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The end of Oslo's rent control: Impact on rent level

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Abstract

Rent control provides an opportunity to study policymakers' ability to control prices on a large scale, in a sector that has significant welfare effects. We investigate the removal of rent control in the Norwegian capital Oslo in 1982 using a long dataset, with observations from 1970 to 2011. This allows us to exclude business-cycle fluctuations and ensure that the market and rent level are no longer affected by the rent control, and that rent has reached a new long-term equilibrium. We do not find that the removal of the rent control led to an increase in private rents in Oslo. It would appear that landlords' asking rent was equal to the market clearing rent in both the period with rent control (1970–1981) and that without rent control (1982–2011). The rent control in Oslo did not have the desired welfare distribution effects.

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1 Introduction

Rent control was widespread in many European and some US cities after World War II, and still has an important role in many housing markets (Lind, 2001; O'Sullivan & DeDecker, 2007; Haffner et al., 2008). Even though the tendency over the past 20 years has been to deregulate markets, there seem to be few studies looking at the effect of rent deregulation (Lind, 2003). In this paper, we revisit the effects of the removal of rent control to see if the control had the desired welfare distribution effect, by applying a new dataset from Oslo. The removal of the Norwegian rent control in 1982 created a natural experiment. We utilise this natural experiment to look at the effects on rent of removing the control. Using the terminology from Arnott (1995), rent control in Oslo went from a second-generation system, where rents were allowed to increase at approximately the same level as the CPI, to a system where the landlord is free to ask whatever rent she wants in new contracts, while at the same time tenants in existing contracts are protected against unreasonable increases.

Lind (2001) argues that rent regulation can have two major purposes. The first is to protect sitting tenants against major increases in market rents caused by increases in demand. The second is to keep down all rents in attractive flats in order to make it possible for households on lower incomes to rent there. Arnott (1995) and Olsen (1988) pointed out the scarcity of research on the detriments and benefits of rent control. They argued that, even though there is broad agreement about the detrimental effects of first-generation rent control, second-generation rent control might not be so harmful. Nevertheless, it may be argued that the harmful effects of rent control are acceptable costs if control leads to a desired distribution of welfare. Arnott and Igarashi (2000) make this case, and claim that rent control could be appropriate for distributional reasons, and that alleviation of it would imply major shifts in welfare from lower to higher decentiles of income distribution.

Gibb (1994) found that after deregulation, more landlords were supplying and that real rents were not rising. At the same time the concentration ratio fell, different properties were being rented out, and the geographical distribution of rental units changed. Bailey (1999) found that rent levels had not risen in real terms, suggesting a smooth adjustment process, with supply keeping pace with demand. Sims (2007) analysing the removal of rent control in Massachusetts in 1995, he found that control leads to large rent decreases and has a small effect on the construction of new housing.

One of the standard mechanisms is that, if rent control depresses rents, it will reduce the housing supply. The microeconomic intuition that relates a rent ceiling to a diminishing quantity and quality of residences in the tenancy market has been supported by several theoretical explorations (Basu & Emerson, 2000; Raess & Ungern-Sternberg; 2002; Basu & Emerson, 2003) and empirical analyses (Johnson, 1951; Albon and Stafford, 1990; Gyourko & Linneman, 1990a,b; Alston et al., 1992). Gyourko and Linneman (1989), Nagy (1995) and Gleaser and Luttmer (2003) studied the New York controlled rental market, finding misallocation of housing units. Others studied the reduced mobility in the housing market under rent control (Clark & Heskin, 1982; Gyourko & Linneman, 1989; Ault et al., 1994; Nagy, 1995; Munch & Svarer, 2003; Skak and Bloze, 2013). Oust (2017) finds that the

removal of the rent control in Oslo made it more costly and more difficult for tenants to find somewhere to live.

We have a long dataset, with observations from 1970 to 2011 with a natural experiment, where all rents went from being under control one year to none in the next year. This offers huge analytical advantages. It reduces problems with business-cycle effects and makes it is more likely that the rent level will have reached a new equilibrium unaffected by the former rent control. If we do not see a jump in the rent level at the time of the removal of the control, and there is no variable in place that might have created the exact opposite effect on the rent level, then rent control was not able to keep the rent under market clearing rent. To isolate the rational components of rent changes that are due to movement in fundamentals, we use the price-rent relationship. We test for changes in interest rate, house prices, house price expectations, inflation and tax. We use dummy variables to test for the effect of the removal of the rent control. The long dataset helps us to isolate the rational components of rent change and to find significant coefficient levels.

