broad policy goals of privatizing the housing market and facilitating ownership.

Privatization of Public Housing

The Swedish state began to withdraw from direct public housing provision subsidization, intending to transfer risk to local municipalities and house-owners. State housing loans and preferential tax treatment for MHCs was abolished, and interest rate subsidies and guarantees also diminished substantially.⁷ MHCs were no longer preferentially treated, forcing them to directly compete with private market participants on equal terms. They transformed into "business-like" entities, focused on financial efficiency and enhanced product customization for its "customers" in response. Their objectives were reformulated from "Housing for everyone" to "Housing for you".⁸ Means-tested housing allowances were increased simultaneously to mitigate impacts on low-income households, highlighting a mindset shift toward private sector driven housing markets and reduction of direct state risk.⁹

Figure 2: Housing Subsidies Relative to Real Estate Taxes

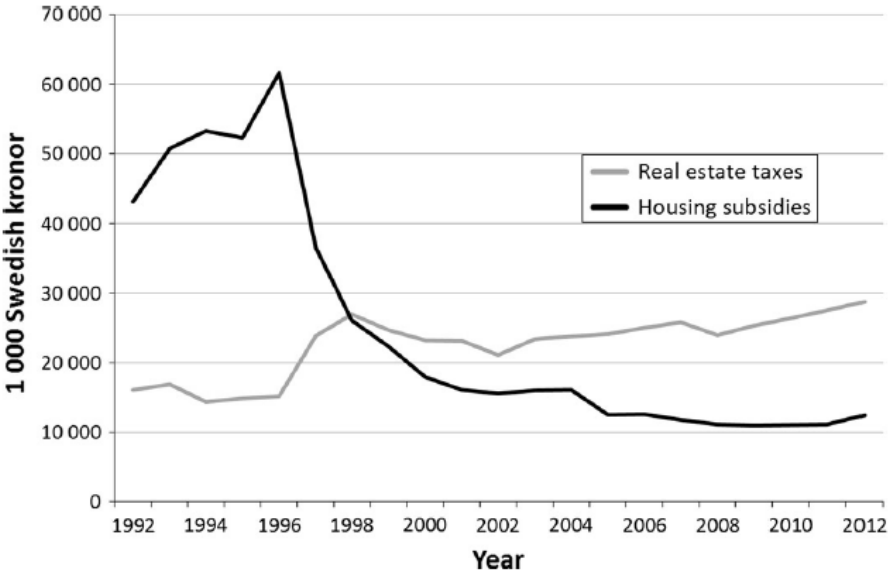


Fig. 1 State real estate taxes and housing subsidies, 1992–2012. Source http://www.scb.se/Pages/SSD/SSD_TreeView___340506.aspx (2012-03-16), and The Swedish National Financial Management Authority (2013-08-14)

Source: Holmqvist and Turner, "Swedish Welfare State and Housing Markets."

⁷ Ibid.
⁸ Hedman, "A History of the Swedish System of Non-Profit Municipal Housing."
⁹ Ibid.

Ownership Prioritization

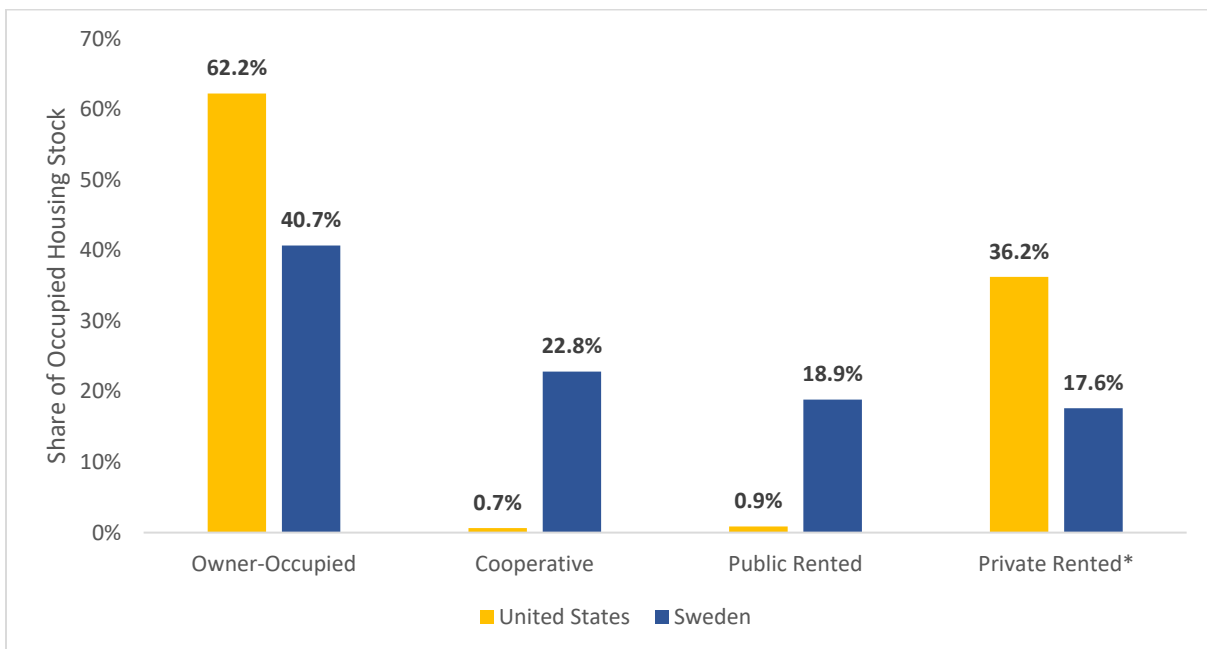
Concurrent with the shift away from direct public involvement were deregulation efforts and new public programs to stimulate the ownership market. Riksdag legalized the conversion of public housing to cooperative housing in the 1990s and introduced condominiums as a legal tenure form in 2009.¹⁰ Rented dwellings could be sold to sitting tenants at often below-market prices which generated substantial profits for purchasers, especially in attractive locations. Access to mortgage finance was also liberalized in the 1990s and a credit guarantee for first-time homebuyers was introduced in 2008 to further facilitate co-operatives and owner occupation access.¹¹ Finally, substantial tax relief in the forms of mortgage interest tax deduction, low ceiling on property tax, deferred capital gains tax on primary residence, and abolishment of the imputed housing rent provided additional incentives for ownership.¹²

