RENT CONTROL

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Rent Control

Strictly speaking, rent control refers to *control* by the government of the rent a landlord may charge for a housing unit. This essay will employ the informal and more general usage of the term, however, as the broader set of laws and regulations which *constrain* the rent or rent increase a landlord may charge.

The desirability of rent control continues to be hotly debated and to generate interest quite out of proportion to its current practical importance. The reason is that -- like the minimum wage -- rent control has served as a case study in price regulation. For years rent control has been presented in economics textbooks as an example of regulatory folly. Recently, however, the asymmetric information revolution has caused economists to rethink the appropriate role of government, including their previous adamant opposition to rent control. The nature of rent control has changed too, evolving into a broad range of optional provisions. At least a significant minority of housing economists today would argue that rent control programmes should be evaluated on a case-by-case basis, rather than being opposed in general.

This essay will selectively review the evolution of rent control policies over the century and how economists' thinking on rent control has changed.

The history of rent control is difficult to document accurately. Most rent control programmes have been instituted and administered by local governments. Documenting the history of legislation and regulation in a particular jurisdiction is difficult enough. Finding out how the programme has been administered, in particular the extent to which the provisions have been enforced, is considerably more difficult. Comparison of rent control policy across jurisdictions requires knowledge of different countries' languages and

legal systems. And data on the behaviour of a local housing market at anything like the level of detail required for a persuasive empirical analysis of the effects of a rent control programme are very rare.

Despite these difficulties and despite considerable variation in programmes across jurisdictions at a point in time, a clear distinction can be made between two generations of rent control programmes. The 'first-generation' programmes entail rent freezes, with intermittent upward adjustments in rents. 'Second-generation' rent controls entail a complex set of optional provisions governing not only rents and rent increases, but also conversion, maintenance, and landlord-tenant relations. They commonly permit automatic percentage rent increases related to the rate of inflation. They also often contain provisions which permit higher percentage increases if certain conditions are met: cost pass-through provisions permit landlords to apply for rent increases above the automatic rent increase, if justified by cost increases; hardship provisions allow discretionary increases to assure that landlords do not have cash-flow problems; and rate-of-return provisions permit discretionary rent increases to ensure landlords a "fair" or "reasonable" rate of return. Second-generation rent controls commonly exempt certain categories of rental housing. Such 'partial coverage' programmes often exempt rental housing constructed after the application of controls (although it may subsequently be brought under control) and sometimes exempt high-rent housing. Many programmes contain provisions for the decontrol of certain submarkets; for example, units may be decontrolled when their rents reach a certain level. And some programmes control rents during a tenancy but allow rents to be raised without restriction between tenancies. Some commentators use the term rent control to refer to first-generation controls, and rent regulation to refer to second-generation controls. Others refer to first-generation controls as hard or strict controls and

second-generation controls as soft controls. This latter distinction is somewhat misleading, however, since rent controls which freeze rents only slightly below market levels may have a softer impact on the market than a second-generation programme.

First-generation rent control programmes were introduced in most major cities in Western Europe during World War I to mitigate the disruptive effects of the War and to prevent profiteering. In some cities, the programmes were discontinued after the War; in others, they lingered on. Rent freezes were imposed throughout Western Europe and North America during World War II. All North American cities, with the exception of New York City, were fully decontrolled by about 1950. However, due to the ravages of the War, first-generation rent controls were maintained in most European cities for considerably longer. In 1970, New York City remained the only city in North America with rent controls, while in Europe, London, Paris, Vienna, Stockholm (B. Turner, 1988) and many other cities still had strict rent control programmes in place.

The year 1973 marks the beginning of the era of second-generation rent control programmes. In the next few years, second-generation programmes were introduced in all Canadian provinces and in many coastal cities in the U.S., most notably Boston, Washington, D.C. (M. Turner, 1988), San Francisco (Keating, 1983), and Los Angeles (Rydell et al., 1981). The impetus was the alarmingly rapid increase in the inflation rate and in nominal rents triggered by the Energy Crisis. In Canada, the provinces were instructed to introduce rent control programmes as part of federal wage and price controls. In the U.S., the rationale for their introduction was partially to combat inflation and partially to prevent undue hardship particularly for the elderly on fixed nominal incomes. Many of these programmes have since been dismantled, but

many others remain in effect, albeit with substantial modification, including those in Washington, D.C., San Francisco, Los Angeles, many towns and cities in northern New Jersey and California, and several Canadian provinces including Ontario. Meanwhile, as part of the trend after 1980 towards deregulation and greater reliance on markets and away from social democracy and the welfare state, those cities in Western Europe that retained controls from World War II, as well as New York City, have been liberalizing their programmes, essentially exchanging hard, first-generation programmes for soft, second-generation programmes.

