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## PRIVATIZATION IN MEXICO

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## Abstract\*

Over the last 20 years, Mexico redefined the role of the state in its economy through an ambitious program to liberalize trade, promote efficiency and reduce the size and scope of the state-owned sector. In Mexico, privatization led to a significant improvement in firm performance, as profitability increased 24 percentage points and converged to levels similar to those of private firms. From this increase, at most 5 percent can be attributed to higher prices and 31 percent to transfers from workers, with the remaining 64 percent representing productivity gains. There is evidence that privatization provides other social benefits, as greater access to services, which usually follows privatization, leads to welfare gains for the poorest consumers that outweigh any increase in prices. Moreover, an often-overlooked aspect of privatization is its fiscal impact, whereby the proceeds from the sale are augmented by reduced subsidies and increased taxes and can help pay off debt or finance social spending. The Mexican privatization program can provide a valuable guide to privatization dos and don'ts: First, the privatization process must be carefully designed and run in a transparent way. Special requirements such as bans on foreign direct investment or cash-only payments lead to substantial price discounts for firms sold, while simplicity breeds competition and leads to higher prices. A transparent program can also help quell the tendency of politicians to favor their friends by tweaking the rules of the game. Second, restructuring firms prior to privatization is counterproductive in raising net sale prices and should be avoided. Governments spend substantial resources on politically motivated investment or efficiency programs that are not valued by bidders and which can rarely be justified on the social ground on which they are sold. Additionally, restructuring programs lengthen the privatization process considerably and lower prices for firms sold—in the case of Mexico, each month of delay reduced the sale price by 2.2 percent. Finally, this paper argues that it is essential to carefully deregulate and re-regulate privatized firms to ensure that they behave appropriately as well as to provide a corporate governance framework to ensure firms are able to finance their operations without relying on the Government for help.

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## **1. Introduction**

What should privatization attempt to achieve? Why does it work? How does it affect firm performance? What are the determinants of privatization prices? What are the effects in terms of fiscal policy? How should a privatization program be structured? What role should deregulation or re-regulation have in a privatization policy, and why? In this paper, we provide empirical answers to these questions through a micro- and macro-economic analysis of the Mexican privatization program. The Mexican program, carried out over the past 20 years, has been one of the largest in the world in terms of its scale and scope. It implied the reversal of forty years of state interventionism and profoundly transformed the economic landscape of Mexico.

Recently, politicians and the media have harshly questioned the effect of privatization, claiming that benefits are exaggerated and that privatization invariably leads to welfare losses for society. This paper's key finding is that privatization leads to dramatic improvements in firm performance and that they are the result of efficiency gains, not transfers from workers or exploitation of consumers. We find that the operating-income-to-sales ratio for the median firm increased 24 percentage points and, by assuming that quality is unchanged and that fired workers have zero productivity, we estimate that price increases and transfers from workers can account for at most 5 and 31 percent of the increase in profitability, respectively. Similar improvements are observed for operating efficiency and output. Furthermore, we calculate industry-adjusted indicators to ensure that the results obtained are directly attributable to the transfer of control to the private sector and not a reflection of general macroeconomic trends or sector-specific phenomena.

Even when this initial objection is overcome, many argue that privatization should be opposed because benefits accrue to the new owners only, while consumers and the poor are left behind. It is claimed that the sale of state-owned enterprises (SOEs) amounts to a privatization of benefits while the government is left to foot the bill if things go wrong. Contrary to this belief, we find that there are significant social benefits to privatization, particularly from greater access to goods and services. It is precisely the poor who are usually left out of the telephone, electricity and water networks when they are public and therefore the ones who stand the most to gain from increased coverage. Moreover, although it is true that the government has sometimes footed the bill for botched privatizations, an often-overlooked aspect of privatizations is their beneficial fiscal effect. Lower subsidies, increased taxes, and of course direct revenues from sale provided

Mexico with the revenues needed to dramatically reduce its stock of external debt and increase spending on education and poverty alleviation programs.

Among those who accept that privatization is a positive force, there is a widespread belief that SOEs need extensive restructuring and nurturing before they are fit for sale. With this in mind, governments often spend vast sums of money and much valuable time implementing investment and efficiency plans that are not valued by bidders. For the case of Mexico, the presence of an efficiency restructuring program or an investment plan reduced the net privatization price received by the government by 56 and 95 percent, respectively. Furthermore, each additional month taken to complete the privatization decreased prices by 2.2 percent. This evidence clearly suggest that governments should think twice before engaging in these types of restructuring programs and that often the best solution is to simply concentrate on the sale of SOEs and leave the restructuring to the market. If politicians wish to help displaced workers, there is sure to be a more cost-effective way to do it than by trying to fix public firms before they are sold. An additional lesson that can be drawn from the Mexican experience is that simplicity and transparency are paramount to a successful program. Special requirements such as cash-only sales reduced net prices by 30 percent, while allowing foreigners to participate boosted prices by 32 percent and the presence of an additional bidder in the final round increased them by 17 percent.

Finally, this paper attempts to make sense of cases of failed privatization by analyzing the importance of a set of complementary policies such as the design of the privatization contracts, deregulation and re-regulation of privatized firms and the corporate governance framework. We find that the main instances of botched privatization can be traced back to mistakes in one or more of these complementary policies. Although it is clear that more attention is needed in these areas, the good news is that the failures seen so far seem to have a readily available solution.

## **2. Mexican SOEs and Privatization**

To understand the opportunities presented by the Mexican privatization program it is helpful to first analyze the role of the government in the economy and the motives behind this role. The 1917 Constitution established the general jurisdictional framework under which the role of the State in the economy was defined. From this foundation, the Mexican government launched a gradual takeover of the economy and by 1982, the year in which banks were nationalized, the

government controlled over 1,100 firms in all sectors of the economy, including monopolistic control of strategic areas such as energy and infrastructure. Since then, government ownership of enterprises has declined precipitously and is now significant only in some entrenched sectors which have successfully resisted divestiture due to their political clout, most notably oil and electricity. This section analyzes the rise of the SOE sector and the subsequent privatization program in more detail.

### *The Growth of the SOE Sector*

Table 1 shows the main focus of state expansion for different periods during 1917-2003 as well as the number of SOEs at the end of each period. During the 1920s, government operations mostly reflected attempts to regulate the economy; the Central Bank was established to control monetary policy, and investments in infrastructure were used to stimulate the economy.<sup>1</sup> The Great Depression in the United States and the worldwide economic crises that accompanied it led the government to take direct responsibility for the provision of many basic services. In 1934, the “Cardenista” era began with the implementation of a six-year plan that emphasized the role of agricultural development and the provision of basic services. Predictably, this approach quickly spawned an array of funding institutions that would outlive their initial mandate and become engines for state expansion.<sup>2</sup> Pemex, the national oil company and probably the most prominent SOE in Mexican history, was created during this period and still remains in state hands today.

By 1940 the government owned 36 enterprises, and the stage was set for a massive expansion of the state-owned sector. The period from 1940 to the mid-1950s witnessed the State’s implementation of an import-substitution model and the undertaking of capital-intensive and long-maturity investments such as steel mills, coal mines, paper mills and oil refineries. The government also took over the social security system during this period and created two institutions to run it: the National Institute for Social Security (to manage private sector pensions) and the Social Security of Government Employees. Until 1947, each company was almost completely responsible for its own operations, and the whole SOE sector was managed in

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<sup>1</sup> For example, the National Commission of Irrigation and the National Commission of Highways and Roads were in charge of providing investments to rural areas and of fomenting trade by improving the infrastructure of Mexico.

<sup>2</sup> Among the most important firms and funding institutions created during this period are the National Commission of Electricity, the National Railway Company, the Exporting and Importing Mexican Company (CEIMSA), the National Bank of Agricultural Credit and the National Bank of Ejido Credit.

a decentralized fashion. In that year, however, due to the increasing size of government operations, centralized control was established under two ministries.<sup>3</sup>

The late 1950s and 1960s were known as a period of “stable development,” during which the economy grew swiftly and the government expanded its influence in a seemingly random way. The number of SOEs more than doubled, and public ownership of firms expanded to new sectors, including sugar cane mills and the manufacture of textiles, tobacco, and food processing. The State’s major investments were directed toward regional development with the aim of increasing employment and production across the nation. Supervision became more complex as the number of SOEs increased, and in 1970 control of these firms was centralized under the control of three ministries: the Ministry of Finance (SHCP), the Secretariat of the Presidency (SP), and the Secretariat of National Patrimony (SENEPAL).

**Table 1. State-Owned Enterprises in Mexico, 1917-2003**

Main Focus of State Activity	Period	Number of SOEs (end of period)
Public administration, creation of infrastructure, administration of natural resources and provision of basic services.	1917-1940	36
Import-substitution oriented investments (capital-intensive and long-maturity areas; industry input suppliers); transportation and communications; and social security institutions.	1941-1954	144
Stable development, unplanned expansion: Regional development, production expansion, and creation of employment.	1955-1970	272
Planned expansion: oil bonanza, government as an industrial investment engine.	1971-1975	504
Planned expansion: Bank nationalization, government investment in strategic areas and takeover of firms in distress.	1976-1982	1,155
Main program of liberalization of the economy and divestiture of the state owned sector.	1983-1993	258
Consolidation of the privatization program: public utilities and pension system.	1994-2003	210

This table shows the main focus of state expansion for different periods during 1917-2003 as well as the number of SOEs at the end of each period.

*Sources:* Aspe (1993) and Informe de Gobierno (Presidencia de la República, 1982-2003).

<sup>3</sup> The Ministry of Finance and the Ministry of National Goods and Administrative Inspection were the two entities with overseeing powers established by the 1947 “Law for the Federal Government’s Control of Decentralized Institutions and Enterprises of State Participation.”



Starting in the first half of the 1970s, a fall in private investment and stricter restrictions imposed by the government consolidated the role of the public sector as the main engine of investment. The government borrowed heavily and used income from high oil prices to expand the number of SOEs under its control. During the 1970s and early 1980s, the government followed a haphazard strategy of taking over companies that fell into financial distress or were of particular interest to the politicians in charge. By 1982 there were 1,155 SOEs, and their weight in the economy was unprecedented: they accounted for 4.4 percent of the country's labor force and 30 percent of fixed capital formation, and they received subsidies equivalent to almost 13 percent of GDP.<sup>4</sup>

### ***The Privatization Program***

The Mexican privatization program was one of the world's largest, both in terms of the number of companies privatized and their relative size. Between 1982 and 2003, the number of SOEs dropped from 1,155 to 210. Table 2 shows the evolution of the SOE sector from 1982 to 2003, while Table 3 shows the number of privatized firms and the number of privatization contracts per year for the same period.<sup>5</sup> The scope of the program entailed the privatization of close to 440 companies in 49 four-digit S.I.C. codes.

The first period, which lasted from 1982-1988, began as the result of a "Restructuring Program" with the aim of increasing the overall efficiency of the public sector. The program involved restructuring measures as well as a general "cleaning up" of the sector through liquidations, mergers, transfers, and privatizations. This period was also marked by constitutional reforms aimed at reducing the economic role of the government; a New Federal Law for SOEs clarified the relationship, and obligations between each SOE and the State led to a large reduction of unviable operations. Nearly 300 SOEs were liquidated or shut down and 157 were privatized.

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<sup>4</sup> According to Aspe (1993), even this number does not capture the true magnitude of the drain that the SOE sector represented. If we include the banking sector operations that lead to the nationalization of commercial banking in September 1982, the corrected figure would increase to a staggering 18.5 percent of GDP.

<sup>5</sup> We group our observations in three periods, and for each the privatization strategy often involved splitting companies into smaller units or making multi-firm conglomerates. For instance, Ferrocarriles Nacionales was split into 8 railroads, whereas 35 local airports were sold in packages of about 10 each.

**Table 2. State-Owned Enterprises 1982-2003**

	State-Owned Enterprises		
	1982-1988	1989/1993	1994/2003
<i>Total at the beginning of period</i>	1,155	666	258
Creation	59	39	108
Liquidations / Shutdowns	294	193	58
Mergers	72	17	16
Transfers	25	11	26
<b>Privatizations</b>	<b>157</b>	<b>226</b>	<b>56</b>
In Process*			37
<b><i>Total at the end of the period:</i></b>	<b>666</b>	<b>258</b>	<b>210</b>

This table shows the evolution of state-owned enterprises for the period 1982-2003. To obtain the total number of SOEs at the end of each period we: (i) add the number of created SOEs to the number at the beginning of the period; and (ii) subtract the liquidations, shutdowns, mergers, transfers and privatizations. “Total at the beginning of period” represents the number of legal entities forming part of the parastatal sector at the start of each period; “Creation” represents the number of created companies by the state in the specified period; “Liquidations / shutdowns” represents the number of companies shut down by the state in the specified period; “Mergers” represents the number of state-owned enterprises that merged with other state-owned enterprise in the specified period; “Transfers” represents the number of state-owned enterprises that were transferred to other levels of government, including firms that ceased to be treated as state-owned by legal mandate (Ley Federal de Entidades Paraestatales); “Privatizations” represents the number of state-owned enterprises sold in the specified period; “In process” represents the number of state-owned enterprises in the specified period with privatizations pending; this number reflects the number of ongoing privatizations, liquidations, shutdowns, mergers or transfers in 2003. *Source:* Informe de Gobierno (Presidencia de la República, 1982-2003).

\* The most important ongoing processes are: (i) Banrural System (13 institutions), FIDELIQ, Nacional Hotelera de Baja California S.A. de C.V.

The program reached its peak during the Salinas administration, from late 1988 to 1993, both in terms of the size and scope of privatizations. Firms sold during this period represent over 96 percent of all assets privatized, and they employed 311,000 workers, or 35 percent of the total workforce of SOEs (López-de-Silanes, 1994). To manage this huge task in such a short time, the President created a special unit within the Ministry of Finance, the Office of Privatization of State-Owned Enterprises (OP), to coordinate a decentralized process that encouraged the involvement of commercial banks, foreign businesses and financial valuers.

The third period, from 1994 to 2003, was characterized by the consolidation of previous divestiture efforts. The administration in charge undertook the privatization of strategic areas of the economy and public utilities such as telecommunications (including satellite telecommunications), ports, airports, toll roads, railroads and the distribution of natural gas. A major reform of the private sector pension system, which was managed by the Instituto Mexicano del Seguro Social (IMSS), took place in 1995. By 2003 the privatization program had

lost its appeal, and in fact the government marginally reversed the process by expropriating some previously privatized companies.<sup>6</sup> All in all, net privatizations of SOEs were negative in 2003.

**Table 3. The Privatization Program in Perspective**

Year	Companies Privatized	Number of transactions (privatization contracts)
1983	4	2
1984	3	1
1985	32	10
1986	30	16
1987	22	17
1988	66	51
1989	37	29
1990	91	63
1991	65	37
1992	21	10
1993	12	8
1994	1	1
1995	1	7
1996	1	16
1997	2	12
1998	3	13
1999	32	5
2000	16	2
2001	0	0
2002	0	0
2003	0	0
<b>Total:</b>	<b>439</b>	<b>300</b>

This table shows the number of companies privatized and the number of privatization contracts by year between 1983 and 2003. The difference between these two categories stems from the fact that some companies were sold in a bundle with other privatized firms while others were split up before the sale.

*Source:* Informe de Gobierno (Presidencia de la República, 1983-2003).