Defining Characteristics

Despite recent shifts in policy priorities, the Swedish housing system continues to maintain many foundational characteristics.

Types of Housing

Figure 3: Distribution of Tenure Types by Country, 2015



Source: Statistics Sweden – SCB, Number of Dwellings by Type of Ownership and Building Type; United States Census Bureau, American Housing Survey

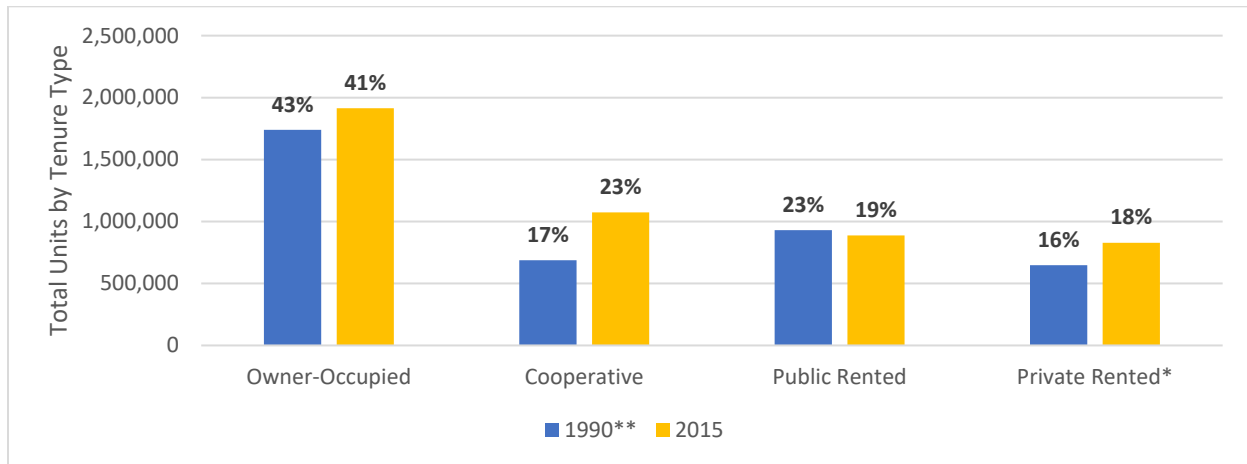
*Swedish private rented includes multi-dwelling buildings owned by “private persons” or “other artificial persons”, though the majority of these units are rented out.

¹⁰ Holmqvist and Turner, “Swedish Welfare State and Housing Markets.”

¹¹ Ibid.

¹² IMF, “Sweden: Staff Report.”

Figure 4: Distribution of Swedish Housing Units by Tenure Type, 1990 and 2015



Source: Statistics Sweden – SCB; Andersson et al., “Immigration, Housing and Segregation in the Nordic Welfare States.”
 *Private rented includes multi-dwelling buildings owned by “private persons” or “other artificial persons”, though the majority of these units are rented out.
 **1990 distribution of housing units derived from Andersson et al.

Public Housing Sector

Public housing accounts for nearly 20% of the country’s housing stock, largely comprised of units operated by local MHCs. They function as non-profit limited companies, with their own boards and day-to-day operations outside the purview of direct political control.¹³ These properties are open to everyone regardless of age, ethnicity, or income and now compete with private operators on equal terms. Additional supply-side interventions include a small number of direct social housing stock (~1% of total housing) intended for short-term uses and indirect ordinary housing stock units rented by social authorities and sublet to households with “social problems”.

