

**RENT CONTROL AND THE VALUE OF  
RENTAL INCOME PROPERTY**

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Economists are almost unanimous in their negative attitude toward rent control. When, for example, 211 American economists were asked whether "a ceiling on rents reduces the quantity and quality of housing available" only 2% answered in the negative.<sup>1</sup> Their position, no doubt, was heavily influenced by economic theory which predicts that imposition of rent control tends to result in housing shortages and housing quality deterioration. Even in terms of equity, such control fares poorly because it is a clumsy and imprecise tool to help indigents. These conclusions have been confirmed by a number of empirical studies.<sup>2</sup>

One reason for the supply and quality results of rent control is the effect of controls on the value of landlords' assets. We, therefore, have researched the question of how rent control affects residential income property values, and do so with the aid of a rent capitalization model. In the model the expected future flow of revenues from rental residential income properties determines their values. These values, in turn, depend on supply and demand conditions and their modification by changes in the legal environment -- enactment of rent control ordinances.

We will begin by offering a rental income property value change model, which will then be econometrically implemented and the empirical results

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<sup>1</sup>Bruno S. Frey, "Consensus and Dissention Among Economists: An Empirical Inquiry," American Economic Review, 74 (Dec. 1984), p. 991.

<sup>2</sup>For a review of some of these studies, see Werner Z. Hirsch Urban Economics (New York: Macmillan, 1983).

discussed. Finally, some conclusions will be offered.

### The Model

For testing hypotheses about the effect of the legal environment on residential income property values, a general model can be presented algebraically in the following form:

$$D = f(A, B, C, I) \quad (1)$$

where,

D is the annualized change in the value of residential income property,

A is change in housing characteristics,

B is change in community characteristics,

C is change in the legal environment, and

I is inflation rate.

We next discuss the four righthand variables:

A. Housing characteristics are clearly main determinants of the price of housing whether in terms of property value or rent. Thus, we would want to include any changes in the major characteristics, whenever we compare sets of data pertaining to the identical property at 2 different times, e.g., before and after a change in legal environment.

B. Community characteristics are used to reflect housing demand and supply conditions. We would want to include as many variables as possible to give expression to these conditions as well as to variables which reflect imbalances in demand and supply. An example of the latter are vacancy rates.

Surely, each community does not function as a distinct housing market; there is significant overlap and substitutability especially within broad geographic areas. Nevertheless, the fact that individual cities have a good

deal of power in determining the nature of their communities (e.g., through public expenditure decisions, housing and land use regulations, etc.), suggests that people would have a preference of one city over another. Demand and supply conditions do exist within a particular community, though that community may be subsumed in a larger, more encompassing housing market.

C. Two law variables are of particular interest. One is a dummy variable testifying to the presence or absence of rent control. The second law variable will be designed to reflect the general regulatory climate within the particular city. By regulatory environment we will mean the extent to which housing and land use is regulated and government activities support housing and land use.<sup>3</sup> In a sense, the intent is to reflect the activism of local government in relation to housing and land use.

I. Since during the period under analysis inflationary conditions prevailed, and they directly affected property values and rents, a variable reflecting the inflation rate needs to be included in the equation whenever the time intervals of observations are not identical.

In a residential housing market, the market value of residential income property is commonly assumed to be based on its expected future net income stream. Specifically, the market value of property in period  $t$  will tend to equal the discounted stream of expected net returns over its life. Landlords will seek to maximize this stream by selecting appropriate levels of repair and maintenance on the one hand, and types of tenants who will pay high rents, have low probabilities of delinquency, and minimize wear and tear on the apartments, on the other.

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<sup>3</sup>Examples of government activities in support of housing and land use are a redevelopment agency and a specific plan.