We do not find that the removal of the rent control led to an increase in private rents. We find that landlords' asking rent was in line with the market clearing rent in both the period with rent control (1970–1981) and the period without it (1982–2011). The Norwegian rent control did not have the desired welfare distribution effects. This article is in many ways in line with much of the literature on rent control; the market has a tendency to find ways around the control by discriminating quantity, quality, or by paying "key" money.

The remainder of this paper is organised as follows. We start with an introduction to the Norwegian rent and house price control in Section 2. Data are described in Section 3 and the empirical approach in Section 4. The results are presented in Section 5, while Section 8 concludes.

2 The Rent control in Oslo and Norway

Rent controls were imposed in Norway and Oslo during World War I as part of a more extensive price capping that covered almost all trade objects. After World War II Norway introduced a more flexible system of rent control, which went through a series of minor revisions. This was a second-generation system, again using the terminology of Arnott (1995), in which local housing rent boards decided what level of increase was permitted in a given year. These were often at the same level as increases in the CPI, but starting from an already low rent level. Larger increases were allowed if the rental property was upgraded, but the size of these increases had to be decided by the rent committee. The regulation and deregulation of the Norwegian housing market are summarised in Table 1. In addition to rent control, Norway imposed price control on houses and flats built with government support after World War II that lasted until 1969.

Table 1: Regulations of the Norwegian housing market

Type of housing	Period	Type of regulation
Rental homes	1940-1982	Rent control on new and existing rental contracts.
	1982->	Tenants in existing contracts are protected agents rent increases considered as unreasonable compared to the market rent.
	1940-2010	Rent control on existing rental contracts in some special buildings.
	1976-1982	Condominium conversion forbidden.
Owner-occupied homes	1940-1954	Prize freeze.
	1954-1969	Price regulations.
Housing co-operatives	1940-1954	Price freeze.
	1954-1982	Price regulations on new flats.
	1954-1988	Price regulations on old flats.
	1976-1982	Condominium conversion forbidden.

Description of the regulation and deregulation in the Norwegian house market.

One of the problems with the rent control system was its dependence on tenants reporting excessive rents to the board or to court. If a tenant did not accept the rent and it was in conflict with the rent control, he or she could bring the matter to court. The upside for the tenant of reporting an excessive rent was that he or she, after signing the rental contract, could get a lower rate in the new contract. As we show later, it seems that most tenants simply accepted the rent that the landlord offered in order to find somewhere to live.

The removal of rent control through the Act of June 11, 1982 # 44 came less than one year after the Conservative Party took power for the first time in more than a decade. With the support of the centrist parties, they started pushing for reforms. Rent control was removed for new rental contracts, but maintained for old contracts on pre-World War II brick buildings until 2010. In addition, condominium conversion was now allowed, and it was permitted to remove price controls on co-operative housing. These rapid changes present a natural experiment that allows us to study the effects of the removal of rent control.

3 Data

3.1 Rent data

To study the removal of rent control, we look at the private sector of the rental market. As in the studies by Gibb (1994) and Bailey (1999), our data is collected from newspaper advertisements. Oslo rents are collected from two rent indices. From 1970 to 2008 we use a hedonic rent index constructed by Oust (2013a), and from 2008 to 2011 we use a hedonic rent index constructed by Option for Boligbygg Oslo. These were by far the two largest

listing services in the representative periods. Both indices use data from housing for rent advertisements. Oust (2013a) uses data from the newspaper *Aftenposten* and Option uses data from Finn.no. The methods and data used to construct these two indices are very similar, and we therefore find them to be compatible.

3.2 House price data

The house price data for the period between 1970 and 2003 were collected from Eitrheim and Erlandsen (2004). From 2004 to 2011, we have used data from the Norwegian Association of Real Estate Agents (NEF), which has compiled and published regional and nationwide house price indices back to 1985. Eitrheim and Erlandsen (2004) merge their repeat sales index with the NEF's house price indices from 1986. The last year for which Eitrheim and Erlandsen collected house price information is 1989. Co-operative housing is not included in any of these indices.