As with in the U.S., these developments initially faced criticism for monotonous designs coupled with technical defects leading many of the higher-resource households to choose either not move in to or quickly move out of them. Faced with mounting rehabilitation needs, high occupant turnover and many empty flats, coupled with the loss of preferential treatment in the mid-1990s, many MHCs advanced bottom-up community driven renewal efforts. They prioritized existing tenants, rather than seeking to replace them with perceived “better tenants”, and transformed their organizational strategy from a hierarchical management system to one emphasizing resident engagement. Their rehabilitation efforts also extended beyond simple building maintenance to broader community improvements, and are widely considered a success. Key characteristics that separate their redevelopment efforts from those in the United States include a higher income tenant base (average incomes approximately 20-25% below country average) better covering operating expenses and greater project-level autonomy to institute changes.¹⁴

¹³ Lind, “Social Housing in Sweden.”

¹⁴ Andersen, Turner, and Søholt, “The Special Importance of Housing Policy for Ethnic Minorities.”

Public units account for a decreasing share of the total housing stock, falling from a 23% share in 1990 to approximately 18% in 2016. Construction of these units predominately occurred during the Million Dwelling Programme (1965-1974), and accounts for a decreasing share of new construction as a result of a loss in public subsidy. Conversion pressures have also intensified, especially in high-cost urban centers, further reducing its share of the total housing market. In Central City Stockholm alone, more than 100,000 public apartments have been converted into cooperatives.¹⁵

Figure 5: New Multi-Family Construction by Tenure Type

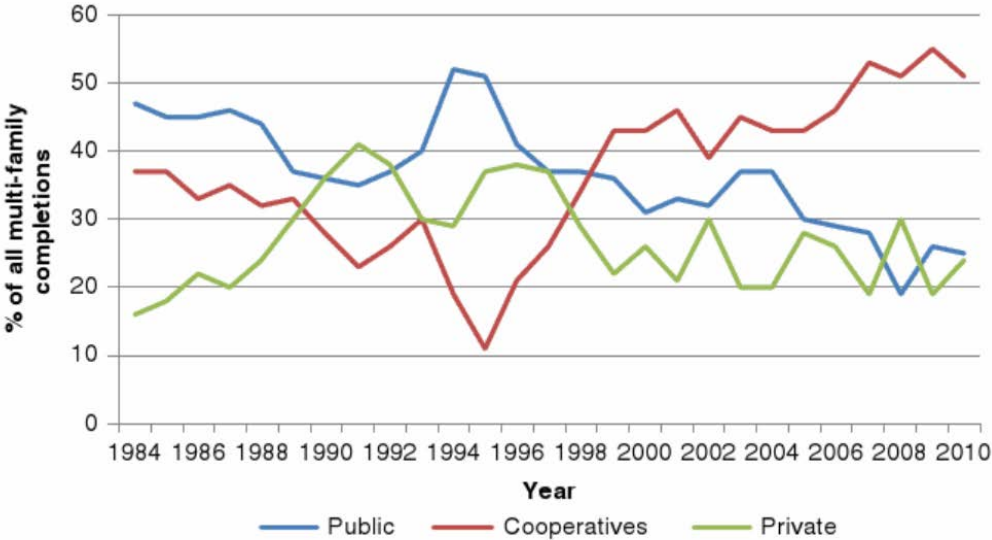


Figure 6.1 Dwellings in newly constructed multi-family buildings by type of ownership (1971–2010).

Source: Swedish official statistics, Yearbook of Housing and Building Statistics 2012.

Source: Lind, "Social Housing in Sweden."

Cooperative Housing

Sweden has a long history of cooperative enterprise, including in the domain of housing. "Cooperative" refers to economic enterprise operated on the basis of joint action and self-help, serving as an alternative to public or private enterprise with principles of open membership, democratic administration and cooperative teamwork, and limited returns on investments.¹⁶ Viable housing cooperatives emerged in the 1920s at initiative of local tenant's organizations, and have dramatically expanded since that time. In practice, cooperative dwellings provide residents with a form of lease known as "dwelling rights" entitling members to utilize a unit for an unlimited period of time under rules specified in the housing cooperative statute and also granting a democratic share in the management of the housing cooperative.¹⁷ In exchange, members participate in financing by both paying a

¹⁵ Lind, "Social Housing in Sweden."

¹⁶ The Swedish Institute, "The_Cooperative_Movement_in_Sweden.Pdf."

¹⁷ Ibid.

basic fee or down payment, financed through mortgage loans, and paying an annual fee covering their share of the cooperative's loan payment and operating expenses. When members decide to move, they can sell their cooperative lease at market price.

