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Are Mortgage Loans the New Toasters? The Roles of Housing Demand and Political Patronage in Mexican Housing Finance

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This paper tests for evidence of political manipulation in the allocation of subsidized mortgage loans in Mexico during the 1990's. First, I develop a baseline model of loan allocation across states as a function of housing need, eligibility for lending programs, and administrative capacity to deliver housing. Then, I add measures of political competitiveness to the model. Empirical results suggest that the two largest lenders generally allocated loans according to their eligibility criteria, granting more loans to states with more income- and employment-eligible households and poorer quality housing. Tests for political manipulation suggest that more loans were, in fact, granted in federal election years and in states where the ruling party did not perform well in the previous election. However, the numbers lack statistical significance. As a result, it can be assumed that political motivation played a relatively small role in the allocation of loans.

Keywords

Mortgage loans; Housing subsidies; Political patronage; Mexico

1. Introduction

The extent to which political patronage affects the allocation of public resources is difficult to quantify. From Juan Perón in Argentina to Daniel Arap Moi in Kenya to the Tammany Hall Ring in 19th century New York City, case studies of notorious patronage systems abound throughout history – in both the developing and the developed world. Attempts to imagine the counterfactual scenario, what public spending patterns would look like if officials had no interest in generating support from or providing rewards to their constituents – which roads and bridges would not have been built in their current locations, how many public employees would not have been hired, what contracts would have been awarded to different firms – would require a sufficiently long tabulation to determine which types of patronage spending, in its many forms, may just be "politics as usual."

Whether undertaken by democratically elected politicians attempting to entice voters or by leaders that came to power by force, government officials have strong incentives to manipulate the distribution of public resources for their own political gain. This raises the question: under what circumstances can governments get away with allocating public funds for overtly political reasons and under what circumstances is this ability curtailed?

Mexico's housing finance sector during the 1990's offers an excellent case to test for constraints on patronage spending. From the end of the Mexican Revolution in 1917 until the historic presidential election of 2000, the Institutional Revolutionary Party (PRI) held undisputed control over Mexican politics. The PRI was notorious for exploiting its authority over government resources to maintain its grip on power. It did everything from targeting food and development subsidies to key political constituencies, especially unions and the rural poor, to more direct tactics such as distributing toasters bearing the PRI logo in the weeks before elections. In the last decade of the 20th century, however, two other parties emerged as viable political contenders. Several characteristics of the housing finance sector made it a potentially attractive arena in which to manipulate spending for electoral gains.

During the 1990's, three public and quasi-public federal agencies – INFONAVIT, FOVI, and FOVISSSTE – held near-monopolistic control over mortgage lending in Mexico, having considerable discretion over the distribution of subsidized mortgage loans. Private bank lending for mortgages was extremely scarce and expensive during most of this period. In addition, interest rates on mortgages issued by the public and quasi-public agencies were typically 10% to 15% lower than on the small number of mortgages issued by banks. Some of the mortgages granted also carried substantial down-payment subsidies.

The potential recipients of the program were formally employed households with moderate incomes. They formed a large constituency, whose characteristics approximated the median voter. Yet the governance structure of the lending agencies, particularly the involvement of private-sector employers and large national

developers, may have constrained the ability of the PRI to manipulate federal lending for political gain.

In this paper, I examine data on the distribution of mortgage loans across Mexican states during the 1990's to determine the extent to which federal agencies allocated loans to politically strategic states, rather than on the basis of underlying demand for housing. If federal agencies acted as benevolent social planners, without regard to electoral politics, they should have allocated loans across states based on housing demand, program eligibility, and the capacity to deliver housing. Alternatively, the government might have allocated loans to provide electoral benefits to the PRI, increasing lending during election years, targeting highly competitive states, or as rewards and punishments for past loyalty to the party.

To identify the determinants of loan distribution, I use a panel dataset containing the number of loans granted in each state by the three dominant federal lenders each year from 1993 to 2000 as well as state-level data on the determinants of housing demand and political competitiveness in federal elections. I develop a baseline model of loan allocation by running regressions of the number of loans per 1,000 households on determinants of housing need, measures of income- and employment-eligibility, and administrative capacity, including fixed effects for regions and years. To test for political manipulation, I add measures of electoral competitiveness from the previous federal election in each state to the baseline model. I use lagged election results to avoid possible endogeneity since the number of loans in the current year could affect election results in that year.

Results of the regression analysis suggest that the major lenders generally allocated loans across states according to eligibility for the loans, the need for housing, and administrative capacity. The two largest lenders, INFONAVI and FOVI, both appear to have adhered to their eligibility criteria, granting more loans to states with higher shares of income- and employment-eligible populations and poorer quality housing. INFONAVIT issued fewer loans to states with largely rural populations, which are difficult for large-scale developers to serve. Only the lender serving public-sector workers, FOVISSSTE, seems not to have allocated loans based on its eligibility criteria. Somewhat surprisingly, the tests for political manipulation yield results small in magnitude and weak in statistical significance. Although INFONAVIT granted more loans in federal election years and FOVI issued more loans in states where the PRI did not perform well in the previous election, the size of the effects suggest that political motivations played a relatively small role in loan allocation decisions.

The following section provides some background on the Mexican housing market and housing finance system during the period under study. After that comes a review of relevant existing literature. An examination of the incentives for and constraints on political manipulation of federal housing programs follows. There is then a description of the empirical strategy and data. Results of the analysis come next. A conclusion rounds out the paper.

2. Mexican Housing Markets, Mortgage Finance, and the Political System

In this section I provide a brief overview of the elements of Mexico's housing markets, mortgage finance, and political system that are relevant to the analysis presented in this paper. For more comprehensive reviews of Mexican housing markets and housing policies, see Joint Center for Housing Studies (1997) or Schuetz, Belsky, and Retsinas (2004).

2.1 Overview of the Mexican Economy and Housing Market

The Mexican economy and financial industry experienced large fluctuations during the 1990's. In late 1994, the rapid depreciation of the peso led to a severe recession, with high rates of unemployment, decreased household incomes, and a general crisis in the financial sector. This led to severe repercussions for private mortgage lending. During the peso crisis, banks experienced mortgage default rates of nearly 80%. Commercial lending for mortgages virtually disappeared in the following years and had barely started to recover a decade later.

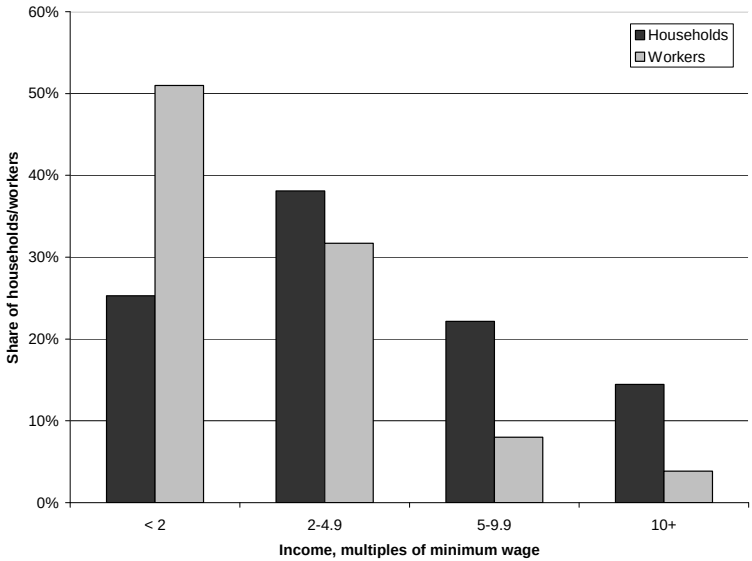
The lack of private capital for housing construction and purchase during the late 1990's was particularly problematic given the country's rapid household growth during this period. The population grew from about 81 million in 1990 to just under 100 million in 2000. With approximately 700,000 to 800,000 new households forming each year, this growth generated an estimated need for nearly 750,000 new housing units annually. However, new housing production was at less than half this level. As a result, many young couples continued to live in homes occupied by parents and extended families, leading to high rates of overcrowding. In 2000 approximately 48% of households reported more than 2.5 occupants per bedroom (Schuetz et al., 2004).

