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Rent control simulation for Mexico City

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RENT CONTROL SIMULATION FOR MEXICO CITY

by

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ABSTRACT

Rent Simulation for Mexico City

by

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A model, based in the current rent control legislation, of landlord's rent setting behavior is used to simulate rents that are then compared to an actual sample of rents from Mexico City. The paper assumes that landlords take into consideration the present value of future rent payments when setting new rents. This behavior nullifies the effects of rent control for the new tenant. Over a period of time tenants enter into a new contract and lose the benefits of the rent control law. The initial rents will be higher than what they would have been had there been no rent control. The main objective of the law, to reduce rents and to protect tenants against increases every year, is defeated after a period of time.
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INTRODUCTION

Mexico City, like many large cities in the world, has a number of rent control laws in effect today. The object of this paper is to propose a model that simulates the effects of the latest rent control legislation on rents in the city. The model used is a discrete time iterative model that takes housing market conditions at the beginning of a year, then applies market behavior principles and estimates rent at the end of the year. In turn these year-end conditions become the starting conditions for next year's simulation. The model will be used to simulate rents under two assumptions: the first case assumes that the law is observed, and the second, that loopholes are found in the law; therefore, the law is not observed. Both will be compared to an actual sample of rents to determine which one is more representative of the actual path rents followed for that particular period of time. When the most accurate path is chosen, it will be compared to the path that we assumed rents would follow had there been no rent control, enabling us to find the percentage rent increase or reduction caused by rent control.

RENT CONTROL

Historically, rent controls have been established when the local housing market experienced a sudden surge in demand. The first rent control law in Mexico City was introduced during WW II. The 1985 rent control legislation however was introduced during a period of high inflation. It was these inflation induced rent increases which the legislation was created to control.

Rent control is a policy which economists usually label as inefficient\(^1\). The benefits derived

\(^1\)A policy is inefficient in the strict sense if those who gain from it could obtain the same benefits from some other policy and those who are injured by it would be injured less by the other policy.
from it can often be achieved more efficiently with other policies\(^2\), such as housing allowance or housing assistance programs. However, judging by the amount of communities that have adopted rent control, it seems very popular with governments\(^3\), primarily because it involves a solution which pleases a large portion of the voting public with no direct output from the treasury.

Critics of rent control argue that the benefits and the costs that it imposes are not clearly related to the economic position of the parties affected. It hastens deterioration of property by deterring property owners from making improvements, it retards labor mobility by paying an implicit subsidy to workers not to move, and it modifies the zoning of a city in increasingly sub optimal configurations\(^4\). Rental housing stock is reduced in the long run. The main benefit, rent reduction to tenants, is usually diminished by a reduction in the amount of housing services\(^5\) provided by the landlords.

A reduction of housing services is a reasonable assumption, but how fast and by how much depends on the elasticity of the supply curve. In the short run, the stock is fixed so landlords can only adjust quantity of housing services provided. In the long run the supply of housing stock is perfectly elastic if there is nothing in the law that prohibits the landlord from using his units for other purposes. So, if supply of housing is perfectly elastic, landlords will reduce the quantity of housing supplied so that the price of housing will return to its original equilibrium level. If the supply curve is less than perfectly elastic, the effect will be to reduce both price and quantity supplied in the long run.


\(^3\)Denton Marks, On Resolving The Dilemma of Rent Control, Urban Studies, Vol. 28, No 3, 1991 415-431

\(^4\) Henry Aaron, Rent Controls and Urban Development: A Case Study of Mexico City, Social and Economic Studies p 314-328, 1966

\(^5\) Housing Services is a composite commodity defined over all the attributes of a dwelling that the tenant values.
Unfortunately, no reliable data is available on expenditures on housing services for Mexico City. This is primarily due to the fact that the tax legislation lets landlords deduct 50% of the rent income as expenses without requiring documentation, so landlords have no incentive to publish or even keep this information. It can be safely assumed that some residential rental housing stock will be lost in the beginning of rent control; however, as landlords realize that they can charge higher rents, part of the incentive to convert the property to other use is lost. There is no reliable information on rental housing stock, because many of the rental units and leases are never registered.

