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Privatization and Labor Force Restructuring around the World

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Abstract

Some critics of privatization argue that poor labor force restructuring is a key concern and that governments should establish better retrenchment programs. Using new data from a sample of 400 companies in the world, Chong and López-de-Silanes test competing theories about the wisdom of retrenchment programs and their effect on prices paid by buyers, and rehiring policies by private owners after privatization. The results show that adverse selection plagues retrenchment programs carried out by governments before privatization. Controlling for endogeneity, several labor retrenchment policies yield a negative impact on net privatization prices. In confirmation of the adverse selection argument, various types of voluntary downsizing lead to a higher frequency of rehiring of the same workers by the new private owners. Compulsory skill-based programs are the only type of program that is marginally associated with higher prices and lower rehiring rates after privatization, but the political and economic costs of this policy may make it somewhat impractical. While a qualified non-intervention policy appears to be the safest bet in labor retrenchment before privatization, another one might be to set up a social safety net or labor reallocation program before privatization, and then let the new private owners decide who is redundant and who is not. Setting up the program before privatization may help with the political viability of the process and letting the new owners manage the retrenchment may help avoid adverse selection.

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1. Introduction

In the last two decades many countries have embarked on major privatization programs, but there are still several countries that have been reluctant to privatize. This is particularly true in developing countries, as reflected by the fact that state-owned enterprises in these countries still account for more than 10 percent of gross domestic product, 20 percent of investment, and about 5 percent of formal employment (Kikeri 1999). While there is growing evidence of the benefits of privatization (for example Megginson and Netter 2001, La Porta and López-de-Silanes 1999), the unwillingness to privatize appears to be associated with a rather negative perception of the privatization process with respect to the labor force. Critics argue that poor labor force restructuring is a key concern and that governments should establish better retrenchment programs.

On the other hand, opponents of the government's restructuring of to-be-privatized firms argue that public unions can influence the future of politicians, effectively reducing the government's bargaining power (Freeman 1986; López-de-Silanes, Shleifer and Vishny 1997). It has also been argued that it is not worth spending resources in restructuring the labor force before privatization, as governments may not be able to distinguish the particular workers that should be retained (Haltiwanger and Singh 1999, Rama 1999). 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 help solve short-run post-privatization efficiency problems and, at worst may be linked with permanent damage to the productive structure of the firm. Dismissing the workers that the new owners would rather keep 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).

Although labor restructuring is one of the most difficult and sensitive issues in privatization, the empirical literature available is quite scarce as a result of the lack of data to address these issues. Our paper contributes to this literature in three ways: by creating a new cross-country database with detailed information about labor retrenchment policies before privatization and labor rehiring efforts after the firms go into private hands; by documenting the effects of different labor restructuring policies on the net privatization prices paid by buyers; and by analyzing worker rehiring in privatized firms that were subjected to various types of retrenchment programs.

The paper pays particular attention to the quality of various targeting processes. In fact, not all targeting is created equal. From an empirical perspective, it may well be the case that a state-owned enterprise that uses targeting when restructuring labor prior to privatization may be able to fetch a higher privatization price by applying a targeting mechanism that may prove very costly afterwards. An example may be the case of age-biased retrenchment, where retrenchment is targeted on older and typically more expensive workers. Although privatization prices may be thought to increase as a result of this policy, as the future operation costs of the firm are expected to improve, the net

impact on future efficiency is unclear as some of these workers may also have been the more productive, experienced or better trained.

Unlike the previous literature, which focused on the effects of restructuring on prices for the case of Mexico (López-de-Silanes 1997), the nature of our data allows us to look at two complementary slices of the picture before and after privatization across countries. We are able to analyze the impact of a large set of labor policies before privatization, and observe the private firms' reaction in terms of rehiring of the previously fired workers. Our analysis uses these two types of results to provide an evaluation of the price effect of labor restructuring policies and the managerial quality of the downsizing efforts carried out by the government before privatization.