Summary statistics are presented in the appendix table 4.

4 Empirical Approach

4.1 Testing the effect of the rent control

To investigate whether the removal of rent control resulted in higher rents, we first isolate the other rational components of rent changes that are due to movements in fundamentals such as land and construction costs, housing quality, property taxes and demographics (Mankiw & Weil, 1990). We follow Brunnermeier and Julliard (2006) and use the price-rent relationship to control for fundamental movements that affect house prices and rents symmetrically. An agent can either buy or rent a house to receive the same service flow.[1] Several authors, including Poterba (1984), Case and Shiller (1989), Meese and Wallace (1994), Gallin (2008) and Campbell et al. (2009), explain price-rent as a sort of dividend model depending on the return on capital. In its simplest form, the house-price dividend model can be written as

$$V_0 = \sum_{t=1}^{T} E\left[\frac{R_t - C_t}{(1+i)^t}\right] + E\left[\frac{V_T}{(1+i)^T}\right], \qquad (1)$$

where V_t is the house price, R_t is the rent cost, C_t is the cost of owning a dwelling, i is the discount rate and t is the period and T is the time of sale.

Set the selling time to $T = 1$ and let R_1 be the contracted rent at time 0 and paid at time 1.[2] Similarly C_1 is the cost of owning known at time 0 and paid at time 1. From expression (1) we get:

[1] Even if renting and buying a house are not perfect substitutes, as households may derive extra utility from owning a house (e.g. the ability to customise, pride of ownership etc.).

[2] Simplification rent is typically paid monthly.

$$\frac{R_1}{V_0} = (1+i) - \frac{E(V_1)}{V_0} + \frac{C_1}{V_0} \qquad (2)$$

where $\frac{R_1}{V_0}$ denotes the yield ratio. We create it on the basis of the rent and house prices on normalised three-bedroom (100-square-metre) flats in 2011. Then we use the rent index and house-price index to construct the yield ratio for the entire period (Figure 1). For the regression we rewrite Equation 2,

$$R_1 = (1+i)V_0 - E(V_1) + C_1 \qquad (3)$$

Equation 3 gives us the independent variables explaining the rents. These variables are discount rates, house prices, expected change in house prices and the cost of owning as a fraction of the house price. In the cost of owning a dwelling, a large number of variables could be included (insurance, maintenance, property tax, water and sanitation etc.). In Norway most of this cost will be the same whether the dwelling is inhabited by the owner or a tenant. As for fundamental movements, we assume that the cost of owning a house affects house prices and rents symmetrically. If this assumption holds, we can ignore the cost of owning and only look at changes in house prices and the discount rate.

To test whether variables are stationary, we use a simple Dickey-Fuller test. All the variables have one unit root, and we therefore differentiate them to make them stationary. To test for autocorrelation we use a Durbin-Watson test and a Portmanteau test for white noise. We find autocorrelation AR(1) and apply a Prais-Winsten regression (Prais & Winsten, 1954) to reduce the problem. The Prais-Winsten regression is a modification of the Cochrane-Orcutt estimation (Cochrane & Orcutt, 1949). The method assumes that the error term in the residuals is AR(1) noise with a serial autocorrelation of ρ. By estimating ρ, we transform our variables, obtaining new estimates for slopes and intercept and new residuals. We redo the process until we find a ρ without autocorrelation in the corresponding residuals.

Our regression is:

$$Y^* = \beta_0(1-\rho) + \sum \beta_j x_{jt}^* + \sum \delta_j s_{jt} + \epsilon_{jt}$$

where β_j is the coefficient for the j_{jt} explanatory variable, δ_j is the coefficient for the s_{jt} dummy variable, ε_{jt} is the error term and Y is the rent. The * denotes the transform of our variables. In our benchmark regression the explanatory variables is Δ average loan rate, Δ house prices, and s is 1981, 1982, and 1983; in addition, we use a dummy for the change in house price expectations.