Without exception, rent control programmes in Europe and North America were introduced as a temporary measure to combat a perceived emergency situation. Evidently, however, many programmes turned out not to be so temporary.

Many major cites in less-developed countries too have rent control programmes (Malpezzi, 1993; Wheaton, 1981). Modeled on European programmes, they differ significantly from one another not only in their form and severity but also in their degree of enforcement.

A useful place to start in the economic analysis of rent control is the treatment of a rent ceiling found in principles of economics textbooks.

INSERT FIGURE 1 HERE

The rental housing market is characterized by a demand curve for housing, $H_D(r)$, which relates the quantity of rental housing demanded to housing rent, and a corresponding supply curve, $H_S(r)$; see Figure 1. In an unregulated market, rent adjusts to clear the market; the equilibrium quantity of rental housing and rent are H^e and r^e, respectively. Now suppose that a rent ceiling, $\bar{r}$, is imposed below the market-clearing level. This gives rise to five types of effects. First, the rent paid by consumers falls, which causes the

quantity of rental housing demanded to increase and all else equal benefits

consumers. Second, the rent paid to housing producers falls, which reduces the

quantity of rental housing supplied. The rent ceiling reduces the profitability of

rental housing, discouraging maintenance and thereby speeding up deterioration

of the existing rental stock, discouraging new rental housing construction, and

encouraging the conversion of housing from rental to owner-occupied status.

Third, there is excess demand for rental housing. How the excess demand

manifests itself depends on how rental housing is rationed. The most obvious

rationing effect is that sitting tenants retain their units at reduced rents while

some households new to the market are rationed out. In extreme cases, being

rationed out can take the form of homelessness. But typically it involves

households living in smaller and less desirable units than they would like, in

children leaving home later, in elderly relatives being taken in, in some doubling

up, and in increased owner occupancy. In choosing whom to rent to, landlords

may ask for illegal, quasi-legal, or legal key money (a non-refundable deposit)

or may select easy tenants -- a widow rather than students or a young family

with children -- and can exercise their prejudices without economic penalty.

Another effect of excess demand is reduced mobility, since a tenant who moves

is likely to find himself among the rationed out. This reduced housing mobility

leads in turn to reduced labour mobility. A related effect is inefficient matching

of housing units to households. The proverbial example is a poor widow who

chooses to remain in the large unit in which she raised her children, while large

young families have to settle for cramped quarters. A final excess demand

effect is increased search. Fourth, rent control has equity effects, effectively

redistributing from landlords and rationed-out tenants to rationed-in tenants.

The fifth type of effect concerns related markets. The most obvious related

market is that for owner-occupied housing; rent control may increase or

decrease the demand for owner-occupied housing but creates an unambiguous incentive for the conversion of housing from rental to owner-occupancy status -- to counter this, rent control programmes have conversion restrictions. But also, if households spend less on rent, they have more left over to spend on other goods. As well, if rent control is applied to some but not all rental housing within a jurisdiction, it will influence the uncontrolled portion of the market via spillover effects (Fallis and Smith (1984), Gould and Henry (1967), Marks (1984)). Relatedly, rent control imposed in one jurisdiction will affect the rental housing market in neighbouring jurisdictions. Over time, with the rent ceiling on a unit fixed and its market-clearing rent rising, the inefficiencies created by rent control become increasingly onerous and the implicit redistribution increasingly unjust.

So goes the textbook analysis. There is no dispute among economists concerning its logic; the conclusions follow from the assumptions. Disagreement instead concerns the realism of the underlying set of assumptions -- the model which forms the basis of the analysis.

