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Streamlining and Privatization Prices in the Telecommunications Industry

by

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Abstract*

This paper fills a void in the issue of determinants of privatization prices by concentrating in one industry across many countries. This has not been done before, as the literature has only focused on (i) many industries in one country, (ii) a single industry in one country, and (iii) many industries in many countries. We complement a recently released database with newly collected data, and we are able to cover 84 telecommunications privatizations, which account for nearly 80 percent of the sector in terms of value. Our findings are consistent with the little existing work on privatization prices, as our best policy prescription is primarily to concentrate on the transparency and cleanliness of the privatization process, as sale methods do matter. We show that government administration of labor downsizing may result in adverse selection, as the best workers are the first to leave when given the opportunity.

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Key words: Privatization, Streamlining, Downsizing, Corporate Governance.

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1. Introduction

There are two basic views with respect to whether streamlining before privatization is the right approach in the privatization process of state-owned enterprises. On the one hand, it is argued that governments are better off streamlining firms before privatization as such measures may enhance the trustworthiness of the process. This *credibility view* is relevant in face of the potentially large political costs of labor streamlining, as willingness to overcome worker resistance may be interpreted as a signal of commitment to reform (Kikeri, Nellis, and Shirley, 1992; Rama, 1999). A similar view that supports prior streamlining is the *social view* by which any social consequences of streamlining, especially labor-related streamlining, may be addressed more adequately by governments, for example, by ensuring payment of severance obligations and other social safety net measures. In fact, the public sector may be better at bargaining with unions if the government has mechanisms to assist displaced workers, such as retraining programs, job search assistance, and severance payments (López-de-Silanes, 1997). Streamlining prior to privatization, either through the credibility or the social view, is expected to increase the attractiveness and value of the firm, which should be reflected in increased privatization sale prices.

On the other hand, it has been argued that it is not worth spending resources in streamlining the firm before privatization, as governments may not be able to manage the downsizing process correctly. The classic example in this area is related to the labor force. According to this *managerial view*, governments that administer human resources risk retrenching the wrong, more productive personnel. This may result in the loss of know-how that, at a minimum, may yield short-run post-privatization efficiency problems and, at worst may be linked with permanent damage to the productive structure of the firm. Dismissal of workers whom the new owners would rather retain may not add value to the firm and consequently may reduce privatization prices. This is particularly true in developing countries where available information is even more lacking (Rama, 1999; Kahn, 1985; Jeon and Laffont, 1999). Another argument against streamlining before privatization is the *political view*, where firm streamlining depends on the extent to which unions are able to influence the future of politicians who, in turn, care about votes which in case of any labor changes may yield a government with weakened bargaining power. It is expected that unions will try to block the privatization, which will result

in excess cost to buyers and a negative link with privatization prices (Freeman, 1986; Boycko, Shleifer, and Vishny, 1996).

Although quite scarce, the existing empirical literature on streamlining and privatization prices appears to support a non-interventionist approach. In fact, the research dealing with this issue appears to support views along the lines of Kahn (1985); Freeman, (1986); and Boycko, Shleifer and Vishny, (1996). For instance, the seminal work of López-de-Silanes (1997) uses information on characteristics and firm policies for 263 firms privatized in Mexico between 1983 and 1992 and finds that their impact on privatization prices are low. He finds that prices are sensitive to competition in the auction process, lengthier privatizations are associated with lower premiums, and that labor downsizing prior to privatization may not be worth its cost. Given the costs of prior streamlining policies, López-de-Silanes draws the lesson that governments should not focus on such labor policies, but on simply selling.

Research by Peren Arin and Okten (2001) use ordinary least squares to analyze the determinants of privatization using a relatively small number of Turkish firms. They claim that revenue, market characteristics, and profits are significant determinants of a measure of privatization prices adjusted by sales. Unlike Lopez-de-Silanes (1997) they also focus their study on a single industry (cement) and find that their results diverge as profit margins and other profitability and efficiency measures become non-significant in a single-industry set-up. While differences between a single industry and heterogeneous sample remains an issue, these researchers claim that governments should not engage in streamlining policies and investment prior to privatization.

Finally, work by Chong and López-de-Silanes (2002) focuses on the issue of labor streamlining on privatization prices using a cross-section of 400 firms around the world for the period 1983-2000. They find that labor retrenchment has little impact on privatization prices, and argue that this may be due to the presence of adverse selection in the process of laying-off workers before privatization. They provide further evidence of this by using firm re-hires after privatization as a proxy of the quality of the retrenchment program. In fact, they find that those groups in which labor retrenchment yields a negative link with prices are also the ones with highest probability of re-hiring workers that were fired prior to privatization.

Despite the fact that all the research above points towards non-intervention, some critics have argued that further empirical research on this issue is advisable (Megginson and Netter,

2001), given the critical policy implications that may be derived from any conclusions. In fact, in this paper we complement the existing empirical literature by focusing on a single industry using a cross-section of firms and countries. This approach has not been taken before. In fact, the existing literature has focused either on (i) many industries in one country, (ii) a single industry in one country, or in (iii) many industries in many countries. For instance, the studies by López-de-Silanes (1997) and Peren Arin and Okten (2001) are for single developing countries in several industries, which makes wider application problematic.[1] Additionally, the latter also provide some evidence on a single industry (cement) in a single country, Turkey. Finally, Chong and López-de-Silanes (2002) consider several developed and developing countries in many industries. Thus, the natural complement to the existing empirical research is to focus on several countries but on a single industry in order to test for unobserved industry heterogeneity.

