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Costs and Benefits of Privatization: Evidence from Brazil

by

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1. Introduction[1]

The Brazilian privatization program has been a major undertaking by international standards. From 1991 to July 2001, the state transferred the control of 119 firms and minority stakes in a number of companies to the private sector. With respect to the companies in which the government had a majority of controlling shares (hereafter, state-owned enterprises, or SOEs), and those of which it only had minority control (hereafter, state-owned minority controlling stakes, or SOMCS), the auctions produced US$67.9 billion in revenues, plus the transfer of US$18.1 billion in debt. The government also sold US$6 billion in shares of firms that remained SOEs, obtained US$10 billion from new concessions of public services to the private sector, and sold US$1.1 billion in scattered non-control stakes in various private companies owned by BNDES, the National Social and Economic Development Bank. The magnitude of the Brazilian privatization program is among the largest in the world, making it worthy of closer analysis.

The Brazilian program has been also large in relative terms. Lora and Panizza (2002) compared the cumulative value of the privatization efforts between 1988 and 1999 as a proportion of GDP in ten South and Central American countries (Argentina, Bolivia, Brazil, Costa Rica, Ecuador, El Salvador, Honduras, Paraguay, Peru and Uruguay). Brazil came in third place with a rate of 5% of GDP, above the average of 2.7% and surpassed only by Peru (6%) and Bolivia (9%).[2] Data for five countries in the region did not exceed 1%.

In spite of its magnitude, the Brazilian program has been largely ignored in the international literature. For instance, a survey by Megginson and Netter (2001) recognized the Brazilian program as "likely to remain very influential," because of its scale and the size of the country.[3] However, their survey did not include any specific analysis of the Brazilian program. This is due to the paucity of studies, and also to the fact that most of the existing literature has been published in Brazil only, and in Portuguese. Furthermore, the existing studies have their

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[2] These numbers, as well as others that will be quoted from the same study, are approximations.
[3] Megginson and Netter (2001: 326).

shortcomings, as will be clear from their review in this paper. Therefore, there is room for adding to both the Brazilian and the international literature.

It is also important to disseminate findings among the Brazilian public at large. The economy's performance was very disappointing in the 1990s. Some groups, among them politicians and journalists, have often expressed their frustration with privatization and other reform and adjustment policies, blaming them for the sluggish growth of the economy. In part because of this, the program all but stalled after 1998. Thus, it is crucial to show the results of the privatization program as such, as this will shed light on a discussion largely based on unwarranted conclusions.

With regard to theoretical aspects, privatization is a topic of the wider and continuing debate on the role of the government in the economy. In this paper, the analysis is primarily focused on the relative effectiveness of private versus public ownership of companies that underwent privatization in Brazil. As a working hypothesis, the paper tests the proposition that private ownership is more effective, but it also looks at the ways by which privatization results in increased profits, such as higher prices and reduced employment. Moreover, it also discusses the management of the privatization process in terms of its macroeconomic implications and in its objective of democratizing capital ownership, among other issues. In this fashion, the paper provides empirical evidence important to understanding the role of public ownership in the country, as well as the process by which the state has been stepping back from an entrepreneurial role.

The text is organized as follows. Section 2 describes the Brazilian privatization program and surveys the literature on it. Section 3 presents the variables and the data set used in the empirical analysis. Section 4 summarizes the methodology and the empirical results. Section 5 contains a discussion of other benefits the program, in addition to those found in Section 6, as well as some costs. Section 6 discusses public opinion on the privatization program in Brazil and compares those views with those in other countries in the same region. It also evaluates the perspectives for new privatization efforts in the country. Section 7 summarizes the major conclusions. Finally, Appendix 1 presents a list of the privatized companies and of those that remain SOEs, and Appendix 2 describes the technical procedures adopted in the tests of means and medians, as well as their detailed results.

2. The Brazilian Privatization Program and the Literature[4]

The Brazilian privatization program has three components: (a) the federal National Program of "Destatization" (NPD), which started in 1991; (b) similar programs at the state level, which began in 1996; and (c) the privatization program of the telecommunications industry. This last component was launched in 1997 as a program at the federal level, separate from the NPD but running parallel to it. We shall refer to it as the telecom program. Its auctions, mostly taking place in 1997 and 1998, produced a total of US$28.8 billion in revenues plus US$2.1 billion in debt transfers. The NPD yielded a total of US$28.2 billion in revenues plus US$9.2 billion in debt transfers, while the state level program produced a total of US$27.9 billion in revenues plus US$6.8 billion in debt transfers.[5]

The total program's composition by industry shows that electricity accounted for 31% of the total value of the auctions; telecommunications, 31%; steel, 8%; mining, 8%; oil and gas, 7%; petrochemicals, 7%; financial, 6%; and others, 2%. Largely due to the telecom program, privatization reached a peak in 1997-98, a period that accounted for 69% of the total value as of July 2001. This will have important implications for the analysis in Section 5 of the macroeconomic impact of the program in terms of fiscal crises and external imbalances.[6]

Before moving on to the literature on the program, the following questions are addressed: 1) what enterprises did the government own before the program; 2) what enterprises have been privatized, and 3) what enterprises still remain under government control. We have little information on the initial situation in the various Brazilian state governments and on what remains to be privatized. Therefore, with respect to questions (1) and (3), we will focus on the federal level only, the most important part of the program. With respect to what has been privatized, our information covers the whole program, except for the concession of public services.

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[4] This section draws from Macedo (2000), and updates and extends his analysis.
[5] These values exclude concessions of public services.
[6] BNDES is the major source of data on the Brazilian privatization program as a whole. It was given the task of managing it, including a part developed at the state level. The reports and other documents used as sources are BNDES (1999a, 1999b and 2001).

2.1. An Overview of Privatization at the Federal Level

In 1980 the federal government undertook a survey of all its "entities," including companies, foundations, port authorities, research institutes and councils in charge of professional registration. There were 560 such institutions, of which 250 were organized as firms (mainly in the form of corporations). In the 1980s, some minor privatizations occurred, and a few firms were also closed. Moreover, at the start of the program in 1991, other entities had also ceased to exist. As a result, the program was launched with 186 firms still under government control. At the end of 2000, mainly because of the privatization program, this number was reduced to 102.

Table A.1.1 in Appendix 1 lists the companies privatized by the federal government since 1990. Table A.1.2 lists the firms privatized on behalf of some states by BNDES, some minority controlling stakes formerly held by the federal government, and firms privatized by the state of São Paulo. In both tables, we refer to the firms included in our sample and the revenue obtained from their privatization. A reference is also made to the companies that were listed on the São Paulo stock exchange before privatization.

Table A.1.3 includes the remaining SOEs. The group includes hospitals, port authorities, the postal service, an agricultural research firm, the BNDES and others. Among the remaining companies, the major ones are in: a) the electricity industry (item 1.1 of the list), the privatization of which has been postponed; b) the oil industry (item 1.2); and c) the financial sector (item 2), in which a few federal banks and most state banks have already been privatized, the latter group having been federalized for this purpose. Finally, item 3 contains a group of entities organized as corporations over which the government exercises 100% control. Some of them are government agencies disguised as corporations. These firms are directly linked to the federal budget, from which they receive practically all the resources they use.

The program has made little progress since 1998. Among other reasons, privatization and other liberalization measures coincided with sluggish growth and this weakened support for the program. Moreover, some accusations that the government had used excessive methods to bring interested groups to the telecom auctions caused a furor in the press and led the Minister of Telecommunications to resign in 1998. Furthermore, if continued, the program would extend into politically sensitive areas such as electricity, where the states are very strong; oil, where the gigantic Petrobrás still arouses strong nationalistic feelings; and the almost two hundred-year-

old Banco do Brasil, which plays an important role in financing farmers and therefore enjoys strong political support.

2.2. The Brazilian Literature on Privatization

In reviewing this literature, we will concentrate on the studies that have addressed the status of the SOEs before and after privatization, as this is the major focus of this paper. Section 5 will refer to the literature on other issues as well.

Three studies are worth reviewing. Pinheiro and Giambiagi (1997) of BNDES presented an overall evaluation of the pre-privatization performance of federal SOEs in the 1981-94 period. They showed disappointing figures for the SOEs, both in terms of profitability and dividends received by the Treasury. Over that whole period, the ratio of profits to net assets was negative 2.5% on average. Moreover, from 1988 to 1994, years for which data on dividends were available, they accounted for only 0.4% of the equity capital owned by the federal government in the SOEs.

One of the causes of this disappointing performance was the SOEs' wage policies. Macedo (1985) undertook a comprehensive analysis of wage differentials between private firms and SOEs. His data consisted of wages and other characteristics of individual workers, obtained from forms filled out by firms every year, as required by the Ministry of Labor.[7] He compared the wages of the workers in private firms and SOEs of approximately the same size in ten industries. After controlling for differences in education, age, gender and experience, he found sizable differentials in favor of the workers at the SOEs.[8]

The third study is Pinheiro (1996). He analyzed the performance of 50 former SOEs before and after privatization, using data until 1994. His data covered 1 to 4 years before and after privatization for each company and came from data sets similar to those used in this study, but complemented by questionnaires filled out by the firms and delivered to BNDES for that purpose. Unfortunately, the bank's policy prevents the use of the data by outsiders. The study covered eight variables: net sales, net profit, net assets, investment, fixed investment, number of employees, debt and an index of liquidity. From these variables, another six were derived to

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[7] The same kind of data will be used in the analysis of employment effects in Section 6. This data base is known as RAIS (Annual Survey of Social Data).

measure efficiency: sales and profit by employee, the rate of return in the form of profit to sales and to net assets, and the propensity to invest, both with respect to sales and to assets. No comparison was made to the performance of the private sector, as a control group, nor was a distinction made between listed and unlisted companies.

The conclusion was that "in general, the obtained results confirm that privatization brings a significant improvement...of the performance of the firms. Thus, for most of the variables, the null hypothesis of no change in behavior is rejected in favor of the alternative hypotheses that privatization increases the production, the efficiency, the profitability and the propensity to invest, reduces employment and improves the financial indicators of the firms."[9]

This paper adds to this literature in various respects, as will become clear from the analysis that follows. It has been carried out by an independent team, while most of the prior major studies have been produced by staff members of BNDES. It covers a larger number of firms until the year 2000, and utilizes data that can be disclosed. We took explicit care to avoid a selection bias by including both large and small privatized firms, SOEs and cases of SOMCS, as well as firms both listed on the stock exchange and unlisted. In addition to tests of means, the empirical work also employs panel data analysis. Moreover, the analysis of performance before and after privatization is also made in comparison to the indicators observed in the private sector during the same periods.

The importance of this last feature must be underscored, as the Brazilian economy underwent various cycles in the pre- and post-privatization periods. In summary, after strong growth in 1994 and 1995 when a modest number of companies were privatized, there was sluggish performance thereafter, followed by a strong recovery in 2000, after the program had passed its peak. Thus, economic cycles might have affected the performance of former SOEs. The absence of control for this effect could have blurred the results of the impact of privatization.

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[8] The differential, net of the workers' characteristics, reached a peak of 80%. This occurred when the workers' characteristics were valued according to the private sector criteria, as measured by the regression coefficients of the workers' characteristics in the wage equation of that sector.

[9] More recently, in a seminar sponsored by BNDES to celebrate the 10th anniversary of the privatization program, Pinheiro (2000) presented some additional and updated results, again based on data that cannot be disclosed, this time covering 55 firms. Without the form of a scientific paper, the analysis simply compared the performance of the firms before and after privatization, thus not relating their performance with those of the private firms. He found sizable increases in net operational revenues, investment, net profit, productivity, tax collections, as well as a reduction in employment, in some cases compensated by an expansion in contracted-out services. We will return to the question of employment in Section 6.

3. The Data Set and the Variables

3.1. The Sample

Our data set is based on the annual financial statements (balance sheets, income statements and cash flows) of the former SOEs and of a number of private companies used as a control group. Brazilian accounting standards and procedures, as established by law and regulatory agencies, have remained the same for the whole period, thus facilitating our analysis.[10] The data range from 1987 to 2000. The financial statements were obtained from two consulting firms (Economática and Austin Assis) and an NGO (the Getúlio Vargas Foundation). All three collect financial statements from several sources, including newspapers. We excluded from our analysis the privatizations in the financial sector, as that sector has a unique structure, involves specific issues, and would have required specialized analysis. We also excluded the cases in which BNDES sold minor non-control participations in scattered companies as part of its portfolio as a development bank. Thus, we focused only on sales of control packages, both of a majority and minority nature. These procedures are among those shown in Table 1 to explain the coverage of the sample.

To proceed, it is necessary to distinguish privatization contracts (or auctions) from privatized enterprises. A number of former SOEs were sold as a block, and the successful bidder for an operational holding company was also given access to the control of its subsidiaries. In the case of the telecom sector, for instance, five amalgamated blocks of privatization auctions covered the entire local, cellular long distance and international restructured segments.