Despite the strong potential demand for housing resulting from population growth, the highly unequal distribution of income has made it difficult for many households to afford adequate housing. As shown in Figure 1, about one-quarter of households earn less than two times the legal minimum wage.[1] In developed countries, the poorest households typically resort to low-quality rental housing. However, the rental housing market in Mexico is quite small and underdeveloped at all quality levels (an estimated 13% of households rent) owing to a lack of capital for the development and purchase of rental properties, a legal environment strongly protective of tenants, and relatively low rates of return on rental housing compared to other types of assets (Schuetz et al., 2004). Moreover, for at least the last 30 years, Mexican housing policies and subsidies have been targeted primarily at owner-occupied housing and at middle-income households, as explained in more detail below. Lacking affordable rental housing or direct tenant-based assistance, the

[1] Because of rapid inflation, prices of many goods in Mexico are estimated in multiples of the federal legal minimum wage (salarios minimum), which is indexed to inflation.

poorest households rely on self-built housing, which typically lacks clear land titles, is not formally connected to urban services, and is financed primarily with cash.

Figure 1 Income Distribution of Households and Workers, 2000



Source: INEGI 2000 and SEDESOL 2001

2.2 Housing Finance System

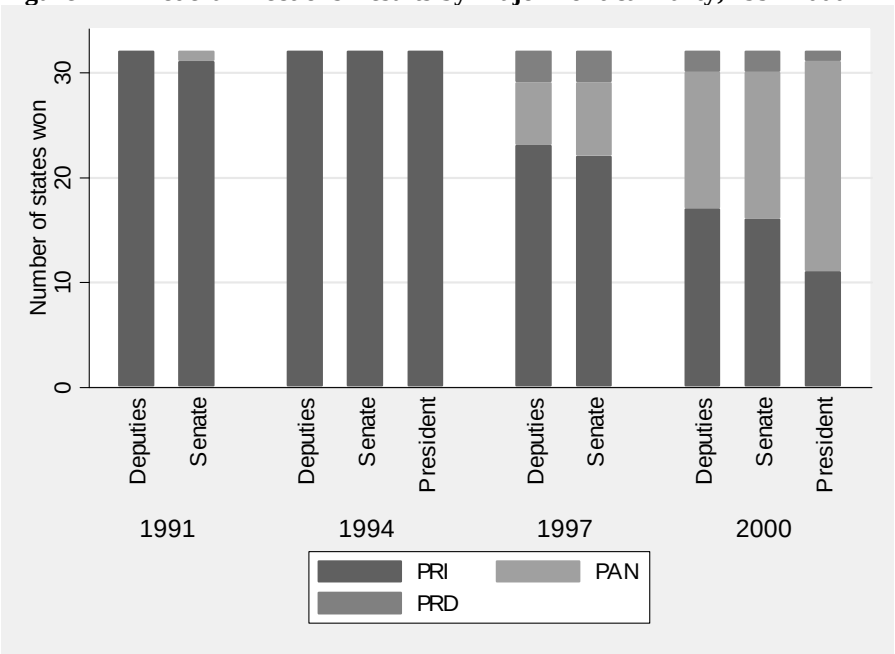
The type of housing finance that is available to Mexican households is sharply segmented by income. In the wake of the peso crisis, private capital withdrew from the market and tightened lending standards to the point that only the wealthiest 5% of households could qualify for or afford bank-issued loans. Throughout the 1990's, the vast majority of housing finance was provided by a small number of public or publicly mandated agencies, which offered subsidized mortgage loans to households earning between two and ten times the minimum wage and met certain employment qualifications (discussed in more detail below).

As shown in Figure 2, 93% of all mortgage loans issued during the 1990's originated from one of the three largest federal lenders. The predominant mortgage lender is the Instituto del Fondo Nacional de la Vivienda para los Trabajadores (INFONAVIT), a mandatory pension program for private sector workers that is funded by a compulsory contribution by employers of 5% of wages. INFONAVIT issued an average of just under two-thirds of mortgage loans during the 1990's.[2] The second

[2] Each year INFONAVIT announces a maximum loan value, determined by the price of a newly constructed house of standard quality and size. Virtually all loans issued by the major

largest mortgage lender, responsible for about 20% of loans in the 1990's, was the Fondo de Operacion y Financiamento a la Vivienda (FOVI), which was established in 1963 as a trust fund to channel federal government funds and donations and loans from the World Bank to housing. The third largest lender, with just under a 10% market share, was the Fondo de la Vivienda del Sistema de Seguridad Social de los Trabajadores del Estado (FOVISSSTE), a pension program similar to INFONAVIT, but serving public sector workers. Not only were these lenders practically the only source of mortgage lending available to moderate-income households, but they also offered much more favorable loan terms than the few banks still willing to lend. INFONAVIT's interest rates are legally capped at 4% to 6% above inflation, while inflation-adjusted interest rates from banks during this period averaged about 20%. Both FOVI and FOVISSSTE also offered similarly subsidized interest rates, and some of the loans granted by FOVI carried initial down-payment subsidies of up to 80,000 pesos, in 2000 terms (Softec 2003).

Figure 2 Federal Elections Results by Major Political Party, 1991-2000



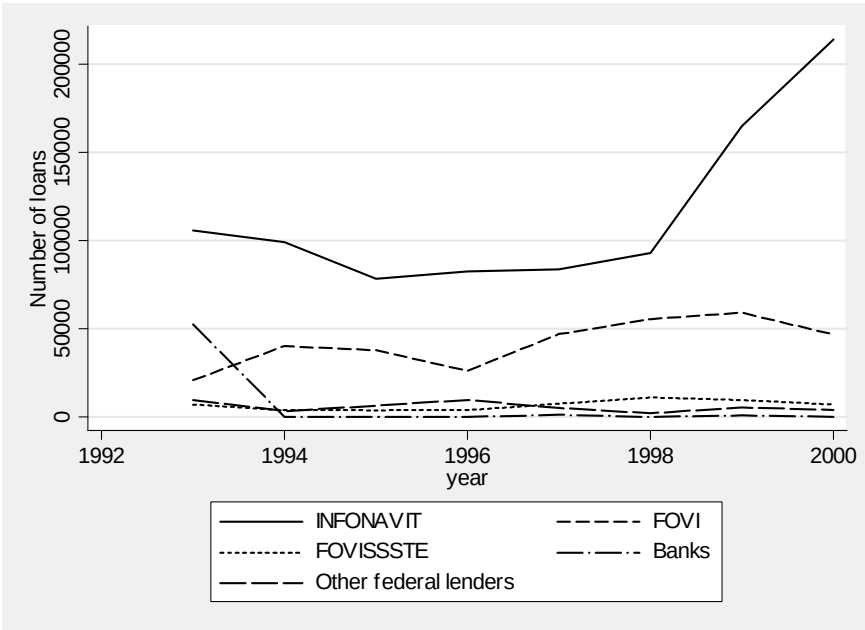
Source: Calculations using data from IFE 2004

public lenders are granted for exactly the pre-set maximum, resulting in almost no variation in loan size. In this paper I use the number of loans rather than the value as the key indicator of loan supply.