This study provides cross-country evidence on firm characteristics and streamlining policies in the privatization process for a single industry, telecommunications. We explore the links of the characteristics and policies taken during the process with net privatization prices. Our empirical research benefits from a wide-ranging database that includes most telecommunication firms that were privatized during the period 1984 and 2000, as we consider 84 privatizations in total. While we use the database by Chong and López-de-Silanes (2002) we were able to expand it, by including data for telecommunications firms that account for an additional 5 percent of the original sample. The list of telecommunications firms used in this study is shown in Appendix 1.

We find that when controlling for endogeneity, streamlining policies do not appear to reduce net privatization prices, as defined by the amount that accrues to the government after all costs are taken into account, adjusted by shares sold, and controlled by average sales during the three years prior to privatization. Although this finding may appear somewhat counterintuitive, as, according to the conventional wisdom, sellers will always want the government to restructure prior to privatization, it is fairly consistent with a non-intervention view of the world along the lines of Freeman (1986), Boycko, Shleifer, and Vishny (1996), Rama (1999), and others.

The paper is organized as follows. The next section describes the data collection process, explains how the key variables were constructed and discusses the empirical methodology. In

[1] Lack of control for endogeneity in Peren Arin and Otken (2001) may be considered a problem, too. López-de-Silanes (1997) stresses the need to control for endogeneity, and he shows that his results vary widely when

Part 3 we test whether streamlining has an impact on privatization prices. Part 4 further tests the link between streamlining and privatization prices by controlling for endogeneity. Section 5 concludes.

2. Data

Our sample is based on a list of privatizations in the world covering the period 1984-2000 originally compiled by Chong and Lopez-de-Silanes (2002).[2] These researchers prepared a detailed questionnaire addressed to the CEO with a recommendation to direct it to the chief financial officer and the director of human resources of the corresponding firms (Chong and López-de-Silanes, 2002). They also used additional sources extensively.[3] In this study we were able to expand their sample for telecommunications firms of Chong and Lopez-de-Silanes (2002) by five percent by using three additional sources: the firms themselves, the regulatory agencies, and the International Telecommunications Union. We followed the same procedure as these researchers. That is, we organized a questionnaire in four areas. The first area covered pre-privatization firm characteristics, with questions on sales, assets, profits, liabilities, management changes, and sector of origin. The second area covered pre-privatization characteristics and policies, with some emphasis on labor issues, such as the incidence of unions, number of strikes, political affiliation of unions, labor streamlining measures and targets. The third area focused on the privatization process, and in particular, on privatization prices, the transaction methods used, shares sold, and foreign participation.

We were able to obtain information for 84 privatizations for the period 1984-2000. Our sample covers about 75 percent of the privatizations carried out in the telecommunications sector worldwide and they account for an estimated 80 percent of the revenues brought in by privatizations in the sector worldwide during the 1990s (World Bank, 2001). In fact, the geographic, year, and revenue distribution of our sample is similar to the corresponding distributions of the population of firms that were privatized in the sector (Chong and López-de-

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endogeneity is not controlled for.

[2] Chong and López-de-Silanes (2002) excluded voucher privatizations on the grounds that there are fundamental differences between such privatization technique and others, which would have made comparisons particularly difficult (Boycko, Shleifer, and Vishny, 1994).

[3] These additional resources consisted principally of the World Bank's intranet system, which provided access to internal documents, NEXIS, which facilitated searches in national and international publications, and interviews

Silanes, 2002). Consequently, it is reasonable to believe that our sample is representative of the non-voucher privatizations in telecommunications around the world. Figure 1 presents the distribution of privatizations in telecommunications in our sample. Around half of the operations occurred during the mid-1990s or before, while the other half occurred during the mid-1990s or later. Figure 2 shows the distribution of our sample by region of the world. Around 27 percent of the privatizations in our sample are from Latin America, 10 percent from Asia, 13 percent from Africa and the Middle East, 35 percent from developed countries, and 14 percent from Transition Economies.

Table 1 presents summary statistics for the variables used in this paper. The set of variables is organized according to firm and privatization characteristics, labor characteristics, labor policies, and macroeconomic variables, along the lines of the questionnaire distributed to firms, as detailed above. The net privatization price is defined as the amount that accrues to the government after all privatization and streamlining costs are taken into account, such as government commitments at the time of sale, and other adjustments are made to the sale contract. This number is adjusted by the percentage of company shares sold and divided by the average net sales during the three years prior to privatization. The present value of the resulting number as of December 2000 is the dependent variable employed, which is labeled "Net Privatization Price/ Sales." The key explanatory variables of interest are (i) the share of the firm that was sold; (ii) the type of sale used, whether public offering, direct sale, or other; (iii) the labor characteristics of the firm, in particular the presence of unions and the extent of strikes; (iv) the labor policies of the firm, such as retrenchment and pay-cuts; and (v) macroeconomic controls, such as the rate of inflation and the gross domestic product of the country. Appendix 2 provides definitions of this specific variable and all the others used in this paper.

Table 2 provides some basic information on our variables of interest according to region. On average, about one-third of the shares of state-owned telecommunications enterprises were sold. In the case of Latin America, shares sold reached around 53 percent, compared to only 22 percent in Asia. Similarly, foreign participation occurred in the great majority of operations around the world and in no case was it lower than 82 percent, the figure for Africa. Additionally, public offerings were the most common way of selling state-owned enterprises in the

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with officials from the World Bank, the International Monetary Fund, and the Inter-American Development Bank associated with privatization programs, and privatization offices or corresponding ministries.

telecommunications sector as, on average, they represented almost 90 percent of the methods used. Industrial countries, with 97 percent, used public offerings overwhelmingly, while Latin America is the region that used this method the least, with 78 percent. In fact, in the latter region, direct sales represented about 17 percent, the highest level among all regions.