The database was constructed by randomly selecting 400 firms privatized between 1982-2000 around the world. We obtained pre- and post-privatization data by sending a detailed questionnaire to the CEO of the privatized firm and accessing privatization files. We followed up with each of the firms and corroborated their answers with several public sources and data for these firms coming from international financial agencies and privatization ministries. The result is a comprehensive cross-country (see Appendix 1 for a list of countries) database with firm characteristics, detailed labor restructuring policies before privatization, and labor rehiring policies after the firm entered the private sphere.[1]

The basic thrust of our results is that adverse selection plagues retrenchment programs carried out by governments before privatization. Controlling for endogeneity, labor downsizing does not do much in terms of net privatization prices.[2] This finding may appear somewhat counterintuitive, as, according to the conventional wisdom, sellers will always want the government to downsize prior to privatization. However, this is fairly consistent with the political view on prior restructuring before privatization (López-de-Silanes 1997). Results also show that after controlling for endogeneity, pay cuts do not increase prices while employment guarantee programs forced on the buyer do carry a significant discount in prices.

To further study the results in the area of downsizing, we focus on the nature of the retrenchment process prior to privatization and its impact on rehiring. Confirming the adverse selection argument, several kinds of voluntary downsizing lead to a higher frequency of rehiring of the same workers by the new private owners.

The only exception is compulsory skill-biased programs as they are marginally associated with higher prices and lower rehiring rates after privatization in some

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1. An additional benefit of this data is that it allows us to consider the issue of failed privatizations on prices, rarely treated in the literature. Research on privatization implicitly sets aside failed privatizations since data is typically available only for companies that actually attract bidders. This potentially underestimates the impact of labor changes for these companies, which are likely the ones that went through more thorough restructuring efforts prior to privatization. Methodologically, this issue is addressed by using a simple non-linear procedure for the entire, truncated, distribution of privatization prices.

2. As defined by the amount that accrues to the government after all costs are taken into account, adjusted by shares sold and divided by average sales during the three years prior to privatization.

specifications. One could argue that the nature of the program itself, typically based on written exams or panel reviews, may partly explain these results. Unfortunately, this policy is one of the most politically difficult to implement by the government and requires a tough stance from the authority. Results show that the managerial quality of the government may have an impact in the results, but as a general policy it appears that not much time and effort should be spent on labor restructuring before privatization.

The paper is organized as follows. The next section describes the data collection process and discusses the empirical methodology. In section 3, we test whether labor restructuring has an impact on privatization prices and whether such results hold when failed privatization and or potential endogeneity are taken into account. Section 4 extends our results on prices for specific types of downsizing measures. Section 5 provides a new look at the effect on prior downsizing by the government by analyzing the nature of post-privatization re-hires by private owners. Section 6 concludes.

2. Data and Methodology

Our sample was formed based on a list compiled by the authors of about 1,500 privatizations around the world covering the period 1982-2000.[3] The two main sources for this list are the World Bank Privatization database and Privatisation International, which together arguably provide the largest source of privatization transactions in the world. From this original list, we selected a random sample of 400 big and small firms to whom we sent a detailed questionnaire designed by the authors. The questionnaire was addressed to the CEO with a recommendation to direct it to the chief financial officer and the director of human resources of the firm.[4]

In order to ensure the quality of our data, we employed four additional sources. First, we took advantage of the fact that in several developing countries many privatizations have been performed as part of structural adjustment or other lending programs with the support of the World Bank. We were able to access a wide range of World Bank's internal documents to double check and in some instances, complement the information collected in our survey. In particular, we made extensive use of the World Bank's electronic Intranet system called *ImageBank*, which allows full access to such documents.[5] Second, we also made broad use of *NEXIS* to search for a number of national

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3. We excluded voucher privatizations. As it has been discussed elsewhere, there are fundamental differences between such privatization technique and others, which would have made comparisons particularly difficult (Boycko, Shleifer, and Vishny, 1994).

