Rent regulation and new construction: With a focus on Sweden 1995-2001

Hans Lind*

Summary

■ Rent regulation can lead to lower production of rental apartments in at least three ways:

- Reducing the rent that it is possible to charge.
- Increasing the risk because the regulation might be changed.
- Increasing the risk because there might be rent-regulated apartments with lower rents, and then vacancies will be concentrated in new construction when demand falls.

A number of factors determine how large the effect will be, e.g. how "hard" the rent regulation is, whether measures to stimulate housing production are part of the same "package" as rent control, and to what degree the production of non-regulated housing increases.

In the empirical part, it is argued that the evidence is consistent with a story in which rent regulation played a very small role for the low level of housing construction in Sweden during the economic boom 1995-2001. In this story, the important factors were the low elasticity of supply (related to the planning process and lack of competition in the factor markets), in combination with a demand that was directed towards the city centers. It is further argued that condominiums would have dominated production even if there had been no rent regulation. In recent years, when demand increased rapidly also in suburban areas, the third mechanism above might have become more important. A change to a milder form of rent regulation, with market rents in vacant apartments, would reduce the risk of new construction in these areas and should lead to higher housing construction there. ■

JEL classification: R31, R52.
Keywords: rent regulation, housing construction.

* *Hans Lind is associate professor at the Department of Infrastructure, Division of Building and Real Estate Economics at the Royal Institute of Technology.*

SWEDISH ECONOMIC POLICY REVIEW 10 (2003) 135-167

Rent regulation and new construction: With a focus on Sweden 1995-2001

Hans Lind*

Arnott (1995, p. 99) has written that there has been "widespread agreement that rent control discourages new production". An important point in his article is, however, that there are several different types of rent regulation.[1] The first necessary step when analysing the relation between rent regulation and housing construction is therefore to clarify with what kind of rent regulation the analysis is concerned. When a statement about the effects of rent regulation is made, the specific type of rent regulation is also compared to some more or less implicit system.

The next step in the analysis is to describe the possible mechanisms that can link rent regulation and housing construction. A number of ideas from the theoretical literature are described in this section and also some new hypotheses.

If there is widespread agreement about the negative effect of rent control on housing construction, it is important to know on what this agreement is based. Is it only based on qualitative results from theoretical models or are there empirical studies that show significant quantitative effects of rent regulation? An overview of the empirical results is presented.

The second part of the article is a case study of the role of rent regulation for the low level of housing construction in Sweden during the period 1995-2001. In these years, there was an economic boom, and a growing population in the major cities. Demand for housing increased, but in a historical perspective, housing construction remained at a very low level. As Sweden has a strong form of rent regulation, a claim in the debate was that rent regulation was a major cause of the low level of housing construction. This claim is evaluated in the second part, where the analysis also gives information about how rent

** I am grateful for comments by the participants in the conference, by an anonymous referee and especially for detailed comments by Peter Englund.*

[1] Rent control and rent regulation are treated as synonyms in this article.

regulation can have negative consequences on housing construction or not.

Before starting the analysis, it is necessary to make some explicit assumptions about the role of the rental housing market. If the share of households that own their car were compared with the share renting their car, the result would probably be a rather similar pattern in most countries. However, this is not the case when the share who own their house/apartment are compared with the share that rent. There are even large differences when comparing countries as similar as the Nordic countries. Norway and Iceland have a very small rental housing market, while Sweden and Denmark have a large rental sector. Such differences in the size of the rental sector can affect the consequences of rent regulation. In a country with a very small rental sector, no system of rent regulation can do *much* harm. In the rest of this article, it is assumed that there is—and will continue to be—a rather large rental sector on the housing market.

1. Clarifications

1.1. Rent regulation

A common theme in the literature from the last 15 years is the need to distinguish between different types of rent regulation. The effect of rent regulation might depend upon a number of details of the system (see e.g. Arnott, 1988; Olsen, 1988; Malpezzi, 1993; Arnott, 1995; and Keating et al., 1998). Malpezzi (1993, p. 595) identifies eight dimensions in which the actual rent regulation system can differ, and uses these to construct an index of how stringent the rent regulation is. Arnott (1995) focuses on the distinction between *first and second generation rent control*.[2] This classification was developed further in Lind (2001) where five distinguishable types of rent regulation are identified. Two of these only cover sitting tenants (A-B) while the other three (C-E) also include rules concerning the rent level for a new tenant. These latter three can cover new construction.

Type A is called "weak transaction cost related rent regulation" and *protects a sitting tenant against rents higher than the market rent.* A sitting tenant with high costs of moving could be in a weak bargaining posi-

[2] Mann and Veseth (1983) use the terms "moderate" and "restrictive " rent controls.

tion and accept a rent higher than the market rent. When Sweden was about to abolish the stringent system of rent regulation in the late 1960s, a system of type A was initially proposed as a replacement. The explicit argument against a complete deregulation was that sitting tenants, who might have high transaction costs, needed protection against rents higher than the market rent. The market rent was then defined as the most probable rent when a vacant apartment is brought to the market. Such a system of rent regulation currently exists on the non-residential rental market in Sweden, but it was never implemented on the housing market. Raess and Von Ungern-Sternberg (2002) focus on this kind of rent regulation and show that it can increase the welfare of tenants.[3]

Type B is called "strong transaction cost related rent regulation" and *protects a sitting tenant against certain types of increases in market rents*, typically against rent increases that only depend upon increases in demand. This is the vacancy-decontrol-recontrol system discussed in e.g. Nagy (1997).

The remaining three types also cover the rent in contracts with new tenants.

Type C *forbids rents higher than the market rent*. This is a kind of usury law, protecting households that might otherwise be "forced" to accept rents higher than the market level, either because they are in a tight spot or because they are not so good at protecting their own interests.

Type D has the aim of *smoothing changes in rents*. As it takes time for supply to increase, the rent might considerably overshoot the long-run value when demand suddenly increases. Rent regulation might introduce a cap on rent increases that cuts these peaks but allows an adjustment to the market level over a typical business cycle. Arnott (1988, p. 212) writes "rent controls may be the efficient response to a temporary, unanticipated surge in demand" and then refers to this type of rent regulation.

Type E is called "segregation related rent regulation" and has the aim of *keeping also the rents in new contracts below the market level* in certain areas. Sometimes it includes new construction, sometimes not. This is closest to the classical first-generation rent controls. The motive for this type is usually that households with lower incomes should be able

[3] From a Swedish perspective, it is, however, somewhat surprising to read that "the paper identifies a new argument for rent regulation" (p. 479).

to afford to live in certain attractive areas. Glaeser's article in this volume evaluates the efficiency of rent regulation in this respect.

It is not only necessary to be precise about the kind of rent regulation analysed, but also about what rent regulation serves as the comparison. In the sections below about the Swedish housing market, the comparison will not be between rent regulation and a market with no special rules for rents. Instead, it will be between the current system of rent regulation in Sweden, *which belongs to type E,* and *a system of type B*, where sitting tenants are protected against some increases in market rents. A system of this type has e.g. been proposed by some political parties and the Property Owners Association in Stockholm, and is the most realistic alternative to the current system, as there is general political agreement about strong protection for sitting tenants. There is disagreement about how strong this protection should be, e.g. for how long the rent could be kept under the market level for a sitting tenant, but this is disagreement within a system of type B.