Cooperative housing comprises approximately 23% of the nation's housing stock, and accounts for the bulk of new multifamily construction. This tenure type benefits from same tax relief granted to owner-occupied households while also providing the density necessary to pencil in land-constrained central city markets that are in much demand. Recent trends of MHC conversions to housing cooperatives have further buoyed the tenure type's unit counts. Of the four major tenure types, housing cooperative residents are the second wealthiest after owner-occupied, with incomes above the national average

Private Rental Market

Comprising slightly under 20% of the country's housing stock, private rental market properties function much like that in the United States with the exception of soft rent control measures. For non-new construction, rent levels are effectively set in relationship to the general rent level of the MHC sector (to be discussed in greater depth later).¹⁸ Private rental construction has largely stagnated and accounts for a quarter of new multifamily construction, largely attributable to restrictions on revenue generation and barriers to higher-density construction. Moreover, in a market where the private sector operates under similar constraints as the quasi-public MHCs, there does not appear to be much difference in desirability between the options as evinced by average resident personal incomes that are relatively comparable (€16,300 in private renting vs. €14,850 in social/public housing in €2011 currency).¹⁹

Owner-Occupied

The largest segment of the Swedish housing market is the ownership tenure type, representing a bit over 40% of the housing stock. Moreover, the vast majority of these units are single-family units located in one- or two- dwelling buildings, reflecting the significant suburban character throughout much of Sweden as in the U.S. The ownership segment is buoyed by substantial tax relief including mortgage interest tax deduction, 2008 replacement of real estate taxes with a lower municipal fee, deferred capital gains tax on primary residence, and the 2007 abolishment of the imputed housing rent. Additional efforts to spur homeownership include the introduction of a 2008 credit guarantee for first-time homebuyers, though a 2010 loan restricting loan LTVs to 85% contradicted the aforementioned policy and has resulted in few households making use of guarantee.²⁰ Most of these policies though have translated into enhanced ownership within the cooperative tenure type rather than in traditional single-family owner-occupied units, with single-family owner-occupied units account for a declining for a declining share of the nation's housing stock (33% of the new construction since 2007 compared with 40% of existing stock).

¹⁸ Becker, "Comparative Housing Policy."

¹⁹ Andersen, Turner, and Søjholt, "The Special Importance of Housing Policy for Ethnic Minorities."

²⁰

Methods of Support

Sweden can be characterized by a high degree of government intervention but a low degree of direct government ownership in broader economic activity and housing in specific. Below are the two principle mechanism for indirect intervention in the housing market, in addition to the previously discussed MHC public housing construction program.

Soft Rent Control Tenant Protections

The Swedish housing market operates under some of the world's most pro-tenant rent control laws. Apartment rents are typically determined through once-a-year negotiations between landlords and tenant representatives, usually the Swedish Union of Tenants. Negotiations revolve around two points of emphasis: the utility value of the apartments and the changes to the cost of building management. Utility value is assessed objectively through surveys of apartments' utility values (e.g. through documentation and by means of a points system) and ascertaining the values assigned by tenants (e.g. by means of questionnaires). These processes are regulated by Regional Rent Tribunes who manage utility value system and determine limits for 'reasonable rents' on the basis of the highest rate plus 5% that others pay for similar apartments. If an agreement is not reached, the dispute is referred to Rental Market Committee for resolution.²¹

This system is designed to provide substantial protection for individual tenants while creating an efficient process for landlords to handle rent increases. Rents in privately owned rental housing are typically determined under similar processes and relative to comparable dwellings, based on size and 'attractiveness', which in effect are often the low-rent MHCs. This process disadvantages private operators who are forced to charge below-market rents without the ability to rely on municipalities for financial support to cover maintenance cost increases, unlike MHCs. Rent increases are moderated significantly by this collective bargaining process. New projects can negotiate higher rents with tenant organizations upon move-in and do not serve as a comparable apartments for utility value reviews, though these special provisions lapse after 10 years of operation. Additional consumer protections include 'security of tenure' entitling tenants to rent apartment as long as rent is paid and neighbors are not disturbed, further shifting power dynamics toward the tenant. With rents constrained to below-market levels especially in high-demand urban cores and large waiting lists for housing, a robust black market for second-hand leases estimated at €128m has also emerged in response.²²

Housing Allowance

In addition to the quasi-public supply-side interventions of the MHCs, Sweden also intervenes on the demand-side in the form of housing allowances. These allowances function as the dominant paradigm for assisting low-income housing, paid by the central government and administered by the Swedish Social Insurance Agency.²³ There are three

²¹ Swedish Association of Public Housing Companies, "SABO and Public Housing in Sweden."

²² Deeter, "Rent Control in Europe."