These decisions by landlords can influence both variable cost and the rent charged. The fixed cost, which includes mortgage payments, insurance and taxes, cannot in most instances be affected by the landlord.<sup>4</sup> In line with these considerations, the annualized percentage change in property values can be expressed as follows:

$$V = \sum_{t=0}^{\infty} (R_t - FC_t - VC_t)(1+i)^{-t} \quad (2)$$

where,

V - annualized percentage change in property value between sale date (s) and resale date (r),

$R_t$  - rent charged tenant in period t,

$FC_t$  - fixed cost in period t, and

$VC_t$  - variable cost in period t.

We will next consider the broader setting of equation (1) within which equation (2) can help explain changes in property values. Market supply and demand conditions surely have a significant influence on the values of residential income properties. Therefore, we will seek to isolate the differences in the demand and supply of rental housing among the communities, so as to capture the effects of rent control. Since this study is concerned with changes in property values over a five year period, changes in demand and supply parameters as well as their levels need to be examined. In the rent capitalization framework, the expected future flow of revenues from rental properties determines their values. In modelling the housing market, we seek those demand and supply factors which influence the

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<sup>4</sup>In periods in which mortgage rates decline sharply, a landlord will seek to refinance fixed-rate loans, a step, if successful, would make mortgage payments a one-time variable cost.

expected future income stream, and thus the value of rental properties.

The market factors can be divided into two general categories. First, we consider the characteristics of a community that influence the costs of building and maintaining residential income properties. These include, among others, the level of property taxes as well as the amount and type of housing and land use legislation prevalent in the community. In communities with strict building codes, for example, it may be more expensive to maintain properties than in communities without codes. Since all the communities examined are in the same metropolitan area, such factors as labor costs, which are not expected to vary over communities, are not considered.

The other way in which market conditions influence property values is through their influence on the returns a property is expected to yield. Values should be expected to grow faster in growing communities with increased employment opportunities and wealthier populations, and vice versa. The levels of wealth, population density and employment may also affect the relative growth rates of values, though the directions of the influences are not known a priori. Changes in the tastes of people for certain types of housing should affect values. Characteristics including location, size, and architectural style should be, whenever possible, incorporated into an analysis of the determination of housing value changes. And changes in community amenities and services, brought about by changing government expenditures, should influence housing values.

Besides these basically demand-side characteristics, expected returns on individual properties are also influenced by the expected supply of housing in the community. Tighter government legislation on the construction of new properties should cause values to increase more rapidly. Together, these demand and supply factors cause values to grow more rapidly in some

communities than others. If possible, we should try to incorporate all of these characteristics into the study. Yet, due to limitations in the data as well as the number of observations, we have used a more limited set of variables to try and capture the divergence in market conditions prevailing across communities.

The legal environment can affect the functioning of the rental housing market, and thereby the prices and quantities of rental housing services as well as the value of residential income properties. As was mentioned earlier, we will divide the legal environment into two major classes -- rent control ordinances and the general regulatory environment.

Clearly, rent (R) is a function of the quantity of housing services offered, which are related to expenditures on maintenance and improvement. The relationship between rent (R) and variable cost (VC) may work in the opposite direction as well. It is likely that a landlord chooses a level of housing services which maximizes his expected income. If, rent control restricts rents to below market clearing levels, the landlord may decide to reduce expenditures. He may lower the quantity of housing services offered to tenants by reducing repair and maintenance, so that restricted rents approach free market levels.

Any reductions in expenditure would appear to devalue the net worth of the property. Yet, because the below-market level rents engender excess demand, a rent control ordinance gives the landlord more flexibility in choosing prospective tenants. By selecting smaller families or even families without children to occupy the units, depreciation (and thereby cost) can be reduced. And by choosing wealthier tenants who are better able to maintain and upgrade their apartments, the building owner may be able to reduce the quantity of housing services he supplies without markedly

diminishing the services offered by the property, if the tenants choose to make improvements. Greater choice should also lessen the problem of nonpayment of rent relative to an uncontrolled market.