A central objective of divestiture in Mexico was to transfer SOE control to a private majority group providing the necessary alignment in incentives for better financial and investment decisions of the firms. As a general rule, the government sold 100 percent of its

<sup>6</sup> For example, in 2001 the government expropriated several sugar mills for questionable public interest reasons. In addition, between 2001 and 2003 the government created the following enterprises: (i) Consejo Nacional para Prevenir la Discriminación; (ii) Servicio de Administración y Enajenación de Bienes; (iii) Consejo Nacional de la Cultura Física y el Deporte; and (iv) Instituto Nacional de Lenguas Indígenas.

ownership in each SOE privatized, retaining a minority share in only eight cases.<sup>7</sup> Six of these companies are instances where the companies were already trading in the market and the intention was to sell secondary packages through the stock exchange.<sup>8</sup>

### **3. The Benefits of Privatization**

Critics often argue that the benefits of privatization come at significant cost to society through higher prices, lower wages and reduced income for the government (Campbell-White and Bhatia, 1998; Bayliss, 2002). In this section we analyze the validity of these claims for the case of Mexico and find evidence that points to the contrary. We study unadjusted and industry-adjusted performance ratios to quantify the effects of privatization on firms and to ensure that these are not explained by macroeconomic factors. We then examine the importance of price increases, market power and worker exploitation as potential determinants of the observed increase in profitability. Finally, we analyze the effect of privatization on the quality and accessibility of services.

#### ***Raw Data***

We rely on seven broad indicators to measure performance: (1) profitability; (2) operating efficiency; (3) employment and wages; (4) capital investment; (5) output; (6) taxes; and (7) prices. For each firm, we measure the change in any given indicator by comparing its value in 1993 to the average value during the four years preceding privatization.<sup>9</sup>

The results, shown in Table 4, reveal several interesting phenomena. Profitability increased significantly after privatization according to all indicators: the mean (median) change in profitability ranges from a low of 24.1 (12.1) percentage points for operating income-to-sales to a high of 40.0 (14.5) percentage points for net income-to-sales. All t-statistics and z-statistics are significant at the one-percent level.

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<sup>7</sup> For a detailed description of the auction process followed for SOE divestitures see López-de-Silanes (1994, 1997).

<sup>8</sup> The clearest case is Telmex (the telephone communications monopoly) where the government originally kept 31 percent of shares and now owns only 4.75 percent. The other five cases include three banks (Bancomer, Banca Serfín, and Banco Internacional) and two companies in transportation (Cia. Mexicana de Aviación and Transportación Marítima Mexicana).

<sup>9</sup> We use industry-matched PPI indices to adjust all product prices and the aggregate CPI index to adjust the values of all other nominal values. The choice of deflator is not irrelevant since the CPI series shows higher inflation than the PPI series over the sample period. Therefore, the use of the CPI index imparts a conservative bias against finding significant increases in sales, earnings, fixed assets, wages and taxes in the post-privatization period.

**Table 4. Changes in Performance for the Sample of Privatized Firms**

Variable	N	Mean change	Median change
<b>Profitability</b>			
Operating income/sales	170	0.2411 <sup>a</sup>	0.1208 <sup>a</sup>
Operating income/PPE	170	0.3450 <sup>a</sup>	0.1347 <sup>a</sup>
Net income/sales	170	0.3996 <sup>a</sup>	0.1447 <sup>a</sup>
Net income/PPE	170	0.2713 <sup>a</sup>	0.1567 <sup>a</sup>
<b>Operating efficiency</b>			
Cost per unit	170	-0.2149 <sup>a</sup>	-0.1676 <sup>a</sup>
Log (Sales/PPE)	170	0.6464 <sup>a</sup>	0.2385 <sup>a</sup>
Log (Sales/employees)	169	1.0530 <sup>a</sup>	0.9909 <sup>a</sup>
<b>Labor</b>			
Log (Employees)	169	-64.89 <sup>a</sup>	-56.75 <sup>a</sup>
Log (Blue-collar workers)	168	-53.44 <sup>a</sup>	-60.87 <sup>a</sup>
Log (White-collar workers)	169	-53.52 <sup>a</sup>	-46.34 <sup>a</sup>
<b>Assets and investment</b>			
Investment/sales	170	0.0150 <sup>c</sup>	0.0103 <sup>a</sup>
Investment/PPE	170	0.0474 <sup>a</sup>	0.0216 <sup>a</sup>
<b>Output</b>			
Log (Sales)	170	0.5428 <sup>a</sup>	0.6816 <sup>a</sup>
<b>Net taxes</b>			
Net taxes/sales	170	0.1301 <sup>a</sup>	0.0763 <sup>a</sup>
<b>Prices</b>			
Index of Real prices (Paasche)	83	1.31	1.27

This table presents raw results for a sub-sample of 170 privatized firms between 1983 and 1992. The table presents, for each empirical proxy, the number of usable observations, the mean change and the median change before and after privatization. “Before privatization” refers to the average value for the four years prior to privatization while “after privatization” refers to the value as of 1993. We report t-statistics and z-statistics (Wilcoxon rank sum) as our test for significance for the change in mean and median values respectively. All variables definitions can be found in the Appendix.

*Source:* La Porta and López-de-Silanes (1999).

<sup>a</sup> Significant at 1 percent; <sup>b</sup> Significant at 5 percent; <sup>c</sup> Significant at 10 percent. “N” number of observations.

This increase in profitability seems to stem from significant gains in efficiency. The mean (median) cost-per-unit decreased 21.5 (16.8) percentage points while the mean (median) sales-to-PPE ratio increased 64.6 (23.9) percent. Regarding the efficiency of employees, both mean and median sales-per-employee double. Once again, all changes are significant at the one-percent level.

The higher profitability and especially the higher levels of sales-per-employees can be partially explained by reduced employment levels, as the mean (median) numbers of employees plummet by 64.9 (56.8) percent. This reduction is shared more or less equally between blue and

white-collar workers: the mean (median) number of white-collar workers falls by 53.5 (46.3) percent while the mean (median) number of blue-collar workers falls by 53.4 (60.9) percent.<sup>10</sup>

The data indicate that investment increases only slightly and therefore cannot be responsible for the vast increase in profitability and operating efficiency documented above. The mean (median) investment-to-sales ratio increased 1.5 (1.0) percentage points and the investment-to-PPE ratio increased by a mean (median) of 4.7 (2.2) percentage points.

One of the most surprising findings is that privatized firms increased their sales substantially despite a reduced labor force and only marginal increments in their capital stock. The mean (median) real growth in sales is 54.3 (68.2) percent and is statistically significant at the one percent level.<sup>11</sup> Once we consider that there is no statistically significant increase in product prices of privatized firms, the increase in production suggests that the consumer surplus should have also increased significantly.

To assess the social impact of privatization, we must also account for the taxes paid by newly privatized firms and prices paid by consumers. The ratio of net taxes to sales increased by a mean (median) of 13.0 (7.6) percent, a significant increase when we consider that sales increased substantially. The magnitude of this change is more evident when we consider that the average firm received a small subsidy before privatization but paid approximately US\$8.55 million in taxes in 1993.

Regarding prices, we find that, contrary to predictions, the products of the mean (median) firm increased only 1.3 (1.3) percent in real terms. One way to gauge the contribution of price hikes to the observed change in profitability is to compare the observed percentage-points increase in operating-income-to-sales to that which would take place if privatized firms had increased output but left prices unchanged in real terms.<sup>12</sup>

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<sup>10</sup> Even though these figures seem large, they probably underestimate the true level of labor retrenchment experienced by privatized firms. In fact, looking at the sub-sample of firms for which we have complete employment data for all four pre-privatization years (117), we find that the mean (median) number of workers falls 16.53 (4.19) percent between t-4 and t-1 and a further 62.36 (64.74) percent between t-1 and 1993.

<sup>11</sup> It is possible that this increase in output overestimates the true impact of privatization as some of the observed gains may simply reflect redistribution away from customers. Some SOEs priced their output below market levels or failed to charge for goods and services produced because of corruption, political meddling or sheer incompetence. Although there is no way to directly quantify the importance of these factors in our sample, available evidence regarding the evolution of prices for the products of privatized firms suggests this is not the driving force behind increased sales.

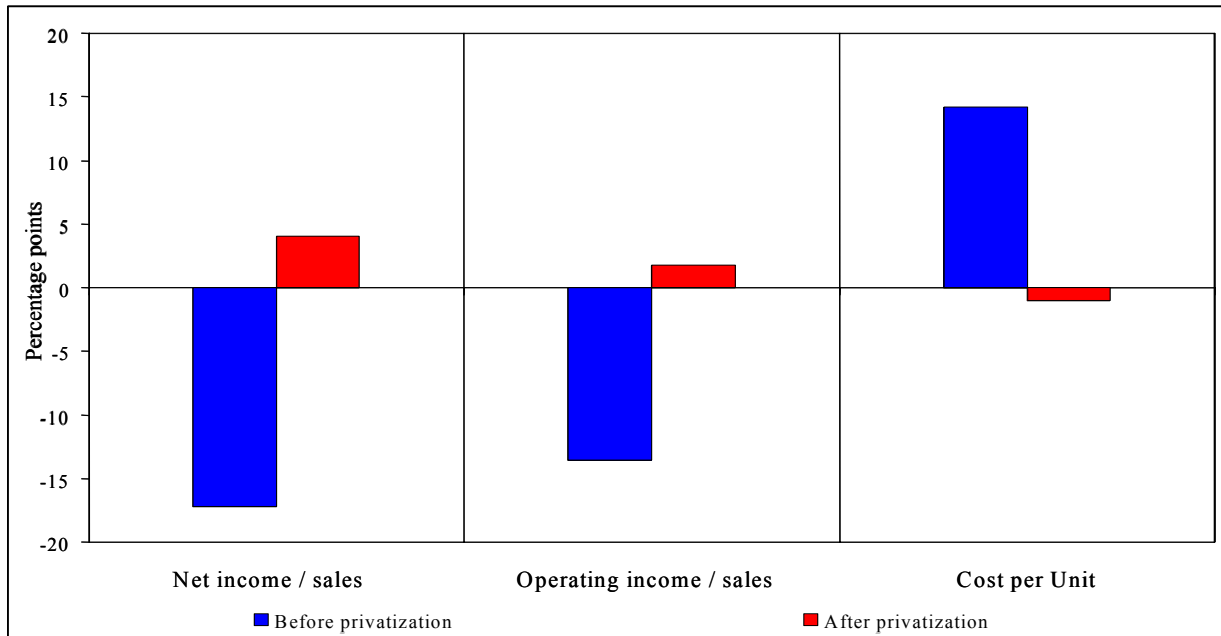
<sup>12</sup> Specifically, we define  $Sales_{1993}$  and  $Cost_{1993}$ , respectively, as sales and operating costs in the post-privatization period and  $\pi$  as the increase in real prices, and compute the following measure for the contribution of price increases to higher profitability:

Our results suggest that price increases account for 1.24 (0.9) percentage points of the ratio of operating income to sales. Accordingly, price increases explain about 5.1 percent of the observed change in mean operating-income-to-sales and 7.4 percent of the change in the observed median operating-income-to-sales. The evidence above does not support the hypothesis that price increases play a substantial role in the increased profitability of privatized firms.

***Industry-Adjusted Data***

During the early 1990s, the Mexican economy experienced a significant structural transformation and growth accelerated. To ensure that the increases in performance documented in the previous section are not driven by macroeconomic factors, we measure the performance of privatized firms relative to those of the industry to which they belong.

**Figure 1. Gap between Privatized Firms and Private Firms**



The figure presents the net-income-to-sales, the operating-income-to-sales and the cost-per-unit median gap between privatized SOEs and private firms, before and after privatization for a sub-sample of 170 privatized firms between 1983 and 1992. “Before privatization” refers to the average value for the four years prior to privatization while “after privatization” refers to the value as of 1993. All variables definitions can be found in the Appendix.

Source: La Porta and López-de-Silanes (1999).

$$\text{Price Contribution} = \left[ \frac{(\text{Sales}_{1993} - \text{Cost}_{1993})}{\text{Sales}_{1993}} \right] - \left\{ \left[ \frac{(\text{Sales}_{1993}/1+\pi) - \text{Cost}_{1993}}{[\text{Sales}_{1993}/1+\pi]} \right] \right\}$$

Figure 1 illustrates the closing gap between privatized and private firms. After dramatically underperforming their private peers in net-income-to-sales, operating-income-to-sales and costs-per-unit ratios, privatized firms caught up and even surpassed them. The most remarkable results are found for the ratio of net income to sales, where private firms were 17.2 percentage points less profitable than private firms before privatization and 4 points more profitable afterwards. Costs per unit show a similar converging trend, albeit from a different starting point. Before privatization, SOEs had median costs per unit 14.2 percentage points higher than their private competitors. After privatization they closed this gap completely and even experienced costs per unit 1 percentage point below their control group.

Table 5 shows that controlling for industry factors explains a non-trivial fraction of the employment cuts. Relative to industry benchmarks, mean (median) employment in privatized firms fell by roughly 35.4 (34.4) percent. Growth in sales remains strong relative to industry as the mean (median) industry-adjusted growth in sales is 43.2 (48.9) percent. Macroeconomic factors can therefore account for only about 21.4 (28.2) percent of the mean (median) growth in sales while firm restructuring accounts for the rest.<sup>13</sup>

**Table 5.**  
**Industry-Adjusted Changes in Performance for the Sample of Privatized Firms**

	N	Mean change	Median change
<b>Profitability</b>			
Operating income/sales	168	0.3264 <sup>a</sup>	0.1531 <sup>a</sup>
Operating income/PPE	168	2.4274 <sup>a</sup>	0.1492 <sup>a</sup>
Net income/sales	168	0.4144 <sup>a</sup>	0.2121 <sup>a</sup>
Net income/PPE	168	0.2524 <sup>a</sup>	0.1736 <sup>a</sup>
<b>Operating efficiency</b>			
Cost per unit	168	-0.1848 <sup>a</sup>	-0.1528 <sup>a</sup>
Log (Sales/PPE)	168	0.4684 <sup>a</sup>	0.2014 <sup>b</sup>
Log (Sales/employees)	168	0.9157 <sup>a</sup>	0.8834 <sup>a</sup>
<b>Labor</b>			
Log (Employees)	169	-35.35 <sup>a</sup>	-34.37 <sup>a</sup>
Log (Blue-collar workers)	168	-36.78 <sup>a</sup>	-32.61 <sup>a</sup>
Log (White-collar workers)	168	-32.21 <sup>a</sup>	-31.59 <sup>a</sup>

<sup>13</sup> We can calculate the macroeconomic contribution to the growth in sales by measuring the difference in raw and industry-adjusted indicators (0.1164 and 0.1925 respectively) as a proportion of the raw increase (0.5428 and 0.6816 respectively).



**Table 5., continued**

	N	Mean change	Median change
<b>Assets and investment</b>			
Investment/sales	168	-0.0474 <sup>a</sup>	-0.0495 <sup>a</sup>
Investment/PPE	168	-0.0328 <sup>a</sup>	-0.0503 <sup>a</sup>
<b>Output</b>			
Log (Sales)	170	0.4324 <sup>a</sup>	0.4891 <sup>a</sup>
<b>Net taxes</b>			
Net taxes/sales	168	0.1609 <sup>a</sup>	0.0757 <sup>a</sup>

This table presents industry-adjusted results for a sub-sample of 170 privatized firms between 1983 and 1992. The table presents, for each empirical proxy, the number of usable observations, the mean change and the median change before and after privatization. “Before privatization” refers to the average value for the four years prior to privatization while “after privatization” refers to the value as of 1993. We constructed the industry control groups using all private firms trading in the Mexican Stock Market (three-digit S.I.C. level). For each privatized SOE and for each year, we compute industry-adjusted indicators by taking the difference between the value of the indicator for the SOE and its industry control group. We use economy-wide aggregates, if available, for those firms for which we cannot find a matched industry sample. We report t-statistics and z-statistics (Wilcoxon rank sum) as our test for significance for the change in mean and median values respectively. All variables definitions can be found in the Appendix.

*Source:* La Porta and López-de-Silanes (1999).

<sup>a</sup> Significant at 1 percent; <sup>b</sup> Significant at 5 percent; <sup>c</sup> Significant at 10 percent. “N” number of observations.

Although some of the improvements in performance are due to macroeconomic factors, the bulk of the observed increase in performance is due to privatization. The next step is to address a number of issues relating to the robustness of our results. In particular, we explore the hypothesis that the increased profitability of privatized firms is due to exploitation of consumers through the use of market power and of workers through wage cuts.