2.3 Political System

Mexico has a federal governance system, led at the national level by a president and bicameral legislature, and at the state level by governors and state legislatures. Federal elections are held every three years: the president is elected for a six-year term.[3] Senators have a six-year term. Representatives to the Chamber of Deputies have three-year terms. The Mexican constitution limits all elected officials (federal, state, and municipal) to a single term (McDonald and Ruhl, 1989, Skidmore, 2001). For most of the 20th century, the PRI completely dominated the political system. However, beginning with the disputed presidential election of 1988, the PRI faced growing competition from two of the opposition parties, the center-right Partido Acción Nacional (PAN) and the center-left Partido de la Revolución Democrática (PRD).[4] As shown in Figure 3, the PRI lost vote share in each of the federal elections during the 1990's, culminating in the historic election of the PAN presidential candidate, Vicente Fox, in 2000 – the first non-PRI president to be elected since the adoption of the current constitution in 1917.

Figure 3 Mortgage Loans by Major Lenders, 1993-2000



Source: Calculations using data from CONAFOVI 1993-2000

[3] Unlike the U.S. system, the president is elected by a straight popular vote.

[4] A number of other minor parties consistently field candidates in federal elections, but they obtain a very small share of the vote and are not relevant for this analysis. See McDonald and Ruhl (1989) for a discussion of other parties.

3. Existing Literature

This paper draws on several strands in previous literature: determinants of "good governance," political budget cycles, patronage spending patterns, and lobbying by special interest groups. Below I briefly discuss the relation of this paper to each of these strands.

In its broadest application, this paper addresses the question of whether political institutions and governments act benignly in the interest of their citizens, in the so-called "good governance" model. A wide range of theoretical and empirical papers have examined this question in various contexts. Among the theoretical literature, Caselli and Morelli (2004) argue that because "low-quality" citizens have greater incentives to run for elected office, if the legitimate rewards to holding office are not sufficiently high, the equilibrium quality of elected officials will be low.

More generally, Acemoglu and Robinson (2005) posit that elites will assent to democratization only when the anticipated costs of democracy (i.e. redistributive policies) are limited or when they are threatened by social unrest that cannot be mitigated by other means. Glaeser and Shleifer (2003) stress that the extent to which political institutions are vulnerable to subversion for individuals' or corporations' private benefits is a key determinant of the appropriateness of government regulation versus private litigation as a means of protecting property rights.

Two recent empirical papers use cross-national data to evaluate which characteristics affect the adoption of "good government" and more efficient policy outcomes. La Porta et al (1999) find that countries that are poor, are close to the equator, have ethnically and linguistically heterogeneous populations, have legal systems not based in Anglo common law, and have large proportions of Catholics and Muslims tend to have inferior government performance, measured by a variety of indicators. In testing for institutional factors that affect the efficiency of fiscal decentralization, Enikolopov and Zhuravskaya (2007) find that strong national political parties significantly improve economic outcomes by aligning local and national policy interests. While these papers address the determinants of efficient and honest government behavior either through theoretical models or by empirical comparisons across different countries, in this paper I examine how institutional structures of public agencies within the same country may affect the degree to which officials behave in the best interests of their constituents.

The second relevant strand of literature, which focuses on political budget cycles, identifies the tendency of governments to manipulate economic policies during election years in order to influence voters' decisions. By cutting taxes and increasing spending, incumbents attempt to induce economic growth and reduce unemployment immediately preceding the election (Rogoff 1990; Alesina, Roubini, and Cohen, 1997). Most literature discusses general policy instruments aimed at affecting broad macroeconomic conditions, but some empirical work examines more targeted spending, including social welfare programs (Brown and Hunter, 1999) and crime

prevention (Levitt, 1997). Political budget cycles assume that politicians attempt to impress voters with a sense of their competence at managing the economy, thus ensuring their re-election.

The long literature on patronage spending can be divided into three related types, all of which are relevant in Mexico's political history: corporatism, clientelism, and direct vote-buying. Corporatism refers to the co-option of formal interest groups by the government, either through positive inducements of the groups and their members, or constraints through which the groups' actions are controlled. The post-revolutionary government in Mexico has historically used inducements to ensure support from key interest groups, particularly labor unions and groups of peasants or campesinos (Collier and Collier, 1979, Klesner, 2001). Though the federal government's control has weakened in recent decades as Mexican states began to push for greater decentralization, Ward and Rodriguez (1999) point out that even in the mid-1990's, the federal government retained control of most major spending and distributed it to groups that provided key political support to the PRI machine.

Clientelism also involves a system of providing material rewards in exchange for political support, but the actors being induced are individual voters or informal groups, generally identified either geographically or through common characteristics. In Mexico, clientelism has taken the form of several large scale social development programs aimed at shoring up support of voters in the PRI's traditional base, particularly among peasants and the urban poor. Policies such as the Program for Rural Development Investments (PIDER), the Village Food Store Program (CONASUPO-COPLAMAR), and urban consumer food subsidies for tortillas and milk targeted broadly defined constituencies and were administered through local clientelistic networks (Fox 1994).

The social development program that has arguably received the most criticism for being distributed in blatantly political ways is the National Solidarity Program, or PRONASOL, which was initiated by President Carlos Salinas after his disputed victory in 1988. According to Dresser (1991), PRONASOL represented a shift from broad-based economic intervention – wage controls and generalized subsidies – to "strategic, targeted, compensatory intervention" aimed at the urban poor, who had voted for the leftist PRD candidate, Cuauhtémoc Cárdenas, in the 1988 presidential election. Fox (1994) points out that 12% of PRONASOL's budget in 1992 went to the small state of Michoacán, the main base of the PRD. Bruhn (1996) conducts a very simple statistical analysis of the amount of PRONASOL spending per capita by state and concludes that spending does not depend on state socioeconomic characteristics, but is positively correlated with the strength of the PRI vote in 1988. The empirical studies of PRONASOL rely largely on qualitative analysis or small sample, fairly simplistic statistical analysis.

The final form of patronage spending, direct vote-buying in the immediate run-up to elections, has been widely documented in the popular press (see, for example, Corchado and Iliff, 2000, and Global Exchange 2000). One recent academic study by

Schedler (1999) identifies the practices by the PRI of distributing toasters, bicycles, and washing machines to potential voters in the weeks prior to elections. Vote-buying is generally cheaper than manipulating funds for long-term social development programs, but is a more obviously unethical, if not actually illegal, and so may be less frequently used by governments attempting to maintain an appearance of legitimacy and transparency.

The literature on patronage spending discussed so far generally assumes that the decision to allocate public resources strategically initiates with government officials or agencies. Alternatively, strategic allocation could be a response to lobbying on the part of special interest groups or other agglomerations of voters. There is an enormous amount of literature on the role of special interest groups, lobbying, and regulatory capture (see, for instance, Acemoglu and Robinson, 2005; Becker and Stigler, 1974; Glaeser and Shleifer, 2003; Grossman and Helpman 2001; Leung et al, 2006; Peltzman, 1976; Posner, 1974, Stigler, 1971).

Some of these works focus on the efforts of formally defined groups, whether of individuals, firms, or industries, while others use the concept of "special interest group" to refer to any group of voters with similar policy preferences, interests, demographic, or economic characteristics. There are several interest groups that might have been involved in this type of lobbying for a particular distribution of mortgage loans: the firms and unions that sit on the governing board of INFONAVIT and the developers that produce much of the housing that is purchased with subsidized loans.

However, it is difficult to make precise predictions about what these groups' preferences over geographic distribution of the loans would be. Thus, it is hard to test explicitly to determine if loan allocations were the result of their lobbying. A slightly different interpretation of the concept would be that individual state governments (or state-level PRI officials) engaged in lobbying with the federal agencies. Since the incentives of the federal government and national party to respond to state lobbying efforts are likely to align closely with the incentives for patronage spending, it would not be possible to distinguish empirically between these two possible explanations.