Finally it should be noted that many have underlined that rent regulation seldom means that the rent for a specific well-defined housing service is regulated. It is more like what Heffley (1998, p. 748) calls an expenditure constraint, where, in reality, the landlord can adjust the quality of the service

1.2. Effect

What is meant by *the effect* of rent regulation also needs clarification. The first issue is the following: Is the aim to know what the situation would be if rent regulation (of the specific type) *had never been introduced*, or what the situation would be if an existing system *had been abolished at a certain point in time*. Olsen (1988) says explicitly that it is the first alternative in which he is interested, but from a Swedish perspective, it seems to be more interesting to focus on what would have happened if rent regulation had been abolished/changed at a specific point in time. If rent regulation has been in place for a very long time, it is difficult to identify the most probable counterfactual development, given the assumption that rent regulation had never been introduced.

The second aspect is that rent regulation seldom is the only type of housing policy. Arnott (1988, p. 209), summarising a conference, wrote that "A more muted theme was that long-term rent controls while harmful, are not devastating. Politicians do not stand idly by...."

If political leaders see that housing production goes down, they might e.g. introduce a subsidy to new construction. A good example of this situation is discussed in Smith and Tomlinson (1981) and Smith (1988). Should the aim then be to evaluate the effect of rent regulation *alone*, even if the "real" decision is whether the *package* of rent regulation and construction subsidy should be introduced/abolished or not? Arguments can be given for both alternatives, but from a Swedish perspective, this problem is not so serious as most subsidies have been taken away. Therefore, it is natural to simply ask what would have happened to housing construction if the rent regulation had been changed, given the low level of subsidy that exists.

The third aspect is that the effect of rent regulation can depend on *other characteristics* of the situation on the specific housing market. If there is an economic crisis in a country, like Sweden around 1993, rent regulation might not have any effect on housing construction simply because demand is so low that practically nothing would be built even if there were no rent regulation. A general discussion about the size of the effect of rent regulation is therefore not meaningful.

1.3. New construction

There is no clear line between new construction and major renovations or upgrading. In the case study, new construction will refer to cases where there either was previously no residential housing at all, or where an old house was completely demolished. There is, however, a risk that this can give a misleading picture of the effect of rent regulation on the housing stock.

Olsen (1988, p. 295) points out that the rules concerning rent regulation can include possibilities to increase the rent if there are major renovations and upgrading in the building. This can create incentives for the owner to reduce ordinary maintenance—which does not justify a rent increase—and instead make a major renovation earlier than would have been the case if there had not been a rent regulation. There is a general belief among actors on the Swedish housing market that private owners think in this way, and the case studies in Tingvall (2002) indicate that private owners are able to negotiate higher rent increases than municipal housing companies when there are major renovations. If the number of major renovations increase, and if renovations and new construction at least partly are substitutes, then this could affect new construction as the demand for new production

could go down. This possible relation will, however, be disregarded in the following analysis.

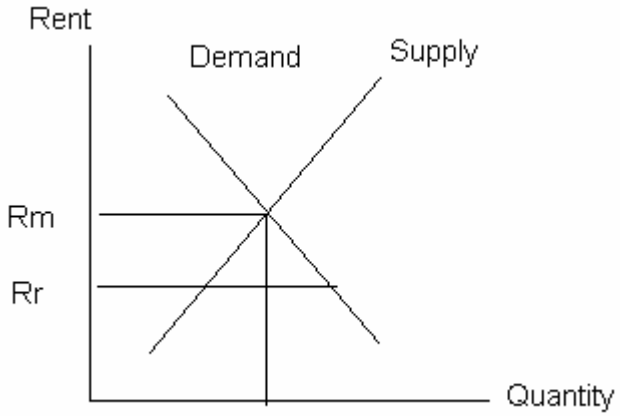
2. Mechanisms and earlier empirical results

2.1. Mechanism 1: The rent level

The hypothesis

Arnott and Igarashi (2000, p. 250) summarise the discursive literature about rent regulation. One mechanism emphasized in that literature is that *if rent regulation depresses rents, it will reduce the housing supply*. If the focus is on the market for new rental housing, the standard textbook version would read something like the following. Figure 1 shows the standard demand and supply curves for new rental housing. The market clearing level is R_m and there is a rent regulation that says that the rent in new construction is not allowed to be higher than R_r. Rent regulation here leads to a lower level of housing construction as supply at R_r is lower than supply at R_m.

Figure 1. The market for new construction of rental housing



In this model, the effect of classical rent regulation on new construction of rental apartments will depend on:

- *The difference between the market clearing rent*[4] *and the regulated rent.* As supply can be expected to depend on beliefs about the future rent levels, the hypothesis would also be that the negative effect is smaller for rent regulation of types B and D as compared to type E. For type B, the rents adjust to the market level when the apartment becomes vacant, and for type D the rent regulation only "bites" in periods with high increases in demand. In systems of type E, the idea is to keep the rent level below the market level also in a longer time perspective. In McFarlane's (2003) model of a market with rent regulation of type B, two results are that:

  > "when the initial rent is competitively determined, the net present value of rental income over the leasing period would be the same with the rent control as without" (p. 6)

  > "The timing of the initial development is neutral with respect to rent stabilization when there is no statutory limit on the base rent" (p. 9)

  Iwata (2002, p. 134) also shows that if the rent is free in the first period, this can compensate for a regulated rent below the market level in future periods.[5] Skelley (1998) shows the same "neutrality result" if side-payments are made at the start of any new contract, and if the responsibility for maintenance can be freely contracted.
- *The elasticity of supply of rental housing.* If the supply is very elastic in the interval between R_m and R_r, a strong effect should be expected. The size of this elasticity should depend upon what happens on markets for substitutes, and that is the next important issue.

A complication: What happens to construction in the non-regulated sectors?

Besides the regulated rental market, there might be both a non-regulated rental market and an unregulated market for condominiums and owner-occupied housing. A number of studies have looked at

[4] For simplicity, it is assumed that the rent level in a market without rent regulation would equal the market clearing level. There are, however, both arguments that the actual rent would be lower (based on parallels to the theories of efficient wages, see Lind, 1994; and Basu and Emerson, 2003) and that it would be higher (because of monopolistic elements on the housing market, see e.g. Arnott and Igarashi, 2000).

[5] As always, the result in the model depends upon a number of specific assumptions. Iwata also shows that if there is asymmetric information about expected contract length and if the landlord is sufficiently risk-averse, then the housing stock will be smaller even with a rent regulation of type B.

how rent regulation affects rents in a non-regulated sector, and a common result is that prices increase in the non-regulated sector (see e.g. the comment and references in Anas, 1997, p. 135). In the long run, this could lead to an increased production of these types of housing and therefore, total production might not fall. In some models (e.g. Olsen, 1972; Ault and Saba, 1990), supply in the non-regulated sector is assumed to be perfectly elastic, and rent regulation would then have a marginal effect on the total housing supply.

Another way to approach this problem is to start with the question of how rent regulation affects housing consumption in the regulated sector. As Malpezzi (1998, p. 798) notes, there are two countervailing tendencies.