To test for the effect of the removal of rent control we use a number of dummies: dummy for 1981, dummy for 1982, and dummy for 1983. The intuition behind our use of dummies is as follows: if rent control were able to force rents to below the market rent, we should expect to see a positive and significant jump in relative rents just after deregulation and a similar jump in yields. 1982 is our main reporting year, since it comes right after deregulation. Oust (2013a) has constructed his rent index in such a way that all his observations from 1981 were conducted before the election and all the observations for 1982 after the removal of rent

control. The dummy for the year 1981 is used to control for the possibility that the removal of rent control was anticipated, and the results for 1983 to control for the possibility that landlords took longer to adjust to the new regime.

We do a final robustness test. Even though house price controls were removed in 1969, rent control could drive down prices of buildings that are difficult to convert to owner occupation, such as large blocks of flats in the city centre where condominium conversion is forbidden. Since smaller dwellings could be owner occupied, regulation of condominium conversions and rent control should only affect larger buildings. To test where rent control combined with regulation of condominium conversions negatively affected house prices on larger buildings, we created rent and house price indices for dwellings smaller than 400 square metres, using house price data from Oust (2013b). We ran the same regressions reported in Section 5; this did not change the results in any significant way. The result of this robustness test is not reported in this paper.

5 Results

5.1 Removal of rent control

As can be seen from Table 2, an increase in the interest rate, house prices and inflation gives an increase in rents, while the expected change in house prices gives lower rents. This is in line with our expectations. Compared with Equation 3, expected house price change shows low coefficient levels, while interest rates have high coefficient levels.

Looking at the three dummy variables 1981, 1982 and 1983 in Table 2, none of them are significant. The dummy variable for 1982 is negative, indicating that rents were falling, but the coefficient is low and has a reported t-value of only -0.17. The coefficient level for the 1981 dummy shows that the rent in 1981 was increasing, but not enough to indicate that a shift in rent did not occur in front of the removal. Nor do the negative coefficients for the dummy variables for 1983 further indicate that a shift in rent did not occur with a lag in 1983. From this, it appears that rent control was not effective in Oslo during the time period between 1970 and its removal in 1982.

Table 2: The removal of the rent control

Interest rate Borrowing rate real	10y gov bond real	House price real	Inflation	Exp. change real	1981	1982	1983	Tax	Adj.R^2	DW transf.
2.11***		0.34***	0.04**	-0.03					0.29	1.78
2.16***		0.31**	0.05**	-0.02	0.03				0.27	1.75
2.13***		0.33***	0.05**	-0.03		-0.01			0.27	1.77
2.26***		0.35***	0.05**	-0.02			-0.05		0.29	1.88
2.25***		0.32***	0.05**	0.00	0.04	-0.01	-0.06		0.26	1.88
	1.62	0.34***	0.04	-0.03		-0.02			0.12	1.77
2.15***		0.35***	0.05**	-0.03		-0.01		0.02	0.26	1.79

*In the table we compare how well different dummy variables for the removal of the rent control are able to explain changes in the rents. To isolate the rational components of rent changes that are due to movement in fundamentals, we test for changes in interest rates, loan interest rate (data from Statistic Norway) and ten-year government bonds (data from the Norwegian Central Bank), as proxies for the discount rate, house prices, house price expectations, inflation and tax.Dummies used are 1981, 1982 and 1983. DW transf. referees to the Durbin-Watson statistic, transformed after using the Prais-Winsten regression. Significance at the 1%, 5% and 10% levels is denoted as ***, **, and *respectively.*

We conduct two different sets of robustness tests. First we replace the average loan interest rate with the rates of ten-year government bonds (Table 2). This does not change the results much when it comes to the effects of the removal of rent control. The dummy for 1982 still shows only an insignificant change in rents. Second, we introduce a dummy for the Norwegian tax reform of 1992 (Table 2). The tax changes in 1992 do not seem to be important in explaining the changes in the rent ratio.

The different regressions show that the removal of rent control did not result in higher rents. If the point of the rent control was to lower rents to less than the market rate (Figure 1) in order to make a welfare distribution, landlords would be expected to increase rents when the opportunity arose. Since we do not find such an increase after the removal of the control, the natural interpretation is that landlords were unable to raise rents because they were already equal to the market rate. In other words, the removal of the Norwegian rent control did not lead to higher rents for dwellings advertised in the newspaper *Aftenposten*.