4. Incentives and Constraints for Patronage Spending

In this paper, I examine the potential for patronage spending in an unusual social program in Mexico during the 1990's: subsidized mortgage loans. During this period, the ruling political party had both the ability to manipulate federal spending and the incentives to do so. The federal housing finance programs in question have some characteristics that make them particularly attractive for patronage. Other characteristics may act as constraints or limitations on the influence of electoral politics.

4.1 Incentives and/or Ability for Patronage Spending

The structure of Mexico's political system and the increasing political competitiveness during the 1990's offers an appropriate setting to test the model of politically strategic social spending. As discussed in the previous section, the federal constitution limits all elected officials to a single term in office. Theoretically, such term limitations would reduce the incentive for incumbent officials to allocate social spending for future electoral gains since they could not benefit directly in successive elections. However, the complete dominance (until very recently) of the PRI has created a system of incentives for strong party discipline. Elected officials that demonstrate loyalty to party leadership while in office are likely to be rewarded by candidacy for higher office or higher bureaucratic positions (Dresser, 2003, Enikolopov; and Zhuravskaya, 2007; Ward and Rodriguez, 1999). Thus, incumbents have an incentive to distribute social spending to locations that are politically strategic for the party as a whole rather than showing loyalty to their own constituents.

Strong party discipline combined with prohibitions on reelection implies that voters cast their votes as party endorsements rather than as endorsements of a particular candidate. Citizens voting retrospectively will vote for the incumbent party (in all elections during this period, the PRI) if their lives improved in the recent past. Otherwise, they will vote for the opposition. Thus, the incentives for strategic social spending also rely on the existence of viable political competition. A one-party system with no challengers is guaranteed to retain control and so may not need to motivate voters (although it may do so to pre-empt the emergence of competitors). As shown in Figure 3, the PRI faced increasing competition from the PAN and PRD during the 1990's, particularly in the latter part of the decade. Not only did the PRI have control of federal agencies, and thus had the opportunity to allocate social spending strategically; the growing political competition offered particular motivation to do so.

Federal housing programs in Mexico during the 1990's would have been an attractive arena for patronage spending for two reasons. First, the product being distributed – subsidized mortgage loans – was highly desirable, scarce, and of considerable value, so that receipt of a loan should have engendered a strong sense of gratitude and loyalty from the beneficiaries. Second, the potential base of loan recipients was a large and politically valuable constituency. Because of possible spillover effects, the electoral consequences could extend beyond the recipient households. It should be noted the Mexican government may have chosen to engage in political manipulation with other types of spending, as well. I cannot test for patronage among non-housing subsidy programs, but do not exclude that possibility.

As described below, the demand for subsidized mortgage loans in Mexico was very strong during the time period in question. The small capacity of the rental market and the scarcity of lending from private capital markets in the wake of the peso crisis gave the three federal agencies a virtual monopoly on mortgage loans. Since the

1970's, these mortgage loans were essentially the only housing subsidies. Thus, they were the only available tool if the government wished to intervene in the housing sector.

One of the unusual characteristics of mortgage loans compared with other forms of social spending that could be used for political gain is their relatively large monetary value. The average price of a house purchased with one of the loans was 15 to 20 times the legal minimum salary, or about 200,000 pesos, or US$20,000 in 2000 terms. The interest rate on the loans provided by the three agencies was roughly 10% to 15% lower than those on bank loans, and some loans from FOVI carried up-front down payment subsidies, as well. Many of the products or services that have been documented as examples of politically-motivated spending or vote-buying, such as toasters or food assistance, are of a much smaller value. The receipt of a big-ticket item would be more likely to influence the recipient's voting behavior.

The nature of mortgage loans may also generate spillover effects that could create political gains beyond the immediate recipient. The construction of a house is highly visible to surrounding communities and durable, similar to infrastructure or public works projects. They can thus serve as a constant reminder of the government's investment in the neighborhood. Moreover, the receipt of a scarce and highly desirable mortgage loan carries not only financial benefits but also social cache amongst the recipient's family and friends since it frequently enables young couples to leave their parents' or extended families' home and establishes a newly independent household (author interview with Sebastian Fernandez, 2004). The spillover reputational effects could thus enhance the desirability to manipulate distribution of mortgage loans for political purposes.

The potential beneficiaries of subsidized mortgage loans – those households that were eligible by income and employment status – formed a large and politically important segment of the population. INFONAVIT serves formally employed private sector workers, whose employers contribute to the fund, while FOVISSSTE serves public sector workers. Eligibility for FOVI loans is not tied to employment status. Formally employed private and public sector workers as well as those employed in the informal labor market are eligible to apply for loans (although informal workers often have difficulty meeting the underwriting criteria). All three lenders target loans to households earning between two and 10 times the minimum wage. As shown in Figure 1, approximately 60% of all households fall into the range of eligible incomes.

Owing to data limitations, it is impossible to determine the exact number of households meeting both income and employment criteria (or the number of contributors to INFONAVIT and FOVISSSTE). However, applying the overall rate of informal employment (50%) to the share of income-eligible households yields a conservative estimate of 30% of total households. Moreover, many of the poorest households and those engaged in informal employment live in rural areas so the share of eligible households in urban areas may be as high as 75% (Softec, 2003).

While the skewed income distribution in Mexico makes it difficult to identify any segment of the population as the "middle class," the types of households eligible for federal lending programs – neither the very poor nor the very rich, formally employed, and predominantly located in urban areas – comes very close to describing the median voter.

4.2 Constraints on Political Manipulation

Despite all the characteristics of housing finance that would enhance the appeal to the ruling party of trying to manipulate spending for political gains, some constraints exist on the government's ability to alter lending patterns. In particular, the governance structures and oversight of at least two of the major lenders could limit the PRI's control over loan distribution.

INFONAVIT is a quasi-public agency managed by a director general that is appointed by the president of Mexico, subject to the approval of the federal General Assembly. It has a tripartite board composed equally of members from three sectors: private sector employers contributing to the fund, unions representing the employees of these companies, and the federal government.[5]

Although firms of all sizes contribute to INFONAVIT's fund, most of the board members representing employers are drawn from large regional or national companies, which have branches and employees distributed throughout the country. These firms are likely to prefer that loan distribution reflects the location of their workers rather than political concerns.

FOVI is also subject to non-governmental oversight since much of the original funding was provided by the World Bank, the Inter-American Development Bank, and the Mexican central bank. Continuing involvement and surveillance from these organizations is likely to inhibit blatantly corrupt practices in loan distribution. Only FOVISSSTE, as the institution serving public sector workers, is not directly subject to some non-governmental or external scrutiny. It also has the smallest group of potential beneficiaries of the three major lenders (Softec,2003; Schuetz et al, 2004; World Bank, 2002b; author interview with Sebastian Fernandez, 2004).

A second moderating influence may stem from the role of developers serving as a conduit for loans from agencies to households. Loans from all three lenders are used almost exclusively for newly constructed homes built by private developers, most of which are large firms that operate on a regional, if not national, scale (Softec, 2003). As in many other countries, developers tend to purchase large parcels of land in major urban markets well in advance of expected development. Because of their

[5] INFONAVIT is not technically a public entity and its funds do not come from public sources. However, it is generally regarded in Mexico as a federal agency since it was formed under a mandate from the government and one-third of the board members are government representatives.

extensive land banks and, to a lesser extent, because staff resources are distributed across large and mid-sized cities throughout the country, it seems plausible that developers would prefer housing loans to be dispersed across various housing markets rather than highly concentrated in key political sites. The traditional relationship between large developers and lenders, particularly INFONAVIT, has been quite close, with the developers playing a key intermediary role in the lending process. Thus, it is likely that the developers' preferences over the geographic distribution of their work will influence INFONAVIT's decisions on how to allocate loans across states.