### ***Market Power***

One of the main criticisms of privatization is that the increase in profitability is due to transfers from consumers extracted through market power. To test this hypothesis, we compare the profitability of privatized firms in competitive and non-competitive industries. If newly-privatized firms use market power to extract rents, the social view of privatization predicts that non-competitive firms would experience larger increases in profitability than competitive firms, and lower growth in output, employment and investment. In Table 6 we classify firms as

operating in competitive or non-competitive industries based on two objective criteria.<sup>14</sup> The table shows, for each ratio, the median change for competitive and non-competitive firms following privatization as well as the difference between these changes.

Changes in both operating-income-to-sales and operating-income-to-PPE are higher in competitive industries than in non-competitive ones. On the other hand, both net-income-to-sales and net-income-to-PPE increase more in the non-competitive sector than in the competitive one. With one exception (net-income-to-sales in the classification based on the number of firms), all differences between the competitive and non-competitive sectors are statistically insignificant.

By construction, three factors can account for the conflicting behavior of operating income and net income: taxes, extraordinary items, and interest expense. The increase in taxes paid is larger for non-competitive firms than competitive firms and therefore its explanatory power is diminished. Changes in leverage provide a more promising explanation. We conjecture that firms in oligopolistic and monopolistic sectors, perhaps due to their greater pre-privatization access to government-backed capital, exhibit greater reductions in leverage in the post-privatization period than firms in competitive ones. Finally, it is also possible that SOEs' net income was unduly depressed by pre-privatization restructuring charges. The bottom line is that operating income, in contrast to net income, is unaffected by changes in leverage and is thus a better gauge for the impact of market power on profits. In any event, differences in profitability changes are not statistically significant.

We also analyze the behavior of investment, employment, and output and find no statistically significant evidence to suggest that market power plays a significant role in explaining the increased profitability of privatized firms. In any case, the differences that exist point towards a more dynamic restructuring in the non-competitive sector relative to the competitive one. For example, costs per unit according to the number of firm's criteria decreased 11 percentage points more in non-competitive firms, while sales per employees according to the market share criteria increased 34 percent more than in competitive firms.

Perhaps the most interesting result is the behavior of real prices. Not only does the increase in the non-competitive sector lag behind that of the competitive sector, but prices in the former actually fell. According to the market-share criteria, the growth of prices in the

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<sup>14</sup> Under the first criteria, firms are considered competitive if they are in an industry with more than 10 firms and as non-competitive otherwise. Under the second criteria, firms are considered competitive if they have less than 10

competitive sector was 9.29 percent while that of the non-competitive sector was -2.82 percent. This difference is statistically significant at the 10 percent level. All in all, we find no evidence that market power or the exploitation of consumers explains the increased profitability of privatized firms.

**Table 6.**  
**Median Performance Changes in Privatized Firms**  
**in Competitive versus Noncompetitive Industries**

Variable	Sorted by number of firms					Sorted by market share				
	N	Competitive	N	Non-Competitive	Difference in medians	N	Competitive	N	Non-Competitive	Difference in medians
<b>Profitability</b>										
Operating income/sales	124	0.1365	42	0.1334	0.0031	104	0.1799	62	0.0712	0.1087
Operating income/PPE	124	0.1714	42	0.1698	0.0016	103	0.1832	62	0.1222	0.0610
Net income/sales	122	0.1838	41	0.4260	-0.2422 <sup>b</sup>	101	0.2263	62	0.2524	-0.0261
Net income/PPE	122	0.2102	41	0.2781	-0.0679	101	0.2015	62	0.2716	-0.0701
<b>Operating efficiency</b>										
Cost per unit	124	-0.1255	42	-0.2362	0.1107 <sup>a</sup>	104	0.1415	62	0.1907	-0.0492
Log (Sales/employees)	126	1.0353	43	0.7875	0.2478	107	1.0877	62	0.7474	0.3403 <sup>b</sup>
Log (Sales/PPE)	124	0.5882	42	0.3313	0.2569	104	0.6429	62	0.2859	0.3570
Operating Income/Employees	125	19.7240	43	20.9320	-1.2080	106	21.6320	62	14.9110	6.7210
<b>Labor</b>										
Log (Total Employment)	126	-0.4339	43	-0.3592	-0.0747	107	-0.4338	62	-0.3645	-0.0693
Log (Blue-collar workers)	126	-0.4365	43	-0.2473	-0.1892	107	-0.4495	62	-0.2518	-0.1977
Log (White-collar workers)	126	-0.4264	43	-0.3342	-0.0922	107	-0.3327	62	-0.4443	0.1116
Variable	Sorted by number of firms					Sorted by market share				
	N	Competitive	N	Non-Competitive	Difference in medians	N	Competitive	N	Non-Competitive	Difference in medians
<b>Assets and investment</b>										
Investment/sales	123	0.0059	42	0.0098	-0.0039	104	0.0048	62	0.0096	-0.0048
Investment/PPE	123	0.0144	42	0.0180	-0.0036	104	0.0144	62	0.0191	-0.0047
<b>Output</b>										
Log (Sales )	124	0.6479	42	0.3752	0.2727	105	0.6479	61	0.4419	0.2060
<b>Prices</b>										
Index of Real Prices (Paasche)	66	4.60	17	-3.64	8.24	53	9.29	30	-2.82	12.1148 <sup>c</sup>
<b>Net taxes</b>										
Net taxes/sales	124	0.0717	41	0.0897	-0.0180	104	0.0675	61	0.0815	-0.0140

This table presents median performance results for a sub-sample of 170 privatized firms between 1983 and 1992. The table breaks down performance results into competitive and noncompetitive sectors based on two objective measures: (1) firms are considered competitive if they are in an industry with more than 10 firms and as non-competitive otherwise; (2) firms are considered competitive if they have less than 10 percent of market share and as non-competitive otherwise. For each group of firms, the table presents median change in each indicator following privatization and their difference. Before privatization refers to the average value for the four years prior to privatization while after privatization refers to the value as of 1993. We report z-statistics (Wilcoxon rank sum) as our test for significance for the change in median values between competitive and non-competitive firms. All definitions of the variables can be found in the Appendix.

Source: La Porta and López-de-Silanes (1999).<sup>a</sup> Significant at 1 percent; <sup>b</sup> Significant at 5 percent; <sup>c</sup> Significant at 10 percent. "N" represents the number of observations.

percent of market share and as non-competitive otherwise.

### *Transfers from Workers*

In this section, we consider the role of labor retrenchment in explaining the large gains in profitability experienced by privatized firms. The redistribution hypothesis links post-privatization gains in profitability to transfers from workers to shareholders, as wages fall from above-market levels induced by income-redistribution goals. Political models of state ownership also imply that SOE workers are overpaid, but unlike redistribution models they lack strong predictions regarding the behavior of wages in the post-privatization period. This uncertainty is due to the fact that public sector jobs are attractive for several reasons besides pay; for example, they may be desirable because they do not require much effort or because they provide the opportunity to collect bribes in exchange for public services. We try to quantify the contribution of layoffs and wage cuts to the observed changes in profitability. Examining changes in real wages is a natural way to test competing hypotheses regarding the channels through which privatization works.

Contrary to the predictions of the redistribution hypothesis, available evidence shows that real wages increased substantially for the mean and median firm (see Table 7). Real wages per worker increased by a mean (median) of almost 80 (125) percent. This is even more striking since overall real wages in Mexico stagnated during the sample period. Furthermore, gains by blue-collar workers are larger than gains by white-collar workers. Even though white-collar wages increased substantially, the mean and median index of industry-adjusted blue-collar wages rose much more—well over 100 percent. Although both skilled and unskilled workers experience impressive increases in wages, it is the least well off that gain the most.

To provide an estimate of the cost savings due to layoffs, we make the extreme assumption that the marginal product of all fired workers is zero and calculate what the increase in profitability would have been if no workers were fired. Even in this extreme case, savings due to layoffs are not as large as the reductions in employment suggest. This is so for two reasons: first, total wages represent only 23.38 percent of sales in the pre-privatization period, and second, labor costs in the post-privatization period are spread over a much wider base since sales increase significantly. Our estimate yields a saving due to layoffs equivalent to 6.80 (4.45) percent of sales in 1993. During the same period, the mean (median) of operating-income-to-sales increased 22.12 (9.59) percentage points. Therefore, savings due to layoffs account for only 31 to 46 percent of the observed gains in profitability. If, instead of assuming that fired workers'

value added is equal to zero, we assume they are half as productive as retained workers, savings due to layoffs drop to between 15 and 23 percent of the increase in profitability.

**Table 7. The Role of Transfers from Workers**

Variable	N	Mean		Median	
		Before Privatization	After Privatization	Before Privatization	After Privatization
Index of real wages per worker	101	100.00	179.64 <sup>a</sup>	100.00	224.92 <sup>a</sup>
Index of industry-adjusted real wages per worker	101	100.00	209.30 <sup>a</sup>	100.00	198.96 <sup>a</sup>
Index of real wages per blue-collar worker	101	100.00	235.43 <sup>a</sup>	100.00	248.14 <sup>a</sup>
Index of industry-adjusted real blue-collar wages	101	100.00	265.61 <sup>a</sup>	100.00	222.43 <sup>a</sup>
Index of Real wages per white-collar worker	101	100.00	158.26 <sup>a</sup>	100.00	200.95 <sup>a</sup>
Index of industry-adjusted white collar wages	101	100.00	177.97 <sup>a</sup>	100.00	147.92 <sup>a</sup>
Index of total employment	101	100.00	57.92 <sup>a</sup>	100.00	58.05 <sup>a</sup>
Total wages/sales	101	0.2338	0.1441 <sup>a</sup>	0.1506	0.1143 <sup>a</sup>
Operating income/sales	101	-0.1530	0.0682 <sup>a</sup>	-0.0251	0.0708 <sup>a</sup>

The table presents data of total number of workers, blue collar and white-collar workers for a sub-sample of 101 privatized firms between 1983 and 1992 for which we have full employment data. For each empirical proxy we show mean and median real wages per worker and the index of industry-adjusted real wages per worker for all three groups. “Before privatization” refers to the average value for the four years prior to privatization while “after privatization” refers to the value as of 1993. We report t-statistics and z-statistics (Wilcoxon rank sum) as our test for significance for the change in mean and median values respectively. All variables definitions can be found in the Appendix.

*Source:* La Porta and López-de-Silanes (1999).

<sup>a</sup> Significant at 1 percent. <sup>b</sup> Significant at 5 percent. <sup>c</sup> Significant at 10 percent. “N” represents the number of observations.

In conclusion, real wages experience large increases in the post-privatization period probably because those workers that are retained are required to work and are paid accordingly.<sup>15</sup> Overall, the high level of labor redundancy in the pre-privatization period, the observed increases in real wages, and the productivity gains in the post-privatization period are consistent with the political view.

<sup>15</sup> To confirm the robustness of our interpretations, we carried out a poll to determine the principal perceived reasons for increased wages. The essential element of the respondents’ explanation was that SOE jobs were desirable not because they paid well, but rather that they required little effort. After privatization, employers quickly moved to dismiss workers who did not increase their productivity and hired new workers from a different pool than those who were hired under state management. Firms retained the most productive workers and offered them conditions similar to both those prevailing in the private sector and those offered to new hires. We therefore believe that higher wages are explained by improvements in worker productivity.

## *Services and Access*

The Mexican privatization program spread benefits to society beyond its direct effects on prices and firm profitability. These benefits take the form of greater access, extended coverage and enhanced quality of the services provided by the privatized firms. Table 8 summarizes some of these benefits. Among the most important improvements are a dramatic increase in freight road transport and in the provision of natural gas; a substantial increase in the capacity and efficiency of the port system and substantial investments and increased coverage in the provision of running water and sanitation. The table presents some examples of other benefits of privatization for specific sectors.

**Table 8. Other Benefits of Privatization Programs**

<b>Program</b>	<b>Impacts</b>
Freight road transport	Between 1988 and 1993, the number of firms providing freight road transport service nearly tripled—from 4,456 to 12,972. The number of trucks increased from 58,133 to 142,973.
Natural gas	Between 1996 and 2000, the Comisión Reguladora de Energía (CRE) awarded 21 gas distribution permits under which concessionaires were obligated to serve 2.3 million customers by 2004. This represents a 15-fold increase in the customer base relative to 1995.
Passenger road transport	The impact of the reform has been seen in: (i) increased entry of new firms or regularization and registration of existing firms; (ii) increased demand (between 1990 and 1996 the number of total passengers transported increased from 1.97 million to 2.75 million and the number of vehicles rose from 36,593 to 53,133); and (iii) quality and reliability of services have also improved significantly.
Ports	There have been huge increases in installed capacity (from 59 million tons in 1993 to 94 millions in 1998) and capacity utilization (from 41 percent in 1993 to 59 percent in 1998). In 1993, the port of Veracruz was handling 43 containers/hour per ship. This figure has now risen to 84. Manzanillo moves 65 containers/hour per ship, and Altamira has achieved the international standard of 50 moves per hour. In Veracruz, the total capacity for loading/unloading agricultural bulk cargo improved from 2,500 to 9,000 tons/day between 1995 and 1998, with the port of Progreso showing similar improvement.
Railroads	New operators invested more than P\$3 billion on maintenance of infrastructure and the renewal of rolling stock during 1997-1998 and another P\$3.3 billion during 1999. In 1998 the total volume of freight handled by the rail system in Mexico increased by 21.5 percent with respect to 1997.
Telecommunications	During the 1990s the number of wire-line telephones in service doubled, wireless telephony grew from negligible levels to nearly 40 percent of all telephones; and waiting lists for service virtually disappeared during the first decade after privatization.
Toll roads	The highway concession program doubled the length of existing toll highways (from 4,500 km in 1989 to 9,900 km in 1994).
Urban water supply and sanitation	A 1994 amendment to the federal water law initiated a program of concessions in water supply and sanitation. By the year 2000, approximately 14 million Mexicans were served by water systems with varying degrees of private participation (including the Federal District service contracts). Private investments totaling \$400 million have been committed, and private operators are handling approximately 16 percent of the 43m/s of wastewater effluent that is treated.

*Sources:* World Bank (2003) and Rogozinski and Tovar (1998).

## **4. Fiscal Impact**

This section explores the fiscal impact of the privatization program as well as its effects on other macroeconomic variables. There are four primary components to the fiscal impact of privatization: (1) the direct revenue generated from the sale; (2) the costs incurred due to restructuring prior to the sale; (3) the elimination of the net flow of subsidies and transfers from the government to the SOEs; and (4) the new stream of tax payments generated under private ownership.

Direct revenues from the sale of SOEs were a major source of government revenue. The aggregate value of the program from 1983 to 2003 amounts to slightly over 5.3 per cent of 2003 GDP (see Table 9), with the second period accounting for the vast majority of these sales (79 percent). About one-third of privatization contracts required “cash-only” payment, and the vast majority of the remaining contracts allowed only very short-term debt lasting no more than a few years. Because most firms were sold for cash and no long-term debt was exchanged, the cash vs. debt component of privatization plays only a marginal role in the case of Mexico.

Costs due to restructuring were by no means negligible; the government spent substantial resources restructuring firms prior to privatization, particularly through labor retrenchment programs. Although the first period had fewer prior restructuring measures, their costs amounted to one-half of total direct revenues. During the second period, firms were restructured more often, but total costs were only equivalent to one-third of total revenues. In any case, it is clear that restructuring costs were significant.

**Table 9.**  
**The Fiscal Impact of Privatization: 1983-2003**  
 (As percentage of 2003 GDP)

Period	Nominal price of privatization contract	Privatization restructuring costs	Net subsidies during the 4 years prior to privatization
1983 – 1988	0.40	0.20	0.18
1989 – 1993	4.20	1.30	0.35
1994 – 2003	0.73	n.a.	n.a.
<b>Total</b>	<b>5.32</b>	<b>1.51</b>	<b>0.53</b>
Number of privatization contracts	255	220	95

The table presents the fiscal impact of the privatization program by period as a percentage of 2003 GDP. The second column shows the discounted nominal price of the privatization contracts excluding revenues from secondary offers of shares in the stock exchange market; the third column show the restructuring costs and the fourth column present a computation of the subsidies net of dividends, revenues and restructuring costs associated with privatization during the four years prior to privatization.