- The low rent levels in the regulated sector can lead to higher housing consumption, as households do not move out of a 'too large' apartment since it is so cheap. In this case, the demand for non-regulated housing would increase as compared to a situation without rent regulation.
- Rent regulation makes it difficult to adjust housing consumption to changes in needs. A growing household might therefore choose to stay in a small cheap rent regulated apartment, as the alternative might be a somewhat larger, but much more expensive, apartment in the non-regulated sector. The number of persons per apartment in the regulated stock could then be higher than if the stock was not regulated. In this case, rent regulation leads to reduced demand for housing in the non-regulated market.

A similar mechanism can be found in Häckner and Nyberg (2000) where rent regulation can lead to a situation where more low-income households live in certain attractive areas, which can increase total demand in other areas where more high-income households live under rent-regulation. Smith (1988 p. 221) notes that rent regulation can affect household formation and thereby demand for new construction.

As rent regulation in Sweden covers all rental housing, including new construction, an important issue is to what degree rental housing and condominiums (and similar forms of housing, like the Swedish condominium "bostadsrätt") are substitutes. If rent regulation reduces the rent that a landlord can charge for a new rental apartment, the alternative would then be to build a condominium. In Smith (1988),

such a relation was found for Toronto, and a common argument in the Swedish debate is that rent regulation is an important explanation for the high share of condominiums in new construction.

If rental housing and condominiums are good substitutes, then the effect of rent regulation on total housing construction could be rather small. The degree of substitutability is probably related to a number of characteristics of the demand for new housing. High-income households can e.g. more easily enter ownership markets, but ownership might not be a good alternative if demand comes from households that only plan to stay a short period in the region, e.g. students and employees who move often.

2.2. Mechanism 2: Increased risk caused by instability in the rent regulation system

A number of authors have pointed out that rent regulation can increase the risk in new construction, and thereby increase the rate of return demanded by investors. Fewer projects would then be profitable and housing construction would fall, compared to a situation without rent regulation. This argument goes back at least to Olsen, (1972, p. 1098):

> "The existence of rent control in New York probably makes the owners of uncontrolled rental housing sensitive to the possibilities of changes in the rent-control law which would inflict capital losses on them..... In other housing markets where rent control was terminated fifteen to twenty years earlier, it is doubtful that landlords attach a very high probability to the imposition of rent control":

More recent, but similar, arguments can e.g. be found in Olsen (1988, p. 297) and Smith (1988, p. 220). Early (2000, p. 186) presents a variation on this theme when he writes (see also Early and Olsen 1998, p. 799):

> "Although new construction is usually exempt from control, nothing prevents future ordinances from controlling these units. This increases the risk of building in an area with rent control."

In the Swedish debate, similar arguments have been put forward, but there is a counteracting force that has not been discussed by the authors above. Rent regulation in an attractive area means that rents are kept below the market rent level and one implication of this is that there is *no need to reduce the rent when demand falls*. There will be no vacancies in the rent controlled attractive areas when there is a down-

turn in the economy. The property then generates a cash-flow that is very stable over time, almost like a bond, if the rent regulation system is believed to be rather stable. Even if there is *some* instability in the rent regulation system, the regulated property can still have a lower risk than properties on a non-regulated market. An indication that this is not only a theoretical possibility can be found in Thermenius and Trotzig (1999). That study concerns the questions of whether real estate companies should focus on certain types of properties or have a mixed portfolio of properties. One result was that most of the listed Swedish real estate firms wanted to keep both offices and residential housing in their portfolio. Their argument for having regulated residential housing in the portfolio was that these properties produced a stable cash flow and reduced the risk in the portfolio.[6]

2.3. Mechanism 3: Increased fluctuations in less attractive areas when demand changes

Discussions about rent regulation and new construction have focused on the effect in the most attractive areas, where the gap between market rents and allowed rents is big (e.g. Turner, 2001, to take a recent Swedish example). Further out in a region, market rents fall, and at least in the Swedish case, rent regulation seldom "bites" for new construction. The rents in new construction can be set at market levels, and it is therefore perhaps understandable that rent regulation is not believed to have any major effect on new construction in such areas. This can be a mistake, however, as there is a possible mechanism through which rent regulation can increase risk in new construction, even if market rents are in reality allowed for the project. The idea is the following.

Rent regulation, especially in periods of high inflation, can lead to a situation where older houses have considerably lower rents than newly built houses. This difference in rents is higher than the difference in the households' willingness to pay for new and old apartments, respectively. The Swedish system of rent regulation, where there is no vacancy decontrol, has led to such a situation.

[6] The argument was not related to theories about diversification based on covariances. The general trend during the period was for firms to focus on specific areas and property types, and let the investor do the diversification by holding stocks in different companies.

If there are such differences between rents in old and new houses, then *a fall in demand will primarily affect the newest houses* on the market, as the rent is much higher there. When demand falls and vacancies occur in the old stock, households in the newly constructed houses will have a strong incentive to move to the older cheaper housing stock. This means that owners of the new stock will face a stronger reduction in demand, and the downside risk increases for the investor. Whether rent regulation that keeps rents down in the old stock also increases the up-side in the new houses is more of an open question. It will depend upon the specifics of the rent control system and the pattern of demand, but the consequence should be an increase in the variance and/or a reduction in the expected value (if the "up-side" is not allowed to affect rents). In either case, rent regulation would make fewer projects profitable and housing construction would be reduced.[7]

A switch to a system of rent regulation of type B, with vacancy decontrol, might reduce this risk considerably. Then, a number of apartments in the old stock will also have market rents and be affected by a downturn in the market. Vacancy decontrol further means that there can be no extra gain in moving from an apartment in a new house to an apartment in an older house, as the landlord in the older house is allowed to charge a rent that reflects the value of the apartment on the market. If the downturn in demand leads to increased vacancies, these will then be spread more evenly over the whole stock.

The negative effect on housing construction, especially in less attractive areas, can be strengthened by the fact that rent regulation r*educes information about the consumers' willingness to pay.* A classical theme in the literature about the advantages of a market system is that the market generates a great deal of information. The price on the market tells us something. Going back to figure 1, the only thing that can be observed under rent regulation is that there is a queue at the regulated rent R_r, but the shape of the demand curve above R_r is not known, neither is the market rent, R_m. As rent regulation reduces the amount of information about probable profits for the investor, the risk should increase.

An example of this information problem can be found in suburban areas in expanding regions in Sweden. At the beginning of the 1990s,

[7] The increased project risk would of course be of less importance if it were possible to diversify it away, but it is very hard to see how this could actually be done.

there was a severe economic recession and the number of vacancies in rental apartments in suburban areas increased. When demand started to increase in the middle of the decade, vacancies fell and soon disappeared completely. More and more people were queuing for apartments, but it was difficult for an investor to know how many of the queuing households that would be willing to pay X per cent more than the regulated rent. This problem should be more serious in less attractive suburban areas where the market for condominiums is thinner, and where condominiums are not such good substitutes, e.g. because households do not have enough capital for a downpayment on a condominium.

2.4. Empirical evidence and methodological problems

Several leading researchers have expressed pessimism about the possibility to say much about the actual consequences of rent regulation.