4. While directors of human resources answered 71.4 percent of the labor part of the questionnaires, public relations managers answered 16.6 percent of them. Personnel working at human resources departments other than managers answered about 5.5 percent, and personnel working at public relations answered 6.5 percent, usually on behalf of managers. Financial information was typically provided by the office of the chief financial officer or, in the case of small firms, by the office of the CEO.

5. Typical World Bank documents include Country Economic Reports, Staff Appraisal Reports, President's Reports, Supervision documents, Project Completion Reports, Audit Reports, Operation Evaluation Studies, and Sector Reports. We covered about 63.4 percent of the sample.

and international publications.[6] Third, whenever possible we interviewed officials from the World Bank, the International Monetary Fund, and the Inter-American Development Bank who were directly associated with the privatization programs in different countries.[7] Finally, when necessary, we directly contacted the privatization offices or corresponding ministries (e.g., finance, industry) of each country to request specific pre-privatization information missing.[8] Whenever we found discrepancies we contacted again the national privatization agencies and the firms themselves to clarify the issues.[9]

We organized the questionnaire in four areas. The first area covered, pre-privatization firm characteristics, and asked about sales, assets, profits, liabilities, management changes, and sector of origin. The second area covered pre-privatization labor characteristics and policies, and asked about number of blue and white collar workers, presence and incidence of unions, number of strikes, political affiliation of unions, labor restructuring measures and targets. The third area focused on the privatization process, and in particular, on privatization prices, transaction methods used, shares sold, and foreign participation. Finally, the fourth area included post-privatization labor re-hiring policies. We tried to get both dummy variables and exact number of workers for every possible category. However, we were not able to achieve this, as most respondents did not provide enough numerical information about the workers involved in various retrenchment and rehiring programs, so we settled for dummy variables that tell us if the policies were undertaken or not.[10] Table 1 provides definitions of the specific variables that we collected.

Table 2 shows the results of our efforts to gather data. Out of the 400 cases targeted we ended up collecting data for 308 privatizations comprising 84 countries for the period 1982-2000. Of those, 16 are failed privatizations or operations in which preparation for privatization occurred but in which the sale ended up not materializing. As the table indicates, the complete information for our 308 firms accounts for 97.21 percent of total sales. On the other hand, 25 companies comprising about one percent of total sales supplied quite incomplete information that could not be further completed and thus, ended up not being used. Additionally, 26 firms did not respond to our requests, denied the existence of information, or simply refused to provide it. Twenty-two firms, accounting for 0.78 percent of total sales, could not be included since they were liquidated and no longer exist. Finally, nineteen firms could not be included in our sample as they merged

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6. To do this, we mainly employed the Wall Street Journal, the Financial Times, Oxford Analytica, and the Economist Intelligence Unit. We covered around 70.1 percent of the sample.

7. We also specifically selected firms totaling about 15 percent of the total sample and double or triple-check most of the information.

8. Using this approach we covered 73.2 percent of the sample.

9. We found most discrepancies in developing countries, in particular Africa and the Middle East. Whenever data led to significant discrepancies that could not be reconciled the firms were eliminated from the sample. This occurred in 6 cases in total, 4 from Africa, 1 from the Middle East, 1 from Asia. These firms were classified under the category firms that supplied incomplete information in Table 2.

and no longer keep separate accounting and financial statements. The pattern in our resulting sample in terms of both, region, year of privatization, and sector fits closely with the compiled list of privatizations of Privatisation International and the World Bank, particularly, when excluding voucher privatizations. This leads us to reasonably conclude that our sample is unbiased.