In terms of labor characteristics, the most unionized firms were found in transition economies, developed countries, and Latin America, with 100 percent, 93 percent, and 91 percent, respectively. The least unionized region is Asia, with one in four workers in the telecommunications sector belonging to unions. This fact is loosely reflected in the incidence of strikes in the sector. In fact, firms in Latin America and Transition Economies are the ones with the highest number of strikes up to three years prior to privatization, with 61 percent and 58 percent of firms having had strikes, respectively. Labor downsizing was employed in developed countries and Latin America more frequently than any other region. In fact, 80 percent of firms from industrial countries and 74 percent of firms in Latin America retrenched their labor force three years prior to privatization. The labor-downsizing variable may be viewed as a basic summary measure of labor streamlining, as it is typically the most widely employed and most relevant from a policy perspective.

Finally, two other labor-related measures considered are pay-cut three years prior to privatization, and the presence of employment guarantees. While not very many firms made use of the first, about one third of firms in Transition Economies and one fourth of firms in Latin America applied employment guarantees.

Table 3 provides a first analysis of the data. We divide the sample into two groups according to whether any labor streamlining did or did not take place in a state-owned enterprise. The table shows the value of the mean and median of the share adjusted net privatization prices of the firms, the difference in net price means and medians, and the t-statistic and z-statistics associated with such difference in means and medians, respectively. Foreign participation in the privatization of the telecommunications firm is linked with increased net privatization price though such link is not statistically significant. Public offerings, on the other hand, appear to be positively linked with prices, as the group of state-owned enterprises where public offerings occurred fetched higher net privatization prices that yielded statistically significant differences in means and medians. Interestingly, direct sales yield statistically significant lower privatization prices with respect to other sales methods. Labor streamlining policies, and in particular, labor

downsizing and voluntary downsizing do not yield statistically significant differences in means and medians even though the group that followed the policy fetched lower prices. Finally, employment guarantees and pay cuts do yield statistically significant differences between the treated and the untreated group. As expected, firms that applied pay cut policies prior to privatization fetched higher prices, while those that guaranteed jobs fetched lower prices.

The findings above, however, do not take into consideration the fact that more than one variable may be affecting the outcome in terms of prices and that potential a endogeneity problem may be at play. In fact, it may be argued that the firms that restructure are the ones that need to do so, as they are precisely the worst performers. As López-de-Silanes (1997) shows, results may vary widely once reverse causality is taken into account. From this perspective the results above should be taken as preliminary and should be further studied when more than one control is present and when reverse causality may be an issue.

3. Basic Finding

In this section we present regression analysis on the link between streamlining policies and net privatization prices. As explained above, we calculate the net present value of the privatization price calculated after all privatization and streamlining costs are taken into account, adjusted by shares sold. This resulting number is our dependent variable.[4] Net privatization prices are regressed against a set of variables that has been classified in five groups. The first category is firm and privatization characteristics. We use a dummy that equals one when net total liabilities are greater than zero for the average of the three years prior to privatization, and zero otherwise; and a dummy variable that equals one when foreign participation was allowed and zero otherwise. We also consider the type of sale. In particular, we consider a dummy that equals one when the privatization was carried out using an initial public offering, and zero otherwise; and a dummy that equals one if the privatization was carried out through a direct sale, and zero otherwise. The second group includes firm labor characteristics, as reflected by the presence of unions and the existence of strikes and related physical protests on the last three years before privatization. A dummy equals one if unions were present up to three years prior to

[4] López-de-Silanes (1997) also uses the firms' total assets and total liabilities to develop a so-called *Privatization Q*. In our case, such data was not possible to obtain. However, as a rough proxy in our regressions we include a dummy variable when total liabilities are greater than total assets.

privatization, and zero otherwise. Similarly, dummy variable equals one if there were strikes up to three years prior to privatization, and zero otherwise. The third group reflects labor-streamlining policies applied up to three years prior to privatization, in particular, employment guarantees, pay cuts, and labor cuts including whether such labor cuts were compulsory or voluntary. As in the other categories, we constructed dummy variables equal to one when the issue in question occurred, and zero otherwise. Finally, the last group includes country-specific macroeconomic variables, in particular, the gross domestic product and the rate of inflation.[5]

The first column in Table 4 presents our basic results. In this section we use a simple ordinary least squares approach and assume that labor-streamlining policies are exogenous. With respect to the first group of variables, firm and privatization characteristics, we find a negative and statistically significant coefficient in the case of net liabilities, as expected (López-de-Silanes, 1997). Firms with net negative liabilities are associated with a privatization price 4 percent lower. We also find that the share of the telecommunications firm that is privatized has a negative and weakly statistically significant link with prices. In fact, an additional 10 percent of privatized share decreases privatization prices by 3 percent. Public offerings yield a positive and statistically significant sign and are associated with a 90 percent increase in privatization price. Additionally, the presence of foreign participation yields a positive and statistically significant link with privatization prices that is equal to a 6 percent reduction in prices (Dewenter and Malatesta, 1997; López-de-Silanes, 1997).

With respect to labor characteristics we find that the presence of unions prior to privatization is associated with a privatization price 20 percent lower, as the sign of the coefficient is negative and statistically significant at 5 percent. Similarly, we find that strikes and other forms of physical protest are negatively linked with privatization prices. Since unions and strikes are relatively highly correlated it is not surprising that the latter yields a statistically non-significant coefficient.[6] When focusing on the set of labor streamlining variables, we find that downsizing is negative and non-significant with respect to privatization prices. Similarly, employment guarantees prior to privatization yield a negative and statistical non-significant coefficient. If maximizing revenues is the sole objective of policymakers, applying this kind of

[5] Since we are including country variables, regressions with country fixed effects are thus not reported. We repeated all our empirical specifications excluding country controls and using country fixed effects instead. As expected, our results do not vary.

policy does not clearly support such an objective.[7] Similarly, pay cuts prior to privatization are associated with higher privatization prices, as the resulting coefficient is positive and statistically significant at five percent. Finally, macroeconomic controls, particular, the average gross domestic product three years before privatization, yield a positive and statistically significant link with net privatization prices. The rate of inflation, on the other hand, yields a non-statistically significant negative link with net privatization prices.