In this fashion, the data set of the sampled companies covers 66 privatization contracts, corresponding to 102 firms. From the figures in Table 1, it can be inferred that the sample covers 64% of the control packages, 69% of the firms they include, and 94% of the total value of the auctions. The smaller number of companies in the mean and median tests is explained by the methodology adopted and described in the next section.

With respect to the 37 contracts not included, which correspond to 45 companies and yielded proceeds of US$4.9 billion as listed in Table A.1.1 in Appendix 1, there was no

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[10] High rates of inflation plagued the economy from 1986 to 1994, a period in which indexation following legal rules was widespread. As the analysis will be developed in terms of ratios based on flow variables, such as operating income to sales, the problems of inflation and indexation are circumvented. For a few cases in which the absolute value of the indicator is used, the original values in Brazilian currency were converted into dollars.

information in the sources named above. The attempts to gather information from BNDES white books were frustrated by non-disclosure and confidentiality rules with respect to data held by the bank.[11] Table 2 summarizes the number of excluded companies by industry, as well as their value at the auctions.

Table 1. Description and Coverage of the Sample

		Number of Contracts	Number of Companies	Auction Results (US$ Million)*
PRIVATIZATION PROGRAM (1991 – 2000)	*Financial sector*	9	9	5,112.30
	Minority sales in SOEs	6	6	6,164.10
	BNDES participations			1,146,00
	Control package sales	103	147	76,878.20
	Total	**118**	**162**	**89,439.20**
SAMPLE (control package sales only)	*State minority control*	16	16	1,299.20
	State majority control	50	86	70,709.80
	Total	**66**	**102**	**72,009.00**
STATISTICAL METHODS OF ANALYSIS	*Mean/median tests*		73	68,062.50
	Panel Control packages		102	**72,009.00**
	Panel SOEs		20	
	Panel Private sector		158	

(*) Includes transferred debt (US$17.8 billion) and offers to employees in the telecommunications industry (US$0.3 billion), but excludes concessions of new services (US$7.7 billion).

Table 2. Excluded Companies

Industry	Number	Value in US$ Million
Electricity and gas distribution	4	2,224.4
Petrochemicals	7	587.6
Fertilizers and chemicals	7	475.1
Railways	8	1,112.8
Ports and container terminals	7	429.7
Others	12	40.4
Total	**45**	**4,880.0**

Source: Table A.1.1 in Appendix 1.

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[11] In the process of privatization, BNDES franchised to interested bidders the existing information on the firms. The files are kept by the bank, but they are considered a proprietary right of the winning bidder. By means of questionnaires, BNDES has also occasionally gathered information from the firms in their post-privatization phase, but responded to our request for both types of data saying that it could not make them available to third parties.

With respect to electricity companies, we have included all but two of them. In the case of gas distribution firms (all of them privatized at the state level), our sample includes one of the three companies that underwent privatization.

In terms of the petrochemical, fertilizer and chemical plants, more companies are included than excluded. The latter group includes various limited liability companies, which are not required to make their balance sheets and income statements public.

Although they are not important in economic size, the release of information on the privatized railways and ports could yield interesting case studies, as privatization came with restructuring of these industries yet the government still plays an active role in them. The railways were operated under regional branches of the federal railway network and split into regional companies for privatization purposes only. The regional port facilities had been separate companies, operating under a federal holding company. In this case, privatization led to the creation of specialized terminals to be leased to private operators, with part of the infrastructure facilities remaining in the hands of SOEs. Thus, if data were available, one could compare the performance of both private and SOEs working side by side.

The companies under the heading "others" include miscellaneous activities, such as bus terminals, data processing and ferryboats. "Various" refers to small firms that are not organized as corporations and are also not required to make their balance sheets and income statements public.

Thus, what was left outside of our sample represents only a minor part of the program, but not an uninteresting group for industry- and firm-specific studies. Their absence, due to insurmountable difficulties, does not jeopardize the relevance of our sample as representative of the companies that underwent privatization in Brazil. When the information was available, as it was for most of the companies and the most important ones, it was included in the sample.

Given the nature of our data set, it involves essentially the same variables used by La Porta and Lopez-de-Silanes (1999) in their study of the Mexican case. Fifteen financial indicators, according to seven criteria, make up this set of variables, as described in Table 3.

Table 3. Description of the Variables

CRITERION	VARIABLE	DESCRIPTION
PROFITABILITY	Operating Income/Sales (OI/S)	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 total value of products and services sold minus sales returns and discounts.
	Operating Income/Property, Plant and Equipment (OI/PPE)	The ratio of operating income to property, plant and equipment, which comprise the value of a company's fixed assets adjusted for inflation.
	Net Income/Sales (NI/S)	The ratio of net income to sales. Net income is equal to operating income minus interest expenses and net taxes paid.
	ROA	Ratio of net income to total assets.
	ROE	Ratio of net income to equity.
OPERATING EFFICIENCY	Log (S/PPE)	Sales and PPE as above.
	Operating Costs/Sales (OC/S)	Ratio of operating expenses to sales.
ASSETS	Log (PPE)	Property, Plant and Equipment as above.
	Investment/Sales (I/S)	Investment and sales as above.
	Investment/Property, Plant and Equipment (I/PPE)	Investment and Property, Plant and Equipment as above.
OUTPUT	Log (Sales)	Sales as above.
SHAREHOLDERS	Payout Ratio	Ratio of total dividends to net income.
FINANCE	Current	The ratio of current assets to current liabilities.
	Long Term Debt/Equity (LTD/E)	Ratio of long term debt to equity
NET TAXES	Net Taxes/Sales (NT/S)	The ratio of net taxes to sales. Net taxes are equal to corporate income taxes paid net of direct subsidies or tax credits received during the fiscal year.

4. Empirical Analysis

Two different approaches were adopted to examine changes in performance after privatization: mean and median tests and panel data analysis.

4.1. *Mean and Median Tests*

For the mean and median tests, two different methods were used. In the first one (Method I), for each indicator a comparison is made between the mean and median values of the two years following privatization and their values in the two years before privatization.[12] The second procedure (Method II) fully utilizes the information in the data set by comparing the mean and medians of all years after privatization with their values in all years before.

The Brazilian economy experienced cycles over the course of the period during which privatization took place. Thus, changes in performance could reflect cyclical movements of the economy, rather than changes due to privatization. To circumvent this problem, in each method we also used, as an alternative procedure, a control group of private companies. The performance of the privatized companies was adjusted by taking the difference between the indicator for the privatized enterprise and the average of the indicator for the control group. Thus, we followed a procedure close to the one used by La Porta and López-de-Silanes (1999) who adopted, in their words, "industry-adjusted changes in performance for the sample of privatized firms."[13] Appendix 2 details these procedures.

Table 4 summarizes the results in terms of their signs and statistical significance. The complete results are presented in Tables A.2.1 to A.2.4 in Appendix 2.

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[12] This procedure differs from that of La Porta and López-de-Silanes (1999) in that they used one fixed year for the period after privatization. In the Mexican case, privatization was heavily concentrated in a few years. In Brazil, it has been extended over a decade and more. Therefore, a fixed year for comparison would be inadequate.

[13] Our adjustment, however, could not be done by industry, as some privatized enterprises do not have a corresponding match in the private sector. This is the case, for instance, of the major mining company CVRD (Companhia Vale do Rio Doce), the telecoms and many companies in the energy sector.

Table 4. Summary of Tables A.1.1 to A.1.4

CRITERION	INDICATOR	TABLES (*)			
		A.2.1	A.2.2	A.2.3	A.2.4
PROFITABILITY	Operating Income/Sales	+	-	+	+
	Operating Income/PPE	+	+	+	+
	Net Income/Sales	-	-	+	+
	ROA	+	+	+	+
	ROE	+	+	+	+
OPERATING EFFICIENCY	Log (Sales/PPE)	+	+	+	+
	Operating Cost/Sales	-	-	-	-
ASSETS	Log (PPE)	-	-	-	-
	Investment/Sales	-	-	-	-
	Investment/PPE	-	-	+	+
OUTPUT	Log (Sales)	+	+	+	+
SHAREHOLDERS	Payout	-	-	-	-
FINANCE	Current	+	+	+	+
	LTD/Equity	+	-	+	-
NET TAXES	Net Taxes/Sales	-	-	-	-

The shading means that the coefficient is significant at least at the ten-percent level.

(*) Table A.2.1: Method I, without adjustment; Table A.2.2: Method I, with adjustment;
Table A.2.3: Method II, without adjustment; Table A.2.4: Method II, with adjustment.

4.1.1. Profitability

In general, the results indicate an improvement in the profitability of the privatized companies. Considering operating income to PPE, return on assets (ROA), and return on equity (ROE), performance after privatization improves regardless of the method adopted. The increase of operating income to PPE is evident once the change in the median or median is always positive and significant, at least at the ten-percent level. The statistics for ROE and ROA are also always positive. In the case of ROE, three of the four statistics are significant, while for ROA only two reveal significance.

A slightly different picture appears when we consider operating income to sales. Looking at the sign of the change, this indicator improves after privatization, except in Method I and in comparison with the private sector, as the change becomes negative and significant at the ten-percent level (Table A.2.2). Little can be said in terms of net income to sales. The sign of the coefficients varies across methods and fails to present statistical significance.

At the firm level, various reasons could account for results of this kind. At this point, the method's weakness in investigating in detail the sources of variance becomes apparent, and this underscores the importance of using a different approach to test explanatory variables other than privatization, as will be done later in this section by using panel data analysis.

4.1.2. Operating Efficiency

The results strongly suggest an improvement in efficiency. In all tables we observe an increase in sales to PPE and a reduction in operating costs to sales. In the case of sales to PPE, all the statistics are positive and significant, strongly suggesting that privatized firms became more efficient in the use of their assets. Regarding operating costs to sales, all the statistics present a negative sign, while only one of them lacks significance at the ten-percent level. As illustrated in Table A.2.1, the mean of the two years after privatization is 0.251, while the mean for the two years before privatization is 0.375, a reduction of 33%, thus providing evidence of improved efficiency at the operational level.

4.1.3. Assets and Output

Apparently, privatization had a negative impact on investment. In all the tables the Log (PPE) and investment/sales statistics present a negative sign. The negative coefficients for Log (PPE)

are significant in Tables A.2.1 and A.2.4, while for investment/sales negative coefficients are significant only when considering two years before and after (Tables A.2.1 and A.2.2). These results seem consistent with the increase in efficiency reported above. When considering investment to PPE, which reflects the rate of investment, there is no clear picture: the sign changes across tables, but none of the statistics is significant. In the next subsection, the impact of privatization on assets will be further clarified.

An observable effect of privatization on sales is a small but significant increase, observed in all tables. The statistics that test for difference in average are significant at the one-percent level (A.2.1 and A.2.3). There is a small increase in sales even after adjusted to the performance of the private sector (Tables A.2.2 and A.2.4).

4.1.4. Finance and Shareholders

With respect to the payout ratio, no conclusive evidence was obtained. The sign of the coefficient is consistently negative, although never significant. This could be due to the lack of information since this variable could be calculated only for a reduced number of firms (45).[14]

A clearer picture emerges with the financial management indicators. We observe an increase in the current ratio, both in absolute terms and in comparison with the private firms in our control group. The statistics for the difference in average are consistently positive and significant. Moreover, one observes that the adjusted mean/median is negative (Tables A.2.2 and A.2.4), meaning that former SOEs, when compared to the control group, continued to present lower short-term solvency. The overall improvement indicates that SOEs, having government backing, are less concerned with achieving sound financial performance.

With respect to long-term debt-to-equity (LTD-to-equity), we observe that when privatized firms are seen in isolation, privatization has a positive impact, as the coefficients in Tables A.2.1 and A.2.3 are significant and show an increase. However, when compared with the performance of the private firms, a different picture emerges, as the change in coefficients become negative (Tables A.2.2 and A.2.4). In any case, in the same tables the mean values after privatization (0.108 and –0.002, respectively) indicate that the leverage of former SOEs converged to values observed in the private sector.

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[14] This information was available only for listed companies.

These results with respect to financial structure are similar to those reported by La Porta and López-de-Silanes (1999). This can be explained by the almost null probability of insolvency of state-owned enterprises, once their credit status is guaranteed by the government. By losing government backing, these firms were forced to adjust by decreasing their LTD-to-equity and increasing their current ratios.

4.1.5. *Net Taxes*

Our results indicate a clear decrease in net taxes to sales. All the coefficients are negative and significant at the one-percent level. There are two reasons for finding a clear and significant decrease in net taxes after privatization in Brazil. This variable is defined as the difference between calculated taxes and allowed deductions. With respect to the latter, as they do not come in the form of explicit subsidies, it is worthwhile to describe them in detail in order to interpret the results more accurately.

Three general categories of deductions apply: fiscal incentives, compensation for previous losses, and tax credits. Losses incurred in one particular year may be deducted from income tax over several years. This, in particular, affected companies that were highly dollar-indebted when the devaluation of the real occurred in early 1999. In fact, losses of this sort were also responsible for a decrease in net taxes even for the control group in 2000.