Due to the lack of information, this paper will only concern itself with quantifying rent reductions. The mitigation of rent increases is the primary objective of almost all rent control laws, this paper will evaluate if the objective is attained in the case of Mexico City. However, the conclusions drawn from this paper have to be evaluated considering that the rent is only one part of the rent control issue.

RENT CONTROL BACKGROUND IN MEXICO CITY

During WWII a series of rent control decrees were introduced in Mexico City from 1942 to 1948, the last of which is still in effect today. This legislation basically extended existing contracts indefinitely. The current number of units affected by this decree is uncertain. It was somewhat reduced by the 1985 earthquakes. Due to the fact that the frozen rent issue is highly politicized, no official study or statistics have been published. There have been many studies on the subject inside and outside Mexico, but most deal with the social

---

63 to 5% of the renters in the Federal District, according to the "Informe que rinde al Pleno de la Camara de Diputados la Comision Sobre Inmuebles en Arrendamiento", 1984.
7Frozen Rent commonly used term to refer to housing units still under the 1948 decree.
issue. Henry Aaron's\textsuperscript{8}(1966) in his work clearly illustrates the difficulties in obtaining accurate information on frozen rents.

Because the frozen rent decrees did not include new construction and because we know that the post 1948 rental market developed without any intervention for four decades, we can assume that by 1985 landlords have raised rents to the maximum levels allowed by the market at that time. Evidence from SEDUE\textsuperscript{9}, based on data from Banco de Mexico, suggests that the rental housing index in Mexico City trailed the increases of both the consumer price index and the increases to the minimum wage from 1950-1980. During this period the rental housing index never grew more than the consumer price index. The report from SEDUE also includes a regression which determines that the variations of the rental housing index for the period between 1970 and 1989 were determined by the consumer price index, the minimum wage increase in the last period, and a variable which measures the amount of housing units compared to the urban population for that period. This regression does a good job at estimating the rental housing index, it also has an $R^2$ of .9651.

Since the late 70's\textsuperscript{10} there has been a drop in new rental housing construction, due primarily to high inflation and uncertainty. There are no records of any exceptional events during this period that would cause additional rental housing demand, other than the earthquakes, but most of the people who lost their homes due to the earthquakes were taken care by the government. Also, the real wage was declining during this period, reducing the number of people in the middle class, who are the principal consumers of rental housing. So in the absence of demand shocks, we have assumed that on the average

\textsuperscript{8}Aaron, pg 314-328
\textsuperscript{9}La Vivienda en Arrendamiento en Mexico. Secretaria de Desarrollo Urbano y Ecologia, March 1990.
\textsuperscript{10}In 1977 only one building for rent was constructed in Mexico City, in 1978 three, and in 1979 there where none according to the "Informe que rinde al Pleno de la Camara de Diputados la Comision Especial sobre Inmuebles en Arrendamiento"
landlords raise rents according to inflation. The evidence from SEDUE shows that, if it errs at all, this assumption overestimates rent increases in uncontrolled rental housing markets.

THE 1985 RENT CONTROL LEGISLATION

To develop the model we need to understand the specific provisions of the 1985 rent control bills. These were a series of reforms and new laws for the purpose of protecting residential housing tenants against sudden increases in rent during a period of high inflation. These laws apply to all residential rental housing units. All existing contracts must be rewritten to include these modifications. These laws establish a minimum period of one year for all leases on residential units, and if the tenant is up to date on his payments, the law gives him the option of extending the contract unilaterally for another two years. This in effect fixes the allowable increase for three years. The rent must be specified and collected in the national currency (pesos), to stop a common practice of signing leases in dollars as a hedge against currency devaluation and inflation. The annual maximum increase permitted by the law, for all residential units, is 85% of the percentage variation of the minimum annual wage for the Federal District for the year. Once three years have elapsed, the law prescribes no limits for rent increases.