*Source:* Data collected by the authors from the original privatization sales and prospectuses from the Secretaría de Hacienda y Crédito Público and Secretaría de Comunicaciones y Transportes (2000).

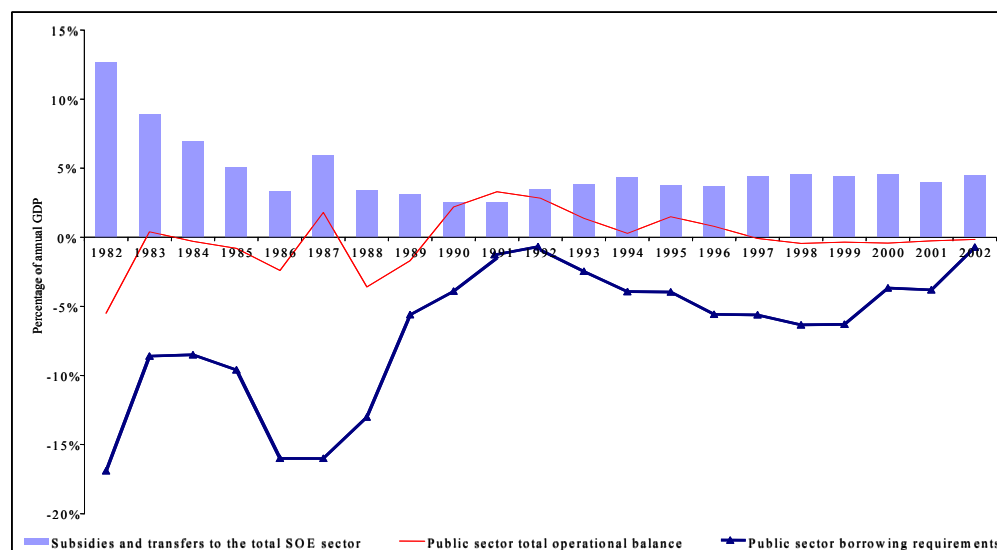
n.a. = not available.

Subsidies and transfers accounted for a significant percentage of the overall government budget—totaling almost 13 percent of GDP in 1982.<sup>16</sup> Table 9 provides a measure of subsidies net of dividends, revenues, and restructuring costs associated with privatization during the four-year period prior to privatization, and reveals that these operations imposed a large net burden on the public finances. During the first privatization period, net subsidies over the four years prior to privatization equaled 0.18 percent of 2003 GDP; almost half of the sale price of the privatized firms. During the second period, net subsidies were over twice their previous value but represented only about 8 percent of the nominal price of privatization contracts.

Overall, the evidence suggests that privatization had a positive and significant impact in the fiscal position of the government. The Operating Balance and total Public Sector Borrowing Requirements show a significant turnaround. In fact, during the second period (1989-1993) the government's budget deficit (without considering direct privatization revenues) climbed from 16 percent of GDP to a small budget surplus (see Figure 2). Furthermore, the greater fiscal discipline afforded by privatization contributed to a sharp reduction in inflation and, therefore, to improved macroeconomic stability (López-de-Silanes, 1994).



**Figure 2. The Overall Fiscal Impact of Privatization**



The figure shows the evolution of the subsidies and transfers to the total SOE sector, the public sector borrowing requirements and the public sector total operational balance as a percentage of annual GDP. *Source:* Data collected by the authors from several issues of “Cuenta Pública” (SHCP, 1982-2003), “Informe sobre la Situación Económica” (SHCP, 1982-2003) and “The Mexican Economy” (Banco de México, 1996-1999).

The funds obtained from the sale of SOEs were allocated to three principal uses: (i) an emergency “Contingency Fund” to protect against non-recurrent external shocks; (ii) a fund destined to reduce the stock of external debt; and (iii) a permanent increase in the budget for education and social assistance. The relative composition of public and private investment also changed because of privatization: total government investment in the economy shrunk from over one-tenth of GDP in 1982 to less than three percent in 2001.<sup>17</sup> During this period, investments by SOEs fell from over one-half of private investment to under one-tenth, reflecting the joint effect of lower government involvement in the economy and a recovery of private investment.

Foreign investors also become active via foreign direct investment because of the privatization program. Although they won only 9 percent of all Privatization Contracts auctioned, they engaged in joint ventures with domestic investors for an additional 11 percent of privatization contracts, including several of the largest firms (see Table 10).

<sup>16</sup> Based on data from several issues of “Cuenta Pública” (SHCP, 1982-2003), “Informe sobre la Situación Económica” (SHCP, 1982-2003).

<sup>17</sup> “Informe sobre la Situación Económica” (SHCP, 1982-2003).

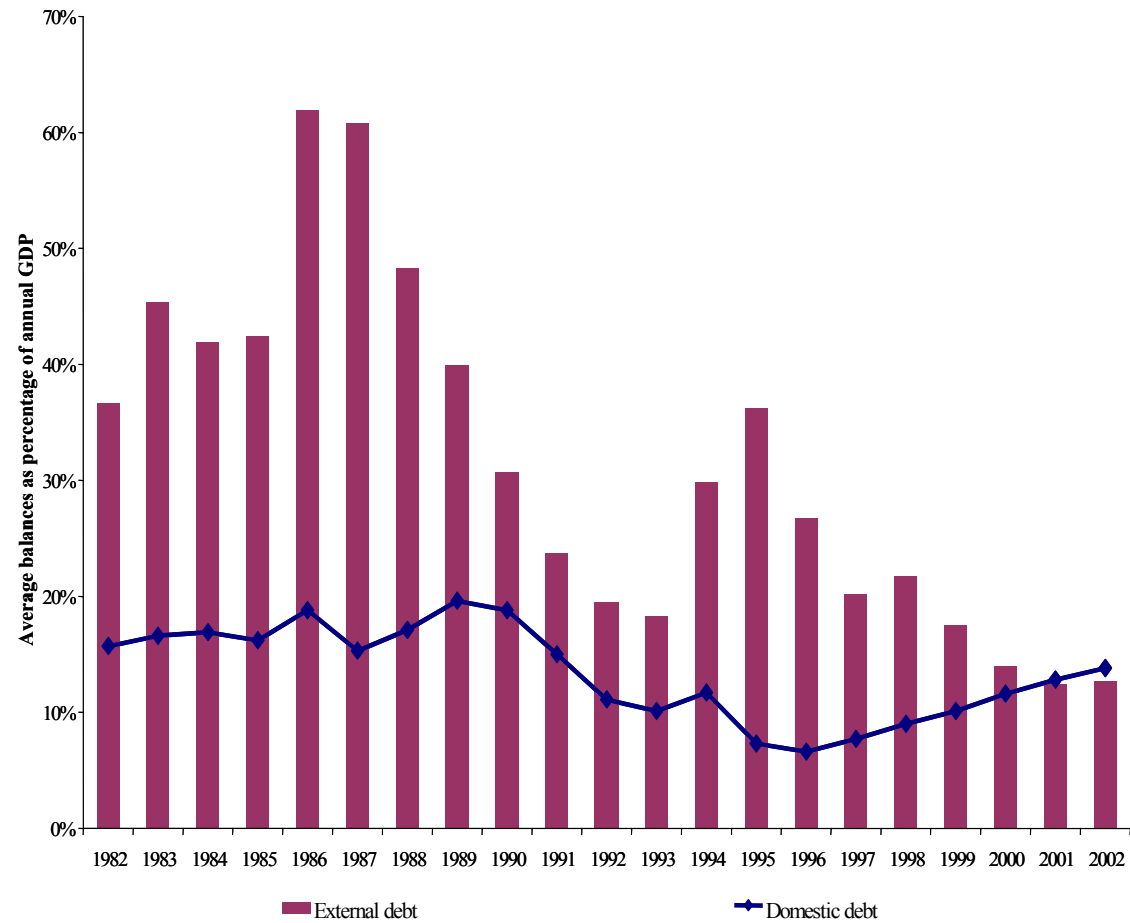
**Table 10. Foreign Direct Investment in Privatization**

Winner's Nationality	Number of privatization contracts in the sample			Present value of sale price as a percentage of average FDI flows
	1983 - 1988	1989 - 1993	1994 - 2003	
Foreign	6	8	9	15.58
Foreign-Domestic Joint Venture	4	16	8	67.35
Domestic	77	110	18	171.96
<b>Total</b>	<b>87</b>	<b>134</b>	<b>35</b>	<b>255.17</b>

This table presents the number of privatization contracts by period and origin of the winning investor as well as their present value as a percentage of the average foreign direct investment during 1983-2003. Source: Data collected by the authors from the original privatization sales and prospectuses from the Secretaría de Hacienda y Crédito Público, Secretaría de Comunicaciones y Transportes (SCT) and Banco de México.

The net effect of these factors contributed to the radical reduction of government debt experienced by Mexico over the past 20 years. As shown in Figure 3, total debt, both internal and external, has dropped from a high of 80.7 percent of GDP in 1986 to only 38.7 percent in 1991 and 27 percent in 2001. Although the stock of external debt increased sharply prior to the 1995 crisis, and the stock of internal debt has increased continuously since 1996, it is clear that Mexico's debt situation is very different from what it was 15 or 20 years ago. The privatization program, through its fiscal windfall and especially the lower financial requirements of a reduced SOE sector, is one of the main factors that explain this transformation.

**Figure 3. Total Net Debt of the Public Sector**



The figure shows the evolution of the average balance of the domestic and external debt as a percentage of GDP and includes debt held by the federal government, government enterprises and entities, development banks, and official trust funds.

*Source:* Data collected by the authors from several issues of “Cuenta Pública” (SHCP, 1982-2003), “Informe sobre la Situación Económica” (SHCP, 1982-2003) and “The Mexican Economy” (Banco de México, 1996-1999).

### *Allocative Efficiency*

Allocative efficiency refers to the idea that firms should be placed in the hands of those who value them the most. The guiding principle behind the idea of maximizing allocative efficiency is that any other mechanism would provide an inferior potential welfare outcome as any distribution goal can be achieved by giving the asset to those who value it the most and then taxing them to compensate others. Some privatization programs, particularly in former communist countries, used voucher mechanisms to achieve a direct transfer of resources. These programs gave each individual a share of the formerly national industry with the objective of achieving a more equitable distribution of wealth and to prevent a few rich investors from pocketing most of the potential gains from privatization.

Recent literature on the subject (World Bank, 1992; and Maskin, 1992) has emphasized that voucher programs are less efficient than fiscal policy in achieving wealth distribution and are subject to more problems. Diffused shareholders are often bought out at deep discounts by agents with asymmetric information, and entrenched management can more easily resist reform because there is no organized pressure from the new owners. Because of this, it seems a wiser idea for governments to follow a process similar to Mexico's, which focused its attention on maximizing allocative efficiency and then used the proceeds from privatization to benefit the rest of the population. As of June 1992, the Mexican privatization program involved a total of over 2,200 interested individuals and companies who formally requested information and 839 actual bidders. This wide participation is one of the main reasons for the high prices paid for privatized firms in Mexico (López-de-Silanes, 1997).

As a result of the income derived from privatization programs, spending on education and social assistance increased dramatically. The resources generated and liberated by privatization account for a significant share of these programs, and have helped the levels of education, health, and regional developments regain its pre-1982 crisis levels (around 9 percent of GDP). For example, in 1992, the education budget increased 9.5 percent in real terms, while the Health and Social Services sector received an increase of 7.7 percent, and transfers to rural development programs increased almost 40 percent (López-de-Silanes, 1994).

## 5. Dos and Don'ts in Privatization

The Mexican privatization program provides an excellent opportunity to study the effects of different privatization policies and restructuring programs. Privatization requires heavy government involvement and is usually fraught with conflicts of interest as politicians set up the method and run the process through which they end up either “selling their own firms” or “firing themselves or their friends” (Perotti, 1995; Biais and Perotti, 2002; Bortolotti, Fantini and Scarpa, 2001; Earle and Gehlbach, 2003). Table 11 shows the most common restructuring measures adopted prior to privatization and their frequency in the different periods of the Mexican privatization program.

The most popular restructuring measures in both periods are labor retrenchment and debt absorption; which were carried out with the hope that bidders would be willing to pay more for firms that have been restructured in this way. During the second period, other restructuring mechanisms such as changing the management team, firing the CEO and implementing investment and efficiency programs were much more common.

**Table 11. Restructuring Actions Prior to Privatization**

Actions	Number of privatization contracts	
	1983-1988	1989-1992
<b>1. Management</b>		
1.a) CEO replaced	11	25
1.b) Change of management team	15	54
1.c) Change or creation of board of directors	1	30
<b>2. Labor</b>		
2.a) Labor cuts	24	65
2.b) Collective contract canceled	4	13
2.c) Collective contract renegotiated	3	10
<b>3. Debt absorption</b>		
3.a) Outsiders debt	23	53
3.b) Cross Liabilities	10	45
3.c) Fiscal debt	11	37
<b>4. Efficiency Programs</b>		
4.a) Performance measures	6	29
4.b) Increased management responsibilities	0	27
<b>5. Investment Programs</b>		
5.a) Investment-Performance Agreements	10	29
5.b) Other Investment programs	5	1
<b>6. De-investment measures</b>	9	32

**Table 11., continued**

Actions	Number of privatization contracts	
	1983-1988	1989-1992
<b>7. Legal Measures</b>		
7.a) Legal debt absorption or solution of disputes	2	15
7.b) Negotiations with minority shareholders	11	9
7.c) Reorganization or changes in legal status	7	11
<b>8. Assets Restructure</b>		
8.a) Clarify or document assets ownership	7	22
8.b) Patent Registrations	1	5
8.c) Breaking-up companies for sale	3	37
8.d) Bundling companies for sale	14	4
8.e) Assets spin-offs	10	14
Number of privatization contracts in the sample	<b>87</b>	<b>134</b>

The table shows the main groups of restructuring actions prior to privatization and their frequency by period for a sub-sample of 221 privatization contracts in Mexico between 1983 and 1992. Some privatization contracts did not undergo any of the actions listed above, while others underwent several restructuring actions simultaneously. Prior restructuring actions are classified into eight major groups, which are themselves further subdivided. The exact definition of each restructuring group can be found in the Appendix. *Source:* Data collected by the authors from the original privatization sales and prospectuses from the Secretaría de Hacienda y Crédito Público.

To assess the impact of different restructuring measures on the price paid for privatized firms, we need to construct a variable that controls for the value of the firm sold and captures the resources that accrue to the government from the sale of the SOE. We propose an approximation of Tobin's Q—the ratio of the firm's market value to the replacement cost of its physical assets—which we call privatization Q (PQ) and estimate as:

$$PQ = \frac{\frac{GNPP}{sh} + TD}{TA}$$

where *GNPP* is the Price received by the government once all restructuring costs have been deducted;<sup>18</sup> *sh* is the number of shares sold; *TD* are total liabilities at the time of privatization; and *TA* are total assets at the time of privatization. The PQ standardization considers *GNPP<sub>i</sub>* as

<sup>18</sup> Specifically, GNPP is calculated as follows:

$$GNPP = B' - P * R - GC - Adj$$

where (B') is the present value of the nominal price of sale as registered in the sale contract which is adjusted in the following ways: (a) subtraction of the cost of the restructuring measures (P\*R) undertaken by the government prior to the sale; (b) subtraction of the costs of the "Government Commitments" and the "Special Clauses" promised by the government at the time of the sale (GC), matching them with the actual bills paid later on; and (c) addition/subtraction of the adjustments made to the sale contract (Adj), which includes reimbursements on both sides when the financial statements differ from the ones given to the bidders before the sale.

the proxy for market value of stock while controlling for debt and assets and allows for the calculation of a good proxy for Tobin's Q.<sup>19</sup>

The estimations shown in this section regarding the effects of the sale process on privatization prices considers PQ as the dependent variable and firm-specific characteristics, industry characteristics, auction requirements and restructuring measures undertaken prior to privatization as the independent variables. OLS results as well as Instrumental Variable results that take into account the possible endogeneity of our proposed measures are shown in Table 12.