Adjusted for loan interest rate, house prices and inflation, rent was almost the same in the period without rent control as in the period with (Table 3). The changes in rent and yield look more likely to have been caused by the business cycle than by the removal of rent control.

Table 3: Rent control

Interest rate real	House price real	Inflation	Rent Control	Adj.R^2	DW transf.
2.10***	0.31***	0.05**	0.00	0.29	1.84

*In this table we look at how well the dummy variable for rent control is able to explain changes in the rent together with changes in the loan interest rate, house prices and inflation. The dummy used is Rent control, given the value 1 in the period 1970 to 1981. DW transf. referees to the Durbin-Watson statistic, transformed after using the Prais-Winsten regression. Significance at the 1%, 5% and 10% levels is denoted as ***, **, and * respectively.*

5.2 Yield ratio, long-run effects

Optimism, high oil prices after OPEC II and a deregulation of the financial market created a strong boom from 1984 to 1987. The optimism ended on Black Monday: October 19, 1987. House prices peaked in the end of 1987, while rents peaked in 1988 (Figure 2), but Norway's economic problems had already started in 1986 with a negative oil price shock. Lower public spending, high interest rates and a Norwegian Bank crisis that lasted from 1988 to 1993 created problems in the housing market, resulting in a drop in both house prices and rents. After the Bank crisis Norway experienced a strong recovery, with a period with increasing house prices that lasted until the international finance crisis 2007. Rents reached a peak in 2001, before a nominal fall from 2002 to 2004. The period from 2002 to 2004 was dominated of two factors: problems in the Norwegian traded sector and low interest rates. After 2004, both rents and house prices increased until the finance crisis 2007. The financial crisis in Oslo only resulted in a small fall in the house prices.

Norwegian rent control was removed in 1982, giving us a 30-year time span of rent observations after deregulation. This long time period increases the chance that supply and demand are now close to the level they would be at had the rent control never been in place. Still, it is necessary to isolate other rational components of rent changes, among them the possibility of the yield ratio and rent level being driven by the business cycle.

Figure 1:
The Yield ratio, $\frac{R_1}{V_0}$. The yield is before tax, and does not take into account maintenance or other owner costs (Appendix table 5). The yield itself is calculated based on house prices and rents for two-bedroom flats (100 square meters). A vertical reference line is placed in 1982. The yield ratio has one large cycle starting in 1984, peaking in 1992, and then falling until 2006.

Looking at Figure 1, we can see that the removal of rent control in 1982 had a small effect on the yield ratio level, indicating that rent control was unable to reduce the asking rent among private landlords who found their tenants through newspaper advertisements. House price and rents are presented in figure 2 in the appendix. There was a small increase in the yield ratio from 1981 to 1982, indicating that rents increased faster than house prices, but the change in the yield is small compared with almost any other year. Following 1982, the yield fell in 1983 and 1984. The increase in the yield ratio from 1984 to 1992 can be divided into two different periods: from 1984 to 1988 rents increased faster than house prices, and from 1988 to 1992 rents fell more slowly than house prices. After 1992, when the yield ratio reached almost 9 per cent, it fell until 2006, when it seems to have levelled out at around 4 per cent. The yield quoted is before tax and does not take into account maintenance or other owner costs. On average, the yield in Oslo was about the same in both of our sample periods: 6.6 per cent in the period with rent control and 6.1 per cent in the period without. Especially after 2002, yields have been low (less than 5 per cent).

6 Concluding Remarks

The findings in this paper indicate that the rent control in Norway's capital, Oslo, in the period between 1970 and 1982 was not "hard" enough to have the desired welfare distributional effects. In the private rental market, rents were close to the market rate even before deregulation.

We use the natural experiment created by the sudden removal of Norwegian rent control in 1982 to expand the small existing literature of before-and-after studies, looking at the effects on rent of the removal of control. In 1982, the Norwegian government removed a second-generation programme of rent control and replaced it with a system where the landlord is free to ask whatever rent she wants in new contracts, while at the same time protecting tenants in existing contracts against unreasonable increases beyond market rent.