Furthermore, the effect of a rent control ordinance depends upon the stringency of the law and its perception by the public. Remember that the value of a residential property is determined by the expected future stream of earnings it will yield. Consequently, a rent control law which restricts present earnings but is not expected to persist into the future, or contains loopholes which will enable property owners to circumvent its intent, is likely to have only a minor effect on property values.

There is also the issue of timing, i.e., when the effects of rent control and regulatory environment will impact on property values, and, if so, by how much. Based on an empirical study of the timing of the effect of Proposition 13 on interest costs of California municipal bonds, we would expect the effect to be strongest immediately following the change in the legal environment.<sup>5</sup> The main reason for this time path is that publicity about a new law tends to produce a strong immediate reaction. But, as time goes on, enterprising landlords often find ways to work around the new legal restrictions and make effective changes in their production functions.

In sum, though a restrictive rent control ordinance, which causes rents to significantly diverge from their free market levels, will reduce the profitability of owning rental property, there do appear to be mitigating factors which, in some cases, could markedly reduce these losses.

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<sup>5</sup>Werner Z. Hirsch, "Revenue Limitation Measures and Their Effects on Municipal Bonds: The Case of California Municipalities," Proceedings of the 40th Congress of the International Institute of Public Finance, (Detroit: Wayne State University Press, 1986), pp. 293-308.



Contrary to the enactment of rent control, the enactment of laws which extend the government's control over land use and housing and which provide government activities to support housing and land use, do not have an unambiguous effect on property values. Depending upon the exact nature of the regulatory environment, the restrictions could either increase or decrease the net worth of residential properties. Consequently, we have no prior belief on how an increase in the number of housing and land use regulations and government activities is likely to affect property values.

#### Econometric Analysis of Property Value Change Model

As was mentioned above, the most promising way of testing hypotheses about the effect of changes in the legal environment on property values is to use microdata, i.e., pairs of sale and resale data of identical properties. We were able to obtain data taken from the roll of the Assessor of Los Angeles County for nine middle-sized cities. One of the nine communities is Santa Monica, which in 1979 enacted a stringent rent control ordinance. All sales data are for the years 1976-78, while all the recorded resales occurred in 1981. This set of observations is not a sampling; it includes all of the sales/resales that occurred in these communities during these years.<sup>6</sup> The total number of observations was 41. Six of these properties had no structures on them and were eliminated. An additional three observations showed changes in value completely out of line with the rest of the data set. We concluded that radical positive changes reflected major upgrading and the negative changes may have resulted from unusually

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<sup>6</sup> Although the set of observations includes all of the transactions for the given years and as such does not constitute a sampling, under different circumstances an infinite number of possible outcomes could have occurred. Consequently, we maintain the assumption that the observations are derived from a normal distribution.

rapid deterioration, possibly caused by fire. Without detailed information about these three properties, particularly any capital investment or divestment that had occurred, it was impossible to control for these major changes. Consequently, we decided to eliminate these three observations, reducing the final number of observations examined to 32.

We constructed the empirical specification in the context of the earlier presented general model (1). In specifying the functional relationship to be tested, we chose to use the annualized relative change in property value as the dependent variable. We hypothesized that any changes in the legal environment would affect the per unit of housing services revenues of residential income properties. As a result, examining relative rather than absolute changes was more appropriate, since relative change implicitly accounts for any variations in the level of housing services offered by different properties. The algebraic formulation of the dependent variable is:

$$V = 100 * ((CR/VS)^{1/\Delta t} - 1) \quad (3)$$

where:

V - annualized percentage change in property value between sale date (s) and resale data (r),

CR - property resale price,

VS - property sale price, and

$\Delta t$  - length of time between sale and resale ( $\Delta t = r - s$ ).

As explanatory variables, in line with equation (1), we considered housing characteristics, the legal climate and the inflation rate.