The first important criticism leveled against the textbook model centres on the distinction between housing units and units of housing service (Frankena, 1975). Housing units are highly heterogeneous. To aggregate them for the purpose of analyzing "the housing market", the procedure is to take a standardized unit -- say an average one-bedroom apartment in a particular neighborhood -- as providing one unit of 'housing service', an apartment commanding twice the rent of the standardized unit in an unregulated market as providing two units of housing service, and so on. Having aggregated housing units on the basis of unregulated rents, the analysis of the housing market is conducted in terms of the market for housing services. The rent on an apartment is then rent per unit of housing service, p, times the number of units

of housing service the apartment provides, q, i.e., $r = pq$. Correspondingly, a rent freeze for the apartment imposes the constraint $\bar{r} \geq r = pq$, which corresponds to a rectangular hyperbola -- as shown in Figure 2, where $h_D(p)$ and $h_S(p)$ are the demand and supply curves for housing services. According to this alternative analysis, a rent freeze on a housing unit may result in equilibrium at the point F. The intuition is that, in response to a rent freeze, landlords may run down the quality of their units so fast that the rent per unit of housing service rises and no excess demand occurs. In this situation, even sitting tenants are made worse off by a rent freeze.

INSERT FIGURE 2 HERE

Another criticism (Olsen, 1988) is that the model assumes that supply decisions are made only by housing producers, which ignores tenant maintenance. Since controls encourage a sitting tenant to stay in his unit longer, he has a stronger incentive to maintain his unit. If the model is augmented to address this criticism, the prediction is that a rent freeze causes undermaintenance of the public areas of an apartment building but has an ambiguous effect on the maintenance of private areas.

In principle, the hypotheses generated by these competing models can be tested using cross-section or time-series econometric analysis. In fact, there are no thorough econometric analyses of a rent freeze because where and when such programmes were in place the collection of housing data was sporadic and spotty. Nevertheless, the cumulative evidence -- both quantitative and qualitative -- strongly supports the predictions of the textbook model in virtually all respects. The decay and shrinkage of the rental housing markets in Britain and Israel caused by long-term rent control are persuasively documented in Coleman (1988) and Werczberger (1988), respectively; Friedrich v. Hayek (Fraser Institute, 1975) provides evidence of the harmful effects of hard rent

controls in interwar Vienna, including their adverse effects on labour mobility; and Bertrand de Jouvenel (Fraser Institute, 1975) and Milton Friedman and George Stigler (Fraser Institute, 1975) argue strongly that the retention of controls immediately after World War II adversely affected the Paris and U.S. housing markets, respectively. There is also abundant anecdotal evidence of the baleful effects of first-generation controls. While the evidence is not incontrovertible, expert opinion overwhelmingly concludes that an extended rent freeze has strongly deleterious effects of the operation of the rental housing sector.

This does not imply, however, that a *temporary* rent freeze is always bad policy. Rent freezes during wartime provide a way to ration housing without imposing undue hardship on landlords or tenants. The difficulty comes with the cessation of hostilities. On one hand, there are good reasons to retain controls; affordable housing needs to be provided to returning soldiers and scarce investment funds are best channeled into industrial reconstruction. On the other hand, the longer controls are in place, the more difficult politically they may be to remove. Even during peacetime a temporary rent freeze may be sound policy; the imposition of controls during the Alaska Oil Boom has been cited as an example.

Economics textbooks continue to apply the analysis of a rent ceiling to second-generation rent controls. The majority of economists, who have been so schooled, stand firm in their opposition to second-generation rent controls. Expert opinion is, however, more equivocal. The first point an expert would make is that the effects of a second-generation rent control programme are sensitive to the particular set of provisions it contains. It matters whether the guideline rent increase is 2% above the rate of inflation or 2% below it, whether or not cost pass-through is allowed, whether or not housing constructed after

the imposition of controls is exempt, whether or not rents may be freely set between tenancies, and so on.

The second major point that a modern housing economist would make is that, in contrast to the assumptions of the standard textbook model, the housing market is not perfectly competitive, and as a result the standard theorems concerning the efficiency of an unregulated market do not apply. Admittedly, controls are not justified on the basis of any of the classic market failures: economies of scale appear unimportant in the housing market -- entry and exit are virtually costless and the typical scale of operation of both housing contractors and landlords is small; externalities are pervasive, but are not of a form that warrant across-the-board rent regulation; and public goods considerations are of secondary importance. However, during the last two decades, economists have come to appreciate that the conditions for perfect competition are far more stringent than was implied by the classic market failure analysis.