It is important to note that the courts have traditionally favored tenants, making the eviction of a tenant a very difficult, costly and tediously long process. If there is a conflict between the parties, the tenant is allowed to stay in his residence paying the same rent for the duration of the litigation. Rent litigation can last for four years and sometimes even longer.\(^\text{11}\)

\(^{11}\text{El Efecto de la Regulacion en Algunos Sectores de la Economia Mexicana, Santiago Creel Miranda, ITAM, Fondo de Cultura Economica, 1991 pg209-231.}\)
BACKGROUND ON THE MODEL

We have adapted the model proposed by Murray, Rydell, Barnett, Hillestad, and Neels\textsuperscript{12} for Los Angeles to Mexico City. Their model estimates the primary impacts of the rent control legislation: rent reduction, housing deterioration and housing losses caused by rent reductions. These last two issues are not addressed for Mexico due to a lack of information.

In our case, the aim of the model will be to get a path of rents over time. We will use the rents to explain the behavior of landlords, and by comparing them to an assumed rate of increase, we will find the percentage rent reduction for the period.

The model is a discrete time iterative model. It takes the housing market conditions at the beginning of a year, then applies market behavior principles and estimates market conditions at the end of the year. These year-end conditions become the starting conditions for the following year's simulation. The initial conditions used in this simulation are those of 1985 in Mexico City, simulation ends in 1991.

ASSUMPTIONS

Two situations will be analyzed with the model, we will get a rent path based on the assumption that the law will be observed, that is, tenants will stay three years with fixed increases, and we will get a path of rents, assuming that loopholes are found, shortening the life of the leases to a year.

These two paths will then be compared to the actual path from our sample and to the path from the assumed increase in rents if there were no control, obtaining two basic results: a conclusion on landlord behavior and a percentage rent reduction.

To generate both rent paths, with or without loopholes, we need some basic assumptions. We have assumed that the market rate is in equilibrium at the beginning of the simulation, and under no rent controls and no sudden demand changes, it will increase at the rate of inflation. We have also assumed that landlords have some expectations about the future inflation and minimum wage. A particular assumption will be selected after some observations of the results from the model.

Because of the particular dynamics of the negotiations to set new rents for new tenants, both tenants and landlords know that rent control will be observed for three years; therefore, the landlord will not accept a new tenant unless the present value of the future rent payments is equal to what he would have received had there been no rent control. The tenant accepts this price because he knows that future rent increases will be limited for at least three years; in effect, this behavior nullifies the effects of rent control for the new tenant. If the tenant stays less than 3 years, he will be paying higher rents than in the absence of rent control. It is important to remember that in making this calculation the landlord's only indication of future inflation is today's inflation. Therefore, if inflation rises unexpectedly, the tenant will benefit, but if it falls, the landlord will benefit.

Now we turn to the issue of landlords finding loopholes in the law. The limit in rent increases is below the expected increase in the CPI. This encourages landlords to adopt black market behavior. Evidence shows that landlords use several measures as protection and try to get around the time and price limits that the law dictates. They make
prospective tenants sign blank, predated or unregistered contracts, or contracts with arbitration clauses (which takes the dispute to private judges). They may ask for I.O.U's, mortgages, and/or collateral in the form of titles to properties or bonds.

We have assumed that these loopholes will, over a period of time, shorten the time span of the leases and almost completely abolish the restrictions on the increases in rent. Furthermore, because of the difficulty of obtaining new housing, most tenants will accept these conditions. This will make them behave almost like new tenants every year; an effect opposite to that which the legislators intended. The time span for these developments depends on how successful the landlord is in harassing the tenants into moving or signing a different contract. Some tenants will choose to fight, but the majority will prefer negotiation to confrontation, basically because the shortage of housing will force them to consider that they will eventually lose and have to enter the market as a new tenants, paying higher rents and giving more guaranties than before, plus the legal and moving costs.

SAMPLE DATA

The sample used to gather the information needed to run this model was provided by a company\textsuperscript{13} that specializes in managing residential housing units in Mexico City. Most of the observations came from buildings in a middle class neighborhood\textsuperscript{14}, the Colonia del Valle district in Mexico City. Property managing companies typically have jurisdiction over many rental properties. They also have more legal clout than the average landlord, which makes them take a more aggressive stance, increasing rents faster than the ordinary

\textsuperscript{13} Because of the nature of the information and the current laws, the company asked to remain anonymous.