With respect to tax credits, an important dimension is the legal treatment of the premium paid on asset value in mergers and acquisitions. Brazilian corporate law recognizes the premium, and it was regulated in the mid-1990s. The company taking over is allowed to set up a reserve account for the premium and amortize it over a period of five to ten years. When the reason for the premium paid over assets is based on expected future profits, the rebate is allowed in a period of up to five years. This benefit applies to mergers and acquisitions in general. Thus, both the overall private sector under restructuring and the privatized companies have been beneficiaries of these rebates. The existence of an explicit provision in declaring premia in concessions as expected future profits facilitates the use of this sort of tax credit in privatization. Therefore, there is a reasonable explanation for our result that net tax payments have decreased after privatization.

Taken as a whole, the results in this subsection support the view that privatization brought improvements in the performance of the firms. However, as pointed out, the mean and median tests leave room for a more comprehensive analysis that fully utilizes the variance of the data set, and allow for examining other aspects of the privatization process. This will be the focus of the next subsection.

4.2. Panel Data Analysis

4.2.1. Methodological Aspects

We start with a brief description of the technique used in this subsection. It is a dynamic version of panel data analysis, and focuses on individual heterogeneities over time, in particular the discontinuous effect of privatization. This approach is an alternative to generalizations of constant-intercept-and-slope models for panel data, which introduce dummy variables to account for effects of variables that are specific to individual cross-sectional units, but stay constant over time, together with the effects that are specific to each time period, but the same for all cross-sectional units. The analysis is dynamic because the lagged value of the independent variable is included in the model, and the panel is unbalanced as there are missing observations for some firms in the data set.

Many economic relationships are dynamic in nature and another advantage of the panel data approach is that it allows for a better understanding of the dynamics of adjustment of a particular variable. However, the inclusion of a lagged dependent variable in the model causes problems, which are well known in the literature.[15] Following it, we opted to apply the Arellano and Bond (1991) GMM-IV method to estimate the parameters of the panel data model used in the empirical analysis.[16]

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[15] According to Baltagi (1995), this renders the OLS estimator biased and inconsistent even if the error terms are not serially correlated. Baltagi (1995) and Hsiao (1986) also demonstrate that the same problem affects GLS and FGLS estimators. Finally, the instrumental variable (IV) estimation method alone leads to consistent, but not necessarily efficient, estimates of the parameters in the model because it does not make use of all the available moment conditions (See Ahn and Schmidt, 1995).

[16] For the lagged dependent variables, this method resorts to instrumental variables that are obtained in a dynamic panel data model once existent orthogonality conditions between these lagged values and the disturbances are taken into account. A set of valid instruments is represented by all the dependent variables lagged more than one period. In this paper, the parameter estimates were obtained by using as an instrument the independent variable lagged two years.

4.2.2. The Model and Variables

To assess the effect of privatization on each performance indicator listed in Table 1 we relied on the following econometric model:

$$I_{it} = \alpha_i + \phi\, I_{it-1} + \lambda\, P_{it} + \beta\, X_{it} + \delta\, \mathrm{M}_{pt} + e_{it}\,,$$

where:

I_{it} represents the performance indicator for firm i in year t;

P_{it}, referred to as PRIVATIZATION, is a dummy variable that assumes a value of 1 if company *i* had already been privatized in year t and zero, otherwise;

X_{it} is a set of control variables that are also firm-specific; and

M_{pt}, referred to as PRIVATE MEAN, is the mean value of the performance indicator for the group of private firms mentioned in Table 1, defined only over time, i.e., assuming for every year the same value across the cross-sections of privatized firms.

The lagged dependent variable has been introduced to capture individual past trends and cycles. With regard to PRIVATIZATION, the hypothesis is that it improves the performance of the former SOEs.

The set of variables in X_{it} includes:

SPLIT/MERGER: a dummy variable that accounts for restructuring of the firm prior to privatization through divesting or merging activities. It assumes a value of 1 if the company had at least one of these interventions, considering the year of intervention, and zero otherwise. The impact of this control variable might be either positive or negative.

MINORITY CONTROL: a dummy variable that takes the value 1 if the government was part of the control group but owned only a minority participation in the pre-privatization phase, and zero otherwise. With this variable we intend to control for the fact that the presence of private partners in the control group may induce SOEs to adopt management similar to those of the private firms. Therefore, we expect a positive impact of this variable.

LISTED: this is a dummy variable that takes the value of 1 if the privatized enterprise was listed on the São Paulo stock exchange before privatization, and zero otherwise. The hypothesis is that publicly traded SOEs are also subject to investors' scrutiny and, therefore, should present a performance closer to that of private firms. The dummy was applied only if the company had been listed before the privatization process started. Those listed for privatization were left out.

TRADABLE: a dummy variable that assumes the value of 1 if the privatized firm is in a tradable goods industry, following three criteria: a) its typical product is included in the international classification of tradable goods; b) it is free from non-tariff restrictions; and c) its effective protection tariff is not redundant.[17] The process of trade liberalization took place over the 1990s, with a timing that coincided with that of the privatization process. Thus, it is important to control for the corresponding effect.

REGULATED: this dummy variable assumes a value of 1 if the privatized firm is in a regulated industry and zero, otherwise. For various industries, regulation was a byproduct of privatization and it might have affected the performance of the regulated firms. Therefore, it is also important to control for the regulation effect.

Finally, the variable PRIVATE MEAN represents in year t the average of the indicator over a control group of private and publicly traded companies. With this variable we aim to control for macroeconomic fluctuations and the state of business conditions in general.

4.2.3. The Empirical Results

The panel results are shown in Table 5.[18] Before discussing them, it should be noted that it is possible to decompose the X_{it} vector of the model into two groups. The first comprises the dummy variables associated with the environment confronted by the firms and are effective for all companies in the sample (TRADABLE, REGULATED and LISTED). The other contains firm-specific variables that affect only the companies that are the focus of the study (PRIVATIZATION, SPLIT/MERGER and MINORITY CONTROL).

In the case of firms operating in TRADABLE industries one observes the predominance of an inferior performance compared with those in non-tradable industries. This is found in the indicators of profitability, operational efficiency, output, sales and indebtedness. Firms also seem to pay higher net taxes to sales. The reason for an underperforming tradable sector is that, for most of that period, the country was promoting trade liberalization, a process aggravated from 1995 to 1998 by an exchange rate overvaluation.

In the case of REGULATION, as its effects are likely to be different in the various industries, a more detailed analysis would be required to investigate them. In any case, the

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[17] See Kume (1996).

comparative analysis of regulated industries versus non-regulated ones shows a slightly better performance of the former in terms of profitability, investment, sales and indebtedness. This might be due to the fact that regulation brought incentives to performance, in particular more realistic prices for the regulated activities.

For the privatized companies that underwent restructuring in the form of SPLIT/MERGERS, no discernable effect was found on profitability indicators. On the other hand, the same companies present evidence of inferior results in terms of operational efficiency, assets and outputs, indebtedness and net taxes. Notice that this dummy variable is in effect only for the period in which the intervention occurred and it is associated with the privatization intervention. So, the inferior results would have to be interpreted with respect to the performance of firms that were privatized without restructuring. There is an open debate on the virtue of government-led adjustments in debt, labor force and firm activities prior to privatization (Megginson and Netter, 2001).

The MINORITY CONTROL dummy shows two significant coefficients for profitability performance indicators, but it has a mixed result in terms of operational efficiency, with larger sales to PPE and slightly higher operational costs to sales. Firms privatized with these characteristics pay the highest net taxes to sales and have lower indebtedness, indicating that they did not benefit as much from the corporate tax credits that came with privatization, and that they had inferior access to credit compared to other privatized companies.

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[18] In Table 5 the numbers below the coefficients are their standard errors. Regarding the payout ratio, the data were insufficient to run a panel data regression.

Table 5. Changes in Performance: GMM-IV Panel Data Analysis

Variables	OI/S	OI/PPE	NI/S	ROA	ROE	Log (S/PPE)	OC/S	Log (PPE)	I/S	I/PPE	Log (S)	Current	LTD/E	NT/S
PRIVATIZATION	0.056***	0.033	0.003	0.016***	0.062***	0.070***	-0.015***	-0.012***	-0.032***	0.057***	0.008**	0.140***	-0.029*	-0.006***
	0.008	0.055	0.005	0.003	0.005	0.009	0.003	0.004	0.009	0.010	0.004	0.015	0.020	0.001
TRADABLE	-0.001	0.030***	-0.006***	-0.007***	-0.030***	-0.026***	-0.005***	-0.005**	0.003	-0.034***	-0.010***	0.019	-0.028***	0.006***
	0.003	0.007	0.002	0.002	0.004	0.005	0.002	0.002	0.005	0.007	0.003	0.017	0.010	0.0005
REGULATION	0.032***	0.013	0.003	-0.0006	0.011***	-0.030***	-0.035***	0.027***	0.003	0.015	0.024***	-0.056	0.130***	-0.004***
	0.005	0.016	0.003	0.003	0.005	0.007	0.002	0.003	0.007	0.009	0.003	0.019	0.017	0.001
SPLIT/MERGERS	0.028	-0.070	0.010	0.0007	0.005	-0.041***	0.032***	0.018***	0.055***	-0.066***	0.004	-0.102***	-0.235***	-0.004**
	0.039	0.105	0.010	0.004	0.004	0.010	0.006	0.005	0.020	0.012	0.004	0.022	0.022	0.001
MINORITY CONTROL	0.016	-0.066	0.040***	0.007	0.026**	0.065***	0.008*	-0.011	-0.021	0.065***	-0.016***	0.348***	-0.137***	0.023***
	0.018	0.097	0.011	0.007	0.011	0.012	0.005	0.009	0.022	0.022	0.005	0.062	0.041	0.005
LISTED	0.057*	-0.063	0.067***	0.018***	0.029***	0.035***	-0.016***	0.008*	0.122***	0.115***	0.007**	0.016	0.085***	-0.004***
	0.034	0.065	0.014	0.003	0.005	0.013	0.006	0.004	0.020	0.011	0.003	0.016	0.024	0.001
PRIVATE MEAN	1.287***	1.070***	0.425***	0.751***	0.710***	0.520***	0.770***	0.101***	0.954***	0.970***	0.115***	0.635***	0.887***	1.070***
	0.053	0.041	0.040	0.040	0.037	0.037	0.061	0.008	0.032	0.024	0.008	0.055	0.030	0.067
LAGGED VARIABLE	0.195***	0.080***	0.556***	0.035***	0.172***	0.831***	0.555***	0.912***	0.304***	0.075***	0.926***	0.458***	0.186***	0.040***
	0.019	0.020	0.015	0.005	0.016	0.007	0.017	0.004	0.012	0.013	0.006	0.013	0.014	0.011
EXCHANGE RATE[1]								-0.020***			-0.012***			
								0.003			0.004			
Constant	-0.137***	-0.015	-0.062***	-0.022***	-0.070***	-0.210***	-0.022*	0.029	-0.120***	-0.164***	-0.220***	-0.299***	-0.122	0.004
	0.034	0.052	0.015	0.004	0.008	0.019	0.014	0.043	0.024	0.01868	0.050	0.080	0.032	0.003
Observations	1798	2158	1960	2257	1903	2044	1580	2561	1702	2185	2073	2120	2256	1598
Pseudo R²	0.332	0.352	0.441	0.397	0.468	0.554	0.561	0.373	0.491	0.538	0.725	0.584	0.610	0.447
Sargan Test[2] (Prob > χ²)	0.000	0.000	0.001	0.002	0.000	0.000	0.005	0.000	0.010	0.004	0.000	0.000	0.000	0.012

***Significant at 1%.
**Significant at 5%.
*Significant at 10%.
1/ Dummy variable introduced in order to overcome a devaluation bias in the variables after 1999.
2/ Sargan Test for Over-Identifying Restrictions. All the null hypotheses were rejected, validating the use of the instruments chosen.

The dummy LISTED reveals a clearer positive effect for all criteria of performance. In particular, four of the five profitability indicators' coefficients presented positive and significant signs. Listed companies also showed better indicators for operational efficiency, output and assets, and the largest long-term debt-to-equity indicator. The net tax to sales indicator has a negative sign again, as in Subsection 4.1.5, indicative of corporate tax benefits for listed companies. Thus, the results presented by this dummy caution against the bias in selecting only firms of this type in privatization studies.

It is possible now to assess the net effects of PRIVATIZATION as a change in the intercept of each indicator. In general, its impact comes as hypothesized and stronger than the one revealed in Subsection 4.1. As it is the key variable under investigation, the results are discussed in more detail for the various indicators of performance.

4.2.4. Profitability

Three out of the five indicators of profitability presented in Table 5 clearly reveal the improvement that comes with privatization, as its estimated parameters are positive and significant at the one-percent level. Privatization coefficients for OI/S, ROA and ROE show an increase of 5.6%, 16.2% and 6.2%, respectively.