5. Empirical Strategy and Data Description

In order to identify whether federal electoral politics affected the geographic distribution of subsidized mortgage loans, I first model loan allocations across states based on underlying housing need and program eligibility, then add measures of electoral competitiveness. Using a panel dataset with annual observations on all 32 states from 1995 to 2000, I estimate regressions on the number of loans per 1,000 households issued by each of the three major lenders as a function of state-level characteristics. Summary statistics for all variables are shown in Table 1.

Table 1 Variable Means and Standard Deviations

Variable	Mean	Std. Dev.	Min	Max
All 3 lenders, Loans/1000 households	8.982	5.753	1.174	29.316
INFONAVIT, Loans/1000 households	6.242	4.436	0.786	22.865
FOVI, Loans/1000 households	2.359	2.181	0.0	10.572
FOVISSSTE, Loans/1000 households	0.380	0.404	0.0	2.385
Prior electoral margin, pct.	18.275	10.445	0.898	43.784
Prior PRI vote share, pct.	46.602	7.555	23.10	59.574
Annual pop growth rate	1.680	1.039	0.246	7.356
Pct. employment-eligible households	44.299	10.862	21.201	68.594
Pct private-sector eligible households	40.26	10.682	16.961	65.269
Pct public-sector eligible households	6.692	3.181	2.070	19.491
Pct income eligible	43.246	11.210	6.828	63.330
Pct pop, 20-35 years	25.541	2.124	21.713	30.573
Pct pop, 36-50 years	15.563	1.159	13.308	19.517
Pct poor quality housing	13.679	10.084	0.659	43.175
Pct pop in towns under 15,000	43.174	19.348	1.168	78.583
Total population	2,945,760	2,537,213	375,450	13,100,000
Total households	648,513	559,977	87,481	2,848,992
N = 192				

5.1 Empirical Strategy

If federal mortgage lenders act as benevolent social planners, unmoved by political concerns, they should allocate loans across states based on demographic characteristics that drive housing demand, eligibility for the various lenders, and administrative capacity to deliver new housing.[6] States with higher population growth rates will have more demand for new housing as will those with relatively large numbers of younger residents that are at the age of forming new households. Demand for new housing will also be higher in states with relatively poor quality housing in need of replacement.

Eligibility for mortgages from each of the three major lenders should be reflected in the allocation of loans. All three lenders should grant more loans in states with a larger share of income-eligible households (those earning between two and ten times the minimum salary). INFONAVIT should issue more loans to states with more formally employed private sector workers, and FOVISSSTE should lend more in states with many public sector workers. Because virtually all mortgages are issued to purchase newly-constructed units built by developers, states where much of the population lives in rural areas will lack the administrative capacity to provide developer-built housing.[7] Finally, to the extent that both developers and employers contributing to INFONAVIT prefer to distribute development across many housing markets rather than saturate the few largest markets, we might expect that smaller and mid-sized states would receive relatively more loans than the largest states because of their smaller populations.

To test whether the electoral strategies of the PRI affected the distribution of loans, I then add several different measures of political competitiveness to the baseline model. According to political budget cycle literature, lending is likely to be higher in federal election years than in non-election years. If loans are granted to encourage households to vote for the PRI, one strategy would be to target competitive states in which the margin between the PRI and the nearest rival is close enough that additional social spending might be perceived as being able to have an impact on the outcome of the election. Another strategy would be to allocate more loans to states in which the PRI previously performed poorly in order to build greater party support. Conversely, a third strategy might be to distribute loans to states with strong PRI support. This could be viewed as shoring up core areas of support or offering rewards to voters for their loyalty in the past. In order to avoid endogeneity problems

[6] Although the agencies set annual targets for the number of loans to be granted per state, they do not have formal written rules that describe how they arrive at these targets. In the baseline model, I apply household-level eligibility criteria and general indicators of housing need to estimate demand for loans at the state level, using data sources that would have been available to the agencies.

[7] Because of the cost of transporting materials and labor, developer-built housing is financially infeasible in communities with a total population of fewer than 15,000 inhabitants (Softec 2003; Schuetz et al 2004).

caused by using voting results and social spending from the same year, I use results from the previous federal election to model current spending. Prior election results will likely be a weaker indicator of political competition than polling data shortly before the election, but polling data are not available.

The baseline model of loan allocation for state *i* in year *t* based on housing need, program eligibility, and administrative capacity is described in Equation 1. Equation 2 includes political measures. Results from the previous election are noted as "E – 1".

$$\textit{Loans/1000 households}_{it} = f(\textit{Annual pop. growth rate}_{it}, \textit{Percent employment-eligible}_{it}, \textit{Percent income-eligible}_{it}, \textit{Percent young}_{it}, \textit{Percent poor-quality housing}_{it}, \textit{Percent rural}_{it}\ \textit{Small state}_{it}, \textit{Medium state}_{it}, \textit{Region and year fixed effects}) \quad (1)$$

$$\textit{Loans/1000 households}_{it} = f(\textit{Federal election year}_{it}, \textit{Margin of victory}_{iE-1}, \textit{PRI vote share}_{iE-1}, \textit{Annual pop. growth rate}_{it}, \textit{Percent employment-eligible}_{it}, \textit{Percent income-eligible}_{it}, \textit{Percent young}_{it}, \textit{Percent poor-quality housing}_{it}, \textit{Percent rural}_{it}\ \textit{Small state}_{it}, \textit{Medium state}_{it}, \textit{Region and year fixed effects}) \quad (2)$$

Although the dataset provides a panel of observations by state over time, I use regional rather than state fixed effects in the regressions in addition to year fixed effects. The demographic and income characteristics change very little within states over time. Because the political measures used are the lagged results from the previous election, they are constant over a three-year period. Thus, there is not sufficient variation in most of the independent variables to control for state fixed effects as well as the variables themselves. Rather, I control for seven regional fixed effects, using regional definitions created by Softec (2004).

The Metro region includes the Federal District, Estado de México, Jalisco, Puebla, and Nuevo Leon. The Pacific includes Colima, Nayarit, and Sinaloa. The South includes Campeche, Chiapas, Morelos, Oaxaca, Tabasco, and Yucatán. The Gulf incluyes Veracruz, Tlaxcala, and Tamaulipas. The Center includes Aguascalientes, Durango, Guanajuato, Hidalgo, Michoacan, Queretaro, San Luis Potosí, and Zacatecas. The North includes Baja California, Coahuila, Chihuahua, and Sonora. Tourist includes Baja California Sur, Guerrero, and Quintana Roo.

The regions are primarily geographic clusters although some reflect underlying economic characteristics (such as the Metro region, which contains all of the largest urban areas, and the Tourist region). To the extent that loan allocation varies across states based on industrial composition or geographic characteristics (such as proximity to the U.S. border or land quality, which affects agricultural production), the regional fixed effects should help correct for that unobserved heterogeneity.

5.2 Data Description

Data on the number of mortgage loans issued in each state by the three major lenders from 1993 to 2000 was provided by the Comisión Nacional de Fomento a la Vivienda (CONAFOVI). Data on population size, age distribution, income distribution by multiples of the minimum salary, and rural share of the population are drawn from the 1990 and 2000 Censo General de Población y Vivienda and the 1995 Conteo de Población.

The primary measure of housing quality is a composite index constructed using micro data from the 1990 and 2000 census. The index measures access to urban services, materials used to construct walls, floors, and roofs and the amount of living space. Methodology for the index was originally developed by Schteingart and Solis (1994) and used by the Joint Center for Housing Studies (1997) and Schuetz, Belsky, and Retsinas (2004).

Housing materials are considered to be of good quality if the walls are constructed from brick, block, stone, or cement, the unit has non-dirt floors, and the roof is made of concrete, brick, or tabique, which are bricks of an adobe-like substance. Living space is deemed good if the house has a kitchen that is not also used for sleeping, a bathroom, and 2.5 or fewer people per bedroom. A value of one is assigned to each of the 10 characteristics for good quality, zero for poor quality, and the values are summed up to construct the index.