\textsuperscript{14} The colonia del Valle is in the Benito Juarez Distric of Mexico City, according to the X census, 59.5% of the housing units are for rent, this is the second highest density for a Mexico City's Distric.
landlord would. This would make our predictions err in the elapsed time between increases; however, if our basic assumptions are true, in the long run, the results will be the same.

The time series was obtained from the company's records of actual rents charged for 1984-1991. The sample consists of the observed rents of 155 rental units; commercial units in the buildings were excluded from the sample because they are not covered by the law. The total number of rental units in the Federal District, as estimated by SEDUE based in the 1980 census, is 908,271. The number of rental units, in the political subdivision Benito Juarez that comprises the Colonia del Valle was 58,082 units, based on the same census.

THE MODEL

The key to modeling rents under the Mexico City's rent control law is to notice that rent increases for continuing tenants are limited by law, but increases for new tenants are set by landlords without any legal limitation.

Since the rent control law gives the tenant the right to extend the contract for two years, after the original one year lease has expired, we divide units into occupancy duration categories as follows: c=1, for the tenants who have lived in a unit from 0 to 1 year, c=2 , for those who have lived from 1 to 2 years, and c=3 for those who have lived from 2 to 3 years. We also subdivide these categories into those units that keep the same tenant for one more year and those that get a new tenant in that year. All units that acquire a new tenant go to the first category, c=1. Also depending on our assumptions, either all category c=3 units become c=1 at the end of the period, or all units act as c=1 units after a certain period.
We divided the model into six phases that are calculated every year: I. Unit Counts, II. Rent Increases for Units with the Same Tenants, III. Rent Increases for Units that get a New Tenant, IV. Average Rent Increases, V. New Unit Counts and Average Rents, and VI. Rent Reduction.

UNIT COUNTS (for c=1,2,3)

\[ S(c) = Z(c)U(c) \]
\[ N(c) = U(c) - S(c), \]

where

\[ c = \text{occupancy-duration category} \]
\[ U(c) = \text{units in occupancy-duration category at start of year}, \]
\[ S(c) = \text{units keeping same tenant during year}, \]
\[ N(c) = \text{units acquiring new tenant during year}, \]
\[ Z(c) = \text{fraction of units in occupancy-duration category c keeping same tenant at least one more year}. \]

RENT INCREASES FOR UNITS WITH THE SAME TENANTS (for c=1,2,3)

All units that keep tenants for one more year are allowed an increase of the rent control limit or price inflation, whichever is lower. In other words, when price inflation is low enough, the rent control limit on increases is not binding.

\[ A(c) = \min \left\{ \left[ 1 + F(c)L(c) \right] P(c) \right\} \]
\[ 1 + (.85)[\{ SM(t)/SM(t-1) \} - 1] P(c) \]
where

\[ P(c) = \text{average rent per unit at start of year in occupancy-duration category } c, \]

\[ A(c) = \text{average rent per unit at end of year } t \text{ for units in occupancy-duration category } c \]
keeping the same tenant,

\[ L(t) = \text{price inflation fraction during year } t, \]

\[ F(c) = \text{fraction of annual price inflation charged to a staying tenant in occupancy-duration category } c; \text{ in our simulation we assume it to be 1.} \]

\[ SM(t) = \text{percentage increase in the minimum wage for year } t. \]

RENT INCREASES FOR UNITS THAT GET A NEW TENANT (for c = 1, 2, 3)

The landlord, at the time that he has to set new rents, knows the rate at which rents would increase if there was no rent control, thus he is able to estimate the flow he would receive if there were no controls. The flows will be determined by the following equation:

\[ R(t) = R(0)(1 + E[L(1)])(1 + E[L(2)]) \cdots (1 + E[L(t + n - 1)])(1 + E[L(t + n)]) \]

where:

\[ R(t) = \text{average market rent for period } t, \]

\[ E[L(t)] = \text{expected inflation for the period at time } t. \]

Similarly the landlord can estimate the flow he will receive from the tenant once the contract is set and the rent increases are limited by law;

\[ R'(t) = R(0)(1 + E[C(1)])(1 + E[C(2)]) \cdots (1 + E[C(t + n - 1)])(1 + E[C(t + n)]) \]

where;

\[ E[C(t)] = \text{expected at time } t \text{ for each period, the minimum of the percentage increase authorized by the law in that period, and the fraction of inflation that the} \]
landlord would charge if there were no controls.