4.2.5. Operational Efficiency

Significant at the one-percent level, the coefficients of the privatization dummy show the expected sign, that is, an increase in sales to PPE and reduction in operating costs to sales. The favorable effect of privatization on operational efficiency is revealed by an increase of 7% in Log (S/PPE) and a reduction of 1.5% in OC/S.

4.2.6. Assets and Output

Significant PPE and sales are the only indicators measured by their absolute values, which are measured in dollars. As the Brazilian currency suffered a major devaluation early in 1999 that was not reversed in 2000, to capture the negative effect on these indicators we introduced a dummy variable taking the value of 1 in those years and zero otherwise. For both Log (PPE) and Log (Sales) the estimated coefficients were negative and significant at five percent. In the

Log (Sales) equation adjusted in this fashion, the impact of privatization on sales is small (0.8%), but positive and significant at the one-percent level.

With regard to Log (PPE), even after taking devaluation into account, the privatization coefficient is negative, indicating a reduction of 1.2% in the productive assets of the firms. This result is consistent with the coefficients for privatization with respect to other asset indicators. An increase in Log (S/PPE) intensifies the use of productive assets, so a reduction of 3.2% of I/S is likely. As I/PPE shows a positive coefficient of 5.7% for privatization, the indication is that investments after privatization are moving into working capital.

The indication of an increase in investments in the form of working capital is confirmed by a strong impact of privatization on the current ratio: a 14% increase, significant at the one-percent level. With respect to the long-term debt-to-equity, a likely outcome is that the privatized companies will seek to reduce the cost of capital, combining equity and debt in an efficient way. On the other hand, state-owned enterprises are likely to increase debt, saving the Treasury from investing in their equity as their credit status, guaranteed by the government, has a small probability of default. This situation may lead to large LTD-to-equity ratios. After privatization and the loss of government backing, privatized firms are forced to adjust by decreasing this ratio and increasing the current ratio. Accordingly, the privatization coefficient for long-term debt-to-equity (LTD/E) shows a reduction in indebtedness of 2.9%, significant at the ten-percent level. It is interesting to observe the coefficients estimated for SPLIT/MERGERS (–23.5%) and MINORITY (–13.7%), which magnifiy the impact of losing government backing.

With respect to net taxes, the coefficient of privatization is negative and significant at the one-percent level. The reasons are those already presented in Subsection 4.1, now confirmed by a panel data analysis.

4.2.7. Other Variables in the Model

The coefficient of the private mean is positive and significant for all indicators, reflecting the impact of overall business and macroeconomic conditions. It also cautions against another distortion of some studies on privatization in which the impact of privatization from the changes in these conditions over time is not isolated.

With regard to the coefficients of the lagged variable, instrumented by its two-period version, they are all positive and significant, revealing that the past behavior of a firm's indicators have a strong influence on their current performance. On top of this effect other variables exert influence, such as those encountered above.

5. Other Benefits and Costs of the Program

The improvement in the privatized firms' performance shown in the previous section can be viewed as a benefit, as it contributes to the efficiency of the economy as a whole. This section addresses other benefits, as well as some costs, of the program. It also seeks to identify some sources of the gains made by privatized firms in the form of reductions in employment and increases in prices.

5.1. Employment

One of the weaknesses of Brazilian data is that there is no comprehensive, reliable and unified record of the number of employees at the privatized companies before and after their sale. Financial statements and annual reports, including those of listed firms, are not required to include information on employment, and companies provide it at their own discretion. There are also no uniform requirements for including payroll information in these reports and statements, which bundle wage and salary costs together with other operational costs.

Even when employment and payroll data are available, their analysis is handicapped for other reasons. In Brazil, there are strong incentives for the adoption of outsourced services, such as security, cleaning, maintenance and accounting. Outsourcing has become a widespread practice to reduce labor costs, as service providers are usually smaller firms and pay lower wages. In addition, one often finds workers disguised as business owners to avoid heavy taxation of wages and salaries.[19] Most workers prefer formal contracts with employers; firms and unions also press for this and are more successful with SOEs. It is therefore very likely that privatization has led to an extension of outsourcing. Thus, a reduction of employment in a

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[19] The incentives gained strength after new "social rights" were established by the Constitution of 1988, as detailed by Fernandes (1998).

company would not necessarily mean a reduction in the jobs generated by its activities along its chain of suppliers.[20]

Given this picture, the employment effects at the industry level will be examined first, as there are aggregate data. Then, for a limited number of former SOEs, the focus will move to employment data from the files of Exame, a business magazine that collects financial statements and reports of Brazilian firms, as well as scattered employment data from them and other sources.

In Brazil, the most important source of data on formal employment is RAIS (Annual Survey of Social Data) from the Ministry of Labor and Employment. All firms and the government are required annually to list workers and their characteristics. Individual firms cannot be identified in the samples. This source has consistent data for the period 1995 to 1999.

Table 6 shows data on employment for the industries in which the most important privatizations have occurred. In public utilities, privatization came later and in a less complete fashion than in the electricity industry. One can see that until 1997 the private sector was responsible for less than one-twentieth of employment in this industry, less than a third in water and sewage, a quarter in telecommunications and a fifth in piped gas distribution. By 1999, both in the telecommunications and gas distribution sectors the larger part of employment moved to private companies. In the electricity, water and sewage sectors, employment is still largely in SOEs and public enterprises, but now with a significant mix.

In electricity, the table shows a clear reduction in employment following privatization. The same holds for the piped gas distribution industry. In telecommunications, the impact in reducing employment is less clear, one of the reasons being the fact that following privatization the provision of services expanded very rapidly. Worth mentioning is the case of the water and sewage industry. Still largely in the hands of the government and not expanding

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[20] Pinheiro (2000) tackled both the direct and contracting-out impact on employment, on the basis of questionnaires sent to the privatized firms by BNDES. He found a 33% reduction in the total number of formal workers. For production workers, the reduction was 29.5%, evidence that overstaffing was concentrated in white-collar workers. In absolute numbers, he found that, excluding telecommunications, the total reduction was 10,000 workers in the year of privatization and 35,000 in the year before, thus showing adjustment by SOEs before privatization. In the telecommunications sector, he found that 145,000 new jobs were contracted out to expand services. This number might sound high, but notice that in this country of 170 million inhabitants, the number of fixed telephone lines increased from 9.6 per one hundred people in 1996 to 21.4 in 2000, while the number of cellular phones rose from 1.6 per one hundred people to 12.9, an expansion that has required a lot of labor, particularly in the case of fixed lines.

as quickly as telecommunications, its employment ranks high in stability among the industries shown in the table. Note also the recovery of employment in petrochemicals and in iron and steel, showing that after employment adjusts following privatization, the growth of investment and production leads to new jobs.

Table 6. Employment in Selected Industries, by Public/Private Ownership, 1995-1999
Number of Employees as of December 31st

SECTOR	1995 Total		1996 Total		1997 Total		1998 Total		1999 Total	
	Public %	Private %	Public %	Private %	Public %	Private %	Public %	Private %	Public %	Private %
Mining	39,131		38,060		31,447		39,955		35,763	
	18	82	18	82	1	99	1	99	1	99
Petroleum	14,442		21,546		16,963		13,923		10,590	
	76	24	82	18	72	28	62	38	39	61
Fertilizers	6,460		7,145		8,395		12,563		11,907	
	18	82	9	91	11	89	1	99	1	99
Petrochemicals	15,739		14,947		19,018		26,263		28,935	
	5	95	2	98	0	100	1	99	1	99
Iron & Steel	376,220		369,234		385,064		429,965		446,949	
	5	95	5	95	2	98	2	98	2	98
Electricity	149,100		128,545		99,871		111,225		95,870	
	97	3	97	3	95	5	64	36	55	45
Gas Distribution	3,257		2,640		1,551		1,763		1,437	
	92	8	89	11	83	17	60	40	31	69
Water & Sewage	135,313		146,791		159,588		145,375		149,822	
	68	32	72	28	66	34	66	34	62	38
Telecommunications	107,689		113,126		117,740		105,284		109,478	
	80	20	77	23	75	25	19	81	26	74

Source: Ministry of Labor and Employment (RAIS, 1995)

Moving to the employment data from the Exame's files, they cover companies privatized in the period 1995-2000, with missing data, but in any case allowing a comparison between the pre- and post-privatization years. Chart 1 shows data for 49 companies in the form of a box-plot diagram. The reduction in employment emerges clearly from the plotted data as 43 companies showed a reduction in employment while only 6 revealed an increase. Tests were performed by taking their average number of employees in at least two years before and after privatization. The Wilcoxon signed rank test presented a Z-difference of $-$ 5.217, significant at 1%, while the t-test showed a value of 3.906, significant at 5%.

Figure 1. Formal Employment before and after Privatization
Sample of Companies, 1995-2000
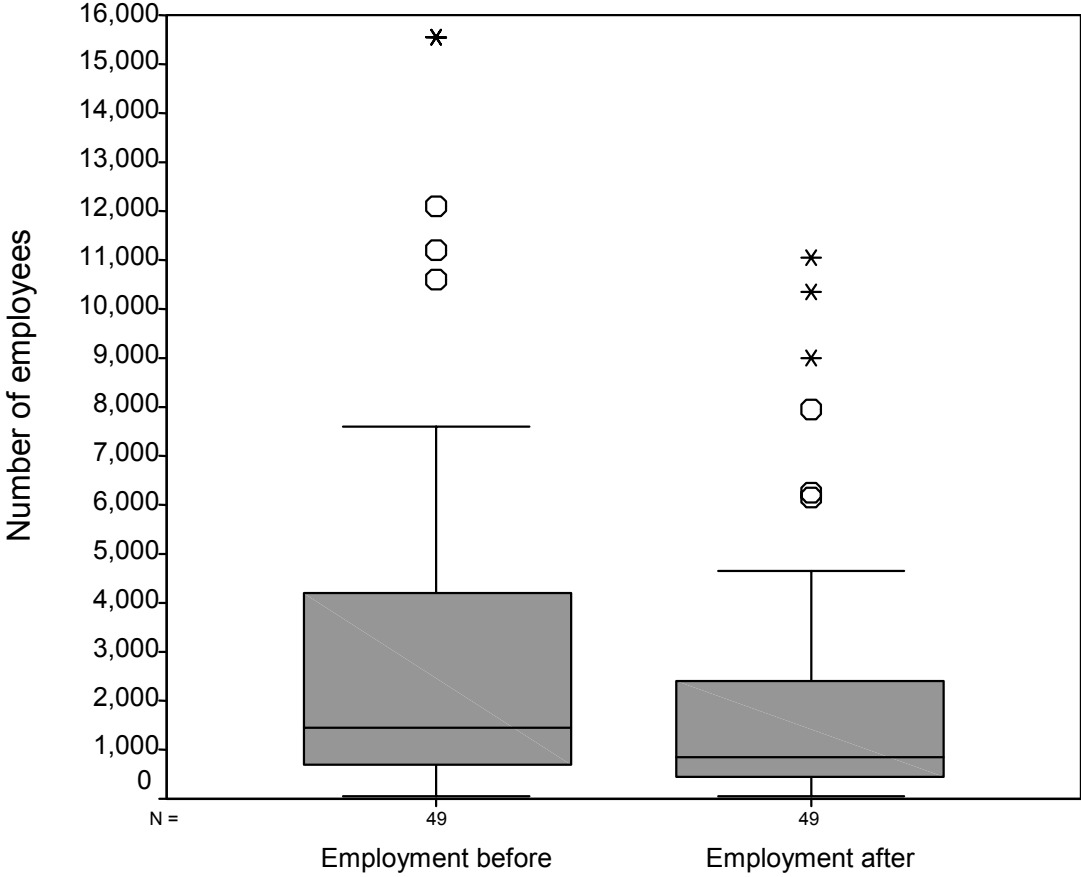
Our conclusion is that a share of the costs of privatization have been borne by some of the workers directly employed by the former SOEs who lost their jobs either in the process of

adjustment for the sale or thereafter. This is an inevitable outcome of privatization as new owners seek higher efficiency. Thus, this reduction in employment was one of the sources of gains reported in the previous section. However, as privatized firms invest and expand their activities, at some point this increases employment, although the same workers are not necessarily rehired and some of them might continue to suffer the costs of displacement and reallocation. In the Brazilian case, the widespread use of outsourced services often blurs the picture, as positive impacts are not necessarily captured by the direct employment data of privatized firms, particularly in the telecommunications industry.

5.2. Prices

Following privatization, newly established regulatory agencies moved to more realistic prices particularly in the areas of electricity and telecommunications. The government had to announce this policy during the privatization process to guarantee the success of the auctions. Moreover, because of the overvaluation of the real and trade liberalization reforms undertaken since the early 1990s, the tradable industries were exposed to increased competition.