Figure 1 shows the distribution of our sample by region of the world with respect to the pattern found in the original privatization lists. Whereas 33 percent of the privatizations in our sample are from Latin America, 8 percent from Asia, 21 percent from Africa and the Middle East, 25 percent from developed countries, and 13 percent from Transition Economies, the corresponding percentages for the original list are 30, 10, 20, 23, and 18 percent, respectively. Similarly, Figure 2 compares the distribution of privatizations in our sample and the original list of privatizations. In both cases, the bulk of privatizations are between the mid-1990s and late 1990s, where more than half of operations in our sample were carried out. Finally, Figure 3 compares the distribution of privatizations by broad sector category and, as before, the resulting pattern is remarkably similar in both cases. In fact, in our sample and in the original compiled list, privatizations occur mostly in services, industry and mining, in that order.[11]

Table 3 presents summary statistics for the variables used in this paper. The set of variables is organized according to firm attributes, privatization characteristics, labor characteristics, labor-restructuring policies, and some basic post-privatization hiring measures. Along the lines of López-de-Silanes (1997) the net privatization price is 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 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.[12]

The labor-downsizing variable may be viewed as a basic summary measure of labor restructuring, as it is typically the most widely employed and most relevant from a policy perspective. This variable is defined as a dummy variable that equals one if the firm undertook any reduction in the labor force up to three years prior to privatization, and zero otherwise. We follow Haltiwanger and Singh (1999) and classify this variable by type, as voluntary and compulsory, and by targeting nature, as age-biased, skill-biased,

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10. In fact, only 26.3 percent of respondents provided some numerical information.

11. The World Bank privatization data, which are for developing and transition economies, only also has information on number of shares sold and foreign participation. When we compare our developing country sub-sample (231 observations) to the one from the World Bank we also find a very consistent pattern between both databases.

12. López de Silanes (1997) also uses the firms' total assets and total liabilities to develop a so-called Privatization Q. In our case, such variable was not possible to construct. However, as a rough proxy in our regressions we include a dummy variable that equals one when total liabilities are greater than total assets (see Table 1 for variable definition).

and female-biased downsizing. Table 4 provides a breakdown of our sample along these lines. Voluntary downsizing is defined as any kind of non-compulsory labor downsizing where the worker chooses to leave, typically as a result of a monetary or non-monetary severance compensation package by the firm. Monetary packages are usually given as a function of two variables, wage and seniority. Typically, the older the worker and the higher the current wage the larger the severance package.[13] Pension enhancements and similar benefits may also be included under this category. Non-monetary packages include any type of in-kind payment that range from training to any other similar enhancements to the safety net intended to help workers that leave, such as food and clothes.[14]

The type of targeting employed, if any, is another useful classification of labor downsizing. As mentioned above, three are considered in this paper: age-biased downsizing, skill-biased downsizing, and gender-biased downsizing. Age-biased downsizing includes any labor cut that used age as a reference. This type of downsizing may be applied in the context of voluntary or involuntary downsizing programs. In fact, while voluntary age-biased downsizing is found in nearly 34 percent of total downsizing cases (and 82 percent of total voluntary cases), this kind of downsizing is not limited to choice as it may be implemented by force, too. In fact, one-half of all the involuntary downsizing cases are age-biased. This is shown in Table 4. The most common age-biased downsizing programs are voluntary early retirement programs through pension enhancements, which, as it implies, target older workers.[15] Mandatory retirement of a specific group of older workers is relatively common in developing countries, too.

Skill-biased downsizing includes any labor cut that uses any written or oral method, test, interview, or certification to measure skills or occupational ability as a retrenchment reference. Thus, skill-biased programs restrict the program along detailed occupational or skill groupings (Haltiwanger and Singh 1999). A typical example is to test workers on general or particular labor skills in order to decide whether or not to keep them. In recent years, the classic example of this is the Peruvian Tax Administration in the early 1990s, which required all workers to pass a written test for workers to keep their jobs. Those workers that did not pass were fired and the new potential workers brought in to replace the old ones also had to pass a written exam. As a consequence of this, turnover in the Tax Agency reached about 30 percent. Another example is the case of the Central Bank of Ecuador. After a disastrous attempt to downsize using voluntary programs, the Central Bank decided to classify all its personnel in three categories: those who were essential for its functioning, those who were clearly redundant, and those for whom it was difficult to tell. This classification was based on the nature of the worker's unit and on the

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13. Recent research proposes using compensation schemes based on additional characteristics of the individual or her household (such as education, gender, and others) and not just wage and seniority (Rama 1999; Chong and Rama 2001).