That imperfect/asymmetric information is pervasive and undermines perfect competition is now generally appreciated. Economists differ in their judgment concerning the extent to which asymmetric information affects the operation of the rental housing market. A strong case can, though, be made that asymmetric information is very important (Hubert, 1995). Prospective tenants invest large amounts of time in search; the cost of operating a rental housing unit depends on the quality of the tenant, which a landlord cannot judge well at the time a lease is signed; and the rental contract is significantly 'incomplete' (falls far short of specifying rights and obligations in all contingencies) and may as a result provide inappropriate incentives.

With asymmetric information, market equilibrium is not in general 'constrained' Pareto efficient (efficient conditional on the information available)

so there is potential scope for ameliorative government intervention. This does not, of course, imply that rent control is desirable. To establish this, it needs to be demonstrated that a rent control programme is part of the policy package which best deals with the inefficiencies generated by imperfect information. Government failure and political failure need to be taken into account as well.

An example may be helpful. Security of tenure looms large in all debates on rent control. The standard rental contract in North America is for one year. At the end of the year, the landlord is free not to renew the lease (while in principle a tenant can negotiate a longer lease, in practice he cannot) and can raise the rent at will. Tenants' groups argue that the standard lease provides inadequate security of tenure. Tenants' enthusiasm for improved security of tenure might be considerably diminished if they had to pay for the cost it imposes on landlords. But suppose, for the sake of argument, that for whatever reason the market underprovides security of tenure. A policy to improve security of tenure requires rent control in order to prevent landlords from economically evicting tenants through prohibitive rent increases.

The model of perfect competition assumes that commodities are homogeneous. In fact, however, housing units are highly heterogeneous. Also, tastes for housing are highly idiosyncratic. These features together explain why the typical prospective tenant household searches extensively, and imply that the typical landlord has market power which he exploits by setting rent above cost (which is consistent with free entry and exit only if there are vacancies). The importance of search and vacancies in the rental housing market provides strong support for the view that market equilibrium is monopolistically competitive rather than perfectly competitive. Anderson, dePalma and Nesterov (1995) have shown, for a symmetric market in which consumers with idiosyncratic tastes choose one of a set of heterogeneous

goods, that the market-determined price is higher than optimal. Applying this result to the rental housing market implies that a form of rent control which holds rent somewhat below the unregulated level is efficiency-enhancing (Igarashi and Arnott, 1992).

Thus, according to this modern view of the housing market, it should be possible to design a second-generation rent control programme that improves efficiency. This argument for rent control is very different from the conventional one put forward by non-economist advocates of rent control, which centers on notions of "equity" and "affordable housing" and fails to acknowledge that setting rent below the market level discourages maintenance and new construction. The new, economically respectable argument in favour of rent control is also more tentative. All it claims is that there is *some* set of rent control programmes which would improve efficiency. It emphatically does not assert that second-generation rent control programmes are in general desirable.

The obvious question is whether the political process can be expected to result in the choice of rent control programmes that do indeed improve welfare. To address this requires consideration of the political economy of rent controls. The literature on the subject is in its infancy. There are, however, two interesting contributions. Fallis (1988) starts with the observation that since tenants outnumber landlords, it is remarkable that rent control is not more widespread. One explanation is that landlords are relatively rich and hence able to lobby against controls. Another is that the extent of political action may be related to the intensity of harm or benefit caused by a policy. Opposition to rent control may be stronger than support for it if it hurts each of the few landlords a lot and helps each of the many tenants only a little. To explain why rent control has been more prevalent in Europe than in North America, Fallis appeals to

differences in ideology -- European social democracy vs. American capitalism. Epple (1997) develops a model in which current residents, all of whom are renters, vote self-interestedly. New, uncontrolled housing will be constructed to accommodate future population growth. On one hand, rent control will help a current resident if he is permitted to stay in his current unit. On the other hand, rent control will cause housing supply to be reduced so that if he is displaced from his current housing he will have to pay more in the uncontrolled market. While both models are insightful, neither addresses the form of rent control programme chosen. Another political economy consideration is the political dynamics of rent control. It might be, for example, that the political process results in the choice of rent control programmes that are beneficial when introduced but are retained for too long or modified in ways that render them harmful.