To show some of the relevant changes in relative prices, a comparison was made of various price indices at the industry level with an overall price index, the CPI-A calculated by IBGE, the Brazilian census bureau, as presented in Table 7. We took August 1994 prices as a reference for the other indices. In the tradable industries, such as iron and steel, non-ferrous metals and non-metallic minerals, fertilizers and plastics, largely affected by the overvaluation of the real, domestic prices lagged behind CPI-A variations for the years 1994 to 1998. After devaluation, prices in these industries clearly catch up to the CPI-A. This sheds light on one of the findings of the previous section, where it was found that firms in these industries had shown a shakier performance, one of the reasons being the restraint imposed by the overvalued real.

For telephone rates, the table shows that price effects started when the telecommunications industry was being prepared for privatization, as early as 1996. In particular, the minimum monthly fee for access to a line received a sharp increase. This has been a source of gains to the telephone companies, but no one in Brazil would dispute that it was followed by a massive expansion of services to the point of destroying the market that

previously existed for trading telephone lines, at prices sometimes reaching two or three thousand dollars, or even more when the dollar was overvalued.

In electricity, the rate restructuring began in 1995. Privatization itself started in 1997, and the concessionaries signed an incentive contract with a pass-through of non-controllable costs clause. Thus, with the devaluation in 1999, they where allowed to adjust prices for the dollar-denominated contracts they had, for instance, with suppliers from Paraguay.

The conclusion with respect to prices is that they have been a source of gains to privatized firms in the telecommunications and electricity industries. Regulation cum privatization made prices follow contracts and other rules, thus reducing the scope for political manipulation that existed when the government played a larger entrepreneurial role in these industries. In the telecommunications industry this role practically ceased to exist, but it is still strong in electricity, particularly in power generation.

Table 7. Evolution of Relative Prices*
All Indexes Aligned to 100 on August 1994

Year**	CPI-A IBGE	Electricity	Telephone	Fuels	Iron & Steel	Fertilizers	Non-Ferrous Metals	Non-Metallic Minerals	Chemical Materials	Plastic Materials
1993	10.7	n.a.	n.a.	12.6	9.6	9.6	9.0	9.3	11.4	11.3
1994	108.9	100.0	88.6	99.7	99.8	100.7	108.8	101.4	100.4	102.8
1995	133.4	103.5	108.5	108.7	117.5	125.9	123.0	110.6	112.7	109.6
1996	146.1	130.5	199.2	125.5	122.2	138.3	122.4	117.5	123.9	113.4
1997	153.8	143.2	199.2	132.5	128.7	138.7	1290	127.3	129.9	119.2
1998	156.3	143.2	199.2	139.0	125.4	140.5	119.9	132.0	132.1	113.0
1999	170.3	173.2	199.2	226.6	160.1	189.0	166.5	155.4	200.7	170.3
2000	180.4	194.2	239.1	306.6	177.9	198.4	174.4	172.7	249.2	186.6

*The sectoral prices for electricity and telephone were obtained from the CPI calculated by FIPE in São Paulo. For the sectors, prices were obtained from the Wholesale Price Index calculated by the Getúlio Vargas Foundation.
** Averages of the monthly indices.

5.3. A Social Cost: No Democratization of Capital Ownership

Macedo (2000) points out that some groups in Brazilian society were excluded from the privatization auctions and, therefore, from the opportunities to gain from them. As a rule, the

privatization program did not resort to public offers to any significant degree. Moreover, some groups were not allowed to participate in the auctions, although they could have been given access. Even without cash to pay, they hold public sector liabilities, which could have been exchanged for shares of the SOEs being privatized. Among these liabilities, there are the unfunded ones of the present and future pensioners of the social security system, and the deposits that formal workers hold in their accounts of the Workers' Tenure Guarantee Fund. This fund, known as FGTS (Fundo de Garantia de Tempo de Serviço), accumulates on a monthly basis a percentage of wages and salaries, to be used in case of termination or dismissal of the workers. Macedo's conclusion was that because of this discrimination, the privatization process failed in one of its stated objectives: democratizing capital ownership in Brazil. Only recently were workers allowed to use their FGTS deposits in successful public offers of a block of Petrobrás shares and another block of remaining state-owned shares of the Vale do Rio Doce mining company.

5.4. Effects on the Development of Capital Markets

A goal of the program was to maximize the revenue from sales. Many of the former SOEs were structured as public companies and, therefore, subject to laws governing the stock market. Before 1996, minority investors in Brazil were protected with features such as "tag along" (giving minority investors the right to sell their shares at the same price as the managing block in case of change in control), and oppressed minority rights (having their shares bought back at book value in cases of restructuring, such as mergers or divestitures). As some companies had to be restructured for privatization (for instance, Telebrás, the state holding company for telecommunications, was split in 12 different firms), there was the fear that lawsuits from minority shareholders could have hampered the privatization process and\or reduced the revenues from auctions. This led the government to reform the legislation.

The amendments to the corporate law revoked the tag along and the oppressed minority rights clauses. To mitigate the impact, the legislation entitled non-voting shares to an additional 10 percent in dividends over those paid to voting shares. In any case, as the post-privatization experience has shown, without the protective clauses, minority shareholders have in several cases been victims of controlling groups' opportunistic behavior.

At the end of the last decade, influential works such as those of Levine (1997), Levine and Zervos (1998), and La Porta et al. (1997) helped to confirm the view that the development of capital markets is important to promote economic growth, and that protecting minority investors' rights is the best way to promote capital markets. In 2000 and 2001 the Brazilian Congress discussed a bill to increase minority shareholders' rights. This bill would contemplate the return of tag along and oppressed minority rights. Unfortunately, the new law that emerged establishes tag along for only 80 percent of the minority shares and the new oppressed minority rights have been extensively criticized as inadequate. Thus, the adverse effect of privatization on stock markets is likely to last.

5.5. A Macroeconomic Cost: No Effective Debt Reduction and a Delayed Devaluation

Macedo (2000) also claims that privatization had a "macroeconomic cost" as the generated revenues—to the government budget, and to the external accounts through foreign direct investment—delayed a genuine fiscal adjustment and the necessary devaluation of the real. It is important to understand the details of this argument because it warns of the risks of misusing privatization resources in conditions of fiscal and external imbalances and in the presence of soft budget constraints.

Privatization was to help the fiscal crisis and the external imbalance, but this intended benefit was lost because in its first term (1995-1998), the Cardoso administration increased the fiscal deficit. Moreover, the new currency, the real, had clearly become overvalued immediately after its release in 1994. With its political capital linked to price stabilization, the government opted for defending the real, afraid of the impact of a devaluation on prices. Very high interest rates were the main policy instrument. These developments had the effect of seriously aggravating the budget deficit and debt, the payment of debt interest, and the external imbalance. Thus, public debt increased from 29.2% of GDP in 1994 to 52.5% in 2001; debt interest grew from 5.8% of GDP in 1996 to 11.8% in 2001; and the current account deficit went from less than 0.5% of GDP in 1994 to around 4% in 1997 and has remained this high since then.[21]

Thus, the privatization program did not accomplish the objective of reducing public debt. On the contrary, public expenses increased, more than compensating for the inflow of

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[21] Data from the Central Bank and the National Treasury.

resources from the privatization auctions.[22] Macedo also argues that privatization allowed the financing of higher current account deficits, particularly in 1997 and 1998 when the program peaked and attracted substantial foreign investment. Although this inflow is usually considered a positive consequence of the process, it also contributed the postponement of a badly needed devaluation of the Brazilian currency.[23]

5.6. Privatization as a Tool for Imposing Fiscal Discipline: The Case of the States

The fiscal policies of Brazilian states also contributed to the ballooning fiscal deficits and debt from 1994 to 1997. Tight public sector budgets as a whole came only after 1998, as the debt size started to cause discomfort in the financial markets, and the external imbalance continued to deteriorate. The federal government then started to generate huge primary surpluses and was also increasingly able to impose fiscal discipline on the states. Privatization of the states' assets played an important role in this process. The states had their debt transferred to the federal government, to which they became indebted themselves, but at more favorable interest rates. In order to obtain this benefit, the states had to make commitments to restrain further indebtedness on their part and also to privatize. Thus, the federal government was able to impose a tight fiscal constraint on the states that it has not adopted itself.

5.7. Hidden Costs Not Yet Accounted for

The Brazilian government still owes a full accounting of the resources it has invested in the firms to be privatized in the process of their restructuring and preparation for privatization. The information provided by BNDES on behalf of the government emphasizes only the amounts collected from the auctions.

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[22] Macedo compares the fiscal picture at that time to what Kornai (1979) calls a soft budget constraint, typical of centralized governments whose budgets are only vaguely monitored or controlled by Congress and society if at all. Under such conditions, the only effective constraint emerges when markets react to the piling up of debt and the interest rate becomes a problem in itself.

[23] Interestingly enough, the devaluation in early 1999 came after the telecom privatization auction in 1998, in which the presence of foreign direct investment was stronger. These investments were seen by the market as a sign that the government could hold on to the overvalued real. As the program came to a halt, devaluation came sooner than expected.

6. Public Opinion and Perspectives

6.1. Public Opinion

Privatization has not been popular in Brazil. A 2001 Latinbarómetero public opinion survey conducted in 16 Latin American countries reported that 53% of the respondents in Brazil believed that privatization had not been beneficial to the country (Lora and Panizza, 2002). Nonetheless, Brazilian public opinion about privatization was found to be more favorable than that of its neighbors: on average 63% of the respondents in all the surveyed countries believed that privatization had not been beneficial to their nations. The countries in which the public appeared to be less discontented with privatization were Chile (47%) and Venezuela (46%). For all the other countries, approval ratings were lower than in Brazil.[24]

Several factors contributed to the unpopularity. Looking at those that we consider to be the most important, we notice that in most cases the average citizen is not able to fully identify the benefits of privatization such as those analyzed in this paper. The creation of non-banking SOEs in Brazil—such as steel and mining—followed the Second World War. Its main motivation was the belief that the state had to play a major role in "strategic" industries, the products of which tend to be remote from the pressing concerns of the population. Thus, one cannot expect the public to be concerned with the outcome of privatization in these industries, nor to be inclined to evaluate its technicalities.

The total privatization of the telecommunications industry and the partial privatization of the electricity SOEs produced mixed outcomes for the consumer. Both were followed by higher rates, which have blurred the favorable impact of a major expansion of telecommunications services. In electricity, a further negative impact emerged in 2001 when the country had to face rationing due to the low levels of the reservoirs of the hydroelectric plants, which constitute the basis of power generation in the country. Opponents of the privatization were eager to blame it for the crisis.

It is also important to highlight that privatization coincided with sluggish growth, particularly after the program peaked in 1997-1998. Therefore, dissatisfaction with lower economic gains or even losses, such as those emerging from the higher rates of

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[24] The other countries are Argentina, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru and Uruguay.

unemployment, are likely to have developed into criticisms of government policies in general and privatization in particular.

Moreover, as already pointed out, the government failed in its objective of using the program to democratize capital ownership. Only recently it resorted to successful public offerings in which workers were entitled to participate by using their FGTS deposits. Thus, as a rule the common citizen was left out of the process and its benefits in the form of rewards to the controllers and shareholders.

Opposition to the program also resulted from its unfavorable treatment by the media: court battles to impede the auctions, attempts to disrupt the auctions themselves, sometimes followed by police intervention, and so forth. The news coverage of the privatization of the telecommunication industry was particularly negative as there were accusations that some government authorities had been involved in arm-twisting to attract and assemble groups to participate in the auctions. Recorded tapes of conversations held by government authorities among themselves and with interested parties reached the press. Even though the legal battles were decided in favor of privatization, the uproar was serious enough to cause the Minister of Communications to resign in November of 1998.

News of this sort has inevitably aroused suspicions that the process has been tainted by wrongdoings. The analysis of Lora and Panizza (2002) revealed that opposition to privatization, again measured by the percentage of those who do not consider it beneficial, was lower in Brazil than in its neighbors. Generally approval ratings are higher in those countries with extensive privatization and limited corruption. In this respect, Brazil ranks second only to Chile in an evaluation involving the above-mentioned group of 16 countries. In any case, although faring better in relative terms, it is clear that privatization is not popular in the country, a finding that is not surprising given the reasons pointed out above.