²³ Lind, "Social Housing in Sweden."

different housing allowance system entitlements: one for pensioners, one for young households, and one for households with children. Pensioner populations receive fairly generous housing allowance supplements which, coupled with rent regulations that moderate rents especially in the older housing stock where they typically live, leads to a very comfortable lifestyle. Young households aged 18-28 are eligible for housing allowances entitlement, though few such households take advantage of the program.²⁴ Household with children are also eligible, though the income ceilings were reduced significantly during 1990s reform leading to 180,000 such households currently receiving such support, down from 380,000 in 1992 and 570,000 at the bottom of the crisis in 1995. Allowances for no-children households were eliminated during this time as well in 1997, reflecting a weakening of the social safety net. Finally, social welfare payments from the municipality for housing, known as 'economic support', serve as last line of support for approximately 6% of the country's households in 2011, typically long-term unemployed or persons with more serious social problems.²⁵

Current State of Housing Market

As in the United States, Sweden is at a crisis point with its housing market. A lack of new supply coupled with escalating affordability issues and rising renovation needs with its existing stock present considerable challenges for the Swedish housing market moving forward.

Supply Shortages

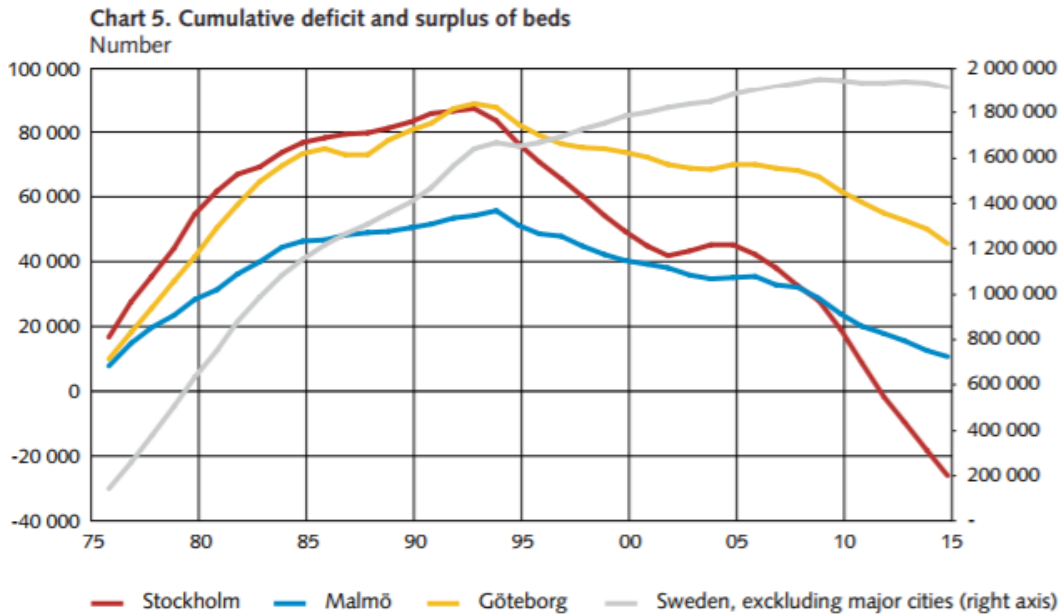
With a lack of new construction since the 1990s, the Swedish housing market is facing a severe housing shortage. Household and population growth rates have accelerated in recent years while production has stagnated, leading to the absorption of excess supply produced during the Million Dwellings Programme of the 1960s and 1970s. The country's urban region, especially Stockholm and increasingly Malmo, now face a cumulative deficit of beds relative to population (see bottom right graph).²⁶ Moreover, there is a fundamental mismatch between where much of supply is located and where the demand is concentrating. Much of the public housing stock is in small towns with high vacancies, while the country continues to urbanize rapidly with limited new production in larger cities.

²⁴ Ahren, "Housing Allowance Systems in Sweden - Policy Press Scholarship."

²⁵ Lind, "Social Housing in Sweden."

²⁶ Emanuelsson, "Supply of Housing in Sweden."

Figure 6: New Multi-Family Construction by Tenure Type



Note. The number of beds is based on the assumption of how many people live in the different sized homes. An apartment is assumed to contain 1-3 people, while a detached house is assumed to contain 1-5 people.

Sources: Statistics Sweden and the Riksbank

Source: Emanuelsson, "Supply of Housing in Sweden."

Low levels of supply additions are attributable to many factors, including elimination of production subsidies, rent control regulations, high constructions costs, and lack of developable land and municipal regulatory burden. Rental supply plummeted in the 1990s with the removal of production subsidies for the MHCs. Without these subsidies, public and private sector new rental projects largely cannot pencil due to restrictions on revenue generation under the current rent control regime. New projects can negotiate higher rents with tenant's organizations for the first 10 years of operations, though long-term profitability is still curtailed. Moreover, large discrepancies between new and existing dwelling rents increase risk for new construction which consequently suffers more significantly when demand drops than if the rent differences were less pronounced. These rent regulation disincentives coupled with constructions costs that are among the highest in the European Union and labor shortages preventing expansion (to be discussed in greater detail in the Off-Site Housing section later on) along with a lack of development land and inconsistent and lengthened municipal procedures reduce the financial attractiveness of new rental production.²⁷ Most new production has therefore been cooperative dwellings, though volume of production there has still been at a relatively low level.