Overall, then, theory leads to an ambiguous conclusion. Depending on the rent control package chosen, rent control may be beneficial but need not be.

Can empirical analysis resolve the ambiguity? Perhaps examination of the experience of jurisdictions which have imposed rent controls can cast light on whether the actual rent control packages chosen have been harmful or helpful. Unfortunately, empirical work on second-generation rent controls encounters severe difficulties. The first set of problems relates to data. In no jurisdiction, with the possible exception of New York City, are data collected at a high level of detail; irregular collection of data and changes in definition make construction of time series for a particular jurisdiction difficult; differences across jurisdictions in definitions and the data collected render cross-section studies problematical; detailed information on local rent control programmes are difficult to obtain, particularly concerning enforcement; and reliable data on maintenance and upgrading expenditures are notoriously hard to acquire because

of infrequent collection, difficulty in measuring "sweat equity" (non-market labour), and the incentives to conceal expenditures so as to evade income and property taxes. Such problems can be exaggerated, however: property transactions are recorded in most jurisdictions and data on rents are collected in many; national censuses collect some data on housing, household mobility, income, and demography, that are consistent across jurisdiction and over time; and some jurisdictions have periodic housing surveys.

The second set of problems relate to inference. Suppose, for the sake of argument, that there is a group of neighbouring jurisdictions for which consistent and reasonably detailed time-series data are collected and for which some have rent controls while others do not. (In fact, there is such a group of jurisdicitons in northern New Jersey. The New Jersey data are especially attractive since those jurisdictions that adopted rent control did so over a three-year period (1973-76) and designed them from a common model ordinance.) What empirical tests could the econometrician undertake to measure the effects of controls?

The econometrician would confront a variety of difficulties. The first is the signal extraction problem. Second-generation rent controls are typically mild and so can be expected to have only modest effects on the housing market. Other influences on the housing market -- macroeconomic conditions (e.g., the interest rate and credit availability), local economic conditions (e.g., the population growth rate, the rate of unemployment, industrial and demographic composition, and the stage of the local real estate cycle), national and local tax policy, national housing policy, local development restrictions and zoning regulations -- together are likely to have impacts many times larger than rent controls. In attempting to control for these other factors, any misspecification of the estimating equations or mismeasurment of variables may severely bias

the estimated effects of controls. Even if these problems are avoided, the rent control variable is likely to come through as insignificant because of the difficulty of extracting the signal from the background noise.

Second, whether a jurisdiction has rent control is endogenous. To account for this, the presence or absence of controls within a jurisdiction (as well as the form of controls) should be estimated simultaneously with the other endogenous variables. Third, account needs to be taken of adjustment lags. In particular, because of the durability of housing and delays in the construction process, the housing stock can be expected to adjust only slowly to a policy change, including the imposition or modification of controls; relatedly, household relocation will be damped by moving costs. Fourth, since producers' construction and maintenance decisions and households' moving decisions are intertemporal in nature, expectations need to be considered, including expectations concerning future rent control policy.

The fifth difficulty is clientele or tenant composition effects -- that heterogeneous tenants can be expected to sort themselves systematically over jurisdictions according to their form of rent control policy. Suppose, for example, that there are two jurisdictions, A and B. Jurisdiction A has a form of rent control that constrains rent increases during a tenancy but imposes no restrictions on rent increases between tenancies. Jurisdiction B is similar in all respects except that it has no controls. Jurisdiction A will attract tenants who anticipate a longer tenancy. Landlords there, realizing this, will tend to 'front-end load' rents, which will compound the effect. Jurisdiction A will then exhibit a lower rate of tenant mobility even when rent control has no effect on individual moving decisions. To infer that rent control reduces mobility would be a logical fallacy. It is well-documented (Guasch and Marshall, 1987) that in uncontrolled markets substantial rent discounts are given to longer-term tenants.

The standard explanation is that longer-term tenants are more stable and have a stronger incentive to maintain their units and to build up goodwill with their landlords. Accordingly, tenant composition effects would result in jurisdiction A having lower rents and probably lower landlord expenditure on maintenance. To argue that the lower rents and maintenance in jurisdiction A provide evidence that controls lower housing quality would be fallacious.