**Table 12. Prior Restructuring: Dos and Don'ts**

Independent variables	Percentage change in Privatization Q (OLS)	Percentage change in Privatization Q (IV)
<b>Firm and industry characteristics</b>		
Net income/sales <sup>1</sup>	15.83 <sup>a</sup>	15.33 <sup>a</sup>
Contingent labor liabilities per worker	-1.97 <sup>b</sup>	-1.38 <sup>c</sup>
Number of Strikes <sup>2</sup>	-16.98 <sup>b</sup>	-23.12 <sup>b</sup>
Government in industry <sup>3</sup>	7.06 <sup>c</sup>	7.12 <sup>c</sup>
Non-control package dummy	-90.89 <sup>a</sup>	-78.28 <sup>b</sup>
<b>Auction process and requirements</b>		
Total length of sale <sup>4</sup>	-2.23 <sup>a</sup>	-3.35 <sup>a</sup>
Additional bidder in final round	16.96 <sup>a</sup>	11.64 <sup>b</sup>
FDI allowed dummy	31.56 <sup>c</sup>	29.63 <sup>c</sup>
Cash-sale only dummy	-30.41	-26.52
<b>Prior restructuring policies</b>		
CEO change dummy	34.13	54.88 <sup>b</sup>
Percentage of labor cuts <sup>5</sup>	-2.82	12.28 <sup>c</sup>
Debt absorbed/total liabilities	-40.89	11.44
Efficiency measures dummy	-14.71	-56.09
Investment measures dummy	2.40	-95.31
De-investment measures dummy	-16.57	3.96

The table shows the effect of firm and industry characteristics, auction characteristics and requirements, and prior restructuring policies on the mean Privatization Q for a sub-sample of 140 firms privatized in Mexico between 1983 and 1992 for which full information is available. We calculate the effect of: (1) a ten percentage-point increase in the net income to sales ratio; (2) an additional strike; (3) a ten percentage-point increase in the governments pre-privatization market share of the industry of the privatized SOEs; (4) an additional month in the length of sale; and (5) a ten percent reduction in the labor force. For all other variables, we show the discrete change of the dummy from zero to one. The first column considers prior restructuring measures and the rest of the variables as "exogenous" and uses estimates from an OLS regression. The second column shows the second step of the two-step instrumental variables (IV) procedure in which prior restructuring measures, total length of sale from rumors to completion and the number of bidder in the final round are treated as potentially endogenous variables. All variables definitions can be found in the Appendix. *Source:* López-de-Silanes (1997).

<sup>a</sup> Significant at 1 percent; <sup>b</sup> Significant at 5 percent; <sup>c</sup> Significant at 10 percent.

<sup>19</sup> As a robustness check, an additional standardization was calculated in the same fashion but using total shareholders' equity (defined as the sum of total assets and total liabilities at the time of privatization) to normalize the Privatization Q. The results obtained from this estimate are very similar and are thus omitted.

### ***Firm and Industry Characteristics***

All firm and industry characteristics show their expected effect on PQ and are statistically significant. An increase of 10 percentage points on the ratio of net income to sales increases PQ by 15 to 16 percent depending on the specification used. A more aggressive labor force, measured by the cost of firing workers or by the number of strikes suffered in the years leading up to privatization, significantly reduces the price received for privatized firms. For example, an additional strike in the five years leading up to privatization lowers PQ by 17 to 23 percent. Government involvement in the industry significantly increases the price paid for a privatized firm but privatizations that do not transfer control of firms to private hands are sold at a significant discount. A 10 percentage-point increase in the market share of public enterprises increases PQ by about 7 percent, probably as a result of protection against competition granted to sectors under heavy state control.<sup>20</sup> In contrast, the sale of government holdings in private firms was heavily penalized. The average non-control privatization fetched PQs 91 to 78 percent lower than control privatizations, probably as a result of poor corporate governance and deficient enforcement of shareholder's rights, which fueled investors' fears that they would be exploited by the current majority shareholder.

### ***Auction Process and Requirements***

Auction requirements make a substantial difference in the net price received by the government. Bans on foreign participation reduced PQs by 30 to 32 percent. Cash-only sales, another common restriction, were popular because they lowered the government's risk of future breaches of contract and provided an instant infusion into the treasury. Nevertheless, these advantages must be carefully weighed against the 27 to 30 percent discount in PQ they entailed. It is important to point out that these penalties are independent of the fact that they lower auction competition, a substantial factor when we consider that an additional bidder in the final round increased PQ by 12 to 17 percent for the average firm.

The speed at which privatization takes place also has important effects on the net price raised. While there are potential costs of rushing a sale, the benefits of a quick process include disposing of money-losing firms and avoiding costly restructuring. Additionally, a lengthy



process usually leads to a deterioration of the operating performance of the firm as managers' incentives collapse and workers are disgruntled about the possibility of losing their jobs. Evidence from Mexico suggests this is the case, as each additional month taken to complete the privatization process costs an average of 2.2 to 3.4 percent of PQ.<sup>21</sup>

### ***Prior Restructuring Policies***

Government restructuring of SOEs prior to their sale is fraught with political difficulties. Direct costs of restructuring are quite substantial and are equivalent, on average, to about 30 percent of the sale price. As with other policies, restructuring programs can be defended rationally on the grounds that they increase revenues from the sale, or that they minimize layoffs and contribute to the future success of the privatized firm. As a result, there is great ambivalence about the optimal policy approach towards restructuring prior to privatization. Analyzing this question is not a straightforward proposition because restructuring measures are not undertaken randomly, but selectively targeted to firms that need them most.<sup>22</sup> To solve this problem, we use an instrumental variable approach to capture the true effect of restructuring measures on privatization prices.<sup>23</sup>

In this section, we look at six types of prior restructuring: (1) change in management; (2) labor retrenchment; (3) debt absorption; (4) efficiency programs; (5) investment measures; and (6) de-investment measures. Restructuring measures are almost certainly endogenous, and therefore we focus on the results provided by the instrumental variable regression.

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<sup>20</sup> An alternative hypothesis is that sectors under control of the state tend to be those with the greatest untapped capacity for efficiency gains. In this case the premium is explained because of a higher perceived future growth rate and not because of the belief that protective regulations will be maintained.

<sup>21</sup> This hypothesis is supported by López-de-Silanes (1997), who finds that it is "internal speed," the length of time that elapses from when the first rumors of privatization arise to the time of the public announcement, and not "public length," the time elapsed from the formal announcement to the conclusion of the sale, which explains the discount in PQ.

<sup>22</sup> We would expect the government to absorb debt of highly indebted SOEs, to fire workers when firms face serious over-employment, or to invest in new machinery when production processes are outdated. If the endogenous nature of these measures is not considered, we run the risk of reaching the wrong conclusions as regression coefficients would capture not only the effect of the restructuring measure, but also the negative effects of being in distress or having a bloated workforce.

<sup>23</sup> We apply a two-step instrumental variables approach by estimating a non-linear reduced-form equation that describes the probability that a particular labor restructuring policy will be implemented. The instruments used are classified into two groups: firm-level and macroeconomic-level determinants. The firm-level variables included the presence of a leading agent bank, involvement of a ministry before privatization, the political affiliation of unions, and sectoral dummies. The macroeconomic variables include the average GDP growth rate and the degree of openness in the three years prior to privatization and the legal origin of the country. None of these variables is statistically significant when included in the price equation. The *F*-statistic for the excluded instruments is statistically significant at 1 percent in all cases.

Management shake-ups before privatization can lead to lower privatization prices if the loss of experienced managers leads to deteriorating performance (Bolton and Roland, 1992). On the other hand, removing an entrenched team can improve the operating performance of a firm as well as make it easier to tackle mismanagement and corruption. This is especially likely if management was appointed for political rather than technical reasons (Barberis, Boycko, Shleifer et al., 1996). The empirical evidence supports the second hypothesis, as firing the CEO leads to a statistically significant increase of 55 percent in the PQ.<sup>24</sup>

The argument against restructuring labor contracts or firing workers before privatization rests on the assumption that the new owner will be better suited to choose which workers to retain and which to dismiss, and he can therefore restructure the labor force to suit his needs at a lower cost than the government could. This may be particularly true if unions have significant power to influence the political process through elections or collective action (Freeman, 1986). On the other, the public sector may have a comparative advantage in bargaining with unions if it can convince workers that there will be social mechanisms in place to assist them. For our sample of Mexican privatized firms, labor retrenchment had a slight negative effect on PQ under the OLS regression but a significant positive impact once we account for its endogenous nature. Under this specification, a 10 percent reduction in the labor force is associated with a statistically significant 12 percent increase in PQ. This evidence should be taken with care, as recent investigations dealing specifically with the effects of labor retrenchment on privatization suggest that these programs are seldom the optimal policy (Chong and López-de-Silanes, 2003).

Classical finance theory holds that government's absorption of SOEs' debt should have a neutral effect on price because potential acquirers would simply increase their bids by the same amount as the decrease in debt (Donaldson and Wagle, 1995). However, it is possible to imagine scenarios under which debt absorption could have a positive or negative effect on net prices if the borrowing terms for the private buyers are different than those for the government or if debt absorption reduces the expected cost of financial distress for excessively leveraged companies (Bolton and Roland, 1992). Once we control for endogeneity, the effect of debt absorption on PQ becomes quantitatively and statistically insignificant.

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<sup>24</sup> We also investigated the effects of changing the management team independently of the CEO and find no significant effect. We can therefore tentatively conclude that the main benefit stems from changing the head and not the body of the management team.

Some of the most frequent restructuring policies undertaken include investment programs and efficiency measures. We would expect a premium in PQ for restructured firms if the government is able to improve the operating performance of firms at a lower cost than the private sector could. However, if restructuring decisions are driven by political motivations and/or if the government is unable to match the know-how of private firms, the restructuring effort will be a waste of resources and therefore lower PQ. The latter seems to be the case in Mexico as, controlling for endogeneity, firms subject to efficiency measures and investment plans were sold for PQ's 56 and 95 percent lower, respectively.

If bidders value investments by the government at less than their cost, it is worth investigating if it may be plausible to increase PQ by cutting the flow of resources and canceling previously approved investments programs. This may not be straightforward, however, as de-investment may hurt the long-term profitability of firms and lead to lower prices. Our results find that, on average, undertaking de-investment measures has no significant effect.

Available empirical evidence strongly suggests that restructuring policies do not lead to better net prices per dollar of assets sold. We find that the optimal policy seems to be to refrain as much as possible from engaging in SOE restructuring. Some of the most popular measures such as debt absorption do not increase net prices, while others such as investment and efficiency programs actually reduce net prices. These results are actually quite intuitive once we realize that all it implies is that new owners are able to better satisfy their own goals better than politicians could.

## **6. Complementary Policies of Privatization**

Privatization should not be looked at in isolation. Its success or failure is likely to depend on a set of complementary policies that are sometimes neglected. First, the outcome of a privatization process depends crucially on the quality and appropriateness of the contracts written, particularly when dealing with the provision of public services or public-private ventures. Policymakers should not rely on the good will of the private sector to act in the best interest of society. If the privatization contracts do not establish the right incentives, it should come as no surprise that newly privatized firms will try to use market power to increase their benefits or that concession holders may manipulate their accounts to extract rents from the government. Second, it is crucial to carefully consider the necessary deregulation or re-regulation for sectors with market power or

in which government ownership represented a substantial percentage of total assets prior to privatization. Without adequate deregulation, firms may not restructure as planned and potential efficiency gains may be lost, as it is easier to extract rents from the government. On the other hand, without a program to re-regulate privatized firms, those with market power may use their ability to influence prices to exploit consumers, and those in sectors with protective regulations may benefit from barriers to entry and other measures originally intended to protect SOEs from competition. Finally, it is important to establish a set of institutions that promote good corporate governance and strengthen shareholder and creditor rights in order to facilitate firms' access to capital and allow recently privatized firms to finance their growth without dependence on the State.

### ***The Type of Contract Written***

The type of privatization contract written is of the utmost importance to ensure that no room is left for opportunistic behavior at the hands of politicians or private buyers. The simplest contracts are straightforward sales of assets in which the government disconnects itself completely from the operational future of the privatized firm. Other types of contracts may lead to a perverse relationship between the privatized firm and the state as managers and bureaucrats collude to serve their interests at the expense of consumers and taxpayers.

Most vulnerable to this sort of manipulation are the provision of services, the construction of infrastructure projects, and the establishment of joint ventures between private companies and the government. The common element in these cases is that the umbilical cord between the government and the firm has not been severed, leaving room for rent-seeking behavior. When privatized firms depend on the state for funding or need permission to undertake certain decisions, it is likely that the incentives to restructure will not be as strong and that management will instead focus its efforts on extracting rents from the government. These perverse incentives are fed by politicians who often aspire to transform firms into national champions by subsidizing them and shielding them from competition. This collusion with business is often rewarded directly by economic support from firms and by the political benefits derived from being perceived as standing up for labor and against foreign competitors. To minimize the potential losses from these arrangements and to ensure that privatized firms live up to their commitments, clear disclosure and monitoring mechanisms are needed.

The importance of writing adequate contracts can be illustrated by one of the major instances of failure in Mexico's privatization program, the concessions to construct and manage highways. As Rogozinski and Tovar (1998) explain, to encourage private sector participation in highways, the government included clauses in its contracts guaranteeing minimum traffic growth rates. If revenues fell below the guaranteed level, the private party would be entitled to claim a revision of the length of the concession. Moreover, under this scheme, the only variable of adjustment was the length of the concession. These incentives created perverse rent-seeking incentives for concession holders to inflate construction costs and to charge excessively high toll charges. With the peso devaluation of 1994, a bad situation was made much worse as lower than expected revenues and higher interest rates pushed many concession holders to the brink of bankruptcy. Banks that had supplied much of the debt were themselves hard hit and thus unable or unwilling to provide relief through debt restructuring (World Bank, 2003).

The World Bank's 2003 report on infrastructure privatization in Mexico points out four basic causes of the failure of road privatization. First, the program as a whole was not financially sound; concessions with the highest profit potential were awarded first, but the overall program was too extensive for each concession to be financially self-sufficient. Second, the decision to award concessions based on the shortest period of private ownership led to excessively high toll levels. The average duration of concessions was 12 years, and in two cases an award was given for only five years. This led to inefficiencies as several newly built toll roads were virtually empty while parallel public roads remained heavily congested; truck traffic, in particular, failed to meet forecast levels. Third, poor feasibility studies led to overgenerous contracts. The SCT did not have the necessary experience or resources to carry out appropriate cost and demand forecasts for such an extensive program and, in particular, it seems to have substantially underestimated the demand elasticity of toll roads. Finally, underbidding and overvaluation of contractor contributions were widespread. Contractors overvalued their contributions, especially once financial problems emerged, because they could then press for extensions on the concession.

The policy lesson is clear: contracts must be designed to take into account moral hazard incentives and the asymmetries of information between the government and the private sector. The design of the contracts should be based on economic efficiency considerations rather than

political or macroeconomic ones and, in particular, contracts should help limit rent-seeking behavior.

### ***Deregulation***

An appropriate regulatory framework after privatization is a key component of the success or failure of the program. A common element across many failed examples of privatization is inadequate deregulation, which may lead to sub-optimal levels of competition and allows producers to keep the gains from privatization without sharing them with consumers.<sup>25</sup> Deregulation is particularly important in sectors where the state owned most of the assets prior to privatization, as they tend to be protected by a web of regulations originally instituted to cut the losses of state-owned firms and reduce fiscal deficits. Without a thorough review of these regulations, privatized firms will be artificially shielded from competition and able to make extraordinary gains at the cost of consumers.