Once we know the flows, we discount them to get present values. The discount rate is the price inflation rate, $L(t)$, plus a 4 percent real discount rate\(^{15}\). We can call the flow received and discounted from no controls $NC$, and we call the flow received from controls $FC$.

\[
NC = \sum_{j=1}^{2} \prod_{i=1}^{j} \frac{1 + E[L(i)]}{1.04 + L(t)}
\]

\[
FC = \sum_{j=1}^{2} \prod_{i=1}^{j} \frac{1 + E[C(i)]}{1.04 + L(t)}
\]

The landlord's problem is reduced to setting the first rent so that he equalizes the flow with controls to the flow without.

\[
R(t)(1 + NC) = B(c)(1 + FC)
\]

\[
\Rightarrow R(t)(1 + NC) - B(c)(1 + FC) = 0
\]

\[
\Rightarrow B(c) = R(t)\left[\frac{(1 + NC)}{(1 + FC)}\right]
\]

where $D(t) = \frac{(1 + NC)}{(1 + FC)} \Rightarrow B(c) = R(t)D(t)$

To calculate the market rate for the period $R(t)$ we use:

\(^{15}\)We used this estimate of the real discount rate for rental housing based on Neels and Rydell(1985), but this is a subjective choice. We tried the model with different values and the results are not significantly affected by them.
\[ R(t) = R(0) \prod_{j=1}^{t} [1 + L(j)] \]

To model the different assumptions, i.e. observing the law and finding loopholes, we use the parameter \( T(t) \). It represents the landlord's perspective on the duration of the lease and the increase in rent the market will take. \( T(t) \) can take values of 1, 3, choosing 3 means that the landlord expects rent increases to be fixed for three years. Choosing 1 means that the landlord has found a loophole and, therefore, expects the lease to last one year. Thus, he increases the rent by the growth in inflation.

\[
B(c) = \begin{cases} 
D(t)R(o) \prod_{j=0}^{t} [1 + L(j)] & \text{for } T(t) = 3 \\
R(o) \prod_{j=0}^{t} [1 + L(j)] & \text{for } T(t) = 1
\end{cases}
\]

where

- \( B(c) \) = average rent per unit at end of year for units in occupancy-duration category \( c \) that acquire a new tenant,
- \( D(t) \) = ratio to set first rent for new tenants, expected average market rent under no rent control over expected average rent with controls,
- \( R(o) \) = average market rent at start of year 1,
- \( T(t) \) = Defines formula used to simulate the lease life, can take values of 1 or 3.
\[ D(t) = \left\{ \begin{array}{l}
1 + \sum_{j=1}^{2} \prod_{i=1}^{j} \frac{1 + E[L(i)]}{1.04 + L(t)} \\
1 + \sum_{j=1}^{2} \prod_{i=1}^{j} \frac{1 + E[C(i)]}{1.04 + L(t)}
\end{array} \right. \]

where

\[ E[C(t)] = \min \left\{ F(i)L(i), (.85)\left[ \frac{SM(i)}{SM(i-1)} \right] - 1 \right\} \]

Equation \(E[C(t)]\) recognizes that for some year, the rent control limit could actually be larger than the increase in inflation. So the actual increase is the minimum of the two.