²⁷ Ibid.

Since the election campaign of 2014, there has been consensus among all major political parties in Sweden concerning the goal of constructing 700,000 new homes in the country over the next decade. These goals require the doubling of construction from present levels.²⁸ However, there is a lack of consensus of how to achieve these goals with the center-left wanting more state funded rental accommodation while the center-right wants more deregulatory measures to encourage private construction.

Price Escalation

With a housing shortage especially pronounced in urban centers, there has been substantial home price appreciation and a growing affordability crisis. Public and private rental stock is limited, forcing many prospective urban residents into the ownership market. Waiting lists for rental housing in Stockholm for instance have risen from 100,000 in 2000 to 550,000 in 2016 (compared to a city population equals 940,000), translating to average waiting times of nine years and up to 16 years in attractive neighborhoods.²⁹ Home prices consequently have appreciated rapidly, rising 15% in 2015 alone and now stand 40% above their 20-year average relative to incomes.³⁰ In Stockholm specifically, apartment prices rose 54% from 2013 to 2015 further illustrating the most dire market conditions in high-demand central cities. It is worth noting that prices have moderated to 5% annual appreciation in 2016, though remaining far above historic highs.

Renovations of Million Dwellings Programme

With the construction of so many homes during a limited period (Million Dwellings Programme in 1965 to 1974 period), the country is facing challenges with maintenance. Needs to refurbish largely coincide, especially as official building requirements become more stringent (such as around energy efficiency), leading to difficulty coordinating and funding renovations. Many of these buildings are now reaching the end of their useful lives, requiring renovations to both repair worn out building elements and adapt to changing tenant needs

Immigrant Integration and Housing

Sweden has experienced a dramatic increase in its number of immigrants, particularly asylum seekers, receiving more refugees per capita than any other European country in the past couple of years, further straining the housing system.³¹ Public housing companies have assumed significant responsibility, through leases of accommodation centers to the Swedish Migration Agency and letting homes directly to newcomers.³² Much of these efforts though are insufficient, as many new arrivals languish in temporary housing without prospects for more permanent settlement. Some situations are so dire that refugees are housed in heated

²⁸ Hansson, "City Strategies for Affordable Housing."

²⁹ Nordic, "The Official Way to Get an Apartment in Stockholm, Sweden Is to Put Your Name on a List and Wait 10 Years."

³⁰ IMF, "Sweden: Staff Report."

³¹ "Sweden's Backlash."

³² "Our Challenges."

tents for lack of other accommodation options.³³ Segregation is also especially pronounced, and many fear a lack of integration will divide society and threaten to further undermine support for public housing.³⁴

Comparison with United States

Key Similarities

Housing Policy

- **Subsidization of Homeownership** – Both systematically subsidize homeownership through many similar mechanisms (e.g. tax relief) without providing significant benefits to renters.
- **Shift toward Demand-Side Interventions** – Both have eliminated support for public sector supply-side interventions in favor of demand-side efforts (e.g. Housing Allowances, Section 8 Choice Vouchers) that face budgetary pressures.

Housing Market Conditions

- **Suburban, Single-Family Homes** – Large percentage of housing stock is wood-frame free standing homes in suburban locations.
- **High-Cost Housing, Especially in Urban Centers** – Urban centers are becoming increasingly unaffordable, and have constructed only limited new supply despite large household/population increases as the countries urbanize.
- **High Barriers to New Construction and Cost of Production High** – They have significant challenges to construction of new housing, especially in highly demanded urban centers, attributable to expensive construction costs, limited available land, and regulatory burden.

Key Differences

Housing Policy

- **Rent Control** – There are strict national rent control regulations in Sweden, and such measures are localized in the United States and not as pervasive nor strong.
- **Universal vs. Social Housing** – United States provides public housing for socially needy populations while Sweden provides public housing available to anyone.
- **Competition with Private Market** – United States public housing is structured to limit competition with private market whereas Sweden structured their system to directly compete with private market participants, and even on more favorable terms prior to 1990s reform.
- **Goal of Public Housing** – United States goal has historically been to provide housing as an economic catalyst compared with the Swedish goal to provide a decent home for all as a basic public good.

³³ Crouch, “Swedish Private Housing Sector Accused of Profiting from Refugees.”

³⁴ Milne, “Sweden Immigration.”

- **Public Housing Building Quality** – United States public housing was built low-quality, whereas Swedish housing was built to a higher standard, partially reflecting the principle goal of the program (see previous bullet point). Moreover, Sweden’s universal approach to housing provided more rental revenues to fund maintenance upkeep compared with in the U.S.
- **Quantity of Public Housing** – Sweden’s public housing program is much more extensive in quantity than in the United States, comprising approximately 20% of the housing stock compared with less than 1% in the U.S.
- **Public Authorities Autonomy and Operational Efficiency** – Sweden’s Municipal Housing Companies operate as non-profit entities with significant autonomy and operate with private-sector equivalent financial efficiency. Neither are as true in the United States.