Deregulation complements privatization in two ways. First, product market competition provides a tool for weeding out the least efficient firms. This process may take too long—or not work at all—if regulation inhibits new entry or makes exit costly. Second, deregulation may also complement privatization by raising the cost of political intervention. Whereas an inefficient monopoly can squander its rents without endangering its existence, an inefficient firm in a competitive industry would have to receive a subsidy to stay afloat.

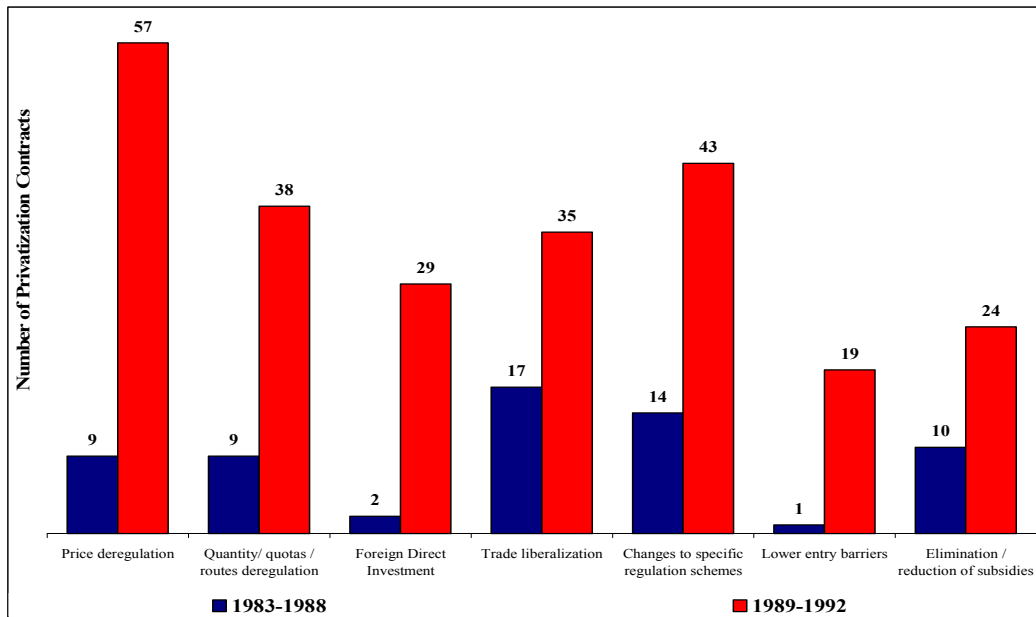
Figure 4 shows the frequency and composition of deregulation measures taken in Mexico prior to privatization during the period from 1983 to 1992. These include price and quantity deregulation, simplified entry and exit barriers, lower restrictions on foreign direct investment and ownership, increased international competition and the elimination or reduction of subsidies. During the De la Madrid administration, 87 privatization contracts were carried out, with trade liberalization and changes in specific regulatory schemes as the most popular measures. During the Salinas administration, 134 privatization contracts were signed and deregulation was undertaken much more aggressively. In particular, price and quantity quotas were disbanded and entry barriers were lowered, both directly and by granting a more prominent role to foreign direct investment. Although it is clear that the Salinas administration engaged in deregulation with

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<sup>25</sup> Megginson and Netter (2001); Boubakri and Cosset (1998).

greater alacrity than the previous administration, privatization coupled with deregulation played a key role throughout the period.

**Figure 4. Deregulation Actions Taken Prior to Privatization**



The figure shows the main groups of deregulation actions taken prior to privatization for a sub-sample of 221 privatization contracts between 1983 and 1992. Not every privatization contract underwent some form of deregulation while others underwent several. 87 privatization contracts were carried out during the first period (1983-1988) and 134 during the second period (1989-1992). The exact definition of each restructuring group can be found in the Appendix.

*Source:* Data collected by the authors from the original privatization sales and prospectuses from the Secretaría de Hacienda y Crédito Público.

### ***Re-Regulation***

Regulation should be carefully revised in conjunction with privatization for firms in industries characterized as natural monopolies or in oligopolistic markets. The reasoning behind the first case is that firms with market power may have ample opportunities to exploit consumers and that the institutions necessary to supervise them are either non-existent or do not have the necessary experience to do the job appropriately. While firms with market power are in public hands, it is likely that the profit-maximizing incentive was held in check as the government prioritized other goals such as providing subsidized services to certain sectors or maximizing employment. Once firms are handed over to the private sector, however, it is likely that the new owners will use whatever means they have at their disposal to increase profits. It is therefore necessary to

complement privatization with adequate re-regulation and with the creation of institutions that ensure fair competition and a level playing field to all participants.

A clear example of the perils of not re-regulating privatized SOEs appropriately is that of the Mexican banking industry. During the years under state management, banks functioned as an annex to the Treasury and served mainly as a tool for financing state deficits and handing out favors to politically influential sectors. As a result, banks did not develop the necessary experience in valuing the risks associated with particular loans or the skills needed to value collateral. Moreover, when banks were privatized there was no supervisory mechanism in place to ensure that bank loans to related parties were in the best interests of the bank or that reserves were proportional to the riskiness of the loans undertaken. The combination of these two shortcomings proved devastating for the banks' future and for the thousands of shareholders who purchased minority stakes in them.

The changes made in the regulatory framework of the banking industry were structured around three main objectives: First, they aimed to decrease the role of the government in determining the allocation of bank loans; second, they tried to create a new market structure for financial services as a whole; and third, they attempted to curtail barriers to entry. Unfortunately, the reforms carried out to achieve these objectives were executed in a piecemeal fashion and not within the context of a comprehensive plan to provide the banking industry with adequate regulation. In the end, the greater flexibility granted to private banks allowed them to engage in risky behavior and to extract benefits from consumers and the government without providing incentives for banks to reform and become more efficient.

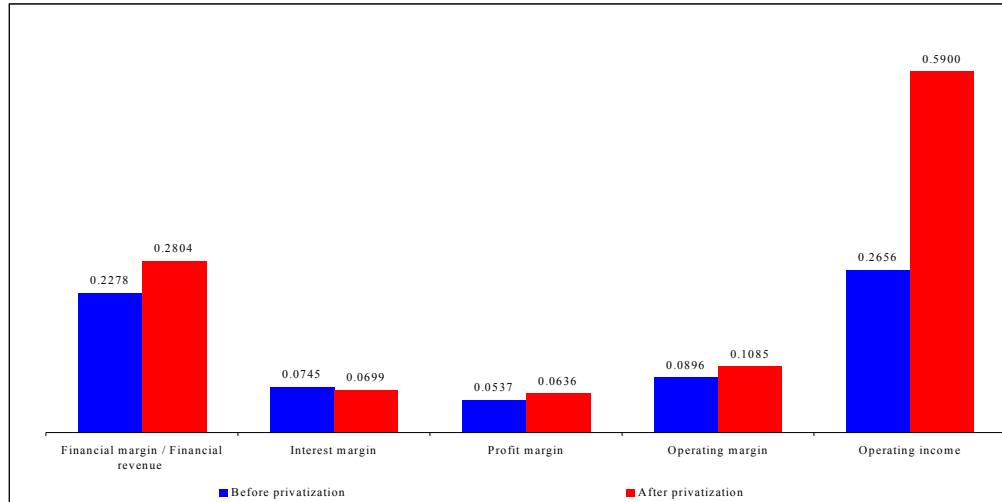
Following privatization, lending increased rapidly and was accompanied by improvements in bank profitability. The average bank increased its operating margin by almost two percentage points to 10.85 percent, and profit margins increased from 5.37 to 6.36 percent (see Figure 5). Interest margins, however, remained steady at about 7 percent despite the fact that nominal interest rates fell from 80 to only 35 percent.<sup>26</sup>

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<sup>26</sup> For this section, we consider the period “before privatization” as the time elapsed from the beginning of 1989 to the time of privatization of each bank; “after privatization” corresponds to the period from the time banks were privatized until the end of 1992, or for the longest period for which we have data. This division biases our findings against finding dramatic improvements in bank performance as this had been increasing since 1986. First because of a partial flotation of bank shares through the Mexican stock market and, second because of the deregulation measures adopted between 1987 and 1988. For example, although the ratio of financial margin to financial revenue increased almost 6 percentage points between 1988 and 1994, it increased a further 12 percentage points between



**Figure 5.**  
**Mexican Banks' Profitability Indicators Before and After Privatization**



This figure shows mean performance indicators before and after privatization for the cross section of banks privatized in Mexico. “Financial margin / Financial revenue” is the financial margin to financial revenue ratio; “Interest margin” is the financial margin divided by the sum of loans portfolio plus securities portfolio; “Profit margin” is the period net income to the period total revenue ratio; “Operating margin” is the period operating income to the period total revenue ratio; “Operating income” is the real annual growth rate in the operating income. Before privatization refers to the period between January 1989 and the month of privatization of each bank while after privatization is the period ranging from the month of privatization to the end of 1992, or for the largest period for which information is available. The banks included in the sample are: Atlántico, Banpaís, Banamex, Banco del Centro, Bancomer, Bancrecer, Banco Oriente, Banoro, Banorte, B.C.H., Cremi, Confia, Comermer, Internacional, Mercantil, Serfin, Somex, and Promex. *Source:* López-de-Silanes and Zamarripa (1995).

There are two hypotheses that can be used to explain the higher profitability of privatized banks without resorting to charges of collusion and market power: the employee-wealth transfer hypothesis and the reduced-agency cost hypothesis. The former argues that wealth is transferred to investors by laying off workers and reducing the wages of remaining employees (Shleifer and Summers, 1988), while the latter argues that proper incentives reduce agency costs and lead to higher profitability.

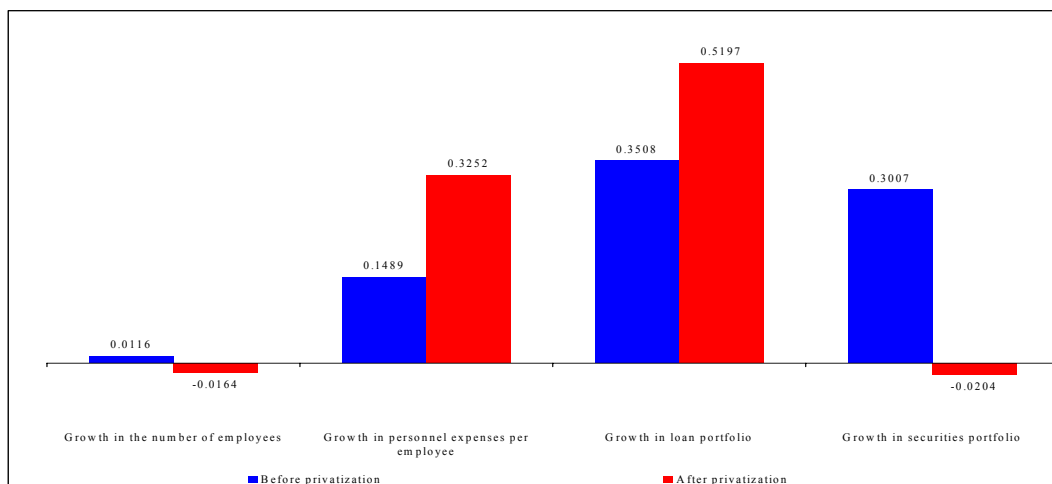
Figure 6 shows that the average annual change in employment after privatization is -1.64 percent, which would seem to lend credit to the employee-wealth transfer hypothesis. However, the real annual growth rate of personnel expenses per employee more than doubled in the period

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1987 and 1989. For a detailed analysis of bank performance during this period see López-de-Silanes and Zamarripa (1995).

following privatization, jumping from 14.9 to 32.5 percent.<sup>27</sup> When put together, these two pieces of evidence show that labor costs not only did not decrease, but have in fact increased significantly following privatization. The employee-wealth transfer hypothesis therefore cannot explain the increased operating performance of banks.

**Figure 6.**  
**Mexican Banks' Performance Indicators Before and After Privatization**



This figure shows mean performance indicators before and after privatization for the cross section of Mexican privatized banks. “Growth in the number of employees” is the annual percentage increase in the number of employees; “Growth in personnel expenses per employee” is the real annual growth in the monthly personnel expense per employee; “Growth in loan portfolio” is the real growth rate in the loan portfolio; “Growth in securities portfolio” is the real growth rate in the securities portfolio. “Before privatization” refers to the period between January 1989 and the month of privatization of each bank, while “after privatization” is the period ranging from the month of privatization to the end of 1992, or for the longest period for which information is available. The banks included in the sample are: Atlántico, Banpaís, Banamex, Banco del Centro, Bancomer, Bancrecer, Banco Oriente, Banoro, Banorte, B.C.H., Cremi, Confia, Comermex, Internacional, Mercantil, Serfin, Somex, and Promex.

*Source:* López-de-Silanes and Zamarripa (1995).

In terms of the Reduced-Agency Costs hypothesis, there are two elements that point towards possible savings. The first concerns banking operations as such. Under government ownership, banks had deviated from their main lending activity and entered the securities market, possibly in reaction to increased competition from brokerage houses. This deviation reflected management or political objectives, such as size or growth, which are common for

<sup>27</sup> The most likely explanation for this increase in personnel expenses despite the reduction in employment is that wages increased as private financial institutions competed for talented employees. This conjecture is reinforced by the fact that the cuts in employment show a higher concentration in unskilled labor.

SOEs all over the world. After privatization, the growth rate of the loan portfolio increased from 35.08 percent to 51.97 percent, while the securities portfolio decreased at an annual rate of 2.04 percent (see Figure 6). Given that the financial margin on loans ranged from 3 to 15 percent, while that of securities was only about 1 to 3 percent (López-de-Silanes and Zamarripa, 1995), it is tempting to argue that privatization reduced the agency problem because resources were channeled towards lending and not towards other objectives. A second source of reduced-agency costs can be found in the ownership structure that emerged after privatization. Most bank managers were also shareholders, which helps increase the incentives to maximize shareholder value. In addition, although management had seats on the board of directors, the board was controlled by outsiders, a management structure that is more likely to allow the board of directors to act as an effective mechanism of corporate governance (Fama and Jensen, 1983).

These two pieces of supporting evidence notwithstanding, the banking crisis of the mid-1990s and the role that related lending played in bringing about the collapse of the banking system seriously undermine the idea that reduced-agency costs can explain the increase in profitability experienced by privatized banks. The conclusion we are left with is therefore that inadequate competition allowed banks to collude and increase their profitability without really restructuring.