Few existing econometric studies even acknowledge these difficulties and none satisfactorily addresses them. The regrettable conclusion is that existing econometric work on second-generation rent controls has not been sufficiently sophisticated to provide persuasive evidence concerning their descriptive effects. Ascertaining their welfare effects is even more difficult.

New York City's rent controls have been in place continuously since 1942, and have undergone a byzantine set of policy changes. During most of that period controls were hard, but they have been liberalized in fits and starts over the past thirty years. The New York City experience has been extensively studied and widely discussed (e.g., DeSalvo, 1971; Gyourko and Linneman, 1989; Lowry, 1970; Marcuse, 1979; Roistacher, 1972; Stegman, 1988; Sternlieb, 1976). Taken together, the studies generally support the predictions of the textbook model, though the effects have not been as dire as predicted. Because of the durability of housing, the current state of New York City's housing stock reflects the cumulative effects of fifty-five years of largely hard controls. It is unclear, therefore, what light the New York City experience casts on the likely impact of the extended application of second-generation rent controls.

Overall, the evidence suggests that the effects of second-generation rent controls have been minor. There is the danger, however, that the longer such programmes are in place, the harder will they be to remove and the stricter will

they become. How real is this danger? Unfortunately, there has been little empirical work on the political economy of rent control. Epple (1997) tested his model of rent control adoption for a sample of New Jersey cities. But there have been no careful statistical analyses which investigate the determinants of how rent control policies evolve: if decontrol occurs, when it occurs and how; and if decontrol does not occur, whether the rent control régime becomes stricter over time. The Canadian experience, described in Muller (1989), is interesting in this regard. All ten provincial governments imposed their own rent control programmes in 1975. Since then six have decontrolled in different ways (alternative decontrol mechanisms are described in Arnott and Johnston (1981)), while of the four that have retained controls, three have liberalized their régimes while Ontario has made its programme stricter (Smith, 1988). If there is a common thread, it is that decontrol is more likely to occur when the rental vacancy rate is relatively high and when the government in power is politically secure.

Rent control has been presented to fifty years of economics students as an object lesson in bad policy. Over that period, however, the nature of rent control has changed from a rent freeze to rent regulation which allows each jurisdiction to choose its policy from an extensive menu of provisions. At the same time, economic theory has become more sophisticated and sensible while the standards for the empirical testing of theory have increased enormously. As a result, expert opinion on the effects of modern rent control policies has become increasingly agnostic.

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Bibliography

Anderson, S., dePalma, A. and Nesterov, Y. 1995. Oligopolistic competition and the optimal provision of products. *Econometrica* 63: 1281-1301.

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

Arnott, R., and Johnston, N. 1981. *Rent Control and Options for Decontrol in Ontario*. Toronto: Ontario Economic Council.

Coleman, D. 1988. Rent control: the British experience and policy response. *Journal of Real Estate Finance and Economics* 1: 233-55.

DeSalvo, J.S. 1971. Reforming rent control in New York City: analysis of housing expenditures and market rentals. *Regional Science Association Papers and Proceedings* 27: 195-227.

Epple, D. Forthcoming 1997. Rent control with reputation: theory and evidence. *Regional Science and Urban Economics*.

Fallis, G. 1988. Rent control: the citizen, the market, and the state. *Journal of Real Estate Finance and Economics* 1: 309-20.

Fallis, G. and Smith, L. B. 1984. Uncontrolled prices in a controlled market: the case of rent controls. *American Economic Review* 74: 193-200.

Frankena, M. 1975. Alternative models of rent control. *Urban Studies* 12: 303-08.

Fraser Institute. 1975. *Rent Control: A Popular Paradox*. Vancouver: The Fraser Institute.

Gould, J.R. and Henry, S.G.B. 1967. The effects of price control on a related market. *Economica* 34: 42-49.

Guasch, J. and Marshall, R. 1987. A theoretical and empirical analysis of the length of residency discount in the rental housing market. *Journal of Urban Economics* 22:291-311.

Gyourko, J. and Linneman, P. 1989. Equity and efficiency aspects of rent control: an empirical study of New York City. *Journal of Urban Economics* 26: 54-74.

Hubert, F. 1995. Contracting with costly tenants. *Regional Science and Urban Economics* 25:631-54.