One argument is that rent regulation can take so many forms, and interact with a number of other factors, and that therefore, nothing *general* can be said. The most famous article of this type is probably Olsen (1988) which discusses the effect of rent regulation on housing maintenance. Malpezzi (1993) argues in similar ways both on the issue of maintenance and the effect on the non-regulated sector.

> "So in summary the effect of controls on the uncontrolled market appears to vary widely with type of control regime, market, and the nature of the uncontrolled sector." Malpezzi (1993, p. 622)

That the effect of rent regulation varies with these dimensions seems very likely, but the conclusion would only be that we have to focus the investigation on a specific type of rent regulation, introduced on a market with specific properties. The "laws" of interest would be of the type: "Rent regulation of type X introduced in situation Y would have consequences Z".

However, a second argument in the literature says that it is very difficult to know the consequences of a specific form of rent regulation in a specific place and situation (see Arnott, 1988, p. 208f; Arnott, 1995, p. 112f). Both "before and after studies" and "cross-sectional studies" are problematic.

Before and after studies

The first strategy to estimate the effect of rent regulation on housing construction is to *compare housing production before rent regulation was intro-*

duced with housing production after its introduction. This is the main strategy in Smith and Tomlinson (1981) and Smith (1988) who look at rent regulation in Ontario. Their conclusion was that there was a fall in rental housing starts when regulation was introduced, especially in the private sector (Smith, 1988, p. 222). Government subsidised rental starts and condominium starts rose during the early control period, so the change in total construction was less than the effect on the private rental market. This result is very much in line with the hypothetical consequences discussed above, even if it was not possible to identify the importance of each of the different mechanisms.

The study is very crude, as there is no control for other factors. In a footnote (Smith, 1988, p. 230), it is mentioned that there were a number of other events that could have affected housing production, e.g. changes in the business cycle, but it is said that "rent control appears to be the primary factor". Arnott 1995 (p. 112) takes up the problem of controlling for other factors, and that this problem might be especially serious when we look at more modern forms of rent regulation, where "The impact of these other factors is likely to be significantly greater than any effect due to controls". As the milder forms of rent regulation have smaller effects, they are more difficult to identify.

Another problem with "before-and-after" studies is that rent regulation might have been in place for a very long time. If the method were to be applied to Sweden, it would be necessary to go back to the 1930s. It might be difficult to argue that information about such a distant period gives a good indication about what would have happened in recent years if there had been no rent regulation.

A further problem with before and after studies is that they cannot be applied if the interesting alternative is not to go back to the old system, but instead to introduce a new and "smarter" form of rent regulation. The historical starting point could be a situation without any special rules for rents, and then a system of type E is introduced. After a while, a change to a system of type B is proposed. The interesting question in this situation would probably be what would have happened to housing construction if there had been a system of type B instead of a system of type E all the time. In such a situation, there is no "before and after" to look at.

As the tendency during the last 20 years has been to deregulate markets, one way to measure the consequences of rent regulation could be to look at *what happens to housing construction when rent regulation*

(of a specific type) is taken away, or when there is a change from a stronger to a milder form of rent regulation. Somewhat surprisingly, there seem to be very few such studies published in the major journals. Gibb (1994) looks at the effect of deregulating the housing market in Scotland, but does not discuss housing production. In a Master's thesis, two of my students collected data and interviewed experts in three cities where the rent regulation system had been softened considerably in the last 10 years (Helsinki, Barcelona and Leeds). Their conclusion was that rental-housing construction had not increased significantly, but that the decline of the share of rental housing had been halted (Forsberg and Åsell, 2000). There were, however, no attempts to control for changes in other factors in that study, but quoting Arnott (1988, p. 208): "expert opinion, however imperfect and however fragile its basis, is better than no opinion at all".

Cross-sectional studies

Another strategy is to compare different countries, or different cities, and see if there is a relation between the level of housing construction and the system of rent control. Smith (1988) also uses this method, but only in a footnote where there is a comment that housing production in Ontario seemed to have fallen more than in cities in the USA and in other parts of Canada (p. 230). No statistical studies are presented.

If there is a considerable number of differences between the systems of rent regulation and the characteristics of the local housing markets and the local economic conditions, then it is of course difficult to identify the effect of rent regulation, especially the milder forms of rent regulation. These problems can be illustrated by another study by two of my students (Sergo and Nordgrén, 2001). They compared housing construction in the four Nordic capitals (Stockholm, Copenhagen, Oslo and Helsinki) during the late 1990s. Only the first two have rather strict systems of rent control. The only city where housing construction had been high, and had been able to match the increase in demand, was Helsinki, but this was also the city with the highest subsidies and the most active municipal housing policy. Oslo had a free rental market, but low housing production in relation to the increase in population. Houses built as rental houses, however, constitute a small share of the market. The city has severe problems with the supply of land for housing, caused by geographical factors in combination with strong preferences for saving recreational

areas close to the city. It might have been a case where the positive effects of a free rental market were counteracted by the problems on the supply side, but it is very difficult to identify the effects of a large number of factors in a cross-sectional study with a limited number of observations. This can be seen as a good illustration of the general problems discussed by Arnott (1995). Adding further cities might also make it necessary to add further factors.[8]

What can be done?

Given the arguments above, it is easy to understand the rather pessimistic comments, especially in Arnott (1995) about the possibilities of identifying the effects of rent regulation on e.g. housing construction. What should then be done?

One strategy could be to use models for simulation (see e.g, Anas and Chow, 1985; and Heffley, 1998). The problem is that in order to construct the simulation model, it would be necessary to make assumptions about a number of quantitative relations, and these assumptions would have to be based on uncertain judgements by experts on the specific markets.

Arnott (1995) writes:

> "It is unlikely that much more will be learned from time-series studies until understanding of the dynamics of housing markets improves sufficiently that other factors which dominate controls can be controlled for. It is also unlikely that much more will be learned from studies which compare controlled and uncontrolled sectors within a housing market until we have better articulated models of housing markets with partial-coverage rent controls function .....[We] will have to await developments in housing economic theory and econometric work which draws on these developments." (p. 114)

Arnott seems to be saying that in the future, the empirical effects of rent regulation will be better known because then, there will be better theoretical models. It is, however, very difficult to see how this could happen. What Arnott calls "Housing economic theory" is mathematical analyses of hypothetical model economies. It is hard to see how developing more such models would help us solve the empirical problems discussed above, especially as we would need a lot of empirical data to identify which of all the models that gives the best picture of a specific housing market.

[8] These problems are discussed on a more general level in Reed and Roger's (2003) evaluation of quasi-experimental methods.

In recent years, a number of interesting theoretical models clarifying possible relations and factors that can affect the consequences of rent regulation have been presented (e.g. Anas, 1997; Arnott and Igarashi, 2000; and Raess and Von Ungern-Sternberg, 2002). The models help us see how complicated the issues are, but it seems unrealistic to expect that they will solve the problems discussed above about the lack of data for drawing conclusions concerning the actual effects of rent regulation on a specific market.[9]

In a work on ethics, Aristotle said that it is a mark of a wise man not to strive for a higher degree of certainty than the subject matter allows. One way of looking at the situation of the economists that shall make a statement about the effect of rent regulation, is to compare it with a judge that has to make a verdict on different kinds of circumstantial evidence. The circumstantial evidence for the economist could include results from credible theoretical models, descriptions of credible mechanisms, the kind of statistical data described above and various kinds of information from actors or experts on the local market.