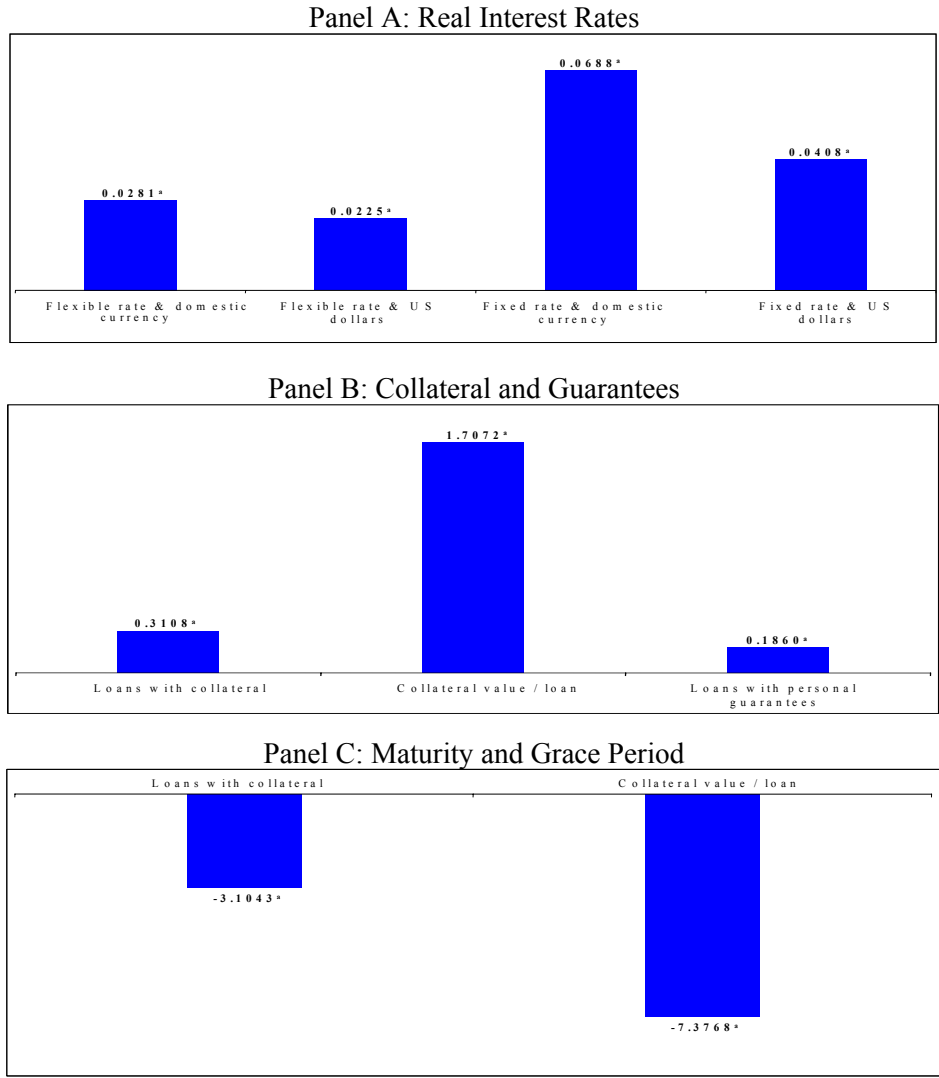
In terms of failed supervision, the government turned a blind eye to overdue loans. The supervisory system was not modernized, and the government did not require banks to increase their reserves or to tie them to the underlying riskiness of the loans. Meanwhile, banks continued to pay high dividends and reserves were progressively de-capitalized, leaving the whole system vulnerable to collapse. Signs of stress in the financial sector first appeared in 1993 as the economy slipped into a recession and, by July 1994, most financial institutions were experiencing serious difficulties.

As the financial crisis evolved, the government took over financially distressed banks with the goal of restructuring them and finding a buyer for them in better times. Once the dust settled, however, only three out of eighteen commercial banks remained independent, and none escaped unscathed. As of the year 2000, seven banks were under government management, five had been acquired by foreign financial institutions, and three had been acquired by domestic financial institutions.

Interestingly, many, if not most, of the defaulted loans that led to the collapse of the banking industry were related loans, or loans granted to directors of the bank or companies in the same industrial conglomerate as others owned by bank directors. Many economists have argued that related lending is beneficial to banks, as it allows them to better assess the risks related to particular projects and to monitor the compliance of debtors. If this is true, banks may be able to get higher ex-post returns from preferential loans granted to related parties than from arm's-length transactions at full rates. In the Mexican case, however, there is evidence that related lending was used by controlling shareholders to loot banks.

There are four basic results that, when put together, overwhelmingly support the looting view of related lending. First, the borrowing terms offered to related parties were substantially better than those available to unrelated ones (see Figure 7). Controlling for observable financial characteristics, the interest rate for fixed-rate related loans in pesos was a mean of 6.88 percentage points lower than that of unrelated loans. The smallest difference is 2.25 percent for floating rate dollar-denominated loans, still a significant margin and, like all the others, statistically significant at the 1 percent level. Moreover, loans to related parties involved collateral or personal guarantees less often than unrelated loans, and when they did so it was for a lower amount. Finally, the maturity of related loans was an average of 3 months longer and the grace period 7 months longer than that of unrelated loans. These facts clearly establish that related loans were given preferential treatment over unrelated ones.

**Figure 7. Terms of Unrelated vs. Related Loans**

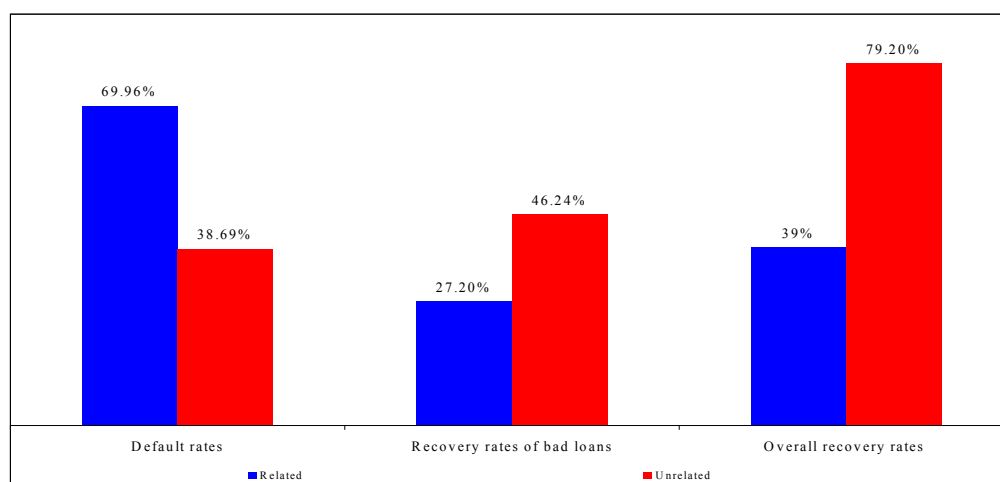


This table shows the main characteristics of related vs. unrelated loans in Mexico for a random sample of loans between 1995 and 1999. Panel A shows the mean change in real interest rates for the sample of related versus unrelated loans. Panel B shows the mean (i) difference of the percentage of loans with collateral; (ii) percentage points difference in the collateral to value of the loan ratio; (iii) difference in the percentage of loans backed up with personal guarantees. Panel C shows the mean difference in: (i) months to maturity of the loan; and (ii) difference in months of grace granted to the loans. For a description of the sample and definitions of all variables refer to the Appendix.

Source: La Porta, López-de-Silanes and Zamarripa (2003). <sup>a</sup> Significant at 1 percent; <sup>b</sup> Significant at 5 percent; <sup>c</sup> Significant at 10 percent.

The second point is that the default rate on related loans was 70 percent versus only 39 percent for unrelated parties and recovery rates were 19 to 40 cents per dollar lower for related borrowers than for unrelated ones (see Figure 8). This clearly undermines the idea that preferential loans can be justified by higher ex-post returns.

**Figure 8.**  
**Default and Recovery Rates: Related vs. Unrelated Loans**



This table shows the difference in default rates, the rate of recovery of bad loans and the overall rate of recovery between related and unrelated loans for a random sample of 300 loans during the period 1995-1999.

*Source:* La Porta, López-de-Silanes and Zamarripa (2003).

Third, related lending represented about 20 percent all loans outstanding, the limit established by law. Moreover, as the economy slipped into recession, the fraction of related lending doubled for banks that subsequently went bankrupt, while it increased only slightly for the banks that survived. This suggests that when bankers thought they might lose their investment they stepped up the rate of looting in order to extract as much value as possible while they still controlled the bank, and it is consistent with what a theoretical model of looting would predict.

Finally, and most interestingly, the worst-performing loans were those made to persons or companies closest to the controllers of the banks. In most cases, a dollar lent to a firm owned by the bank's owners turned out to be a dollar lost.

The evidence provided above clearly shows that related lending had a negative effect on the banking sector in Mexico. Loans to related parties were not granted because it was easier to

supervise compliance or because related parties were more suitable candidate. Instead, there is clear evidence that related loans were used to divert funds away from banks and to exploit minority shareholders. Even so, bank owners emerged from the crisis relatively unscathed; after “tunneling” money out of their bank, they lost control of the bank but not their industrial assets.

Although related lending explains a significant part of the problem in financial institutions, it cannot be blamed completely for the current malaise of the banking sector. The other aspect of lending is collecting, and banks need to have effective collecting mechanisms in place. Effective corporate governance through creditor protection has recently proven to be a key component of the development of financial systems around the world. As we will see in the next section, the problems brought on by related lending were exacerbated and in part instigated by deficient shareholder and creditor rights.

## **7. Privatization and Corporate Governance**

The development and appropriate functioning of stock and credit markets needs a solid regulatory framework that promotes investor protection and disclosure. Recent research shows a strong link between firms’ access to capital and efficiently enforced laws, and in countries where large numbers of firms have been privatized and deregulation has increased competition and lowered trade barriers, there is an urgent need for institutions that can efficiently channel resources to the private sector.<sup>28</sup> The old laws and institutions that might have been efficient in covering the needs of state-owned enterprises will probably not suffice for the requirements of private enterprises and privatized firms. This section focuses on the role of shareholder rights and creditor rights as important determinants of the success of stock markets and credit institutions.

Modigliani and Miller (1958) argue that the size of capital markets is determined only by the cash flows that accrue to investors; roughly speaking, this implies that the size of capital markets should be proportional to GNP. To explain the large discrepancies in the size of financial markets across countries with similar GNP, however, we need to recognize that securities are more than the cash flows they represent. They entitle investors to exercise certain rights and to exercise control over management through the voting process. Similarly, debt not

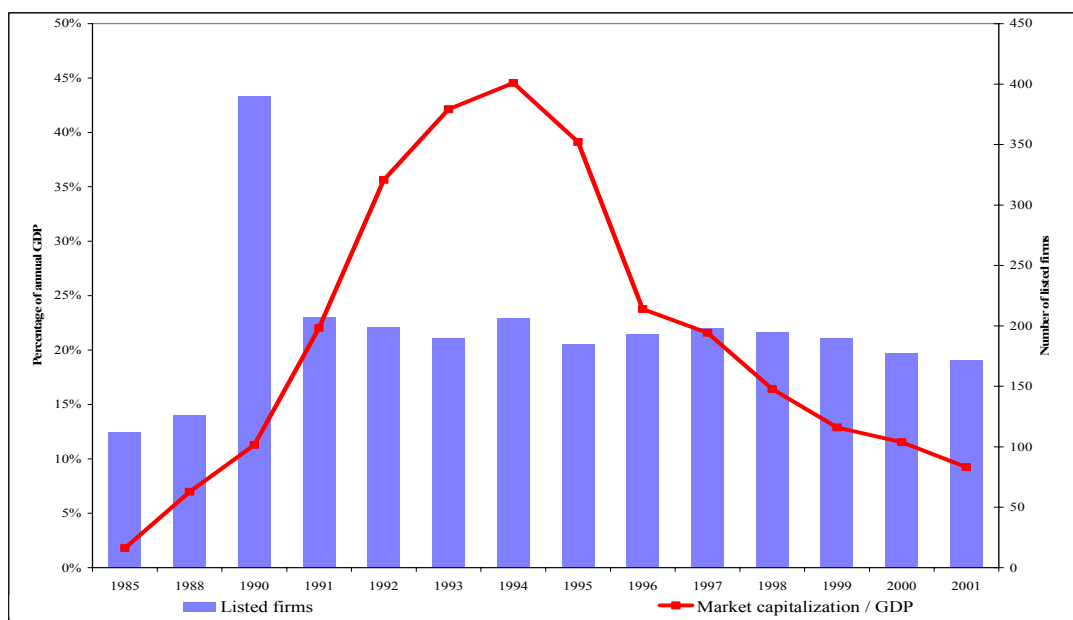
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<sup>28</sup> See La Porta and López-de-Silanes (1999); La Porta, López-de-Silanes, Shleifer and Vishny (1997, 1998, 2000a, 2000b, 2002); La Porta, López-de-Silanes and Shleifer (2002).

only entitles creditors to receive interest payments, but also to regain their collateral in the event of bankruptcy.

Countries differ enormously in the extent to which they afford legal protection to investors. Not only does a shareholder in Mexico have a very different set of rights from one in the United Kingdom or the United States, but his recourse to redress is also likely to be significantly weaker. The legal theory (La Porta, López-de-Silanes, Shleifer and Vishny, 1997 and 1998) predicts larger capital markets in countries where agency costs are reined in by the law and the institutions built to support their enforcement. The evidence presented in these studies shows that, all in all, Mexico offers investors a rather unattractive legal environment.

**Figure 9.**  
**Market Capitalization as Percentage of GDP and Number of Companies Listed in the Mexican Stock Exchange**



This table shows the number of firms listed in the Mexican stock exchange and their market capitalization as a percentage of GDP. Sources: (i) Market capitalization / GDP: Standard and Poor's Emerging Market Database (and Emerging Stock Markets Factbook); (ii) Number of listed companies: For 1985 and 1988 the Source is Banco de México and Indicadores Bursátiles (BMV, 1985-1992); for 1990 to 2001 the source is the World Federation of Exchanges.

Figure 9 shows market capitalization as a percentage of GDP and the number of listed firms in the Mexican stock exchange. Not surprisingly, the Mexican market has a low capitalization by international standards. The stock market did, however, enjoy a significant



boom during the Salinas administration, as many privatized firms were subsequently listed and those that already were increased their capitalization considerably. Market capitalization increased from slightly over 5 percent in 1988 to almost 45 percent in only 6 years. Following the 1994-1995 crisis, capitalization plunged to 25 percent and has dropped further since. Moreover, the number of listed firms itself is declining, which suggests that firms are either going bankrupt or are being taken private. In either case, it is a clear sign that corporate governance structures are not functioning efficiently.

There have been some recent attempts to strengthen shareholder rights in Mexico. Most notably, the 1997 and 2001 securities acts moved from a merit to a disclosure system of regulation. They also established requirements for a minimum number of independent directors on boards of listed companies and mandated the creation of an independent audit committee. A forthcoming securities act attempts to expand protection further by making the economic group the subject of regulation, establishing the duty of loyalty and care for directors, improving disclosure requirements, improving the enforcement powers of the Securities and Exchange Commission and establishing a special committee to monitor conflicts of interest and related-party transactions. Furthermore, the new securities act seeks to limit the issuing of non-voting shares and expand the rights of minority shareholders to obtain information about the firm, convene shareholder meetings, designate comptrollers and even challenge unfair actions through the judicial system. Although these reforms are expected to have a significant effect, their scope is inherently limited, as they apply only to listed companies. The next step will be to expand some of these best practices to a broader set of firms.

Another source of finance for privatized firms and other businesses is bank lending. However if financing for privatized SOEs is expected to come from privatized banks—or from any other private credit institution—then creditor rights, embedded in bankruptcy laws and the efficiency of courts, must be strengthened and streamlined.

Without proper bankruptcy procedures that allow for the expedient recovery of assets, financial institutions will be reluctant to lend and may end up failing to satisfy the financial needs of the private sector. La Porta, López-de-Silanes, Shleifer, and Vishny (1997) empirically confirmed the existence of a strong link between efficient creditor rights and an efficient judiciary with deeper debt markets. In a more recent paper, Djankov, La Porta, López-de-Silanes and Shleifer (2003) studied the costs, in both time and money, involved in collecting a bounced

check or evicting a tenant in 109 countries. Their results show that Mexico ranks among the worst countries; this suggests that if there are considerable difficulties in using the court system for simple procedures, foreclosing on defaulted loans would prove even more cumbersome. The lesson is clear: if banks are to function appropriately, they must have mechanisms in place to recover the costs of loans in the case of default. Otherwise, the possibility of having a large number of irrecoverable loans default will drive up the interest rates for all projects, stifling growth and aggravating adverse selection problems.

There are two types of reforms that may be key to building stronger and sounder financial institutions. First, potential conflicts of interest in boards of directors of banks must be reduced. These boards have allowed large-scale unprofitable related lending to occur, which has increased the fragility of the banks and of the overall financial system. Corporate governance reform must be designed to prevent interested directors from voting on approving related transactions that do not benefit the institution as a whole. Tougher limits on related loans, disclosure of related credits, and laws that effectively punish directors who vote in favor of unprofitable transactions should be among the first group of reforms. Second, in the event that a borrower defaults on its loans, financial institutions need to be able to exercise their rights to collect their debts. An essential condition for improved creditor protection is strengthening bankruptcy laws and increasing efficiency in the implementation of these rights.