Homes with index values of three or lower are deemed to be in need of replacement or significant upgrading. Homes with values of between four and six are considered to be in need of moderate upgrading. Those with values of between seven and nine need minor upgrading. An index value of 10 indicates that there are no problems. I also run robustness checks, shown in Appendix Table A.1, measuring housing quality by whether electricity is available inside the unit and whether sewerage is provided by way of connection to a public system or a septic tank. To obtain annual values for variables from the decennial census, I use a linear interpolation. The values change little even over a 10-year interval.

Eligibility by employment status for INFONAVIT and FOVISSSTE loans is estimated using data collected in biennial national surveys of household income and expenses, Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH 1992, 1994, 1996, and 1998), and from the 2000 census. To determine overall employment eligibility, I construct a composite measure of position, occupational class, and industry.

Household members giving their position as either non-agricultural worker or worker in a cooperative firm are counted as eligible by position. Several occupational classes are counted as ineligible because they are typically informal workers: agricultural workers, unskilled day laborers, informal salespersons (*vendedores ambulantes*), personal service workers, and domestic servants. Workers in all

industries except agriculture and repair services are counted as potentially eligible. I identify a household as employment-eligible if at least one member meets all three of the criteria described. Eligible households are then further divided into private-sector and public-sector eligible. A household in which at least one member listed his or her occupational class as civil servant or industry as public administration is counted as eligible for a public sector loan from FOVISSSTE. All other occupations and industries are considered private sector.

Measures of political competitiveness are drawn from data collected by the Instituto Federal Electoral (IFE), which tracks state- and district-level voting records in federal elections. During the period examined, there were three legislative elections (1994, 1997, and 2000) and two presidential elections (1994 and 2000). In the regressions, a dummy variable indicates a federal election year. To measure the strength of the ruling party, I use the PRI's share of total votes cast in the previous election. The measure of margin of victory is constructed as follows:

$$\textit{Margin of victory} = 100*|(\textit{PRI votes} - \max(\textit{PAN votes}, \textit{PRD votes})/\textit{Total votes}$$

In all of the regressions shown, I use results from the Chamber of Deputies elections. The correlation between the results from the Chamber of Deputies, the Senate, and the President (in 1994) for both political outcome measures is approximately 0.90 or greater so regressions using either the senate or presidential election results are essentially identical. Additional tests for the effects of prior elections decided by fewer than 30,000 or 50,000 votes, and for whether the PRI won the previous election, show no significant results, as shown in Appendix Table 2.

6. Regression Results

6.1 Baseline Determinants of Mortgage Allocation

The regressions suggest that two of the three major lenders – INFONAVIT and FOVI – generally allocated loans across states according to housing need and program eligibility, but it is less clear what criteria drove FOVISSSTE's lending patterns. Table 2 presents regression results from several specifications on each of the three lenders' allocations across all 32 states annually from 1995 to 2000. Column 1 shows results on the number of loans from all three lenders per 1,000 households. Columns 2 and 3 show results on INFONAVIT's loans. Columns 4 and 5 present results on FOVI's loans. Columns 6 and 7 show regression results on FOVISSSTE's loans.

INFONAVIT appears to have allocated its loans based on employment and income eligibility, housing need, and capacity to deliver housing. The share of households eligible for INFONAVIT loans, by income and employment status, is significantly positively correlated with the number of loans issued per 1,000 households. The number of loans per 1,000 households is also increasing in the share of poor-quality

housing, another predictor of housing need. As anticipated, INFONAVIT makes fewer loans in states with predominately rural populations that are difficult for large-scale developers to serve, and the number of loans per 1,000 households is decreasing in the share of the population living in communities of 15,000 or fewer inhabitants. The magnitude of all these relationships is fairly small. A 1% increase in the income-eligible population (the largest coefficient) is associated with an increase of approximately 0.15 loans per 1,000 households or less than one-tenth of a standard deviation, controlling for other variables.

Table 2 Determinants of Major Lenders' Allocation of Mortgage Loans by State, 1995-2000

Dependent variable:	**Mortgage loans per 1000 households**						
Lender:	**All lenders**	**INFONAVIT**		**FOVI**		**FOVISSSTE**	
Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Annual pop growth rate	1.103**	0.343	0.215	0.632*	0.644*	0.076	0.066
	(0.515)	(0.418)	(0.389)	(0.326)	(0.338)	(0.047)	(0.051)
Pct employment eligible	0.119**			0.014	0.013		
	(0.053)			(0.028)	(0.029)		
Pct eligible private-sector workers		0.092**	0.097***				
		(0.039)	(0.036)				
Pct eligible public-sector workers						0.003	0.002
						(0.018)	(0.019)
Pct income eligible	0.287***	0.151**	0.144**	0.129***	0.130***	0.004	0.004
	(0.072)	(0.062)	(0.056)	(0.046)	(0.047)	(0.006)	(0.006)
Pct pop, 20-35	0.262	0.027	-0.013	0.275	0.275	0.014	0.012
	(0.316)	(0.248)	(0.239)	(0.171)	(0.174)	(0.030)	(0.030)
Pct pop, 36-50	0.175	-0.034	-0.164	0.110	0.097	0.177***	0.175***
	(0.496)	(0.441)	(0.328)	(0.205)	(0.215)	(0.063)	(0.062)
Pct poor quality housing	0.265***	0.144**	0.195***	0.108***	0.103***	0.005	0.008
	(0.064)	(0.057)	(0.069)	(0.033)	(0.033)	(0.006)	(0.006)
Pct pop in towns under 15,000	-0.067*	-0.089**	-0.102***	0.018	0.018	0.006*	0.005*
	(0.039)	(0.035)	(0.028)	(0.018)	(0.019)	(0.003)	(0.003)
Pop under 1.5mi			2.463***		-0.151		0.160*
			(0.808)		(0.390)		(0.083)
Pop 1.5-3mi			2.311**		0.050		0.105*
			(0.898)		(0.319)		(0.062)
Region FEs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	192	192	192	192	192	192	192
R-squared	0.80	0.72	0.74	0.63	0.63	0.33	0.34

There is one observation per state-year for all 32 states, 1995-2000. Robust standard errors clustered by state shown in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%

The results also provide some evidence that developers, firms, or both groups prefer to spread the loans across many housing markets rather than concentrate them in a few of the largest areas. As shown in Column 3, INFONAVIT issues approximately

2.3 to 2.4 more loans per 1,000 households in small states (with populations of less than 1.5 million) and medium sized states (with populations of between 1.5 and 3 million) than in the largest states. The relatively simple models being tested in Columns 2 and 3 appear to have captured many of the important determinants of loan allocation. They explain nearly three-quarters of the variation in lending across states during this period.

The pattern of loan distribution across states by FOVI also reflects income eligibility and housing need, with the weakly significant effect of population growth rates. The number of loans per 1,000 households is increasing in the share of income eligible households and share of poor quality housing. Results are statistically significant at the 5% level, but similarly small in magnitude. Since eligibility for FOVI's loans does not depend on employment status, it is not surprising that there is no significant association between the share of workers in formal employment and the number of loans. FOVI does seem to target loans to faster-growing states although the coefficient on the annual population growth rate is significant only at the 10% level. Unlike INFONAVIT, there are no differences in per-household loan numbers according to the overall population of the state. This perhaps reflects the absence of pressure from national firms. As with the results for INFONAVIT, the models of FOVI's lending provide a relatively good fit, explaining more than 60% of the variation in lending.

The baseline models are least strongly predictive in identifying what criteria FOVISSSTE applied when allocating loans across states. The only variable that is statistically significant at the 5% level is the share of the population between 35 and 50 years of age. The number of loans per 1,000 households increased on average by 0.18 loans for every 1% increase in the share of population in this age range. It should be noted that this population is somewhat older than the usual age of household formation in Mexico, but may be more typical of the age of people working in the public sector. Surprisingly, there is no significant relationship between either the share of public sector employees in the state or the share of income-eligible workers and the number of loans.