**AVERAGE RENT INCREASES**

\[ X_1(t) = 100 \left[ \frac{\sum_{c=1}^{3} S(c)A(c)}{\frac{3}{\sum_{c=1}^{3} S(c)P(c)}} \right] - 1 \]

where

- \(X_1(t)\) = average percentage rent increase for units with same tenants during year \(t\),
- \(S(c)\) = units keeping same tenant during year,
- \(P(c)\) = average rent per unit at start of year in occupancy-duration category \(c\),
- \(A(c)\) = average rent per unit at end of year \(t\) for units in occupancy-duration category \(c\) keeping the same tenant.

To calculate new tenant's increase we have to remember that we assumed that all tenants
after three years are treated as new tenants. To get the average, we find the increase for new tenants in each category, and the increase for the tenants who stay more than three years.

\[
\frac{\sum_{c=1}^{3} N(c)B(c)}{\sum_{c=1}^{3} N(c)P(c)} \quad \text{and} \quad \frac{B(3)S(3)}{P(3)S(3)} \Rightarrow \frac{B(3)}{P(3)}
\]

Then we apply weights to get the overall average.

\[
X_2(t) = 100 \left( \frac{\sum_{c=1}^{3} N(c) \left( \frac{\sum_{c=1}^{3} N(c)B(c)}{\sum_{c=1}^{3} N(c)P(c)} + S(3) \left[ \frac{B(3)}{P(3)} \right] \right)}{S(3) + \sum_{c=1}^{3} N(c)} \right) - 1
\]

where

\[X_2(t) = \text{average percentage rent increase for units with a new tenant during year } t,\]

\[B(c) = \text{average rent per unit at end of year for units in occupancy- duration category } c \text{ that acquire a new tenant},\]

\[N(c) = \text{units acquiring new tenant during year}.\]
\[ X_3(t) = 100 \left[ \frac{\sum_{c=1}^{2} S(c)A(c) + \left( \sum_{c=1}^{3} N(c) + S(3) \right) B(c)}{\sum_{c=1}^{3} U(c)P(c)} \right] - 1 \]

where

\( X_3(t) \) = average percentage rent increase for all units during year \( t \),

\( U(c) \) = units in occupancy-duration category at start of year.

**NEW UNIT COUNTS AND AVERAGE RENTS (for c=1,2,3)**

All units with new tenants become category 1 units, and because of our assumption that all tenants must sign a new contract every three years, all category 3 units also become category 1 units; the new rent in that category is the average of the rents for units with new tenants plus the category 3 units:

\[ U(1) = S(3) + \sum_{c=1}^{3} N(c) \]

\[ P(1) = \frac{\left[ S(3) + \sum_{c=1}^{3} N(c) \right] B(c)}{S(3) + \sum_{c=1}^{3} N(c)} \]

All the units that keep the same tenant move to the next higher up occupancy-duration category:
U(c) = S(c-1), c = 2 and 3,

P(c) = A(c-1), c = 2 and 3,

The average controlled rent is the unweighted average of the rents in all occupancy-duration categories:

\[
K(t) = \frac{\sum_{c=1}^{3} U(c)P(c)}{\sum_{c=1}^{3} U(c)}
\]

Iterative running of the model gives us the simulated rent path for all 7 years.

RENT REDUCTION

When considering rent reductions we have to add some equations to the model. Based on the assumption, if there was no rent control, the average market rent is calculated by multiplying the initial average rent by the growth in inflation.

\[
M(t) = R(0) \prod_{i=1}^{t} [1 + L(i)]
\]

We then calculate the average percentage rent reduction by the end of year t as:

\[
100 \left(1 - \frac{K(t)}{M(t)}\right)
\]
Iterative running of the model gives us the rent reduction path.

Implementing the model requires values for some sets of parameters;

* L(t), for t= -1,1,2,...,7 inflation, comes from Banco de Mexico official estimates.

* SM(t), for t= -1,1,2,...,7 minimum wage for the year comes from the Diario Oficial.(Official Daily Newspaper)

* U(c), for c=1,2,3; unit count at start of rent control, we get them from our sample.

* P(c), for c=1,2,3; parameter that gives rent per unit by occupancy duration category at the start of rent control.

* Z(c), for c=1,2,3 for t=1,2,...,7 gives the fraction of tenants staying at least one more year. We calculate them from our sample by counting the units that keep the same tenant at least one more year according to our assumptions.