Housing Market Conditions

- **Cooperative Housing** – It comprises a large and growing share of the Swedish housing market, and a very small share of the United States housing market.

Off-Site Housing in Sweden

Brief Overview of Off-Site Process in Sweden

Most of Swedish single-family housing is constructed using a panel, or wall element, approach. “Panelized” construction means that the walls and floor of the home (panels) are pre-made in the factory and set in place by crane.³⁵ Other prefabrication is generally reserved for more comprehensive products such as non-structural volumetric spaces (e.g., bathroom pods). Standard construction process for single-family construction fabricates wall panels on the ground and work goes from 2D to 3D at the last possible moment. Everything arrives on site at time of need and framing process takes a day compared with a few weeks in the U.S. and can be accomplished by a five-person construction site, enhancing efficiency.

Lindbäcks, on the other hand, focuses on multifamily projects and instead employs modular construction methods. They build finished volumes in their factory space, with everything from ceiling, floor, and wall blocks to furnishings with doors, windows, kitchens, tiled bathrooms, heating and water as well as electrical installations and painting completed within the factory.³⁶ These modules are then transported and assembled in volumes on the construction site which increases efficiency, significantly reduces assembly time length, and minimizes disruption to the surrounding communities.

³⁵ Luyendijk and Nowak, “Supplemental Data# 1 A Review of Programs Embracing a Whole-House or Systems Approach for Housing.”

³⁶ “Lindbäcks – Rationellt Byggande, Sunt Boende.”

History

As recently as the 1970s, the United States and Sweden built houses in largely the same way. Sweden transitioned toward off-site construction processes beginning in the 1970s, attributable to the below combination of factors.

Drivers of Adoption

- **1970s Swedish Energy Crisis** – During the onset of the 1973 oil crisis pushing up energy costs, Sweden was forced to reevaluate its dependence on foreign oil. With hydropower at full capacity and growing resistance to nuclear power, reducing energy demands was the one place to turn. Buildings specifically were identified as targets for energy efficiency, spurring significant innovation within the housing and construction space.³⁷
- **Million Dwellings Programme** – A sudden spike in supply requirements forced factories to improve assembly-line machines and materials handling, while spurring research efforts into alternative more efficient construction techniques.³⁸
- **Labor Market Limitations** – Reliance on skilled, high cost construction labor is a key predictor of prefabrication methods usage. Unlike in the United States, they could not rely on an abundance of low-cost unskilled labor to carry out projects. Moreover, a specially-trained labor force better facilitates industry development toward off-site construction, given the greater build complexity and faster execution times required of this method.³⁹
- **Harsh Climate** – Incentivizes short construction period outside, and increases importance of a quality internal home environment.⁴⁰
- **Detached, Single-Family Housing Stock** – These building types have seen the greatest application of off-site construction methods.⁴¹ This product type specifically may have encouraged off-site methods initially due to its smaller scale and greater opportunity for standardization.
- **Swedish Culture** – Sweden values fulfillment of basic needs and esteem is granted to those who provide them, leading to perhaps brighter minds entering the housing construction professions. A cultural affinity for self-help applications, including the construction of one's own house, further incentivized the creation of prefabrication techniques.⁴²

³⁷ Dean, "The New Foreign Import."

³⁸ Ibid.

³⁹ Steinhardt and Manley, "Adoption of Prefabricated Housing—the Role of Country Context."

⁴⁰ Dean, "The New Foreign Import."

⁴¹ Steinhardt and Manley, "Adoption of Prefabricated Housing—the Role of Country Context."

⁴² Dean, "The New Foreign Import."

Construction Industry Today

Industrialized Methods

Single Family

Sweden is an innovator within the homebuilding space, with off-site techniques accounting for over 80 percent of new single-family homes.⁴³ This product type though only accounts for approximately 30 percent of newly built dwellings.

Multi-Family

Multifamily construction accounts for the remaining 70 percent of new supply. Approximately 10 percent of new multifamily construction is wood-frame, of which a large portion utilizes industrialized modular techniques.⁴⁴ The remaining nearly 90% uses concrete frame techniques, with at least 20 percent of these buildings employing significant prefabrication methods. Thus, at least 30 percent of the multifamily market utilizes some significant form of prefabrication and at least 45 percent of the overall housing market, a high proportion relative to the international context.

Though usage of prefabricated techniques is still a minority share of the multifamily construction market, it is growing significantly especially for smaller projects of four stories and under. With multiple new modular factories opening, the Swedish Federation of Wood and Furniture Industry (TMF) expects annual wood-frame multifamily capacity to rise from an annual production of 3,000 units in 2016 to 8,000 units by 2020.⁴⁵

Lindbäcks Role in the Industry

Lindbäcks currently produces 800 units a year, or a bit under 25 percent of the wood-frame multifamily market and ~2.5 percent of the overall multifamily market. Their new factory will bring their capacity to 2,400 units a year, which will represent a significant share of the construction industry.