## **8. Conclusion**

Empirical evidence shows that the Mexican government was effective in improving its fiscal discipline, increasing the efficient allocation of resources and restructuring inefficient SOEs. Success, however, has not been absolute. Although the privatization process was drastic and far-reaching, public utilities and firms in the energy sector remain in State possession. Moreover, there have been important failures in the Mexican privatization process, such as banks and highways.

The Mexican experience provides valuable insights into what to do and what not to do regarding large-scale privatization programs. Mexico's program should be considered a success, as the performance of firms increase dramatically according to all performance measures and both the government and consumers are better off as a result. Nevertheless, particular care should be

taken to provide appropriate regulation of oligopolistic sectors or those that have spent a considerable time under the control of the State.

This study provides three useful lessons that any privatization program should heed in order to maximize the probability of success. First, the privatization process must be carefully designed. Special requirements such as a ban on Foreign Direct Investment or cash-only payments lead to substantial price discounts for firms sold. Simplicity and transparency, on the other hand, increase prices because they expedite the whole process and increase the number of bidders. Speed is important because the operational efficiency of SOEs tends to atrophy once rumors of divestiture arise. The ability to draw on a wide pool of bidders is crucial in order to maximize the price received for privatized firms and therefore to obtain the most social benefit from the program. Privatization of services and infrastructure provides a valuable opportunity to enhance social welfare, but contracts must be carefully designed. Special attention is needed to ensure that the incentives of future owners are aligned with those of the government.

Second, restructuring firms prior to privatization is usually counterproductive in raising net sale prices. Restructuring programs are usually politically motivated and cost more than the value they add to companies; this is in addition to the fact that they lengthen the privatization process and therefore increase the costs related to the sale. Although the evidence from Mexico shows that labor retrenchment paid off, this is probably due to the abnormally bloated workforce of most Mexican SOEs. Nonetheless, labor retrenchment is fraught with difficulties because the most politically palatable option, voluntary retirement programs, is plagued by adverse selection problems. Under these schemes, the most experienced and productive workers tend to leave and the least productive stay. The government is thus left with a steep bill from severance payments and bidders are left with a lower-quality workforce that may not possess the skills necessary to run the firm successfully.

Third, re-regulation of sectors with market power, de-regulation of industries previously protected by the government and efficient corporate governance institutions are important complementary measures to privatization. There is mounting evidence of the importance of good corporate governance institutions in ensuring positive results from privatization and avoiding debacles similar to the one suffered by the Mexican banking industry due to related lending. The need for better regulation and corporate governance is not an argument for slower privatization, but it does point to the need for studying similar privatization programs in order to anticipate the

regulatory framework and best practices codes needed for firms to have a smooth transition into the private sector.

Privatization and deregulation have allowed the Mexican government to withdraw from virtually all commercial and industrial activities and to concentrate on providing a stable economic environment. The proceeds from privatization helped deal with a crushing debt burden and allowed the government to invest in education and poverty alleviation. The evidence provided in this paper leaves but one conclusion: The overall effect of privatization has been positive for Mexico.

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## Appendix

This Appendix describes all variables used to compute the results presented in the paper. It contains three panels, each based on a different section of the paper. The first panel describes the restructuring actions undertaken for a cross section of 221 privatized SOEs in the period 1983-1992. We gathered this data from the original privatization sales and prospectuses from the Mexican Ministry of Finance and Public Credit (SHCP). The second panel corresponds to the quantitative variables collected for a cross section of 170 non-financial firms privatized in Mexico during the period 1983-1992 and used to measure the performance of privatized firms. We gather the pre-privatization data from the original privatization sales and prospectuses from the Mexican Ministry of Finance and Public Credit (SHCP). For each firm, we compute the pre-privatization value of each variable or ratio by averaging its value in the four years that preceded the privatization of the firm. The post-privatization data come from the 1994 Economic Census from the Mexican National Statistics Institute (INEGI) and refers to 1993 data for each firm. When necessary, industry adjustments are made to various variables and ratios with the use of (1) financial data of publicly traded firms in the Mexican stock market, (2) INEGI's Monthly Survey of Industry, and (3) the Producer Price Index at the sector level. The third panel defines the loan characteristic variables used in our related lending section. Regulation in 1995 required banks to submit a list of the three hundred largest loans as well as their size and detailed information about the borrowers. Our sources are the SAM-300 database (largest 300 loans for each bank), SENICREB database (complete list of loans made by each of the privatized banks), and banks individual databases as reported to the Mexican Banking Commission.

Variable	Definitions
	<i>Panel A: Restructuring Actions</i>
Management	These actions include changes of the CEO and in the next level of the management team, as well as the creation or changes in the board of directors in the two years prior to privatization.
Labor	These actions include pre-privatization labor reductions of union or non-union workers with their related severance payment costs, as well as varying forms of labor contract restructuring, plans for worker ownership of shares, cancellation of collective contracts in some subsidiaries or for the whole company, and unions unification under the same contract.
Debt absorption	The actions include the government's engagement in: (i) partial or total debt absorptions of outsiders' debt (that was owed to private companies or private banks); (ii) cross liabilities and (iii) the absorption of the company's past-due fiscal liabilities or taxes.
Efficiency Programs	Under this category are grouped all of those detected actions which increased the management responsibility, increased the flexibility of investment policies, or referred to the installation of programs with defined performance targets and internal restructuring of operations.
Investment Programs	These actions involves only detectable programs of rehabilitation and maintenance plans, agreements of financial restructuring tied to inflow of resources for operation improvements, and temporary re-openings of the plant.

De-investment measures	These actions include partial or total shutdown of operation, stopping of major investment programs, declarations of emergency-only expenditure taking place, and discontinuation of all government funding.
Legal measures	This group of actions involves the solution or clarification of legal disputes, the reorganization and consolidation of all legal information and demands against the company, renewal or creation of necessary operation concessions and permits, and changes in the legal incorporation or in company's bylaws. Under this category are also considered negotiations with other shareholders regarding either their "preference status" in the case of sale, or their agreement to sell their shares to the new buyer or to put them in the government's hands for privatization of a larger package.
Assets Restructure	The actions include the government's prior to sale engagement in: (i) clarification or sometimes documentation of fixed assets ownership, especially in the cases of broken-up corporations, (ii) patent registrations and changes in assets classification mechanisms, (iii) break-ups or splits of the SOE for its sale and (iv) spin-offs of specific assets.
Deregulation	These measures reflect deregulation actions undertaken by the government tied to privatization. The range of actions includes price and quantity deregulations, foreign direct investment and ownership restrictions, international trade quotas or tariffs, entry or exit barriers for domestic or international competitors, changes in the regulation scheme of the company or the industry, and elimination or reduction of subsidies.

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*Panel B: Firm Characteristics*

Privatization Q	<p>The value of the Government's Net Privatization Price (GNPP) adjusted by the fraction of shares sold plus total liabilities at the time of privatization, divided by total assets of the company at the time of privatization. GNPP is calculated as follows:</p> $GNPP = B' - P * R - GC - Adj$ <p>where (B') is the present value of the nominal price of sale as registered in the sale contract which is adjusted in the following ways: (a) subtraction of the cost of the restructuring measures (P*R) undertaken by the government prior to the sale; (b) subtraction of the costs of the "Government Commitments" and the "Special Clauses" promised by the government at the time of the sale (GC), matching them with the actual bills paid later on; and (c) addition/subtraction of the adjustments made to the sale contract (Adj), which includes reimbursements on both sides when the financial statements differ from the ones given to the bidders before the sale.</p>
Operating income/sales	The ratio of operating income to sales. Operating income is equal to sales minus operating expenses, minus cost of sales, and minus depreciation. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts.
Operating income/PPE	The ratio of operating income to property, plant, and equipment (PPE). Operating income is equal to sales minus operating expenses, minus cost of sales, and minus depreciation. Property, plant, and equipment is equal to the value of a company's fixed assets adjusted for inflation.
Net income/ sales	The ratio of net income to sales. Net income is equal to operating income minus interest expenses and net taxes paid, as well as the cost of any extraordinary items. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts.
Net income/ PPE	The ratio of net income to property, plant, and equipment (PPE). Net income is equal to operating income minus interest expenses and net taxes paid, as well as the cost of any extraordinary items. Property, plant, and equipment is equal to the value of a company's fixed assets adjusted for inflation.
Cost per unit	The ratio of cost of sales to net sales. Cost of sales is equal to the direct expense involved in the production of a good (or provision of a service). This includes raw material expenditure plus total compensation paid to blue-collar workers. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts.
Log (sales/PPE)	The log of the ratio of sales to property, plant, and equipment (PPE). Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts. Property, plant, and equipment are equal to the value of a company's fixed assets adjusted for inflation.
Log (sales/employees)	The log of the ratio of sales to total number of employees. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts. Employees correspond to the total number of workers (paid and unpaid) who depend directly on the company.

Log (Total Employment)	The log of the total number of employees. Employees correspond to the total number of workers (paid and unpaid) who depend directly on the company. They receive, in general, either salary or wage payments on a regular schedule and work at least fifteen hours a week. A minimal number of these workers do not receive a regular salary. This number includes all workers on strike, as well as workers who still report to officials of the company despite different work locations, and workers on sick leave or vacation. It does not include individuals who are retired or working on commission.
Log (white-collar workers)	The log of the total number of white-collar workers. White-collar workers perform skilled labor and administrative tasks for modest to high salaries. They are individuals involved in sales, administration, and management.
Log (blue-collar workers)	The log of the total number of blue-collar workers. Blue-collar workers perform un- or semi-skilled labor for modest to low wages. They perform tasks directly related to the (mass) production process or menial services. Typically, they are factory line or maintenance workers.
Investment/sales	The ratio of investment to sales. Investment is equal to the value of expenditure to acquire property, equipment, and other capital assets that produce revenue. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts. The total number of workers (paid and unpaid) who depend directly on the companies.
Investment/PPE	The ratio of investment to PPE. Investment is equal to the value of expenditure to acquire property, equipment, and other capital assets that produce revenue. Property, plant, and equipment are equal to the value of a company's fixed assets adjusted for inflation.
Log (sales)	The log of sales. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts.
Index of real prices (Paasche)	The Paasche price index is the ratio (expressed as a percentage) of the total value in the given year of the quantity of each commodity produced in the given year to what would have been the total value of these quantities in the base year. In order to isolate changes in relative prices, for each firm and for each of the firm's line of business, we found an appropriate control group among the 61 sectors that have official. Producer Price Index statistics and report the post-privatization behavior of the firm-level price index relative to its control group.
Net taxes/sales	The ratio of net taxes to sales. Net taxes are equal to corporate income taxes paid net of direct subsidies received during the fiscal year. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts.
Index of total employment	For each firm, the index takes value of 100 for the pre-privatization period. The 1993 value is computed by augmenting the pre-privatization value by the difference between the cumulative growth rate of employment of the firm and the cumulative growth rate of employment of the control group in the post-privatization period relative to the average employment in the four years that preceded privatization. Industry control groups are given by three-digit S.I.C. sectors for all manufacturing firms and an index of economy wide total employment for firms in the mining and the service sectors. A similar procedure is used for the calculation of the index of blue-collar workers and the index of white-collar workers.
Index of real wages per worker	For each firm, the index takes the value of 100 for the pre-privatization period. Real average wages paid per worker in each firm. The Consumer Price Index was used as a deflator to calculate real wages.
Index of real wages per blue-collar worker	For each firm, the index takes the value of 100 for the pre-privatization period. Real average wages paid per blue-collar worker in each firm. The Consumer Price Index was used as a deflator to calculate real wages.
Index of real wages per white-collar worker	For each firm, the index takes the value of 100 for the pre-privatization period. Real average wages paid per white-collar worker in each firm. The Consumer Price Index was used as a deflator to calculate real wages.
Index of industry-adjusted real wages per worker	For each firm, the index takes the value of 100 for the pre-privatization period. The 1993 value is computed by augmenting the pre-privatization value by the difference between the cumulative growth rate of real wages per worker of the firm and the cumulative growth rate of real wages per worker of the control group in the post-privatization period relative to the average real wage per worker in the four years that preceded privatization. Industry control groups are given by three-digit S.I.C. sectors for all manufacturing firms and an index of economy wide real wages per worker for firms in the mining and the service sectors. A similar procedure is used for the calculation of the index of industry-adjusted real wages per blue-collar and the index of industry-adjusted real wages per white-collar worker.

Index of industry-adjusted real wages per blue-collar worker	For each firm, the index takes the value of 100 for the pre-privatization period. The 1993 value is computed by augmenting the pre-privatization value by the difference between the cumulative growth rate of real wages per blue-collar worker of the firm and the cumulative growth rate of real wages per blue-collar worker of the control group in the post-privatization period relative to the average real wage per blue-collar worker in the four years that preceded privatization. Industry control groups are given by three-digit S.I.C. sectors for all manufacturing firms and an index of economy wide real wages per blue-collar worker for firms in the mining and the service sectors.
Index of industry-adjusted real wages per white-collar worker	For each firm, the index takes the value of 100 for the pre-privatization period. The 1993 value is computed by augmenting the pre-privatization value by the difference between the cumulative growth rate of real wages per white-collar worker of the firm and the cumulative growth rate of real wages per white-collar worker of the control group in the post-privatization period relative to the average real wage per white-collar worker in the four years that preceded privatization. Industry control groups are given by three-digit S.I.C. sectors for all manufacturing firms and an index of economy wide real wages per white-collar worker for firms in the mining and the service sectors
Total wages/sales	The ratio of the total wages paid by the firm to the sales of the firm. Total wages is equal to the total wage bill paid by the firm to blue- and white-collar employees. Sales are equal to the total value of products and services sold, nationally and internationally, minus sales returns and discounts.

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*Panel C: Loan Characteristics*

Real interest rate	<p>The average real interest rate paid during the duration of the loan. The average real interest rate is computed as:</p> $\frac{1}{T} \sum_{t=1}^T \frac{(1+i_t + s)}{(1+\pi_t)},$ <p>where <math>i</math> is the reference interest rate assigned to the loan, <math>s</math> is the spread above the interest rate and <math>\pi</math> the inflation rate. For loans in Mexican pesos the inflation rate was calculated using the Producer Price Index (INPP) excluding oil products. For loans in US dollars and other foreign currencies the inflation rate was calculated using the US Producer Price Index (PPI) of finished products.</p>
Collateral	Variable that takes a value equal to one if the loan is backed by collateral; and zero otherwise. Definitions from collateral include physical tangible assets, financial documents (e.g., title documents, securities, etc.), intangibles, and business proceeds pledged by the borrower to ensure repayment on the loan. Collateral does not include personal guarantees such as obligations backed only by the signature of the borrower or the submission of wealth statements from guarantors to the bank—a usual practice in Mexico.
Collateral value / loan value	The ratio of collateral value to loan value when the loan was first granted.
Personal guarantees	Variable that takes a value equal to one if the loan is secured by a personal guarantee; and zero otherwise. A personal guarantee is defined as the obligation of repayment by a letter of compromise. Usually, the debtor must submit wealth statements from a guarantor who is willing to back his loan.
Maturity	The number of months to maturity of the loan starting from the moment in which the loan was granted.
Grace period	The number of months beyond maturity given to a debtor in order to repay the balance due. A grace period is granted to a debtor on an individual basis. A loan may have no grace period at all but, if granted, the grace period may vary according to the loan type and terms established in the loan contract.
Loan in domestic currency	Variable that takes a value equal to one if the loan is denominated in Mexican pesos or in Mexican inflation-adjusted currency units UDIs ( <i>Unidad de Inversión</i> ) and zero otherwise.
Loan with fixed interest-rate	Variable that takes a value equal to 1 if the loan pays a fixed interest rate and 0 otherwise. A fixed interest rate loan pays an annual percentage rate on a fixed rate for during the duration of the loan.

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