In the case study presented below, the starting point is the possible causal mechanisms described in sections 2.1-2.3 above, and then all these kinds of information are used in order to make a judgement about what would have happened on the market if there had been another kind of rent regulation.

3. The Swedish system of rent regulation

The fundamental role in the Swedish system of rent regulation is that a private landlord is not allowed to charge a significantly higher rent (and that means 5 per cent) than the rent in similar apartments owned by a municipal housing company. The Swedish rental market is what Kemeny (1995) calls a unitary rental market. Municipal and private companies are active in most sectors of the rental market—from new and very expensive centrally located apartments to apartments in less attractive suburbs. During the 1990s, there have been no special subsidies to the municipal housing companies.

With this system of rent regulation, it becomes very important how the rents are determined in the municipal housing companies. This is done separately in each municipality through negotiations with

[9] An interesting recent discussion about the role of models can be found in Sugden (2000).

the local tenants' union. Traditionally, these negotiations have been carried out in two steps. First, the *acceptable change in total cost* has been determined, i.e. how much more money does the municipal company "need" to cover its costs. This determines how much the total rental income of the company must increase. In the second step, this increase is divided between different types of apartments within the company. There are no governmental regulations concerning these negotiations, and there are different patterns in different cities. In Malmö, the rent gradient has systematically been steepened during the 1990s by raising rents relatively more in central locations, while in Stockholm, the rent gradient has hardly changed at all. Usually, the result of the negotiations is such that there is a strong correlation between the age of the building and the rent level, and only a weak relation between location and rent. This means that *in most cities we have the "classical" type E form of rent regulation, where rents are below the market level in central parts of the city, especially in older houses*. Note that in the Swedish system, there is usually no difference between rents for sitting tenants and rents for new tenants. Also note that the same system of regulation covers new construction.[10] The rent in a newly built privately owned house is not allowed to be significantly higher than the rent in a newly built house by the municipal housing company in the same area.

In reality, this system gave private firms a rather sheltered position and low risk, especially as the system had been stable for a considerable number of years. Private firms had lower costs than municipal housing companies, partly because they could select "better" tenants, but as they were allowed to charge the same rent, there was no problem in getting a reasonable profit margin.

This stable situation was suddenly upset in Stockholm in 1998. An old centrally located hospital area (the S:t Erik area) was redeveloped and one of the municipal housing companies was developing part of the area. When they marketed their new apartments they said that the rent would be 1300 SEK/m^2 per year. The left wing majority in the

[10] McFarlane (2003, p. 2) says that Sweden belongs to the group of countries where "the base rent on private rental housing is unrestricted." There is a small grain of truth in this as tenants must wait 6 months before they can go to court and get the rent reduced if it is higher than the municipal rent. But as the period with unrestricted rents is so short, it is rather pointless for a company to try to get a higher rent in these six months. The strategy of private firms seems to be to find the highest rent that might hold in court from the beginning.

board of the housing company then decided to reduce the rent to 1100 SEK/m² per year, with the argument that otherwise, households with lower incomes would not have the opportunity to rent an apartment in the house.

A number of households in a privately owned house in central Stockholm, where the rent was 1400 SEK/m² per year, then took their landlord to court and demanded a reduction of their rent to the level in the municipal housing company (i.e. 1100 SEK/m²). This created great uncertainty for private investors, as such a rent level would lead to considerable losses in new projects.

However, the tenants lost in court, because the court argued that if a municipal housing company has explicitly subsidised the rent in a specific project, this rent level should be disregarded when the acceptable rent in a private rental apartment is determined. In the specific case, the tenants got their rents reduced to 1300 SEK/m², as this was the full cost level in the specific project, and also the rent level in some other recent municipal projects.

This ruling can be interpreted as transforming the Swedish system of rent regulation from a system where comparisons with a municipal housing company is at the centre, to one with "reasonable costs" at the centre. One interpretation of the ruling is that the court realised that if Sweden wants to have private actors on the rental housing market, then these firms have to be given a rather stable environment. They should not be dependent on "political" adjustments of the rent level in specific projects in the municipal sector.

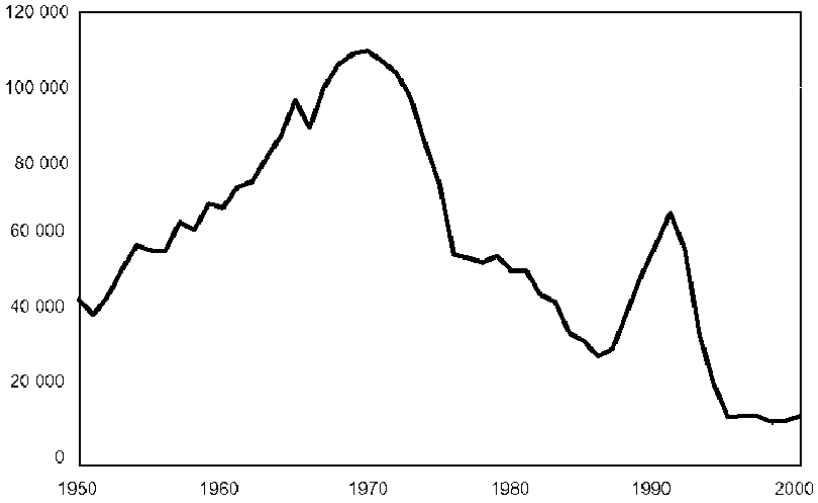
4. Housing construction in Sweden during the 1990s: The facts and a general explanatory model.[11]

4.1. The development of housing construction in relation to economic development

There was a dramatic decrease in housing construction in the early 1990s and the level continued to be low all through the 1990s, as can be seen in the figure below. The levels are among the lowest during the whole 20th century.

[11] This section is based on Lind (2003) where references to a number of Swedish sources can be found.

Figure 2. Completed housing units in Sweden 1950-2001, all tenures



Source: The figure is taken from Statistical Yearbook, 2003, Statistics Sweden.

The downturn in housing construction in the early 1990s was much in line with the development of economic fundamentals:

- A tax reform at this time led to a considerable increase in the relative price of housing. [12]
- GDP fell two years in a row and, on average, by 1 per cent per year during 1990-1994.

The level of housing subsidies had for a number of reasons been very high, and had led to a low perceived risk in housing construction during the boom 1986-1991, and this contributed to the high level of housing construction around 1990. More "normal" levels of housing construction during the period 1975-1985 were around 40,000 housing units per year. That construction would fall dramatically in the early 1990s, when supply had increased at the same time as fundamentals were considerably weakened and housing subsidies reduced, is just what should be expected.

The fundamentals changed almost as dramatically in the second half of the 1990s. Economic growth averaged 3 per cent in 1995-

[12] See Englund, Hendershott and Turner (1995).

2000. Unemployment fell from over 10 per cent to around 4 per cent. There was a large inflow of people to the major cities, especially Stockholm. The average prices of single-family houses in Stockholm increased with almost 50 per cent in real terms from 1996 to 1999. The National Board of Housing, Building and Planning sends a questionnaire to every municipality once a year, and asks a number of questions about the housing situation. In 1988-1990, more than 200 of the around 290 municipalities reported a housing shortage. In 1993-95, this figure was down to 20. In 2001, the number of municipalities that reported a housing shortage had gone up to 77, and more than 50 per cent of the population lived in these municipalities.