High Construction Costs

Despite substantial innovations within the construction sector, Sweden suffers from extremely high construction costs relative to the rest of Europe. Since the mid-1990s, these prices have increased significantly more than general cost levels for society leading to costs that are 65 percent higher than the European Union average in 2015.⁴⁶ It is important to note that construction costs are not dramatically different from other Nordic countries who encounter similar contexts. Nonetheless, these construction costs are primarily attributable to two major factors described below: lack of competition and labor constraints.

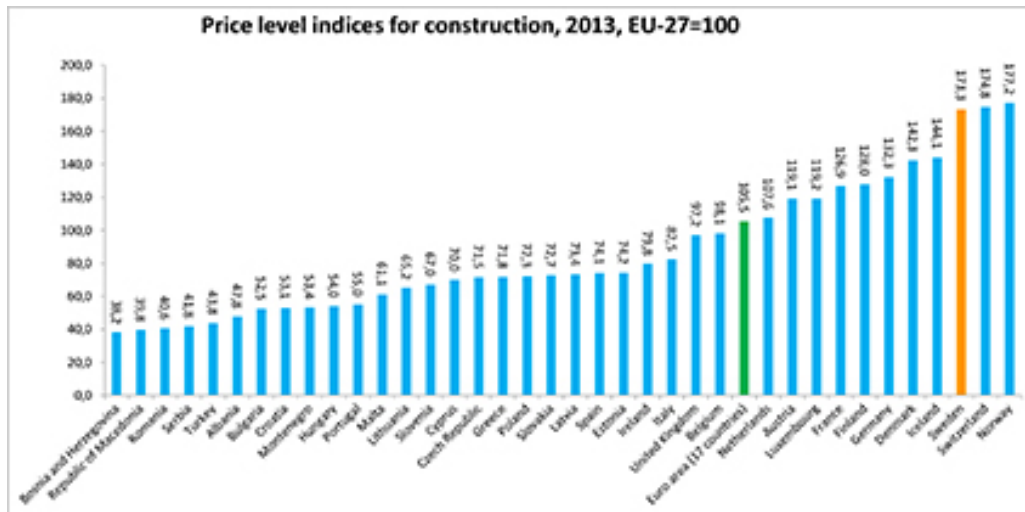
⁴³ Luyendijk and Nowak, "Supplemental Data# 1 A Review of Programs Embracing a Whole-House or Systems Approach for Housing."

⁴⁴ Steinhardt and Manley, "Adoption of Prefabricated Housing—the Role of Country Context."

⁴⁵ <http://www.tmf.se/statistik/statistiska-publikationer/trahusbarometern/>

⁴⁶ Emanuelsson, "Supply of Housing in Sweden."

Figure 7: Construction Price Indices for New Construction



Source: Swedish Association of Public Housing Companies, "SABO and Public Housing in Sweden." via Eurostat.

The Swedish construction market is characterized by a shortage of competition and major barriers to entry. Large construction companies are vertically integrated in terms of access to the requisite building material and the three biggest construction companies together have a share of nearly two thirds of the Swedish market, as of 2003.⁴⁷ There is also substantial concentration within the sub-sectors for building materials, further driving up costs. Much of this lack of competition is attributable to the unique Swedish construction context creating high barriers to entry; these factors include more extensive planning processes, construction requirements regarding input materials, strong environmental legislation, and a uniquely cold climate entailing different structural approaches when compared with other European markets. Additionally, another theory posits that housing policy decisions of the pre-1990s created informal cartels which had little incentive to contain costs due to high public housing subsidies. A mid-2000s survey of 600 construction sector managers reveals 50 percent of respondents believed that cartels existed within the industry, and half of them saying they were quite frequent.⁴⁸ Large construction companies today are in effect making use of their oligopolistic positions to charge higher prices, driving up end-user prices and holding back construction levels.⁴⁹

In addition to potential structural market failures in competition, Sweden's labor market has also impacted construction prices. Construction workers maintain high union membership rates and are in short supply, with 40 percent of construction companies saying expansion was being held back by a lack of labor.⁵⁰ Workers have taken advantage of their leverage and successfully negotiated significant wage increases, outpacing unit labor cost increases in other European countries in recent years. Moreover, this has coincided with labor

⁴⁷ Note: More recent data not available, but literature/articles consider this issue still very relevant. Hufner and Lundsgaard, "The Swedish Housing Market."

⁴⁸ Hufner and Lundsgaard.

⁴⁹ Emanuelsson, "Supply of Housing in Sweden."

⁵⁰ Reuters, "Sweden Faces Housing Crunch despite Government Building Plan."

productivity growth that has significantly lagged economy-wide developments, perhaps attributable to more limited construction industry innovations in recent years.⁵¹

⁵¹ Hufner and Lundsgaard, "The Swedish Housing Market."

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