The natural experiment in this paper offers great advantages when interpreting the results. For rent control to have held down rents in Oslo, giving the desired welfare distributional effects, we need to see a jump in rents in, or close to, 1982. Since we do not find such an increase, and we do not find another event in the market that could have caused an equivalent fall at the same time, thus neutralising the effects of the removal, we find that the rent control in Oslo was not able to lower the rent. We also do not find that change in in supply can explain the missing increase in the rent levels (Appendix figure 3 and table 6).

Our long dataset with observations from 1970 to 2011 improves our opportunities to exclude business-cycle problems and ensure that market and rent levels have reached a long-term equilibrium and to isolate the rational components of rent change. To isolate the rational components of rent changes that are due to movement in fundamentals, we use the price-rent relationship. In our regressions we test for changes in interest rate, house prices, house price expectations, inflation and tax. In addition, we use dummy variables to test for the effect of the removal of rent control. From the results in Section 5, we find that landlords' asking rent was in line with the market clearing rent in both the period with rent control (1970–1981) and that without it (1982–2011). This result is in line with what Gibb (1994) and Bailey (1999) found from studying the removal of rent control in Scotland in 1988. Our result is the opposite of that of Sims' (2007) study of the removal of rent control in Massachusetts in 1995, where he found that rent control leads to large rent decreases.

The rent control system in Norway was rather "soft", with a large private rental sector, and "soft" controls based primarily on reports from tenants do not have the desired welfare distributional effects. A "harder" rent control with a larger public or semi-public rental sector might have succeeded in pressing the rent below the market clearing rent in the period with rent control, giving the desired welfare distribution effects. The results presented in this paper, however, show that it is difficult to control rent effectively in the private residential market. As the Norwegian rent control does not seem to have had the desired welfare distributional effects while still incurring costs, even if these costs were probably lower than they might be under a more effective control program, its removal can be considered a success.

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Appendix

Table 4: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Yield	42	6.968356	1.714576	3.903	10.14274
Rent	42	684.536	442.1272	100	1536.964
Real rent	42	149.6294	40.1528	95.98678	220.5492
Price	42	686.4293	589.8722	100	2117.058
Real price	42	143.8651	67.29106	81.01386	303.7908
Inflation	42	5.01286	3.40731	0.7	13
Real Borrowing rate	42	4.18941	3.54746	-.0291439	10.83578
Real 10y gov bond	42	2.63683	2.89812	-3.98531	6.86827

Table 5: Yield ratio, $\frac{R_1}{V_0}$.

Year	Brutto Yield	Year	Brutto Yield
1970	5.973	1991	8.103
1971	6.137	1992	8.905
1972	6.338	1993	8.726
1973	5.833	1994	8.389
1974	5.942	1995	8.463
1975	7.110	1996	7.953
1976	6.750	1997	7.497
1977	5.599	1998	7.116
1978	7.515	1999	6.439
1979	8.282	2000	5.914
1980	7.618	2001	5.703
1981	6.159	2002	5.276
1982	6.412	2003	4.825
1983	5.867	2004	4.263
1984	5.338	2005	4.057
1985	5.721	2006	3.696
1986	6.187	2007	3.753
1987	6.577	2008	4.248
1988	7.071	2009	4.140
1989	7.355	2010	4.074
1990	7.666	2011	3.903

The Yield ratio, $\frac{R_1}{V_0}$. The yield is before tax, and does not take into account maintenance or other owner costs. The yield itself is calculated based on house prices and rents for two-bedroom flats (100 square meters).