The second column in Table 4 replicates the specification above but places some focus on the composition of labor downsizing by including a dummy variable on whether retrenchment in the firm was voluntary or not. This emphasis reflects recent claims for the need to study the labor economics of pre- and post-privatization transactions, as there is almost no research on labor issues, despite the fact that it is a critical issue from a policy perspective (Megginson and Netter, 2001; Chong and López-de-Silanes, 2002). We find that voluntary downsizing, whereby workers freely choose to leave their jobs, usually when monetary or non-monetary incentives are offered, is negatively and weakly statistically significantly linked with a net privatization price 11 percent lower. Firms that retrench workers prior to privatization do not get a premium in terms of prices, as prospective buyers are not more interested in buying such firms. Worse, the fact that the resulting sign is weakly statistically significant is consistent with the multi-industry findings by Chong and López-de-Silanes (2002) and may suggest that adverse selection may be a problem along the lines of theoretical work by Kahn (1985), Jeon and Laffont (1999) and Rama (1999). According to this application of asymmetric information theory, the most productive workers in state-owned firms are aware of their productivity and are thus more likely to take the offered severance package and leave voluntarily, as their chances of obtaining a job outside of the public sector will be relatively high. On the other hand, less productive workers will rather stay in the public sector when voluntary retrenchment schemes are offered. Since they are not as productive, skilled, or able, these workers would rather cling to their public sector job instead of searching for a job outside of the public sector where their chances of obtaining a position are relatively lower (Rama, 1999).

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[6] In fact, when excluding the unions variable or constructing a combined "unions-strikes" variable, the signs are negative and statistically significant at 1 percent.

[7] However, governments frequently have more than one objective, and those objectives are frequently contradictory. objectives. The value of this finding from a policy perspective is, perhaps, to make policymakers aware that there appears to be a trade-off between objectives and their cost.

In summary, under the assumption of exogeneity in the explanatory variables, our findings appear to support the idea that (i) the characteristics of the firm are important determinants of privatization prices, as firms in worse shape will not be sold at higher prices, (ii) foreign participation does not increase privatization prices, (iii) the type of method used in the sale matters; (iii) labor characteristics, such as the presence of unions before privatization, are negatively linked with prices; and (iv) a few labor policies are conducive to higher privatization prices, in particular, pay cuts before privatization. On the other hand, some other labor measures appear to be very counterproductive, such as voluntary downsizing, as it appears to produce adverse selection in the labor reduction process.

4. Instrumental Variables

The findings above do not take into account potential endogeneity problems and therefore the findings lack credibility. Endogeneity may arise as governments try to restructure the labor force of the state-owned telecom enterprises before the sale in order to raise the privatization price. For instance, if the unobservable characteristics of a firm are positively correlated with the presence of strong unions, the government may be particularly interested in dismantling such unions (López-de-Silanes, 1997). Using a method developed by López-de-Silanes (1997), the first step describes the determinants of prior labor streamlining measures undertaken mainly, but not necessarily, by politicians. All of them are binary choices, such as the decision to downsize, implement pay cuts, break unions, or reduce strikes. The first step estimates a reduced-form equation that describes the probability that such a restructuring policy may be implemented. This set of variables consists of what López-de-Silanes calls *excluded instruments*, as they are not included in the privatization price equation. This instruments have very low statistical power when included directly in the price equation, but they are highly correlated with the labor streamlining actions of the firm, as shown by applying F-statistics to test for the joint hypothesis that they are all equal to zero. Appendix 3 provides the first stage employed in the case of unions and strikes. The F-statistic of the excluded instruments is higher than 3, suggesting that the first stage was adequately specified.[8]

[8] Because of space considerations we did not include first stages for all the variables in which endogeneity was corrected. We would be happy to do so upon request.

Table 5 shows our findings when correcting for endogeneity when using instrumental variables method described above. With respect to privatization characteristics the results are very similar. Net total liabilities are still negative and statistically significant, and they are associated with a 15 percent decrease in privatization price. Foreign participation and public offerings are associated with a 7 and 100 percent increase in privatization price, respectively. On the other hand, the coefficients of the labor characteristics variables are always negative and statistically significant in the case of unions. The presence of unions in the firm is associated with a 30 percent decrease in the privatization price.

Finally, with respect to labor-streamlining policies, we find that even though all the variables considered keep the same signs as the non-instrumented regressions, they do not have statistical significance. These findings indicate that when controlling for endogeneity, labor-streamlining policies do not significantly increase net privatization prices. However, the fact that labor downsizing yields a negative though non-statistically significant sign is intriguing. After all, conventional wisdom has it that prospective buyers will always prefer that governments get rid of labor before privatization whenever possible. Again, the nature of the labor downsizing process may be an issue to explore.

An indication that this may be the case is shown in column 2 in Table 5 when voluntary downsizing is used as an explanatory variable, instead. This variable yields a negative and statistically significant sign at 5 percent. As in the ordinary least squares case, this result suggests that adverse selection may be an issue as workers with the best outside prospects will leave and those with the worst outside perspectives will tend to stay. In fact, voluntary downsizing is associated with a 15 percent decrease in the privatization price.