Even when the economy boomed, housing construction was still very low by historical and international standards. In the year 2000, Sweden had by far the lowest level of housing construction per household in the EU. Sweden was building 1.4 housing units per 1000 persons, while the EU-average was around 5. The level increased in 2001 and 2002 but it is still below 20 000 new units per year and very low by historical or international standards.

The word "housing crisis" was used more and more often, especially in Stockholm where owner-occupied house prices and condominium prices continued to rise. Prices in the black market for rental contracts rose, and so did the amount of illegal subletting at market rents, where the tenant with the contract and/or the landlord pockets the difference between market rents and regulated rents. A large number of rental apartments in central Stockholm were transformed into condominiums. Most of the textbook consequences of rent regulation could be observed.

Before looking at an explanatory model for why housing construction did not expand during the boom, it should also be observed that during this period (1995-2001), there was a strong increase in costs for the construction of multi-family apartments[13] and that housing construction:

- was concentrated in the central parts of the major regions
- mostly consisted of condominiums
- mostly consisted of high quality and high price units aimed at groups with a good economic position.

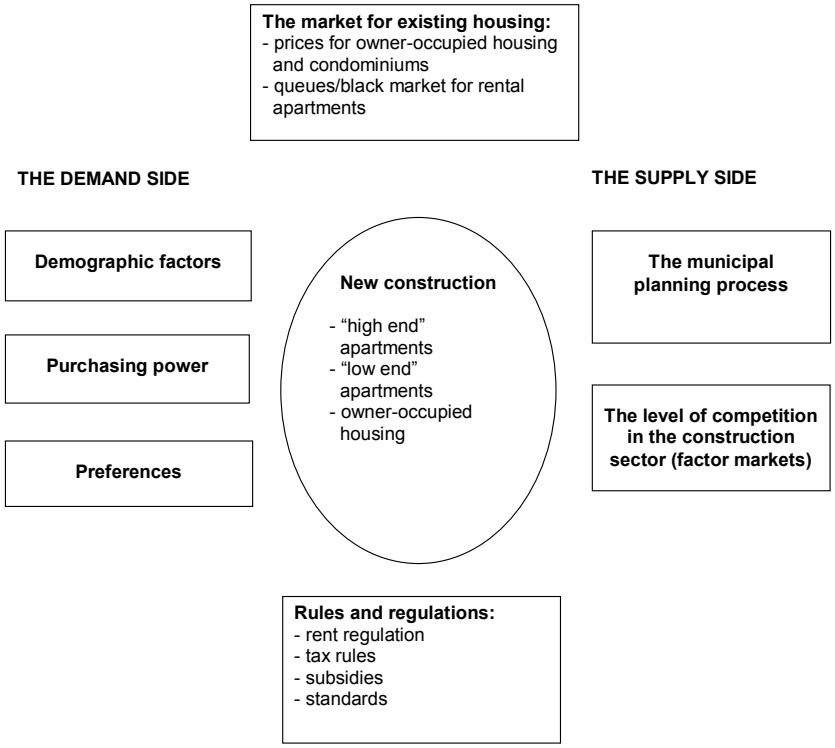
[13] For a number of reasons, comparisons over time are not unproblematic but the published figures from Statistics Sweden show an increase in the average cost from around 12000 SEK/ m^2 in 1995 to almost 20 000 SEK/m^2 in 2001.

From a historical perspective, the major decline could be observed for rental housing aimed at groups with more normal incomes.

4.2. A general explanatory model

The model below tries to give a systematic overview of a number of factors that can have affected housing construction in Sweden during the second half of the 1990s. The focus is on what is happening in the major cities, with Stockholm as the biggest and most interesting region. Even if the model is constructed with this situation in mind, most of the factors would be relevant on any market.

Figure 3. A model of factors that might affect new construction on the housing market



At the *centre,* there is housing construction in three submarkets: Apartments in the "high end" and in the "low end" (for households with "normal" incomes) and owner-occupied single-family houses.

At the *top,* there is the situation in the existing stock—which obviously affects what happens on the market for new construction.

At the *bottom,* there are rules and regulations that might affect the market, e.g. rent regulation, tax laws, subsidies to new construction and regulations concerning standards for new construction.

To the *left*, there are three factors that affect the volume and structure of demand: Demographic factors, purchasing power and preferences.

To the *right*, there are two important supply-side factors: The municipal planning process and the level of competition in the construction sector, including factor markets like the labour market.

The next step is to present a story about the development of new construction in a city like Stockholm during the period 1995-2001. This story will hardly mention rent regulation, but the role of rent regulation will be the topic of the next section.

The starting point is a situation where there are still vacancies, or very short queues, for rental apartments in the suburbs, and low prices of single-family houses, except in high-status areas. The demographic structure is such that the age-group 30-40 is relatively small. There is an inflow of young people from other regions, who have stronger preferences for living in the central parts of the city. There is also a large number of households aged above 50, and a relatively high share of these are interested in moving from their owner-occupied house in the suburbs to a central apartment, now that their children have moved out. At the same time, there seems to be a general shift in preferences towards living in the central parts of the city, which furthers strengthens the demand in central areas.

As in many other countries, the income distribution in Sweden became somewhat more unequal during this period, and the dramatic increase on the stock market meant that a number of rather well to do households increased their wealth considerably.

All this leads to a strong increase in condominium prices in the central areas, and *a growing number of households that are willing to pay much for new condominiums in central locations.*

The planning process is complex and unpredictable, especially as demand focused on areas with many conflicts of interest. Either the new projects led to protests and drawn-out administrative proceedings, or there were technical or environmental problems, e.g. in redeveloping industrial areas. The supply of new projects was therefore low, and not easy to increase in a couple of year's time. In combination with the high willingness of certain groups to pay for new condominiums, the price for these could be set high. This drove up land

prices and, because of a combination of low elasticity of factor-supply and high demand from a number of infrastructural projects, the consequence was also high wage levels in the construction sector and high prices for hiring sub-contractors. One way of describing this is to say that the high prices that it was possible to charge for the new condominiums created profit opportunities that were shared between all actors involved in the production process.

The demand for housing in suburban areas did not start to grow until 1999, and vacancies disappeared completely on the rental market only in the year 2000. As almost no projects had been started in the middle of the 1990s, because of the low level of demand, very little new construction came out on the market in suburban areas 1996-2000. Very few new projects were also started in the suburbs around the year 2000, as production costs had increased faster than the willingness to pay. This can be seen as a kind of Dutch disease, where the increase in factor prices generated by some profitable sectors—the centrally located condominiums—makes other "low-margin" sectors unprofitable. It should also be remembered that there is a special complication in building rental housing for middle-income groups. When moving into a new area, many people want to be sure that they get "good neighbours" and not households with social problems. If there is a fear that the risk of getting "bad" neighbours is higher in rental housing in suburban areas, this further reduces the willingness to pay for rental housing among households with a choice.