* F(c), c=1,2,3, parameters that give the fraction of annual price inflation charged to staying tenants, by occupancy duration. In our case we assumed that they charged the actual price inflation, therefore this parameter was 1 for all categories.

* T(t), t= 1 or 3 for t=1,2,...,7; gives the expected life of the lease. We determine which one we use for the year based on the particular assumption for that simulation.
RESULTS AND CONCLUSIONS

We tried different assumptions about how landlords form their expectations of inflation. We used naive expectations, that is using last period's inflation as a forecast parameter for today's inflation, and found that they did not give the desired effects. Rational expectations, using the actual figures for each period, gave a much better approximation but still did not explain the behavior of the sample completely. Adaptive expectations presented an attractive framework, but when tried in the model it did not yield the desired results. After reading some of the problems that Cagan faced in explaining the end of hyper-inflation, using adaptive expectations, we decided to investigate if something similar to a change in regime had occurred in Mexico.

After analyzing the data and doing some research around the circumstances that the country experienced, we concluded that the formation of expectations had to be broken into two segments, one before the 1987 stock market crash and one after that. In 1987, not only did the stock market dramatically crash in Mexico, there was hyper-inflation, the black market exchange rate was twice the official rate, there was a tough election for the presidency, and there was a general loss of confidence in the economy. In a country where foreign currency controls, foreign debt crisis, capital flight, nationalization, and devaluation have happened recently, confidence in the government's ability to control the situation is essential for the economy and the stability of the country. In the beginning of 1988, the inflation for the month of January was 15.5% annualized it yields a rate of 563.6%. In the face of this, the government had no option but to try to increase confidence by implementing an inflationary reduction shock program\(^{16}\). This shock program managed to reduce inflation during 1988 to 51.7% for the year. Another

\(^{16}\)The program has been ratified a few times, every time they change the name, but it is commonly known as EL PACTO. It consists mainly of a series of price limit accords between industry, government and labor unions to try to contain inflation.
important event occurred at this time, Banco de Mexico reduced the amount of goods in
the bundle used to calculate the consumer price index. The government had an incentive to
reduce inflationary expectations, even using some accounting and reporting tricks. For this
reason, almost no one believes the official inflation statistics. Landlords, and people in
general, experienced more inflation than what the government officially quoted, so we
thought it logical that the measure landlords use for inflation and future expectations
changed at this point. We then tried the model assuming that since 1988 landlords in fact
experience fifty percent more than the official inflation \( L(t) = L(t) + (L(t)/2) \) for \( t=4,\ldots,7 \).

The results presented in Table 1 are from running the rational expectations hypothesis,
using \( T(t) = 3 \) for every year. Table 2 contains the results from the model when using
rational expectations until 1987 and then changing to fifty percent more than official
inflation, also using \( T(t) = 3 \) for every year. The results for \( T(t) = 3 \) for \( t = 1,2 \) and 3 and
\( T(t) = 1 \) for \( t = 4,\ldots,7 \) first with rational expectations and then with the change in 1988, are
shown in table 3 and 4 respectively.

After viewing the results, table 2 gives the best approximation to our sample, and it also has
the highest R squared (.9548) of all the results. We obtain these results when we consider
inflation to be fifty percent more than the officially reported for 1988-1991, and using the
assumption of fixed rents for three years. Empirical evidence shows that at least some
landlords are using some loopholes to get around the law. A possible explanation may be
that the market rent is calculated by all landlords using the three year horizon, so even if
one landlord manages to reduce the duration of his leases, it is not in his interest to reduce
his rents until everybody reduces their lease period and the market rent is again determined
for a one year lease. This may be possible in the short run since there is a fixed stock of
rental housing units, and most are occupied, so tenants do not have many options. In time
however, when enough landlords are having difficulty renting out the units, rates will have
to be determined based on a one year lease. In our sample we find that in 1991 the vacancy rate begins to increase, and in some cases we can see a reduction not only on the rate of increase but a reduction of the actual rent of new tenants.