Although the privatization program has not been popular in general, a different picture emerges from a study by Lamounier and De Souza (2002), which focused only on the opinion of a group called the "Brazilian elites," composed of 500 businessmen (including leaders of associations of small and medium firms), union leaders, congressmen, high echelon members of the executive and judiciary branches of government, journalists, religious leaders, directors of NGOs and intellectuals. On average, 62% responded that they approved or tended to approve of privatization. The rates ranged between 87% for members of the executive branch

of government to 13% for union leaders, whose rate was the only one below 45%. Another question was directed at the performance of the companies after privatization. In this case, the approval rate (percentage of good or above) showed large variations by industries.[25]

6.2. Perspectives

The overall unpopularity and its causes were among the reasons for the privatization program's having come to a virtual standstill since 1998. According to BNDES, the proceeds from the auctions, including new concessions of public services, fell from US$26.3 billion in 1997 and US$35.7 billion in 1998 to US$4.2 billion in 1999, US$10.2 billion in 2000 (this figure includes the privatization of a state bank, Banespa, which totaled US$3.6 billion and had been in the pipeline for a long time), US$2.8 billion in 2001, and US$2.2 billion in 2002.[26]

Other factors also explain the current status of the program. First, moving ahead would have meant including those SOEs that have stronger political patronage than those privatized thus far. If one looks at the list of remaining SOEs presented in Table A.1.3 in Appendix 1, in the banking industry there is the almost two-century-old Banco do Brasil, a commercial bank of which the federal government is the controlling shareholder. It holds the government's accounts and is the key player in providing agricultural credit subsidized by the federal budget. In this fashion, it has built a major constituency as private banks have refrained from being more active in agricultural credit. Its staff, traditionally selected by public examinations, is a breeding ground for government officers. Some of them have reached the ministerial level or have become members of Congress and are very influential. Moreover, the bank is a not entirely an SOE, but has private shareholders who act as a group to maintain its present status.

In the oil industry, there is the giant Petrobrás. The company was established in 1954, following a strong nationalist stance against foreign oil companies. Petrobrás proved effective in finding oil in Brazil. It moved into offshore drilling in the 1980s, and has set worldwide records in deep-water exploitation. Domestic production that currently accounts for 90% of the

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[25] The highest rates were given to the aviation industry (80%), in which Embraer, the only former SOE, has been very successful, steel (65%) and telecommunications (58%). The lowest were received by railroads (9%), electricity (13%) and an airline (11%) (this was a case of one small company that belonged to the state of São Paulo, individually privatized in the mid-1980s).

[26] In 2000, for the first time since the program started, the federal government resorted to a public offer of minority shares in Petrobrás totaling US$4 billion, in which workers were also allowed to participate with their FGTS deposits. The operation was very successful, as was another public offer of a remaining state-owned block of minority shares of Companhia Vale do Rio Doce, sold in 2002 for US$1.9 billion.

country's needs is seen as a sign of success. It had a monopoly in prospecting, production and importing in the upstream market until 1995. Since then, it continues to have a virtual monopoly in these activities, as well as in refining. As oil is associated with national security issues, keeping Petrobrás under government control is seen as crucial by the military. Moreover, the company also has private shareholders who support its current and very profitable status.

In the electricity industry, the privatization process occurred mainly in the distribution sector. A few important companies in this sector were kept by state governments unwilling to move in the direction of privatization. With respect to the generation segment, the state of São Paulo privatized a large part of its assets. At the federal level, only one subsidiary of a federal holding company, Eletrobrás, was privatized. The three remaining subsidiaries control around 60% of the country's generation. After the 2001 drought, which led to a rationing, the process of sector restructuring stalled. The rationing stimulated industry and households to adopt energy-saving measures, and in the aftermath demand has not recovered its previous levels. Both rationing and demand reduction brought losses to the industry, exacerbating the dollar indebtedness of some privatized companies since 1999. With both distribution and generation companies currently suffering huge losses, the federal government, which regulates the entire industry, is preparing a new sector arrangement. At the same, BNDES has to find a way to manage huge debts on the verge of default. Thus, it is an industry in disarray, not attractive to private investors and in need of reorganization before any discussion of a new round of privatizations.

In spite of these shortcomings, there are no plans for privatization reversal in Brazil, either at the moment or in the foreseeable future. The new federal government, inaugurated in 2003, is for the first time led by the Worker's Party, which won the presidential election as an opposition party. It fought privatization in Congress and in the courts in the 1990s, but since taking power it has adopted conservative fiscal and monetary policies and avoided condemning privatization. In this context, there is no room for privatization reversal, nor has the government even been suggesting it in discourse. Apparently, the government is likely to keep the program stalled—that is, no privatization reversal, but no further advances.

Even in light of these new political developments, the possibility of resuming the privatization effort should not be ignored: a serious fiscal problem remains in the form of large

and difficult-to-manage public deficits and debt. They have been kept under control at the cost of huge increases in the tax burden, which moved from 25.7% of GDP in 1993 to a record level of 35.9% in 2002, an exceptionally high rate for a developing country.[27] Under such conditions, a new start of the privatization program could help to alleviate the fiscal accounts. Moreover, as the new government has been willing to reconsider many of the cherished dogmas it subscribed to when in opposition, there is a chance that even its current stance against new privatization efforts might be reconsidered as well. Thus, to give new life to privatization, it is important to continue the monitoring the process and publicizing of the results of the program and the inefficiencies of the remaining SOEs. In addition, the objective of democratizing capital ownership by means of public offers should be brought to the front line, both for its own merits and to attract wider political support, in particular by making privatization more appealing to President Lula da Silva's government.

7. Summary and Conclusions

This paper has focused mainly on the changes in the performance of companies that have been privatized in Brazil since 1991. It confirmed previous findings that the firms became more efficient after privatization. It has contributed to the literature, first by bringing to a wider audience studies available only in Brazil and in Portuguese. It is also more updated than previous studies, since it covers data up until 2000. In terms of the companies covered, it is the most comprehensive thus far. In the sample, a selection bias was avoided by including both large and small firms, as well as those listed and unlisted on the stock exchange. All companies for which information was available have been included in the analysis. In addition to tests of means and medians, the research also resorted to panel data analysis in an attempt to fully utilize the information provided by the data. Moreover, the analysis of performance before and after privatization was also made in comparison to the private sector, taken as a control group over time. Finally, this study was undertaken by an independent team while most of the previous ones were done by staff members of BNDES.

In addition to the findings on improved efficiency, the paper has identified some sources of gains made by privatized firms in the form of a reduction in direct employment and

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[27] The source of the tax burden data is the Secretary of Federal Revenue, Ministry of Finance, as published by Folha de São Paulo (May 10th, 2003).

of increased prices. The paper has also shown other costs in the sense that the benefits of privatization could have been higher had the government not used the revenues to sustain its misguided policy of enlarging fiscal deficits and adopting high interest rates to defend the real. Moreover, foreign investment attracted by privatization and the high interest rates also contributed to the postponement of devaluation. In any case, what is to blame are the fiscal, interest rate and exchange rate policies, not privatization itself.

The benefits could also have been greater had the government not neglected the opportunity of privatization for democratizing capital ownership. In the capital markets, privatization also brought costs in the form of reducing the rights of minority shareholders, therefore hampering the development of these markets.

The study has also shown that although there is evidence that privatization is approved of by a majority of the Brazilian elite, it is not viewed as beneficial by the majority of the population, as revealed by public opinion surveys. After pointing out some of the reasons behind this unpopularity and looking at the current status of the program, the paper concludes that the door to new privatization efforts remains open. One suggestion is to give the program popular appeal in the form of public offers in which workers would be entitled to participate with their own financial assets, including the deposits they hold in the FGTS.

With respect to future research, it is particularly necessary to further clarify costs, to look at the impact of privatization at the industry level, and at the role of the regulatory agencies that have emerged in the wake of the state's backing away from its role as an entrepreneur.

To conclude we return to Megginson and Netter (2001), quoted at the start of this paper. The Brazilian privatization program is indeed likely to remain influential because of its scale and the size of the country. Hopefully, it will continue to have an impact because of the successes and benefits of the program, not for the mistakes that have been made.

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Appendix 1

Table A.1.1. Federal State Enterprises Privatized between 1990 and 2000

Auction	Company Name	Date of Auction	Auction Result (US$ Million) [1]	Presence in the Sample	Listed Before Privatiz.
USIMINAS	Usinas Siderúrgicas de Minas Gerais (Usiminas)	10/24/91	2,310	1	1
	Usiminas Mecânica (Usimec)*			0	0
CELMA	Cia. Eletromecânica	11/01/91	96	0	0
MAFERSA	Mafersa S.A.	11/11/91	50	0	0
COSINOR	Cia. Siderúrgica do Nordeste (Cosinor)	11/14/91	15	0	0
	Cosinor Distribuidora (Cosinor Dist.)*			0	0
SNBP	Serviço de Navegação da Bacia do Prata	1/14/92	12	0	0
INDAG	Indag Fertilizantes	1/23/92	7	0	0
AFP	Aços Finos Piratini	2/14/92	109	1	0
PETROFLEX	Petroflex Indústria e Comércio S.A.	4/10/92	255	1	1
COPESUL	Cia. Petroquímica do Sul	5/15/92	871	1	1
CAN	Cia. Nacional de Álcalis	7/15/92	87	0	0
	Álcalis Rio Grande do Norte (Alcanorte)*			0	0
CST	Cia. Siderúrgica de Tubarão	7/16/92 to 7/23/92	837	1	1
NITRIFLEX	Nitriflex	8/6/92	35	1	0
FOSFÉRTIL	Fertilizantes Fosfatados S.A.	8/12/92	226	1	1
POLISUL	Polisul	9/11/92	188	0	0
PPH	PPH	9/29/92	94	0	0
GOIASFÉRTIL	Goiás Fertilizantes S.A.	10/8/92	22	0	0
ACESITA	Cia. Aços Especiais Itabira	10/23/92	697	1	1
	Acesita Energética (Energética)*			0	0
	Forjas Acesita (Fasa)*			0	0
CBE	Cia Brasileira de Estireno	12/3/92	11	1	0
	*Poliolefinas	3/19/93	87	0	0
CSN	Cia. Siderúrgica Nacional	4/2/93	2,028	1	1
	Fábrica de Estruturas Metálicas S.A.*			0	0
ULTRAFÉRTIL	Ultrafértil S.A. Indústria e Comércio de Fertilizantes	6/24/93	226	1	0
COSIPA	Cia. Siderúrgica Paulista	8/20/93	1,470	1	1
AÇOMINAS	Aço Minas Gerais S.A.	9/10/93	721	1	0
OXITENO	Oxiteno	9/15/93	56	1	1
PQU	Petroquímica União S.A.	1/25/94	328	1	1
ARAFERTIL	Arafértil Fertilizantes – ARAFÉRTIL	4/15/94	13	0	0
CARAÍBA	Mineração Caraíba LTDA.	7/28/94	6	1	0
ACRINOR	Acrinor	8/12/94	13	0	0
COPERBO	Coperbo	8/16/94	32	0	0
CIQUINE	Ciquine	8/17/94	30	1	1
POLIALDEN	Polialden	8/17/94	19	1	1
POLITERO	Politeno	8/18/94	73	1	1
EMBRAER	Empresa Brasileira de Aeronáutica (Embraer)	12/7/94	455	1	1
	Embraer Aircraft Corporation (EAC)*			0	0
	Embraer Aviation International (EAI)*			0	0
	Indústria Aeronáutica Neiva (Neiva)*			0	0

Table A.1.1.

(continued)

Auction	Company Name	Date of Auction	Auction Result (US$ Million) [1]	Presence in the Sample	Listed Before Privatiz.
ESCELSA	Espírito Santo Centrais Elétricas S.A.	7/11/95	522	1	1
COPENE	Cia. Petroquímica do Nordeste	8/15/95	745	1	1
CPC	CPC	9/29/95	161	0	0
CQR	CQR	10/5/95	2	1	0
SALGEMA	SALGEMA	10/5/95	183	0	0
NITROCARBONO	Nitrocarbono	12/5/95	37	1	1
PRONOR	Pronor	12/5/95	99	1	1
POLIPROPILENO	Polipropileno	2/1/96	86	1	1
KOPPOL	Koppol	2/1/96	70	0	0
LIGHT	Light Serviços de Eletricidade S.A.	5/21/96	3,094	1	1
DETEN	Deten	5/22/96	12	1	0
POLIBRASIL	*Polibrasil	8/27/96	111	0	0
EDN	Estireno do Nordeste- EDN	9/26/96	16	1	1
CVRD	Cia. Vale do Rio Doce	5/6/97	6,858	1	1
CODESP	Terminal de Contêiners Tecon 1 (Codesp)	9/17/97	251	0	0
CDRJ	CDRJ - Porto de Angra do Reis	11/5/98	8	0	0
CDRJ	CDRJ-Terminal de Conteineres 1 – Porto de Sepetiba	9/3/98	79	0	0
CDRJ	CDRJ-Terminal Roll-on Roll-off do Porto do Rio	11/3/98	26	0	0
CDES	Cia. Docas do Espírito Santo- Cais de Capuaba	5/6/98	26	0	0
CDES	Cia. Docas do Espírito Santo -Cais de Paul	5/13/98	9	0	0
CODEBA	Cia. Docas da Bahia	12/21/99	21	0	0
RFF	Rede Ferroviária Federal S.A. (Nordeste)	7/18/97	15	0	0
RFF	Rede Ferroviária Federal S.A. (Oeste)	3/5/96	63	0	0
RFF	Rede Ferroviária Federal S.A. (SP)	11/10/98	206	1	0
RFF	Rede Ferroviária Federal S.A. (Sudeste)	9/20/96	870	1	0
RFF	Rede Ferroviária Federal S.A. (Sul)	12/13/96	209	0	0
RFF	Rede Ferroviária Federal S.A. (Tereza Crisitina)	11/22/96	18	0	0
RFF	Rede Ferroviária Federal S.A.(Centro-Leste)	6/14/96	316	0	0
MERIDIONAL	Banco Meridional do Brasil S.A.	12/4/97	240	0	0
EMBRATEL	Embratel	7/29/98	2,276	1	1
TELESP	Telesp Operacional, Borda do Campo	7/29/98	4,967	2	1
CENTRO SUL	Telepar, Telebrasília, Telegoiás and other 4 closed Companies : CTMR, Telemat, Teleron, Teleacre	7/29/98	1,778	3	3
NORTE LESTE	Telerj, Telebahia, Telemig, Telpe, Telma, Telest, Teleceará, Teleamazon and other 9 closed companies	7/29/98	2,949	16	8
	Aggregate transferred debt of these companies		2,125		
	Telecom offers to employees		293		
TELESP CEL	Telesp Celular	7/29/98	3,082	1	0
SUDESTE CEL.		7/29/98	1,168	1	0
TELEMIG CEL.		7/29/98	649	1	0
CELULAR SUL		7/29/98	601	4	0
NORDESTE CEL.		7/29/98	567	7	0
LESTE CEL.		7/29/98	368	2	0
CENT. OESTE CEL.	Telegoiás Celular and other 5 closed companies	7/29/98	378	3	1