The demographic structure with relatively few households in the age-group that tend to "move to the suburbs", and the probable shift in preferences towards central locations, meant that house prices were still rather low in many suburban areas. Tobin' s Q was below 1 in many suburban municipalities, and few new houses were therefore built. There were a number of high-status municipalities where prices and Tobins Q were high all through this period, but these municipalities were not interested in any large-scale housing construction. They wanted to keep their image, and their property values. This is in line with the arguments concerning similar American suburbs presented by e.g. Fischel (2000).

Before the role of rent regulation is analysed, two further comments are motivated:

- There are similarities between the story above, and the arguments from a number of other countries that a restrictive, complex and uncertain planning process can lead to high housing costs, see

e.g. Glaeser and Gyourko (2003) and Luger and Temkin (2000) about USA; Monk and Whitehead (1999) about England, and Boulhower and de Vries (2002) about the Netherlands. What is special about the above Swedish story seems to be the combination of preferences for central locations, and the low elasticity of the supply of factors of production which led to factor price increases. A study by Barot and Yang (2002) indicates that the housing supply is less elastic in Sweden than in the UK, which could be explained by less competition and a stronger labour union in Sweden.

- In the Swedish debate, it has been argued that reduced subsidies and high taxes are a cause of the low level of housing production. It could always be said that housing production would have been higher with lower taxes and more subsidies. But if there are structural problems in a market, the view here is that the first priority should be to try to take action against these structural problems, e.g. the planning process, the system of rent regulation and/or the lack of competition/elasticity on the factor market. Housing production should not need subsidies, and the firms in the construction sector should be able to pay the same taxes as other sectors, and from that perspective, the current Swedish tax and subsidy situation is rather good.

5. The role of the rent regulation

The argument here will concern the role of rent regulation during the period 1995-2001 for housing construction in two types of areas: The central parts of the region and the suburbs.

The thesis will be that rent regulation only played a minor role in the complex of factors that led to low housing production in general and low production of rental apartments in particular.

5.1. The central areas

The arguments here are the following.

- *A fixed number of projects, focused on high-income groups*
  - The planning process made it difficult to increase the total number of projects within a number of years. Studies show

that the time from initiation to completion of a housing project is around 6 years.[14]

- New production in central areas is in general more costly than in the suburbs: Land prices are higher and there are more technical problems.
- Therefore, there were in reality a fixed number of rather costly projects, and households with a good economic situation were then the natural customer-group.

- *Condominiums would have dominated over rental apartments even if market rents were allowed.*
  - High income groups have a higher willingness to pay for condominiums than for rental apartments of the same quality (see Bernow, 2002, for an overview of preference studies). One explanation could be that the social structure in condominium projects is more predictable.
  - The Swedish tax system makes a condominium cheaper than a rental apartment for a household, given the same investment and maintenance cost. The reason for this is that the subsidy to rental housing does not fully compensate for the value of the interest deductions that can be made by the buyer of a high-price condominium with a normal level of loans. Further, if a seller of a single-family house buys a condominium, then the payment of the capital gains tax can also be postponed, but not if the household moves to a rental apartment.
  - The upturn on the stock market and the real estate market, had led to an increase in wealth and this also contributed to a high willingness to pay for condominiums in central locations.
  - All this led to a high willingness to pay that made it possible to earn higher and more immediate profits for an investor that built and sold condominiums rather than rental apartments. *Even if there had been no rent regulation it would, given the preferences and the tax system, have been more profitable to build condominiums*, especially as the risk for the investor would have been higher for rental apartments. The profitability would in that case depend upon future development on the market, while the profit in a condominium project would be realised

[14] See Lind (2003) for an overview of these studies.

immediately.[15] Another way to describe the situation is to say that a number of households had "easily earned" wealth that they were willing to put to risk, which made an immediate sale of the asset to this group the most profitable alternative for the investor.

Arguments like these paint with a very broad brush and there were probably some cases where the arguments above do not hold, especially around 1999 before the rulings in the St Eric case, but these would only be exceptions to the rule. The economic "fundamentals" in terms of willingness to pay made condominiums the best alternative both for the households in question and for investors/developers.[16]

5.2. The suburban areas

In the above story, the main explanation for the low level of housing production in suburban areas was simply that such production was expected to be unprofitable, in those municipalities that were positive to new construction. Initially, demand was low, and when demand increased so did production costs. This had nothing to do with the system of rent regulation. An observation consistent with this is that very few condominiums were built in these areas. As the change in demand around 1999-2000 was so sudden, almost no new construction can be ready in these areas until 2003, given the time that the planning process takes.

It is, however, possible to argue that the strong rent regulation has played some role for the low level of construction in suburban areas. Had there been rent regulation of type B instead of type E, then:

- Information about the rent level that it was possible to charge in different areas would have been better, as rents would have been market-determined for vacant apartments.
- The risk in starting new production of rental apartments would have been lower, as the probability of vacancies in the newly

[15] In Sweden, rental housing is never built by a developer which sells the project after completion.

[16] A number of investors blamed rent regulation for the low level of rental production, but the argument above indicates that this was only a "cover-up". It sounds better to refer to rent regulation than to the fantastic profit opportunities on the market for condominiums.

produced areas, if the market turns down, would have been lower.

- *The number of housing starts would then have been higher, and demand would not have had to be high for such a long time, before firms dared to initiate new projects*—if there had been a softer type of rent regulation. It is almost impossible to answer the question "How much more?" because then it is necessary to have detailed information about the demand situation and cost levels in different suburban areas. And even then, there could only be qualified guesses as this would be a situation of which no actor in Sweden has any experience. A qualified guess, however, is that during the specific period, it would not have been a big effect, as demand was initially so low in the suburban areas, and then rose so quickly and unexpectedly—and as construction costs increased so much at the same time.

6. Concluding discussion

Rent regulation can lead to lower production (of rental apartments) in at least three ways:

- Reducing the rent that it is possible to charge in new production.
- Increasing the risk in new production because the regulation might be changed in such a way that rents are (further) reduced.
- Increasing the risk in new production even if market rents can be set in new construction, because if there are rent-regulated apartments with lower rents, then vacancies will be concentrated in new construction when demand falls.

From the overview of the theoretical models and earlier studies, it is clear that whether rent regulation will in fact have a significant negative effect on housing construction will depend upon a number of circumstances. What kind of rent regulation is it? What other policies are in place? What is the role of the rental market? Etc.

The conclusion from the empirical part of this study is that rent regulation probably only played a minor role for the low level of rental housing construction in Sweden 1995-2001. In central areas, condominiums would have been more profitable even if there had not been any rent regulation in new construction. In the suburban areas, housing production was not profitable given the cost level and the willingness to pay until maybe the year 2000. And the planning

process made it very difficult to rapidly increase housing construction. It is, however, argued that the third mechanism above probably delayed and lowered housing starts somewhat in suburban areas at the end of the period under study.

My conclusion is that the main problem with the current rent regulation in Sweden, from the perspective of housing construction, is the third mechanism above. A switch to a rent regulation of type B, with vacancy decontrol but still a rather strong protection of sitting tenants would reduce the risk in suburban areas, and stabilise housing production there.[17] In Lind (2003), a package of policy changes is proposed in order to make housing construction in Sweden adapt more rapidly to changes in demand. This package includes:

- A switch to a kind of rent regulation that allows market rents in vacant apartments.
- Measures that reduce uncertainty and the time that the planning process takes.
- Measures that improve the level of competition and increase the elasticity of factor supply in the construction industry.