Below we have the results from running the program with a change in inflation on the fourth year and assuming that landlords calculate rents as if they were fixed for three years. Column \( L(t) \) is the government reported inflation for that year, and the LIMIT column shows 85% of the minimum wage variation authorized by the law.

### RESULTS FROM THE PROGRAM

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<thead>
<tr>
<th>YEAR</th>
<th>R(t)=</th>
<th>M(t)=</th>
<th>A(c)=</th>
<th>B(c)=</th>
<th>X1(t)=</th>
<th>X2(t)=</th>
<th>X3(t)=</th>
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</thead>
<tbody>
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<td>192323</td>
<td>304312</td>
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<td>488.65</td>
<td>422.19</td>
<td>159.20</td>
</tr>
<tr>
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<td>338401</td>
<td>384731</td>
<td>583337</td>
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<td>132.34</td>
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<td>51.70</td>
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<td>19.63</td>
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In the model we have assumed that all of the tenants in their third year get new rent increases. Comparing it to the sample (Table 2), we can observe that this assumption is too optimistic. The actual time it takes the landlord to negotiate a rent increase varies from landlord to landlord. It is perhaps more realistic to expect the tenants to resist the first increase for a longer period of time. However in the end, the trend resulting from the program will be the same; only the time span will be different. Eventually, all of the tenants will have to accept the new rent increase, and the beneficial effects of the law will end for them.
The results from comparing the sample with the proposed market rents are shown in table 5. We have used two market rents, first assuming that after 1987 landlords set their rents according to a perceived inflation, which is fifty percent higher than the official one. We can see in both samples that in the beginning there is a real rent reduction benefiting the tenants, but we must remember that these benefits are at least partially offset by a reduction of housing services provided by the landlords. Furthermore, in both comparisons we see that after a certain period of time, in our case four years, rents begin to increase by more than inflation causing the tenants to pay more than if there had been no rent control. Since the law permits the landlord to set new rents with no limits, once the tenant has agreed to sign a new contract he will never again obtain any benefits from the rent control law.

It is argued by some that the latest rent control law helps fight inflation. The evidence from our sample and program shows that because of the annual nature of the leases and the particular rent setting mechanisms, rent control law causes rents to rise slower than inflation in the beginning; but later, they rise higher than inflation, and take longer to come down than rents without rent control.

This evidence is corroborated by the Rental Housing Index described in page 38 of the SEDUE report cited above. It shows the index raising slower than inflation until 1988, when it starts to increase by more than inflation. Actually, what is happening is that new rents are always set higher than inflation (Table 6). It is not until 1988 that the amount of new rents is significant enough in the average, that makes up the index, to influence it. We can see that the difference between our program and our sample in the setting of new rents is minimal. (Table 6).

Summarizing, we can conclude that landlords set new rents as if they were going to be
fixed for three years, implying that at some point in time the beneficial rent reduction effects perceived by the tenant will end. New rents will be higher than what they would have been had there been no rent control. The law will cause rental housing stock reduction and does not promote investment in rental housing. The main objective of the law to reduce rents and to protect tenants against increases every year is defeated in the long run. It is important to note that the solution to the problem is not setting limits for new rent increases, for that will only make landlords get out of the market.
TABLE 1

<table>
<thead>
<tr>
<th>YEARS</th>
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<th>MARKET</th>
<th>PROGM</th>
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-105695  206403.6  0.78755  8  6  1.605135  0.340344
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*TABLE 4*

![Graph showing the growth of SAMPLE, MARKET, and PROGM over the years 1984 to 1991.](image-url)

The graph illustrates the annual growth in PESOS for SAMPLE, MARKET, and PROGM from 1984 to 1991.
TABLE 5

AVERAGE PERCENTAGE RENT REDUCTION

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<th>MKT 2</th>
<th>AVG. RED</th>
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![Graph showing the comparison of Sample, Market 1, and Market 2 over the years 1984 to 1991.](image)
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<tr>
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<th>B(C) =</th>
<th>Regression Sample vs. B(c)</th>
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</thead>
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![Graph showing the relationship between years and pesos](#)
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