Auction	Company Name	Date of Auction	Auction Result (US$ Million) [1]	Presence in the Sample	Listed Before Privatiz.
TELE NORTE C		7/29/98	161	2	0
GERASUL	Centrais Geradoras do Sul do Brasil S.A.	9/15/98	1,962	1	0
GUARARAPES	GUARARAPES	12/7/98	0.1	1	1
DATAMEC	Datamec S.A.	6/23/99	49	0	0
BANESPA	Banco do Estado de São Paulo	11/20/00	3,604	0	0
Petrobrás	Petrobrás**	8/9/00	4,032	1	1
Total			**56,841.20**	**75**	**38**

Source: BNDES
1 Includes transferred debt.
* Sold with mother company.
** Minority shares privatization in remaining SOE.

Table A.1.2. Companies Privatized by BNDES on Behalf of Brazilian States, Minority Shares Privatized by Federal Government, and São Paulo State Privatization Program

Company Name	Date of Auction	Auction Result (US$ Million) [1]	Presence in the Sample	Listed Before Privatization
Banco Banerj S.A. –BANERJ	6/26/97	289	0	0
Banco de Crédito de Minas Gerais S.A – Credireal	8/7/97	112	0	0
Banco do Estado da Bahia –BANEB	7/22/99	147	0	0
Banco do Estado de Minas Gerais – BEMGE	9/14/98	494	0	0
Banco do Estado de Pernambuco S.A.	11/17/98	153	0	0
Banco do Estado de Santa Catarina – BESC	9/30/97	28	0	0
Centrais Elétricas Cachoeira Dourada	9/5/97	854	1	1
Centrais Elétricas do Pará S.A. – CELPA	7/9/98	504	0	0
CELPE	2000	1135	1	1
Centrais Elétricas Matogrossenses S.A.-CEMAT	11/27/97	814	1	1
CESP Paranapanema	7/28/99	1,164	1	1
CESP TIETÊ	11/1/99	1,140	1	1
Cia de Gás de São Paulo –COMGÁS	4/14/99	1,076	1	1
Cia União de Seguros Gerais	11/20/97	45	0	0
Cia. Centro Oeste de Dist. de Energia Elétrica- (AES-SUL)	10/21/97	1,436	1	1
Cia. De Eletricidade de Minas Gerais-CEMIG *	5/28/97	1,053	1	1
Cia. De Eletricidade do Estado da Bahia-COELBA	7/31/97	1,965	1	1
Cia. De Eletricidade do Rio de Janeiro-CERJ	11/20/96	951	1	1
Cia. De Navegação do Rio de Janeiro – CONERJ	2/5/98	29	0	0
Cia. De Saneamento Básico de São Paulo-SABESP *	7/31/97	375	1	1
Cia. De Saneamento Básico do Paraná-SANEPAR *	6/8/98	217	1	1
Cia. Energética de Brasília- CEB *	4/30/97	74	1	1
Cia. Energética do Ceará- COELCE	4/2/98	1,338	1	1
Cia. Estadual de Gás do Rio de Janeiro-CEG	7/14/97	430	1	0
Cia. Fluminense de Trens Urbanos	7/15/98	240	0	0
Cia. Metropolitano do Rio de Janeiro *	12/19/97	262	0	0
Cia. N. NE de Dist. de Energia Elétrica- CEEE – (RGE)	10/21/97	1,635	1	1
Cia. Paranaense de Energia – COPEL *	9/20/96	413	1	1
Cia. Paulista de Força e Luz- CPFL	11/5/97	2,833	1	1
Cia. Riograndense de Telecomunicações-CRT	6/19/98	2,496	1	1
COSERN	12/12/97	718	1	0

Table A.1.2

(continued)

Company Name	Date of Auction	Auction Result (US$ Million) [1]	In the Sample	Listed before Privatization
EBE –BANDEIRANTE DE ENERGIA	9/17/98	1,235	1	0
Elektro Eletricidade e Serviços S.A. –ELEKTRO	7/16/98	1917	1	0
Eletricidade de São Paulo S.A. –Metropolitana	4/15/98	3,445	1	0
Empresa Energética de Mato Grosso do Sul – ENERSUL	11/19/97	783.0	1	0
Empresa Energética de Sergipe- ENERGIPE	12/3/97	560	0	0
Estrada de Ferro Paraná Oeste S.A.-Ferroeste	12/10/96	25	0	0
Riogás S.A.	7/14/97	146	0	0
Terminal Garagem Menezes Côrtes	10/28/98	67	0	0
Total		**32,598**	**27**	**18**

Source: BNDES.

1 Includes transferred debt.

*Minority shares in remaining SOEs.

Table A.1.3. Remaining State-Owned Enterprises

_____

1. PRODUCTIVE SECTOR

1.1 – ELETROBRÁS GROUP (Electricity)
- Centrais Elétricas Brasileiras S.A. – ELETROBRÁS
    - Boa Vista Energia S.A. - BOVESA
    - Centrais Elétricas de Rondônia S.A. - CERON
    - Centrais Elétricas do Norte do Brasil S.A. – ELETRONORTE
    - Centro de Pesquisas de Energia Elétrica – CEPEL
    - Companhia de Eletricidade do Acre - ELETROACRE
    - Companhia de Geração Térmica de Energia Elétrica – CGTEE
    - Companhia Energética de Alagoas – CEAL
    - Companhia Energética do Amazonas - CEAM
    - Companhia Energética do Piauí - CEPISA
    - Companhia Hidro Elétrica do São Francisco - CHESF
    - Eletrobrás Termonuclear S.A. - ELETRONUCLEAR
    - Empresa Transmissora de Energia Elétrica do Sul do Brasil S.A. - ELETROSUL
    - FURNAS Centrais Elétricas S.A.
    - LIGHTPAR - Light Participações S.A.
    - Manaus Energia S.A. - MANAUS ENERGIA

1.2 – PETROBRÁS GROUP (Oil)
- Petróleo Brasileiro S.A. - PETROBRÁS
    - Braspetro Oil Services Company - BRASOIL
    - Petrobrás Distribuidora S.A. - BR
    - Petrobrás Gás S.A. - GASPETRO
    - Petrobrás Internacional S.A. – BRASPETRO
    - Petrobras International Finance Company – PIFCO
    - Petrobrás Química S.A. - PETROQUISA
    - Transportadora Brasileira Gasoduto Bolívia-Brasil S.A. - TBG
    - Indústria Carboquímica Catarinense S.A. - ICC (Em Liquidação)
    - Petrobrás Transporte S.A. - TRANSPETRO
    - Fronape International Company – FIC

1.3 – OTHER
Ports
Companhia Docas do Ceará - CDC
Companhia Docas do Espírito Santo - CODESA
Companhia das Docas do Estado da Bahia - CODEBA
Companhia Docas do Estado de São Paulo - CODESP
Companhia Docas do Maranhão - CODOMAR
Companhia Docas do Pará - CDP
Companhia Docas do Rio de Janeiro - CDRJ
Companhia Docas do Rio Grande do Norte - CODERN
Transportation
Rede Ferroviária Federal S.A. – RFFSA (In process of liquidation)
Rede Federal de Armazéns Gerais Ferroviários S.A. – AGEF (In process of liquidation)
Other
BB-Administradora de Cartões de Crédito S.A. - BB-CAR
BB-Corretora de Seguros e Administradora de Bens S.A. - BB-COR
BB-TUR Viagens e Turismo Ltda.
BEM Serviços Gerais Ltda. – BEM SG

BEM Vigilância e Transporte de Valores S.A. – BEM VTV
Casa da Moeda do Brasil – CMB
Centrais de Abastecimento de Minas Gerais S.A. - CEASA/MG
Companhia de Armazéns e Silos do Estado de Minas Gerais - CASEMG
Companhia de Entrepostos e Armazéns Gerais de São Paulo – CEAGESP
COBRA - Computadores e Sistemas Brasileiros S.A.
Empresa Brasileira de Correios e Telégrafos – ECT
Empresa Brasileira de Infra-Estrutura Aeroportuária – INFRAERO
Empresa de Processamento de Dados da Prev. Social – DATAPREV
Empresa Gerencial de Projetos Navais – EMGEPRON
Hospital Cristo Redentor S.A. – REDENTOR
Hospital Fêmina S.A. – FÊMINA
Hospital Nossa Senhora da Conceição S.A. – CONCEIÇÃO
Indústria de Material Bélico do Brasil – IMBEL
Sistema de Processamento de Dados, Planej. e Adm. de Cartões de Crédito Ltda. – SISPLAN
Telecomunicações Brasileiras S.A. – TELEBRÁS

2. FINANCIAL SECTOR

- Banco do Brasil S.A. - BB
    BB-Banco de Investimento S.A. - BB-BI
    BB-Distribuidora de Títulos e Valores Mobiliários S.A. - BB-DTVM
    BB-Financeira S.A., Crédito, Financ. e Investimento - BB-FIN
    BB-Leasing Company Ltd. - BB-LEASING
    BB-Leasing S.A. Arrendamento Mercantil - BB-LAM
    Brasilian American Merchant Bank - BAMB
- Banco Nacional de Desenvolvimento Econômico e Social - BNDES
    Agência Especial de Financiamento Industrial - FINAME
    BNDES Participações S.A. - BNDESPAR
- Banco do Estado de Goiás S.A. – BEG
    BEG Distribuidora de Títulos e Valores Mobiliários S.A. – BEG DTVM
- Banco do Estado de Santa Catarina S.A. – BESC
    BESC Distribuidora de Títulos e Valores Mobiliários S.A. – BESCVAL
    BESC Financeira S.A. Crédito, Financiamento e Investimento – BESCREDI
    BESC S.A. Arrendamento Mercantil – BESC LEASING
- Banco do Estado do Ceará S.A. – BEC
    BEC Distribuidora de Títulos e Valores Mobiliários S.A. – BEC DTVM
- Banco do Estado do Maranhão S.A. – BEM
    BEM Distribuidora de Títulos e Valores Mobiliários Ltda. – BEM DTVM

Banco da Amazônia S.A. – BASA
Banco do Estado do Amazonas S.A. – BEA
Banco do Estado do Piauí S.A. – BEP
Banco do Nordeste do Brasil S.A. - BNB
Caixa Econômica Federal - CEF
IRB-Brasil Resseguros S.A. - IRB-BRASIL RE
Financiadora de Estudos e Projetos - FINEP

3. ENTERPRISES INCLUDED IN THE FISCAL BUDGET

Companhia Brasileira de Trens Urbanos - CBTU
Companhia de Desenvolvimento de Barcarena - CODEBAR
Companhia de Desenvolvimento dos Vales do São Francisco e do Parnaíba - CODEVASF
Companhia de Navegação do São Francisco - FRANAVE
Companhia de Pesquisa de Recursos Minerais - CPRM
Companhia Nacional de Abastecimento - CONAB
Empresa Brasileira de Comunicação S.A. - RADIOBRÁS
Empresa Brasileira de Pesquisa Agropecuária - EMBRAPA
Empresa Brasileira de Planejamento de Transportes - GEIPOT
Empresa de Trens Urbanos de Porto Alegre S.A. - TRENSURB
Hospital de Clínicas de Porto Alegre - HCPA
Indústrias Nucleares do Brasil S.A. - INB
Nuclebrás Equipamentos Pesados S.A. – NUCLEP
Serviço Federal de Processamento de Dados – SERPRO
VALEC - Engenharia, Construções e Ferrovias S.A.

4. OTHER

Centrais de Abastecimento do Amazonas S.A. – CEASA/AM
Petrobrás America Inc. – AMERICA
Petrobrás U.K. Limited – BUK

Source: Ministry of Planning, Budget and Administration - Department of Coordination and Control of State Enterprises – Executive Secretary.