While the overall results do not differ much with respect to the ordinary least squares findings, they do vary in some important ways, especially in regard to labor force retrenchment. While the ordinary least squares findings suggest that some labor downsizing methods, such as pay cuts prior to privatization, may be worth the effort, our findings using instrumental variables suggest that no single labor policy prior to privatization is worth the effort, as each of them yields no statistical significance, and when it does, as in the case of voluntary downsizing, the resulting sign yields the undesired sign, a strong suggestion of adverse selection. To some extent, this finding is consistent with the argument by López de Silanes, Shleifer, and Vishny (1997) and by Freeman (1986) that there is a negative link between restructuring and net privatization

prices. In addition, as shown in work by López-de-Silanes (1997), Peren Arin and Okten (2001) and Chong and López-de-Silanes (2002) the best strategy appears to be not to do much and simply concentrate on setting up a transparent process, as the method of sale does matter.

5. Summary and Conclusions

Despite the fact that researchers have claimed that industry heterogeneity may be an important issue to consider when assessing net privatization prices, major data constraints have limited empirical studies. While existing empirical studies on determinants of privatization prices have focused on (i) many industries in one country, (ii) a single industry in one country, and in (iii) many industries in many countries, this paper fills a void by focusing on a sample covering one industry, telecommunications, across many countries. To do this, we complement a recently released database to which we add some newly collected data. We are able to cover 84 telecommunications privatizations, which account for nearly 80 percent of the sector in terms of value.

When controlling for endogeneity, we find that characteristics of the firm are important determinants of privatization prices, as firms with negative net liabilities will not be able to fetch higher privatization prices. Similarly, we find that foreign participation in privatizations does not increase net privatization prices. Also, we find that labor characteristics, such as the presence of unions before privatization, are negatively linked with net privatization prices. However, we find that specific labor policies before privatization, such as retrenchment, pay cuts, and employment guarantees policies, may not be conducive to higher net privatization prices and, on the contrary, may be conducive to adverse selection in the particular case of voluntary downsizing. Overall, our findings are consistent with the growing existing literature on determinants of privatization prices, as our best policy prescription is not to do much, but rather to concentrate on the transparency and cleanliness of the privatization, as sale methods appear to matter in the privatization price determination process.

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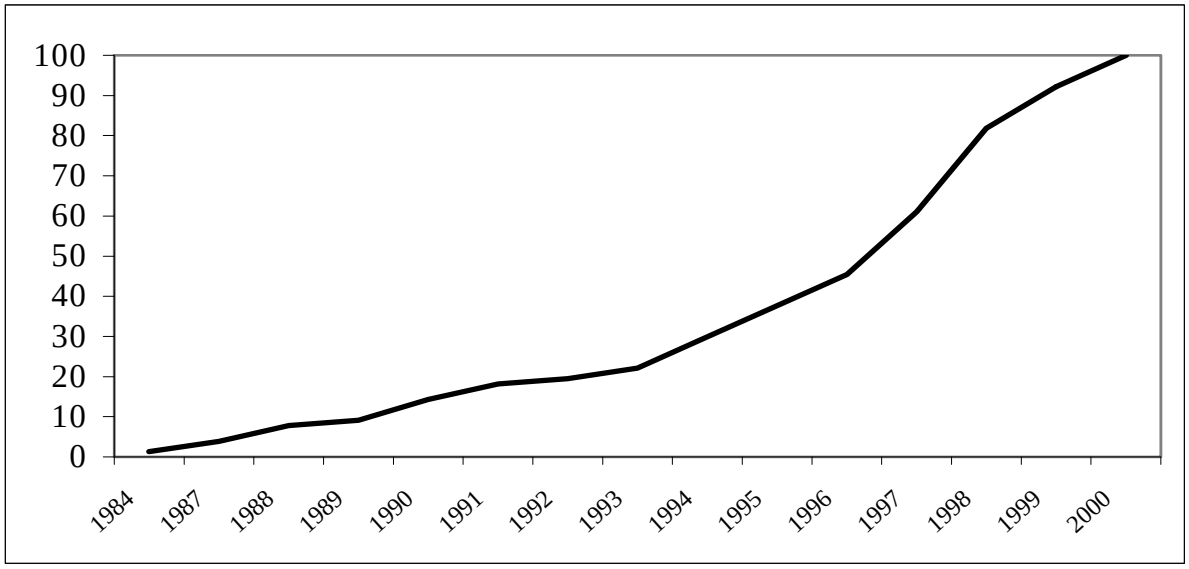
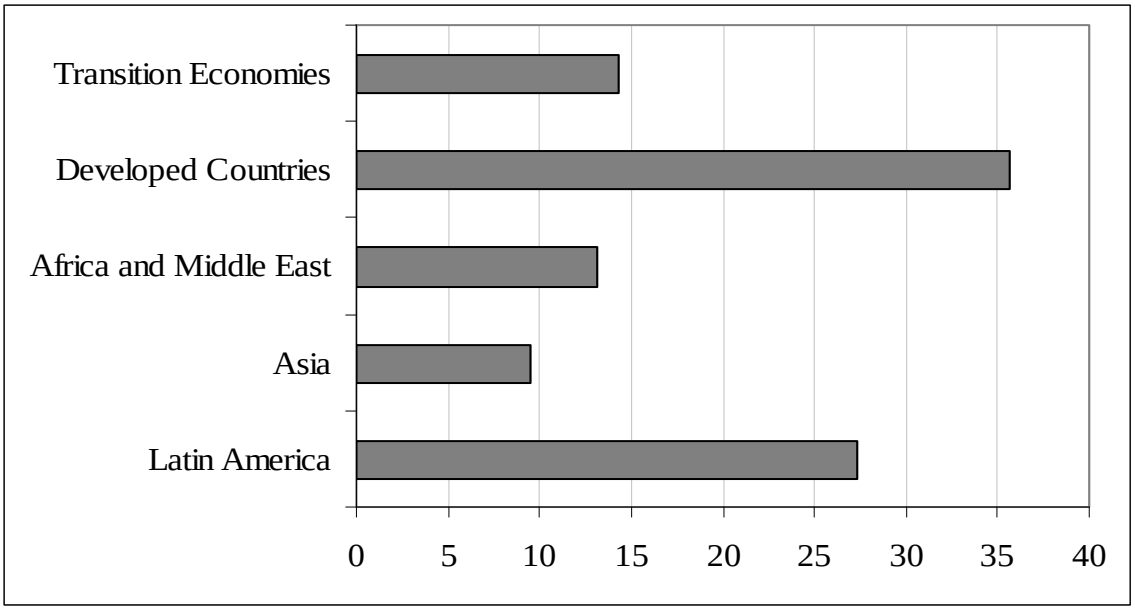
Figure 1.