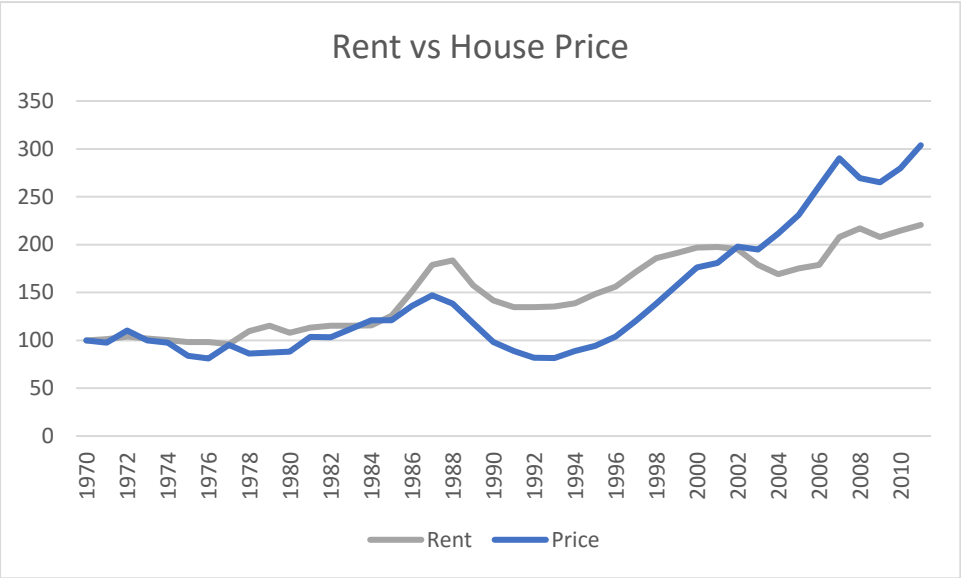

Figure 2:

The figure shows real rent and real house price in Oslo between 1970 and 2011.

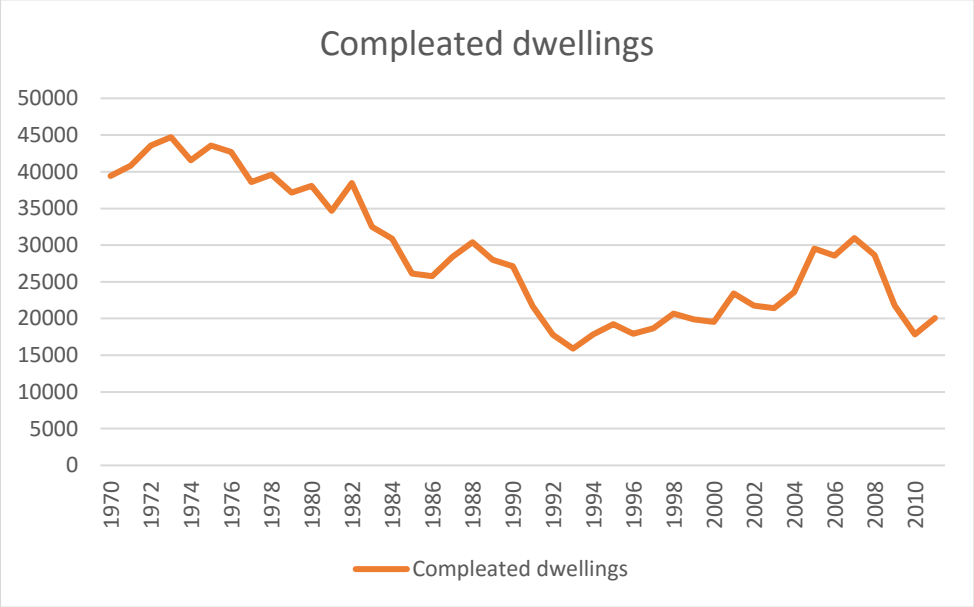

Figure 3:

The figure shows the number of completed dwellings in Norway between 1970 and 2011.

Table 6: The composition of the rental market in Norway

	1973	1981	1988	1995	2001
Flats rented out by non-professionals where they live	68	54	45	109	130
Other flats rented out by non-professionals	105	132	129	177	130
Company residence, public and private	86	51	31	33	25
Local authority owned	33	42	51	56	60
Professional landlords	104	67	45	41	95
Rest	6	4	6	1	10
Total number of rented properties	402	359	307	418	450

Reference: Langsether et al., 2003

The composition of the rental market in Norway, 1973–2001. All numbers in 1000s. Before deregulation, blocks of flats were typically owned by professional landlords. These properties then became divided into separate flats and sold to people who chose to reside there themselves. After some time we see professional landlords re-enter the market, holding other types of property. Non-professionals also contribute a large share of the rental market; these flats are well scattered.