There is a positive association between the rural share of the population and loans, but the results are only weakly significant and the magnitude is very small (0.006 additional loans per 1,000 households for 1% of rural population). As with INFONAVIT, FOVISSSTE appears to grant more loans to small and mid-sized states although the results are only significant at the 10% level. Of the three lenders examined, the models on FOVISSSTE's loans explain by far the lowest share of variation. Only one-third of the total variation in lending is explained by the independent variables.

6.2 Results on Politically Strategic Loan Allocation

The results on regressions testing for various forms of politically strategic lending provide some evidence that the major lenders gave more loans in federal election

years and more loans in close electoral races. However, the results are not consistent across lenders and the magnitude of the effects is small.

In Table 3, Columns 1 through 3 show the results for INFONAVIT. Columns 4 through 6 report results on FOVI. Columns 7 through 9 show results on FOVISSSTE. The first column in each lender group tests for increased lending in federal election years, using data from 1993 to 2000 in order to capture three election years. The second column tests the relationship between close previous elections and lending, using lagged election results from the 1994 and 1997 elections on lending between 1995 and 2000. The third column examines lending as a function of the PRI's overall strength in the previous election during the same period.

The results of regressions on INFONAVIT's loans show some evidence of a political budget cycle, but do not show evidence of targeting loans to electorally strategic states. The regression in Column 1 shows higher lending per household in federal election years, significant at the 10% level, controlling for the variables included in the baseline model and a quadratic time trend (year fixed effects are omitted to avoid collinearity with the election year dummy). On average, INFONAVIT issued 0.47 more loans per 1,000 households in election years, approximately one-tenth of a standard deviation. However, the agency did not grant more loans either to states with previously close races, as shown in Column 2, or to states where the PRI had a particularly weak electoral share, shown in Column 3. The coefficients on both the prior electoral margin and PRI's share of the vote are statistically not different from zero. In magnitude, they are quite close to zero. The coefficients on variables from the baseline model are robust to the inclusion of the electoral competitiveness variables.

Of the three major lenders, FOVI's lending patterns appear to be most affected by electoral politics. The number of loans per household decreases with the margin of victory in the previous election, as shown in Column 5, although the results are only weakly significant. Statistically stronger results occur on the PRI's overall strength in the state, shown in Column 6. The higher the PRI's share of the vote in the prior election, the more loans were given per 1,000 households, controlling for the baseline variables. The magnitude of the electoral strength variable is quite small though an additional 1% in the PRI's previous vote share is associated with a drop of 0.07 loans per 1,000 households. There is no evidence that FOVI gave more loans in election years, shown in Column 4, with controls for a linear time trend.

The results shown in the last three columns provide no evidence that FOVISSSTE alters its lending patterns as part of its federal electoral strategy. None of the coefficients of the three political variables included in the model – the dummy for federal election years, the prior electoral margin, or the prior PRI vote share – are statistically different from zero, nor do the coefficients on the baseline variables change.

Table 3 Influence of Electoral Strategies on Mortgage Allocation by State, 1995-2000

Dependent variable:	**Mortgage loans per 1000 households**								
Lender	**INFONAVIT**			**FOVI**			**FOVISSSTE**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Federal election yr	0.467*			0.177			-0.061		
	(0.230)			(0.176)			(0.042)		
Prior electoral margin, pct		-0.004			-0.031*			0.004	
		(0.037)			(0.016)			(0.004)	
Prior PRI vote share			0.004			-0.067**			0.003
			(0.054)			(0.032)			(0.007)
Annual pop growth rate	0.235	0.207	0.217	0.481**	0.587*	0.622**	0.027	0.082*	0.077*
	(0.323)	(0.371)	(0.378)	(0.233)	(0.313)	(0.311)	(0.034)	(0.045)	(0.046)
Pop under 1.5mi	2.699***	2.505**	2.441***						
	(0.765)	(0.991)	(0.892)						
Pop 1.5-3mi	2.649***	2.331**	2.287**						
	(0.762)	(0.940)	(0.931)						
Pct eligible private-sector	0.077**	0.097**	0.097***						
	(0.030)	(0.037)	(0.037)						
Pct employment eligible				-0.003	0.008	0.014			
				(0.024)	(0.029)	(0.028)			
Pct eligible public sector							0.015	0.004	0.003
							(0.011)	(0.019)	(0.018)
Pct income eligible	0.135**	0.144**	0.144**	0.119**	0.130***	0.131***	0.003	0.004	0.004
	(0.056)	(0.056)	(0.056)	(0.051)	(0.046)	(0.041)	(0.005)	(0.006)	(0.006)

Table 3 Continue…

Table 3 Continued

Pct pop, 20-35 yrs	-0.039	-0.003	-0.017	0.187	0.363**	0.346**	0.020	0.004	0.011
	(0.263)	(0.260)	(0.240)	(0.187)	(0.180)	(0.163)	(0.022)	(0.031)	(0.030)
Pct pop, 36-50 yrs	-0.236	-0.156	-0.161	0.166	0.180	0.078	0.141***	0.169**	0.179***
	(0.275)	(0.365)	(0.311)	(0.272)	(0.208)	(0.159)	(0.048)	(0.065)	(0.060)
Pct poor quality hsg	0.188***	0.196***	0.195***	0.109***	0.106***	0.105***	0.005	0.005	0.005
	(0.061)	(0.073)	(0.071)	(0.039)	(0.035)	(0.031)	(0.005)	(0.006)	(0.006)
Pct pop in towns under 15,000	-0.116***	-0.100***	-0.103***	-0.004	0.031	0.032	0.005*	0.004	0.005
	(0.026)	(0.033)	(0.034)	(0.023)	(0.020)	(0.020)	(0.003)	(0.004)	(0.004)
Year	-1,160***			0.426**			0.007		
	(162.1)			(0.163)			(0.015)		
Year squared	0.291***								
	(0.041)								
Region FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Observations	256	192	192	256	192	192	255	192	192
R-squared	0.70	0.74	0.74	0.45	0.64	0.65	0.20	0.33	0.33

There is one observation per state-year for all 32 states. Columns 1, 3 and 5 show results for 1993-2000; all other columns show results 1995-2000.
Robust standard errors clustered by state shown in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

7. Conclusions

In allocating subsidized mortgage loans across states, it appears that Mexico's dominant federal lenders responded primarily to housing demand and program eligibility rather than the electoral strategies of the PRI. The largest and most important agency, INFONAVIT, allocated more loans to states with high proportions of income- and employment-eligible households, high levels of poor quality housing, and relatively large urban populations. The second largest lender, FOVI, also granted more loans per household to states with more income-eligible households and poor quality housing. Only the lender responsible for public-sector employees, FOVISSSTE, did not appear to have reflected housing need and eligibility in its loan allocation.

Rather surprisingly, electoral strategies seem to have played a relatively small role in federal lending during the 1990's. INFONAVIT issued more loans in federal election years, but did not target the loans at politically competitive states. FOVI did give more loans to states with previously tight elections and where the PRI had previously performed poorly, but the magnitude of the politically motivated allocation was quite small. FOVISSSTE showed no signs of responding to federal electoral politics.

Given the PRI's well-documented practice of patronage spending and vote-buying and the appealing characteristics of mortgage loans, these results are quite striking. In the face of ever-increasing political competition, why would Mexican federal agencies refrain from allocating their loans in a way most likely to increase voter support for their party? First, the governance structures of the agencies may have constrained an overt politicization of lending or have created counter-pressures for a different type of distribution. In particular, the presence of large national firms on INFONAVIT's board, and the role of regional or national developers in administering the loans, may have prevented the federal government's representatives from allocating loans to political battleground states. Similarly, the oversight capacity of the World Bank and IADB may have unhibited the degree to which FOVI could manipulate its allocations. However, it is somewhat surprising that the agency with the least amount of non-governmental oversight, FOVISSSTE, showed the least evidence of political pressure.