Telecommunications: Accumulated Sample Distribution by Year



Source: Data collected by authors and by Chong and Lopez-de-Silanes (2002).

Figure 2. Distribution of Privatization in Telecommunications by Region



Source: Data collected by authors and by Chong and Lopez-de-Silanes (2002).

Table 1. Summary Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Firm Characteristic:						
Net Privatization price/sales	84	0.84	0.87	0.27	0.12	1.37
Sales	84	3.46	1.38	5.03	0.00	21.99
Net total liabilities	84	0.44	0.00	0.50	0.00	1.00
Preprivatization profits	84	0.52	1.00	0.50	0.00	1.00
Privatization Characteristics:						
Foreign participation	84	0.87	1.00	0.34	0.00	1.00
Share sold	84	0.34	0.30	0.20	0.01	0.95
Public offering	84	0.89	1.00	0.31	0.00	1.00
Direct Sale	84	0.07	0.00	0.26	0.00	1.00
Labor Characteristics:						
Unions	84	0.83	1.00	0.37	0.00	1.00
Strikes	84	0.45	0.00	0.50	0.00	1.00
Labor Policies:						
Downsizing	84	0.73	1.00	0.45	0.00	1.00
Voluntary downsizing	84	0.19	0.00	0.40	0.00	1.00
Employment guarantee	84	0.18	0.00	0.39	0.00	1.00
Pay cut	84	0.17	0.00	0.37	0.00	1.00
Country-Specific Variables:						
English common law	84	0.24	0.00	0.43	0.00	1.00
French commercial code	84	0.44	0.00	0.50	0.00	1.00
German commercial code	84	0.14	0.00	0.35	0.00	1.00
Scandinavian commercial code	84	0.05	0.00	0.21	0.00	1.00
Socialist laws	84	0.131	0.00	0.34	0.00	1.00
Gross domestic product	84	25.46	25.65	2.14	19.45	28.86
Inflation	84	75.91	8.83	201.81	0.62	863.27
Growth	84	2.87	3.15	3.58	-11.14	12.82
Openness	84	40.62	31.17	47.45	5.12	314.59
Fiscal Deficits	84	-2.42	-2.20	3.87	-10.45	13.63

Table 2. Streamlining Policies and Privatization Characteristics in the Telecommunications Sector

Region	Sold	Foreign	Public Offering	Direct Sale	Unions	Strikes	Downsizing	Pay Cut	Employment guarantee
Latin America	53.1%	87%	78.3%	17.4%	91.3%	60.8%	73.9%	17.4%	26.1%
Asia	22.2%	88%	87.5%	0.0%	25.0%	37.5%	62.5%	0.0%	0.0%
Africa and Middle East	26.3%	82%	90.9%	9.1%	63.6%	45.5%	63.6%	0.0%	36.4%
Developed Countries	25.5%	87%	96.7%	3.3%	93.3%	30.0%	80.0%	10.0%	3.3%
Transition Economies	42.0%	92%	91.7%	0.0%	100.0%	58.3%	66.7%	8.3%	33.3%
All	34.4%	86.9%	89.3%	7.1%	83.3%	45.2%	72.6%	9.5%	17.9%

Source: Data collected by authors and by Chong and López-de-Silanes (2002).

Table 3. Firm Characteristics and Streamlining in the Telecommunications Industry
Tests of Means and Medians

		SOEs where measure was not taken	SOEs where measure was taken	T-statistic for change in mean [1/]		Z-statistic for change in median [2/]	
Foreign Participation							
	mean	0.8354	0.8409	-0.061		-0.020	
	median	0.8555	0.8767				
Public Offering							
	mean	0.6439	0.8592	-2.300	***	-1.974	**
	median	0.6702	0.8796				
Direct Sale							
	mean	0.8522	0.6281	1.976	**	2.136	**
	median	0.8814	0.6365				
Downsizing							
	mean	0.8677	0.8242	0.650		0.296	
	median	0.8767	0.8595				
Pay Cut							
	mean	0.8040	0.9969	-2.495	**	-2.196	**
	median	0.8575	0.9850				
Employment Guarantee							
	mean	0.8761	0.6523	3.025	***	3.369	***
	median	0.9037	0.6702				
Voluntary Downsizing							
	mean	0.8524	0.7673	1.127		1.105	
	median	0.8840	0.7779				

Level of Significance: * 10%, ** 5%, *** 1%

1/ T-test for Ho about difference between means. Unequal N's

2/ Z-test for Ho about difference between medians. Unequal N's. (Wilcoxon rank sum).