Appendix 2. Mean and Median Tests

Method I (Two Years before versus Two Years after Privatization)

As individual privatizations were undertaken over several years, this method compares the mean of the two years immediately before privatization with the mean of the two years immediately after it.

Let P_i be the year of privatization for each former SOE i in our sample. Let X_i^{t-j} be the indicator value calculated for the j years before the privatization of each company i. Also let X_i^{t+j} be the indicator value calculated for the j years after the privatization of each company i. Finally, let M_i^B and M_i^A be the mean values of the indicators for the before and after two year periods for each firm i. Thus, we have the following array of variables

$$X_1^{t-1}, X_1^{t-2}, M_1^B, P_1, M_1^A, X_1^{t+1}, X_1^{t+2}$$
$$X_2^{t-2}, X_2^{t-1}, M_2^B, P_2, M_2^A, X_2^{t+1}, X_2^{t+2}$$
$$\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots$$
$$X_n^{t-2}, X_n^{t-1}, M_n^B, P_n, M_n^A, X_n^{t+1}, X_n^{t+2}$$

where $M_i^B = \sum_{j=1}^{2} X_i^{t-j}$ and $M_i^A = \sum_{j=1}^{2} X_i^{t+j}$. The general mean/median value for financial indicators before and after privatization are given respectively by M^B and M^A (the mean/median values of M_i^B and M_i^A over i).

In this method, a particular indicator for a particular firm is included in the test only if there is data available for the four years as described.

Method II (All Years before versus All Years after Privatization)

Using the same terminology above, it is possible to re-write the array of variables in the following way.

$$X_1^{t-2}, X_1^{t-1}, M_1^B, P_1, M_1^A, X_1^{t+1}, X_1^{t+2}$$
$$X_2^{t-1}, M_2^B, P_2, M_2^A, X_2^{t+1}, X_2^{t+2}, X_2^{t+3}$$
$$\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots$$
$$X_n^{t-3}, X_n^{t-2}, X_n^{t-1}, M_n^B, P_n, M_n^A, X_n^{t+1}, X_n^{t+2}, X_n^{t+3}, X_n^{t+4}$$

The number of years included in the M_i^B and M_i^A is given by the availability of data in the data set. Once more, the general mean/median value for financial indicators before and after privatization are given respectively by M^B and M^A (the mean/median values of M_i^B and M_i^A over i).

For this method, a particular indicator for a particular firm is included in the test if there are data available for at least one year before and one year after privatization.

Adjustment for Comparisons with the Private Sector

In order to filter macroeconomic fluctuations, we used a procedure similar to the one adopted in La Porta and López-de-Silanes (1999). We started by calculating the same indicators X_i^t as described above. Then, we calculated the same indicators for each company in our control group. Next we calculated the average across firms in the control group for every year, MEP^j, where j is the year. The control group includes only public companies controled by the private sector for which data were available over the whole period. Then, we took the differences between the privatized enterprises' indicators and the indicators obtained from the private firms. Thus, for Method 1 the array of variables becomes

$$(X_1^{t-2} - MEP^{t-2}) , (X_1^{t-1} - MEP^{t-1}), M_1^{B*}, P_1, M_1^{A*}, (X_1^{t+1} - MEP^{t+1}) , (X_1^{t+2} - MEP^{t+2})$$
$$(X_2^{t-2} - MEP^{t-2}) , (X_2^{t-1} - MEP^{t-1}), M_2^{B*}, P_2, M_2^{A*}, (X_2^{t+1} - MEP^{t+1}) , (X_2^{t+2} - MEP^{t+2})$$

....

$$(X_n^{t-2} - MEP^{t-2}) , (X_n^{t-1} - MEP^{t-1}), M_n^{B*}, P_n, M_n^{A*}, (X_n^{t+1} - MEP^{t+1}) , (X_n^{t+2} - MEP^{t+2}),$$

while for Method II the array is given by

$$(X_1^{t-2} - MEP^{t-2}), (X_1^{t-1} - MEP^{t-1}), M_1^{B*}, P_1, M_1^{A*}, (X_1^{t+1} - MEP^{t+1}) , (X_1^{t+2} - MEP^{t+2})$$
$$(X_2^{t-2} - MEP^{t-2}), M_2^{B*}, P_2, M_2^{A*}, (X_2^{t+1} - MEP^{t+1}) , (X_2^{t+2} - MEP^{t+2}), (X_2^{t+3} - MEP^{t+3})$$

....

$$(X_n^{t-3} - MEP^{t-3}), (X_n^{t-2} - MEP^{t-2}), (X_n^{t-1} - MEP^{t-1}) , M_n^{B*}, P_n, M_n^{A*}, (X_{23}^{t+1} - MEP^{t+1}) , (X_n^{t+2} - MEP^{t+2})$$
$$, (X_n^{t+3} - MEP^{t+3}), (X_n^{t+4} - MEP^{t+4})$$

Table A.2.1. Change in Performance: Tests of Means and Medians, Method I.a
Two Years before Privatization versus Two Years after, without Adjustment

CRITERION	VARIABLE	N	MEAN AND MEDIAN BEFORE	MEAN AND MEDIAN AFTER	Z-TEST (1)
PROFITABILITY	Operating Income/Sales	66	0.037 0.072	0.042 0.108	0.536 0.523
	Operating Income/PPE	67	0.092 0.035	0.141 0.107	3.556* 3.566*
	Net Income/Sales	65	0.000 0.034	-0.008 0.039	-0.595 0.677
	ROA	70	-0.860 0.014	0.008 0.011	0.291 -1.287
	ROE	70	-1.152 0.019	0.046 0.039	0.662 0.862
OPERATING EFFICIENCY	Log (Sales/PPE)	63	-0.273 -0.201	-0.006 0.009	5.520* 5.492*
	Operating Costs/Sales	58	0.375 0.200	0.251 0.196	-2.631* -2.917*
ASSETS	Log (PPE)	67	6.001 5.891	5.946 5.813	-1.981*** -1.983***
	Investment/Sales	54	0.295 0.158	-0.032 0.093	-2.550** -2.476**
	Investment/PPE	57	0.115 0.101	0.094 0.104	-1.202 0.202
OUTPUT	Log (Sales)	63	5.644 5.403	5.876 5.643	4.335** 4.301**
SHAREHOLDERS	Payout Ratio	45	71.40 30.78	55.99 48.66	-0.089 0.166
FINANCE	Current	70	0.847 0.745	1.009 0.866	2.755* 3.089*
	LTD/Equity	63	0.636 0.181	0.701 0.269	2.506** 2.506**
NET TAXES	Net Taxes/Sales	65	0.024 0.017	-0.010 0.007	-3.834* -3.343*

(1) We report Wilcoxon Signed Rank Test for the mean and the Rank Sum Test for the median.
*** Significant at 1 percent; ** Significant at 5 percent; * Significant at 10 percent.

Table A.2.2. Change in Performance: Tests of Means and Medians, Method I.b

Two Years before Privatization versus Two Years after, with Adjustment

CRITERION	VARIABLE	N	MEAN AND MEDIAN BEFORE	MEAN AND MEDIAN AFTER	Z-TEST (1)	
PROFITABILITY	Operating Income/Sales	66	0.097	-0.430	-2.944*	
			0.084	0.019	-2.944*	
	Operating Income/PPE	67	-0.092	0.141	3.556*	
			0.005	0.222	5.713*	
	Net Income/Sales	65	-0.004	-0.105	-1.476	
			0.020	0.012	-1.534	
	ROA	70	-0.870	-0.014	0.824	
			0.003	-0.012	-1.369	
	ROE	70	-1.194	0.025	1.768	***
			-0.030	0.021	1.698	***
OPERATING EFFICIENCY	Log (Sales/PPE)	63	-0.548	-0.298	3.980	**
			-0.522	-0.218	3.876	**
	Operating Costs/Sales	58	0.174	0.065	-1.837	
			0.014	0.021	-0.809	
ASSETS	Log (PPE)	67	1.445	1.002	-1.286	
			0.955	0.871	-1.370	
	Investment/Sales	54	0.223	-0.058	-1.887	**
			0.117	0.066	-1.795	***
	Investment/PPE	57	0.038	0.024	-0.774	
			0.026	0.039	0.264	
OUTPUT	Log (Sales)	63	0.774	0.901	3.306***	
			0.274	0.457	3.598***	
SHAREHOLDERS	Payout Ratio	45	0.309	-0.263	-0.229	
			-28.62	-5.805	0.299	
FINANCE	Current	70	-0.510	-0.250	3.238*	
			-0.605	-0.250	3.768*	
	LTD/Equity	63	0.254	0.108	-0.210	
			-0.142	-0.325	-0.021	
NET TAXES	Net Taxes/Sales	65	0.018	-0.014	-3.578*	
			0.005	0.003	-3.575*	

(1) We report Wilcoxon Signed Rank Test for the mean and the Rank Sum Test for the median.
*** Significant at 1 percent; ** Significant at 5 percent; * Significant at 10 percent.

Table A.2.3. Change in Performance: Tests of Means and Medians, Method II.a
All Years before and after Privatization, without Adjustment

CRITERION	VARIABLE	N	MEAN AND MEDIAN BEFORE	MEAN AND MEDIAN AFTER	Z-TEST (1)
PROFITABILITY	Operating Income/Sales	71	-0.052 0.080	0.050 0.096	1.511 1.037
	Operating Income/PPE	70	0.057 0.045	0.291 0.097	3.042* 3.408*
	Net Income/Sales	68	-0.067 0.010	-0.042 0.039	0.815 0.889
	ROA	73	-0.812 0.003	0.017 0.026	2.967* 2.311**
	ROE	73	-1.109 0.008	0.021 0.038	2.258** 2.150**
OPERATING EFFICIENCY	Log (Sales/PPE)	64	-0.247 -0.285	-0.076 0.012	5.600* 5.244*
	Operating Costs/Sales	64	0.428 0.255	0.245 0.207	-3.138* -2.756*
ASSETS	Log (PPE)	70	6.889 5.911	5.994 5.809	-1.141 -0.952
	Investment/Sales	61	0.191 0.202	0.038 0.1131	-1.406 -1.157
	Investment/PPE	62	-1.735 0.085	0.1181 0.098	0.288 0.168
OUTPUT	Log (Sales)	64	5.823 5.800	6.004 5.974	2.032*** 1.956***
SHAREHOLDERS	Payout Ratio	59	34.406 38.848	30.860 42.268	-0.138 1.232
FINANCE	Current	73	0.849 0.843	1.106 0.905	2.662* 2.642*
	LTD/Equity	66	0.529 0.167	0.576 0.298	3.192* 3.302*
NET TAXES	Net Taxes/Sales	68	0.015 0.018	0.009 0.006	-3.821* -4.296*

(1) We report Wilcoxon Signed Rank Test for the mean and the Rank Sum Test for the median.
*** Significant at 1 percent; ** Significant at 5 percent; * Significant at 10 percent.

Table A.2.4. Change in Performance: Tests of Means and Medians, Method II.b
All Years before and after Privatization, with Adjustment

CRITERION	VARIABLE	N	MEAN AND MEDIAN BEFORE	MEAN AND MEDIAN AFTER	Z-TEST (1)
PROFITABILITY	Operating Income/Sales	71	-0.050 0.072	-0.005 0.036	0.107 -0.241
	Operating Income/PPE	70	-0.003 -0.010	0.385 0.207	6.112* 6.387*
	Net Income/Sales	68	-0.084 0.005	-0.064 0.014	0.693 0.262
	ROA	73	-0.831 -0.017	-0.003 0.003	3.130* 2.736*
	ROE	73	-1.159 -0.44	-0.012 0.014	3.236* 3.223*
OPERATING EFFICIENCY	Log (Sales/PPE)	63	-0.677 -0.600	-0.255 -0.264	5.226** 4.914**
	Operating Costs/Sales	64	0.236 0.090	0.066 0.025	-3.199* -2.819*
ASSETS	Log (PPE)	69	1.380 1.111	1.017 0.993	-2.001* -1.885*
	Investment/Sales	61	0.098 0.123	0.011 0.086	-0.394 -0.730
	Investment/PPE	62	-1.840 0.022	0.055 0.029	1.385 1.072
OUTPUT	Log (Sales)	63	0.906 0.855	1.178 1.029	2.333*** 2.599***
SHAREHOLDERS	Payout Ratio	59	0.082 -29.35	-5.963 -9.292	-0.731 1.169
FINANCE	Current	73	-0.526 -0.503	-0.232 -0.313	3.653* 3.937*
	LTD/Equity	66	0.233 -0.107	-0.002 -0.238	-2.086** -2.286**
NET TAXES	Net Taxes/Sales	68	0.007 0.007	0.005 0.002	-3.173* -3.534*

(1) We report Wilcoxon Signed Rank Test for the mean and the Rank Sum Test for the median.
*** Significant at 1 percent; ** Significant at 5 percent; * Significant at 10 percent.