In the general equation (1), A represents housing characteristics and their possible changes. However, since we use pairs of sale/resale data for

the identical property over a relatively short time span, no information on housing characteristics is included.<sup>7</sup>

It is also quite possible that certain types of structures would become relatively more or less valuable over time, indicating that the levels of certain characteristics and not just their changes over time were important. To examine hypotheses of this type, we will include dummy variables in the equations and analyze whether certain types of residential income properties appreciate more rapidly than others.

Data on the community characteristics should reflect differences in demand and supply conditions that existed across communities. On the demand side, we examined the following variables: annualized growth rate of population; annualized growth rate of per capita income; annualized growth rate of government expenditures, (a proxy for the quality of community amenities assumed to be a complement to housing); and annualized growth rate of local employment. We also looked at several characteristics which reflect supply conditions. These include: per capita property taxes collected (PCTAX), and per capita assessed valuations (PCASS), which reflect the value of housing in an area. Last we included two variables which reflect the tensions in the individual markets: vacancy rates (VAC) and average travel time to work (ATT).

Changes in legal environment are represented by two variables: the first, LC, reflects the general regulatory climate which prevailed in 1981 in the nine cities examined in the study. Since we identified 16 housing and land use regulations and housing and land use related government activities, this variable can range from 0 to 16. Admittedly, we did not

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<sup>7</sup>As mentioned earlier three outlying values which possibly involved major housing quality changes were dropped.

know how to weight the different regulations and activities; nevertheless, a value of LC which approaches 16 almost surely reflects a highly regulated community. This variable is not only interesting for its own sake, i.e., to test hypotheses about whether an active regulatory environment is associated with relatively smaller or larger value increases, but it also fulfills an additional role. Specifically, this variable acts as a control variable. Only if LC is not highly correlated with the rent control variable (described below) could we conclude with some confidence that a high correlation (should such be found in the analysis) between property value changes and the presence of rent control, is directly related to rent control. Otherwise, rent control might merely serve as a proxy for the general regulatory environment.

We used a 0-1 dummy for the rent control variable (LR): 0 signals absence of rent control, 1 means a rent control law was in effect. If the study had included more than one community with rent control ordinance, we would have used a more complex specification which reflected the relative stringencies of the various rent control laws. Of particular importance are the degree to which rent increases are restricted to below rises in the price level, and whether the law allows for vacancy decontrol granting landlords greater freedom to raise rents of new tenants.

The final group of variables reflect the effects that different holding periods between sale and resale (GAP) have on the annualized changes in property values (V). Since the annualized rate of inflation (INF) should be positively correlated with the change in value, the coefficient on INF should have a positive sign. It is also quite likely that properties held for different lengths will show different value increases for reasons other than changes in the inflation rate. Different market conditions could exist

during these longer holding periods, or people who hold property longer may do systematically better in the market by accruing more information. We include the variable GAP, the difference in time between sale and resale, to try to capture these effects.

### The Empirical Results

The final model specifications and results are presented in Table 1. In the empirical work we found that several of the community characteristics had negligible effects on changes in property values; consequently they were omitted from the specification. In addition, two of the community characteristics, i.e., change in government expenditures and changes in population were dropped due to problems of multicollinearity. We omitted these variables in order to improve the fit, with the understanding that if we omitted relevant variables, we may have biased the results.

We also tested for market segmentation based on the number of dwelling units in the rental property by including a 0-1 dummy variable to separate one and two unit apartment buildings from larger ones. The coefficient was insignificant even at the 10% level. Consequently, no variables relating to housing characteristics appear in the final specifications.

In the end, we decided to present three capitalization equations. All include a rent control variable (LR), a general regulatory climate variable (LC), as well as an inflation variable (INF), and a variable indicating the time elapsed between sale and resale (GAP). With regard to community characteristics and tension in the housing market, respectively, the equations contain per capita assessed valuation (PCASS) and/or per capita property taxes (PCTAX), as well as average travel time to work (ATT) and/or vacancy rates (VA).