Note: This table reports mean and median values of the privatization price/sales in the group of firms both where the measure on the rows was present compared to those firms where such measure was not present. The presence of particular measure is indicated in the lines (foreign participation, public offering, direct sale, downsizing, pay-cut, employment guarantee, and voluntary downsizing). The third column shows the t-statistics of the difference in means of the two groups respectively. The fourth column reports the z-statistics of the difference in medians of the two groups, respectively.

Table 4. Determinants of Privatization Prices in the Telecommunications Sector
Dependent Variable: Net Privatization Prices/Sales
Ordinary Least Squares

Variables	OLS	OLS
1.- Firm and privatization characteristics:		
Net total liabilities	-0.0586 **	-0.0592 ***
	(0.023)	(0.022)
Share Sold	-0.0046 *	-0.0041
	(0.003)	(0.003)
Foreign participation	0.0175	0.011
	(0.055)	(0.057)
Public offering	0.3783 **	0.3809 **
	(0.166)	(0.174)
Direct Sale	0.4121 **	0.3859 **
	(0.181)	(0.187)
2.- Labor Characteristics:		
Unions	-0.1381 **	-0.1385 **
	(0.058)	(0.063)
Strikes	-0.0498	-0.0473
	(0.034)	(0.030)
3- Labor Policies:		
Downsizing	-0.0448	
	(0.037)	
Voluntary downsizing		-0.092 *
		(0.053)
Employment guarantee	-0.0225	-0.0148
	(0.041)	(0.037)
Pay cut	0.0856 **	0.0755 **
	(0.036)	(0.037)
4.- Macroeconomic Variables:		
Gross Domestic Product	0.0932 ***	0.0939 ***
	(0.009)	(0.008)
Inflation	-0.0001	-0.0001 *
	(0.000)	(0.000)
Constant	-1.7581 ***	-1.7854 ***
	(0.303)	(0.299)
Observations	84	84
R-squared	0.762	0.773
F	29.92	30.80
Prob > F	0.000	0.000

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Note: The dependent variable is net privatization price/sales, defined as the amount that accrues to the government after all privatization and restructuring costs are taken into account, such as government commitments at the time of sale, and other adjustments are made to the sale contract. This number is adjusted by the percentage of company shares sold and is divided by the average net sales during the three years prior to privatization. The present value of the resulting number as of December 2000 is used.

Table 5. Determinants of Privatization Prices in the Telecommunications Sector
Dependent Variable: Net Privatization Prices/Sales

Variables	Instrumental Variables		Instrumental Variables	
1.- Firm and privatization characteristics:				
Net total liabilities	-0.0874	**	-0.0895	***
	(0.036)		(0.032)	
Share Sold	-0.0048	*	-0.0046	
	(0.003)		(0.003)	
Foreign participation	0.0425		0.0364	
	(0.040)		(0.040)	
Public offering	0.3672	**	0.3552	**
	(0.154)		(0.155)	
Direct Sale	0.4081	**	0.4122	**
	(0.171)		(0.168)	
2.- Labor Characteristics:				
Unions	-0.1669	**	-0.2391	***
	(0.068)		(0.069)	
Strikes	-0.0842	**	0.0159	
	(0.040)		(0.027)	
3.- Labor Policies:				
Downsizing	-0.0849			
	(0.053)			
Voluntary downsizing			-0.0647	**
			(0.025)	
Employment guarantee	-0.0204		-0.0292	
	(0.044)		(0.042)	
Pay cut	-0.0767		-0.1199	
	(0.085)		(0.089)	
4.- Macroeconomic Variables:				
Gross Domestic Product	0.0969	***	0.0968	***
	(0.013)		(0.012)	
Inflation	-0.0001	*	-0.0001	***
	(0.000)		(0.000)	
Constant	-1.9144	***	-2.0108	***
	(0.413)		(0.394)	
Observations	84		84	
R-squared	0.764		0.786	
F	24.03		26.53	
Prob > F	0.000		0.000	

Robust standard errors in parentheses

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

Note on Instrumental Variables: The dependent variable is net privatization price/sales, defined as the amount that accrues to the government after all privatization and restructuring costs are taken into account, such as government commitments at the time of sale, and other adjustments are made to the sale contract. This number is adjusted by the percentage of company shares sold and is divided by the average net sales during the three years prior to privatization. The present value of the resulting number as of December 2000 is used.