Two other possible reasons may explain the lack of evidence of political influence. Although the target population for federal loans more closely resembles the median voter than some other recipients of the PRI's patronage and vote-buying activities, it is possible that the somewhat more affluent mortgage recipients were perceived as being less receptive to persuasion. Moreover, the loans are far more expensive to the government than the usual goods and services used for patronage. If the votes of large numbers of poor households can be swayed by gifts of toasters and bicycles, allocating high-value, long-term mortgage loans to moderate-income households would be an inefficient means of affecting elections.

Improved data in two respects would be desirable to test further whether lending serves political purposes. First, it is possible that the state is too broad a level of analysis and that spending for electoral gains at the municipal level would be a better targeted. Second, the measure of political competition used in this paper derives from previous election results, which may not accurately indicate the perceived closeness of current and future contests. The use of polling data shortly before elections would be preferable although such data are not currently available. Finally, it would be interesting to test for reverse relationships – does the receipt of federal mortgage loans affect the outcome of elections? Perhaps the PRI did not allocate mortgage loans strategically enough during the 1990's – and paid the price for its omission.

The housing industry and housing finance system in Mexico have evolved substantially since the period of this study, generally moving towards less direct government control and greater market orientation. The winner of the 2000 election, Vicente Fox from PAN, made modernization and expansion of the housing sector a signature issue during his term. Under his administration, FOVI evolved from a direct lender into a national mortgage bank, Sociedad Hipotecaria Federal, which channels funds to households through privately owned specialized financial institutions known as SOFOLes. INFONAVIT has shifted towards issuing a larger number of smaller loans, aimed at its lower wage contributors, while encouraging its higher-income contributors to use the subsidized loans as leverage to obtain additional funds from SOFOLes or commercial banks.

The role of private capital markets has been growing although banks still issue a small share of total loans (Schuetz et al 2004). Perhaps in keeping with PAN's traditionally more business-oriented positions, or simply weaker ties to the old political establishment, the Fox administration made a number of efforts to make the Mexican housing industry more market-driven and less dependent on direct public guidance or subsidy. Although production levels had not attained President Fox's stated goal of 750,000 new houses per year by the end of his administration in 2006, there have been substantial increases in the annual production and investment in housing.

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Appendix A

Table A.1 Robustness Checks on Allocation of Loans, 1995-2000

Dependent variable:	**Mortgage loans per 1000 households**						
Lender	**INFONAVIT**			**FOVI**		**FOVISSSTE**	
Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Annual pop	0.353	0.415	0.422	0.444	0.723**	0.030	0.074
growth rate	(0.404)	(0.430)	(0.436)	(0.287)	(0.347)	(0.036)	(0.046)
Pct employment				0.021	0.007		
Eligible				(0.025)	(0.026)		
Pct eligible private-	0.043	0.095**	0.108**				
Sector	(0.034)	(0.038)	(0.042)				
Pct eligible public-						0.009	0.002
Sector						(0.012)	(0.018)
Pct income eligible	0.150**	0.104*	0.076*	0.120**	0.070**	0.002	0.005
	(0.063)	(0.055)	(0.044)	(0.052)	(0.035)	(0.005)	(0.005)
Pct pop, 20-35	-0.008	-0.169	0.034	0.175	0.111	0.030	0.010
	(0.283)	(0.246)	(0.292)	(0.207)	(0.181)	(0.023)	(0.026)
Pct pop, 36-50	-0.082	-0.131	-0.080	0.116	0.080	0.156***	0.172***
	(0.425)	(0.434)	(0.418)	(0.288)	(0.217)	(0.051)	(0.062)
Pct poor quality	0.129**			0.115***		0.004	
Housing	(0.053)			(0.040)		(0.005)	
Pct hsg w/ electricity		-0.174**			-0.059		-0.012
		(0.082)			(0.036)		(0.007)

Table A.1 Continue…

Table A.1 Continued

Pct hsg w/ sewerage			-0.067**				
			(0.028)				
Pct pop in towns	-0.109***	-0.104***	-0.102***	0.000	0.006	0.005**	0.005*
under 15,000	(0.034)	(0.034)	(0.032)	(0.022)	(0.019)	(0.003)	(0.003)
Region FEs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	256	192	192	256	192	255	192
R-squared	0.68	0.71	0.71	0.50	0.60	0.32	0.33

There is one observation per state-year for all 32 states. Columns 1, 2, 5 and 7 show results for each year, 1993-2000. The remaining columns show results for each year, 1995-2000. Robust standard errors clustered by state shown in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.2 Robustness Checks for Influence of Electoral Strategies of Loan Allocation, 1995-2000

Dependent variable	**Mortgage loans per 1000 households**								
Lender	INFONAVIT			FOVI			FOVISSSTE		
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Prior margin	-0.402			0.700			0.054		
< 50k votes	(0.862)			(0.469)			(0.090)		
Prior margin		-0.557			-0.280			0.029	
< 30k votes		(1.105)			(0.428)			(0.113)	
PRI won			-0.401			-0.010			-0.048
prior			(0.917)			(0.503)			(0.113)
election									
Annual pop	0.301	0.257	0.213	0.476	0.655*	0.632*	0.064	0.074	0.077
growth rate	(0.366)	(0.397)	(0.391)	(0.359)	(0.333)	(0.329)	(0.054)	(0.047)	(0.048)
Pop under	2.502	2.505	2.595						
1.5mi	***	***	***						
	(0.790)	(0.814)	(0.805)						
Pop 1.5-3mi	2.268	2.287	2.406						
	**	**	***						
	(0.911)	(0.883)	(0.852)						
Pct eligible	0.098	0.098	0.095						
private-	***	***	**						
sector	(0.036)	(0.038)	(0.038)						
Pct				0.011	0.014	0.014			
employment				(0.029)	(0.029)	(0.029)			
eligible									
Pct eligible							0.002	0.003	0.003
public-sector							(0.019)	(0.019)	(0.018)
Pct income	0.144	0.140	0.134	0.129	0.128	0.129	0.004	0.004	0.003
eligible	***	**	***	***	***	***			
	(0.055)	(0.057)	(0.051)	(0.043)	(0.045)	(0.046)	(0.006)	(0.006)	(0.006)
Pct pop, 20-	-0.066	-0.079	-0.010	0.368*	0.241	0.275	0.021	0.017	0.014
35 years	(0.229)	(0.265)	(0.249)	(0.208)	(0.188)	(0.172)	(0.034)	(0.030)	(0.031)
Pct pop, 36-	-0.108	-0.152	-0.160	0.028	0.114	0.111	0.171	0.176	0.177
50 years							***	***	***
	(0.314)	(0.326)	(0.332)	(0.197)	(0.203)	(0.207)	(0.065)	(0.063)	(0.064)
Pct poor	0.192	0.193	0.194	0.115	0.106	0.107	0.005	0.005	0.004
quality	***	***	***	***	***	***			
housing	(0.070)	(0.069)	(0.069)	(0.032)	(0.033)	(0.032)	(0.006)	(0.005)	(0.006)
Pct pop in	-0.103	-0.109	-0.103	0.020	0.015	0.018	0.006*	0.006*	0.006*
towns under	***	***	***						
15,000	(0.028)	(0.032)	(0.027)	(0.017)	(0.019)	(0.018)	(0.003)	(0.003)	(0.003)
Region FEs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	192	192	192	192	192	192	192	192	192
R-squared	0.74	0.74	0.74	0.64	0.63	0.63	0.33	0.33	0.33

Observations per state-year for 32 states, 1995-2000. Robust standard errors clustered by state in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%