TABLE 1  
Capitalization Regressions

	<u>Equation 1</u>		<u>Equation 2</u>		<u>Equation 3</u>	
		<u>t-value</u>		<u>t-value</u>		<u>t-value</u>
INTERCEPT	-112	-2.58	-107	-2.47	-124	02.83
GAP	13.83	3.98	13.60	3.84	13.57	3.92
PCASS	0.0002	1.60	0.0002	1.36	0.0004	2.02
PCTAX	-0.068	-0.85	-	-	-0.15	-1.49
ATT	-1.31	-1.97	-1.89	-2.70	-0.99	-1.08
VAC	-	-	0.73	0.43	2.77	1.29
INF	9.58	3.66	9.56	2.62	8.78	3.37
LC	0.53	1.42	0.67	1.96	0.40	1.03
LT	-7.33	-1.77	-8.57	-1.70	-11.92	-2.20
	$R^2 = 0.57$		$R^2 = 0.56$		$R^2 = 0.60$	
	F = 4.47		F = 4.30		F = 4.23	

For definitions see pp. 12-13.

All equations exhibit relatively high degrees of explanatory power, with an  $R^2$  falling between 0.56 and 0.60. Most importantly, the results confirm our chief hypothesis: rent control does appear to decrease the appreciation rate of residential income property values. In every specification, the rent control variable is shown to be statistically significant at the five percent level, using a one-tailed test.

The magnitude of the effect of rent control varies somewhat among the equations. In the three specifications, the existence of rent control is shown on average to be associated with an annualized decline in property values of between 7.3% and 11.9%, ceteris paribus. As stated earlier, we can be confident that the LR coefficient is actually capturing the effects of rent control only if it is uncorrelated with LC. The simple correlation coefficient between these two was 0.45, indicating that the two law variables are not highly not correlated. The coefficient LC has a positive sign in all equations, though it is significant only in equation (2).<sup>8</sup>

Apart from the variables describing the legal climate, the results on the other variables also offer some insights into the functioning of the market. INF has magnitudes ranging from 8.8 to 9.6, suggesting that a one percent increase in the inflation rate tended, on average, to be associated with an increase of the annualized changes in relative property values of about 9 percent. GAP was also positive and significant in each equation. There are several conceivable explanations for this result. First, even controlling for inflation, it is possible that in the additional time periods in which properties with a long lag between sale and resale were held,

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<sup>8</sup> A possible explanation is that values increased more in highly regulated housing markets because the legislation tended to favor owners of residential income property.

values increased more rapidly. Second, owners who waited longer before selling got higher prices, which are reflected in larger annualized gains in value. The results as presented do not contain enough information to choose between these or other possible explanations.

The signs on PCASS were positive, while those on PCTAX were negative, (though in only a few cases are the results for either coefficient shown to be significant). These results suggest that in communities where there is more valuable property per capita, values increased relatively more than elsewhere. Conversely, where property taxes are higher, relative values increased less rapidly.

The tension variables were generally not significantly different from zero: VAC was positive but insignificant in the two equations in which it appeared. Apparently the absolute tightness of the housing market did not alter the rate at which values increased. ATT was negative in all specifications, suggesting that in markets in which people commute longer distances to work, values increased relatively less rapidly.

#### Summary and Conclusion

For 9 cities in Los Angeles County, sets of residential income property sale/resale data were collected (an effort undertaken, to the best of our knowledge, for the first time anywhere). Data from these tables were used to test hypotheses about the effect of changes in the legal environment on residential income property values using a capitalization model. The results can be summarized as follows -- when 9 cities in Los Angeles County were analyzed, the presence of rent control in one of them, i.e., Santa Monica, was found significantly associated with a decline in the value of residential income property between 1976 and 1981. The annual effect was quite substantial, i.e., somewhere between 7 and 12 percent. (However, the



association between the regulatory environment and property value changes is less clear. In all equations, the relationship is positive, but quite small and often statistically insignificant.) These results suggest that the imposition of rent control, especially a stringent and tight type, has a chilling effect on residential income property values.