Appendix 1. Firms and Countries

Company	Country	Year of privatization
Albanian Mobile Communications	Albania	2000
Belgacom	Belgium	1995
Belize Telecommunications Ltd.	Belize	1988
Bezeq	Israel	1998
British Telecom	United Kingdom	1984 , 1991
Bulgarian Telecommunications Co.	Bulgaria	2000
CANTV	Venezuela	1991
CTE	El Salvador	1998
Cabo Verde Telecom	Cape Verde	1995
China Telecom- Hong Kong Ltd.	China	1997
Compania de Telefonos Chile (CTC)	Chile	1988
Deutsche Telekom	Germany	1996 , 1999
ENTEL	Bolivia	1995
Embratel SA	Brazil	1998
Entel and CPT	Peru	1994
Entel- Telecom SA	Argentina	1990
Entel- Telephonica de Argentina SA	Argentina	1990
Estonia Telecom	Estonia	1993 , 1999
France Telecom	France	1997, 1998
Ghana Telecom	Ghana	1996
Guyana Telephone and Telegraph	Guyana	1991
Hrvatske Telekomunicacije	Croatia	1999
INDOSAT	Indonesia	1994
INTEL	El Salvador	1998
INTEL SA	Panama	1997
Jordan Telecom	Jordan	2000
Korea Telecom	Korea, Rep.	1999
Lattelekom	Latvia	1994
Lietuvos Telekomas	Lithuania	1998
NTT	Japan	1987, 1988, 1998, 1999
P.T.Telkom	Indonesia	1995
Portugal Telecom	Portugal	1995, 1996, 1997
Puerto Rico Telephone Co. (PRTC)	Puerto Rico	1999
Q-tel	Qatar	1998
Royal KPN	Netherlands	1994 , 1995
SKANTEL	St. Kitts and Nevis	1992 , 1994
SPT Telecom	Czech Republic	1994
Singapore Telecommunications	Singapore	1993 , 1996
Sonatel	Senegal	1997
Sonera	Finland	1998 , 1999
Sri Lanka Telecommunications	Sri Lanka	1997
Svyazinvest	Russian Federation	1997
Swisscom	Switzerland	1998
Tele Centro Sul	Brazil	1998
TeleDanmark	Denmark	1998
Telecom Eireanne	Ireland	1996
Telecom Italia	Italy	1997
Telecom Serbia	Yugoslavia, FR	1997
Telecommunications of Jamaica (TOJ)	Jamaica	1990
Telefonica del Peru	Peru	1996
Telekom Austria	Austria	1998
Telekomunikacja Polska SA	Poland	1998 , 2000
Telesp Celular Participacoes SA	Brazil	1998
Telfonica	Spain	1997
Telgua	Guatemala	1998
Telia	Sweden	2000
Telkom	South Africa	1997
Telstra	Australia	1997 , 1999
Telus	Canada	1990
Trinidad and Tobago Telephone Co. (T&TT)	Trinidad and Tobago	1989
Uganda Telecommunications Ltd	Uganda	2000

Appendix 2. List of Variables and Definitions

Variable	Description
Firm Characteristics	
Net Privatization price/sales	The net present value of the nominal price of sale in U.S dollars after all privatization and restructuring costs are taken into account adjusted by the percentage of company shares sold, and divided by total sales before privatization.
Sales	The net present value of the three-year average of firm sales before privatization denominated in U.S dollars.
Net total liabilities	Dummy variable equal to 1 if net total liabilities are greater than zero up to three years prior to privatization, and 0 otherwise.
Preprivatization profits	Dummy variable equal to 1 if the company make any profits up to three years prior to privatization, and 0 otherwise
Privatization Characteristics	
Foreign participation	Dummy variable equal to 1 if foreign participation was allowed in the privatization process, and 0 otherwise.
Share sold	Percentage of firm's shares sold in privatization.
Type of sale	Dummy variable equal to 1 to take into account for method of privatization sale. Two dummies are considered to account for initial public offering an direct (non-competitive) sales respectively, and 0 otherwise (reflecting other methods such as purchases by employees, joint ventures, or secondary offerings).
Labor Characteristics	
Unions	Dummy variable equal to 1 if firm had unions up to three years prior to privatization, and 0 otherwise.
Political affiliation of unions	Dummy variable equal to 1 if political affiliation of union is the same as the political party linked with the ruling government at the time of privatization, and 0 otherwise.
Strikes	Dummy variable equal to 1 if there were any protest, picketing or strikes prior to privatization, and 0 otherwise.
Labor Policies	
Downsizing	Dummy variable equal to 1 if firm undertook any downsizing in the labor force up to three years prior to privatization, 0 otherwise. Downsizing may be classified as voluntary or compulsory.
Voluntary downsizing	Dummy variable equal to 1 if there was any kind of voluntary downsizing in the labor force three years prior to privatization, 0 otherwise. Voluntary downsizing is defined as any non-compulsory, worker-based decision downsizing. Typically severance packages, pension enhancements, and other benefits are offered to incentive workers to leave the firm.
Employment guarantee	Dummy variable equal to 1 if there was any promise of employment guarantee up to three years prior to privatization,
Pay cut	Dummy variable equal to 1 if there was any pay cut to the salary or wage of the worker three years prior to privatization, 0 otherwise.
Country-Specific Variables	
Law origin	Legal origin of the country from which company is geographically based upon. Five possible legal origins considered: English common law; French civil code ; German commercial code; Scandinavian commercial code; and Socialist laws (La Porta, Lopez-de- Silanes, Shleifer, and Vishny, 1998).
Gross domestic product	Gross Domestic Product (US$ PPP) in logs. Average of the three years prior privatization (World Bank, 2001a).
Inflation	Average rate of inflation in the country three years prior privatization (World Bank, 2001a).
Openness	Average sum of exports and imports of goods and services measured as a share of gross domestic product three years prior to privatization (World Bank, 2001a).
Continental dummies	Dummy equal to 1 if to account for the following regions: Latin America, Asia, Middle East and Africa, Developed Countries, 0 otherwise.
Fiscal Deficits	Average fiscal deficits as a percentage of gross domestic product three years prior to privatization (World Bank, 2001a).

Appendix 3. First Stage Probit Unions, Strikes Case

Variables	Probit Model
Preprivatization profits	-0.9830***
	(0.341)
Political affiliation of unions	-0.1541**
	(0.063)
Latin America	-0.9798*
	(0.605)
Asia	-0.9047
	(1.002)
Africa and Middle East	-1.1567
	(1.050)
Developed Countries	0.2211
	(0.894)
Openness	-0.0034***
	(0.001)
Number of observations	84
Pseudo R Squared	0.15
F-statistics on excluded instruments	3.02
Prob>F	0.001

Note: This appendix presents the first-step regression of the two-step procedure for one of the potentially endogenous variables in this case for both unions and strikes. Robust standard errors are given in parentheses. Regressions include agent bank dummy (not reported). (***) Indicates significance at 1 percent; (**) indicates significance at 5 percent; (*) indicates significance at 10 percent.