The thesis is that simultaneous changes in all these three areas are necessary.

References

Anas, A. (1997), Rent control with matching economies: A model of European housing market regulation, Journal of Real Estate Finance and Economics 15, 111-137.

Anas, A. and Chow, J.R. (1985), A dynamic policy oriented model of the regulated housing market: The Swedish prototype, Regional Science and Urban Economics 18, 201-231.

Arnott, R. (1988), Rent control: The international experience, Journal of Real Estate Finance and Economics 1, 203-215.

Arnott, R. (1995), Time for revisionism on rent control?, Journal of Economic Perspectives 9, 99-120.

[17] In a forthcoming study, Rune Wigren at the Institute for Housing and Urban Research at Uppsala University, will present data that show *that housing production is more volatile in Sweden than in any other EU country.* One part of the explanation for this can be the way that rent regulation increases the risk in new production, even if a number of policy changes have probably also played a role for the high volatility.

Arnott, R. and Igarashi, M. (2000), Rent control, mismatch costs and search efficiency, Regional Science and Urban Economics 30, 249-288.

Ault, R. and Saba, R. (1990), The economic effects of long-term rent control: The case of New York city, Journal of Real Estate Finance and Economics 3, 25-41.

Barot, B. and Yang. Z. (2002), House prices and housing investment in Sweden and the United Kingdom: Econometric analysis for the period 1970-1998, Working Paper 80, National Institute of Economic Research.

Basu, K. and Emerson, P.M. (2003), Efficiency pricing, tenancy rent control and monopolistic landlords, Economica 70, 223-232.

Bernow, R. (2002), Boendekvaliteter och Värden, Temaplan, Stockholm.

Boulhouwer, P.J. and de Vries, P. (2002), Housing production in the Netherlands: A growing misbalance between state and market, Working Paper, OTB Research Institute, Delft.

Early, D.W. (2000), Rent control, rental housing supply, and the distribution of tenant benefits, Journal of Urban Economics 48, 185-204.

Early, D.W. and Olsen, E.O. (1998), Rent control and homelessness. Regional Science and Urban Economics 28, 797-816.

Englund, P., Hendershott, P.H. and Turner, B. (1995), The Tax Reform and the Housing Market, Swedish Economic Policy Review 2, 318-356.

Fischel, W.A. (2000), Zoning and Land Use Regulation, in B. Bouckaert and G. De Geest (eds.), Encyclopaedia of Law and Economics, Volume II, Edward Elgar, Cheltenham.

Forsberg, L. and Åsell, M. (2000), Vad kan vi lära av länder som avreglerat sin hyresmarknad, Thesis No 98, Bygg- och fastighetsekonomi, KTH.

Gibb, K. (1994), Before and after deregulation: Market renting in Glasgow and Edinburgh, Urban Studies 31, 1481-1495.

Glaeser, E.L. and Gyourko, J. (2003), The impact of building restrictions on housing affordability, FRBNY Economic Policy Review 9, 22-39.

Heffley, D. (1998), Landlords, tenants and the public sector in a spatial equilibrium model of rent control, Regional Science and Urban Economics 28, 745-772.

Häckner, J. and Nyberg, S. (2000), Rent control and prices of owner-occupied housing, Scandinavian Journal of Economics 102, 311-324.

Iwata, S. (2002), The Japanese tenant protection law and asymmetric information on tenure length, Journal of Housing Economics 11, 125-151.

Keating, D., Tietz, M. and Skabursis, A. (eds.), (1998), Rent Control, Regulation and the Rental Housing Market, CUPR Press, New Jersey.

Kemeny, J. (1995), From Public Housing to Social Market: Rental Policy Strategies in Comparative Perspective, Routledge, London.

Lind, H. (1994), Hur skulle en fri marknad för hyreslägenheter fungera. En analys av tänkbara problem och kompletterande regelverk, Message 5:38, Bygg- och fastighetsekonomi, KTH.

Lind, H. (2001), Rent regulation: A conceptual and comparative analysis, European Journal of Housing Policy 1, 41-57.

Lind, H. (2003), Bostadsbyggandets hinderbana: En analys av utvecklingen 1996-2001, (Ds 2203:6), Ministry of Finance, Stockholm.

Luger, M.I. and Temkin, K. (2000), Red Tape and Housing Costs: How Regulation Affects new Residential Development, CUPR Press, New Jersey.

Malpezzi, S. (1993), Can New York and Los Angeles learn from Kumasi, and Bangalora? Costs and benefits of rent controls in developing countries, Housing Policy Debate 4, 599-626.

Malpezzi, S. (1998), Welfare analysis of rent control with side payments: A natural experiment in Cairo, Egypt, Regional Science and Urban Economics 28, 773-795.

Mann, B.D. and Veseth, M. (1983), Moderate rent controls. A microeconomic and public choice analysis, ARUEUA Journal 11, 333-343.

Monk, S. and Whitehead, C. (1999), Evaluating the impact of planning controls in the United States: Some implications for housing, Land Economics 75, 74-93.

McFarlane, A. (2003), Rent stabilization and the long-run supply of housing, Regional Science and Urban Economics 33, 305-333.

Nagy, J. (1997), Do vacancy decontrol provisions undo rent control?, Journal of Urban Economics 42, 64-78.

Olsen, E.O. (1972), An econometric analysis of rent control, Journal of Political Economy 80, 1081-1100.

Olsen, E.O. (1988), What do economists know about the effect of rent control on housing maintenance, Journal of Real Estate Finance and Economics 1, 295-307.

Raess, P. and Von Ungern-Sternberg, T. (2002), A model of regulation in the rental housing market, Regional Science and Urban Economics 32, 475-500.

Reed, W.R. and Rogers, C.L. (2003), A study of quasi-experimental control group methods for estimating policy impacts, Regional Science and Urban Economics 33, 3-25.

Sergo, T. and Nordgrén, K. (2001), Bostadsbyggande. En jämförelse av påverkande faktorer i Stockholm, Oslo, Helsingfors och Köpenhamn, Thesis No. 131, Bygg- och fastighetsekonomi, KTH.

Skelley, C. (1998), Rent control and complete contract equilibria, Regional Science and Urban Economics 28, 711-743.

Smith, L.B. (1988), The economic assessment of rent controls: The Ontario experience, Journal of Real Estate Finance and Economics 1, 217-231.

Smith, L.B. and Tomlinson, P. (1981), Rent controls in Ontario: Roofs or ceilings?, AREUEA Journal 9, 93-114.

Sugden, R. (2000), Credible worlds: The status of theoretical models in economics, Journal of Economic Methodology 7, 1-31.

Thermenius, J. and Trotzig, J. (1999), Beståndsförändningar hos börsnoterade fastighetsbolag. Fokusering vs Diversifiering, Thesis No 26, Bygg- och fastighetsekonomi, KTH.

Tingvall, J. (2002), Ombyggnad av bostadshyreshus i Stockholm, Thesis No. 136, Bygg- och fastighetsekonomi, KTH.

Turner, B. (2001), Varför byggs det så lite där efterfrågan är som störst?, Ekonomisk Debatt 29, 117-129.