Igarashi, M. and Arnott, R. 1992. Rent control, mismatch costs, and search efficiency. Mimeo.

Keating, W. D. 1983. Rent control in California: responding to the housing crisis. Institute of Governmental Studies, University of California, Berkeley, California Policy Seminar.

Lowry, I. S. (ed.) 1970. Rental housing in New York City. *Confronting the Crisis*. Research Memo No. RM-6190-NYC. New York: The Rand Institute 1.

Malpezzi, S. 1993. Can New York and Los Angeles learn from Kumasi and Bangalore? Costs and benefits of rent controls in developing countries. *Housing Policy Debate* 4: 589-626.

Marcuse, P. 1979. *Rental Housing in the City of New York: Supply and Condition 1975-1978*. New York: City of New York, Department of Housing Preservation and Development.

Marks, D. 1984. The effects of partial-coverage rent control on the price and quantity of rental housing. *Journal of Urban Economics* 16: 360-69.

Muller, R. A. 1989. The experience with rent regulation in Canada.. Programme for Quantitative Studies in Economics and Population, McMaster University, Research Report 244.

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.

Roistacher, E. A. 1972. The distribution of tenant benefits under rent control. Ph.D. dissertation, University of Pennsylvania.

Rydell, P.C., Barnett, L.C., Hillestad, C. E., Murray, M.P., Neels, K., and Sims, R.H. 1981. The impact of rent control on the Los Angeles housing market. N-1747-LA. Santa Monica: The Rand Corporation.

Smith, L. B. 1988. An economic assessment of rent controls: the Ontario experience. *Journal of Real Estate Finance and Economics* 1: 217-31.

Stegman, M. 1988. Housing and vacancy report: New York City, 1987. New York: City of New York, Department of Housing Preservation and Development.

Sternlieb, G. 1976. Urban housing dilemma: the dynamics of New York City's rent controlled housing. New Brunswick: Center for Urban Policy Research.

Turner, B. 1988. Economic and political aspects of negotiated rents in the Swedish housing market. *Journal of Real Estate Finance and Economics* 1: 257-76.

Turner, M. 1988. Rent control and the availability of affordable housing in the District of Columbia: a delicate balance. Report prepared for the District of Columbia's Department of Consumer and Regulatory Affairs. Washington, D.C.: The Urban Institute.

Werczberger, E. 1988. The experience with rent control in Israel: from rental housing to condominiums. *Journal of Real Estate Finance and Economics* 1: 277-93.

Wheaton, W. 1981. Housing policies and urban "markets" in developing

    countries: the Egyptian Experience. *Journal of Urban Economics*

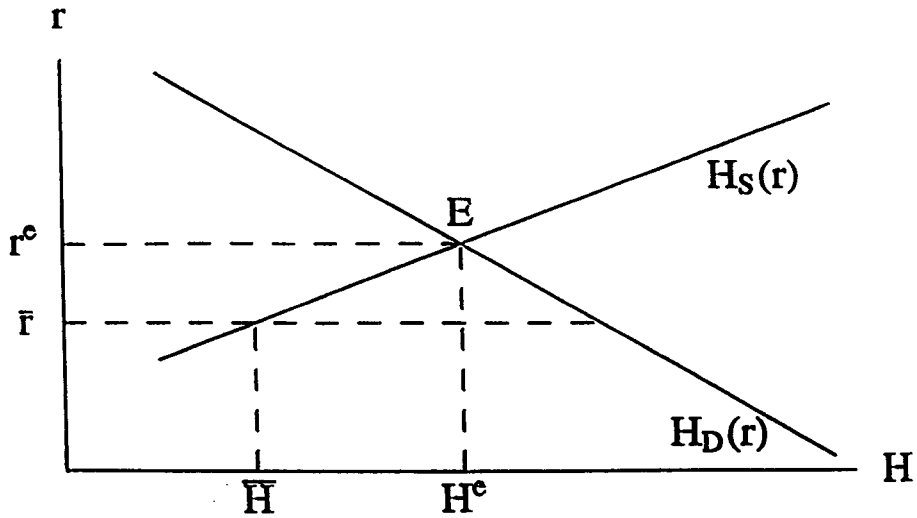   9:242-56.

Figure 1: Textbook analysis of a rent ceiling.

Figure 2. Alternative analysis of a rent ceiling.