14. This last is not uncommon in African countries.

15. This program typically improves pension benefits if the worker retires earlier than the legal or agreed upon age. It has been applied widely in developing and developed countries.

worker's occupation and educational attainment. Essential workers did not have an option to leave (they were ring fenced), redundant workers did not have the option to stay, and the rest were offered a voluntary separation program (Rama and MacIsaac 1999).

Gender-biased retrenchment refers to labor cuts based on any implicit or explicit gender-based indicators. Practically all gender-biased retrenchment is female biased. Since most developed countries have laws against gender discrimination and in both, developing and developed countries such bias is, at least explicitly, considered ethically wrong, we expect this variable to be biased downwards. Finally, neutral downsizing refers to any labor cuts that did not include any of the three target groups above. Though in theory a firm may apply one, two, or more targeted downsizing mechanisms at the same time, interestingly, the overlap of retrenchment policies is relatively small in the case of our sample of firms, as 87 percent of firms did not apply more than one single mechanism. On the other hand, less than 1 percent of firms in our sample applied skill, age, and female-biased retrenchment when downsizing at the same time. This is also shown in Table 4.[16]

Roughly 78 percent of our sample of firms did some labor force downsizing, most of it compulsory, as shown in Table 5.[17] Such percentage is similar when looking at regions.[18] However, the data show great variation in the labor cuts before privatization both in terms of their nature as well as across regions. For instance, age-biased downsizing was the more predominant in our sample, with 49 percent of firms using it. On the other hand, skill-biased retrenchment is used by only 13 percent of state-owned enterprises worldwide, mostly by developed countries with 15 percent. Additionally, Table 5 also includes two other labor restructuring policies, employment guarantees (after privatization) and pay cuts (prior to privatization). These are dummy variables that capture whether a specific firm proceeded with the mentioned policy in any of the three years that preceded privatization and, as their names indicate, their interpretation is straightforward.

Table 6 provides some simple correlation of our labor downsizing measures. Two things stand out. First, the general downsizing measure is, as expected, correlated with its components, in particular, voluntary downsizing. Second, the voluntary downsizing measure is significantly correlated with age-biased downsizing, as it is frequent to find early retirement programs as a downsizing mechanism. However, other than that, there is little significant correlation among downsizing measures.

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16. Also, while voluntary and compulsory downsizing may have been used simultaneously, as the example in the Central Bank of Ecuador above shows, this was an extremely uncommon occurrence according to our sample. In the three instances where this occurred we treated one as two separate episodes, and in the others we chose the predominant downsizing method.

17. This percentage is strikingly similar to the one found by Haltiwanger and Singh (1999) for 41 retrenchment programs in 37 countries using a mainly civil sector sample. They also find that compulsory downsizing is as predominant as voluntary downsizing (46 percent in our sample).

18. In Latin America, Africa, and industrial countries, 82, 79, and 79 percent of the firms did some labor force downsizing, respectively.

Table 7 provides a first analysis of the data. We divide the sample into two groups according to whether any labor restructuring 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. Most labor restructuring policies yield statistically significant differences in means and medians. Interestingly, this finding does not provide support to the idea that governments should pursue labor restructuring, quite the opposite. Governments that restructured labor in state-owned enterprises before privatization obtained significantly lower privatization prices in relation with those that did not restructure labor. In particular, governments received *lower* revenues as a result of labor force downsizing, the key measure. This finding, however, does not consider that other prior restructuring policies may be playing a role, and in particular, do not take into account endogeneity problems. In fact, it may be argued that the firms that downsize are the ones that need to do so as they are the worst performers. According to these results, only labor restructuring through pay cuts yield increased prices, and even in this case the difference in means is only weakly statistically significant.

3. Downsizing and Privatization Prices

In this section we present regression analysis on the link between labor restructuring policies and privatization prices. Net privatization prices are regressed against a set of variables that has been classified in four groups. The first 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. Similarly, we include a set of dummy variables to take into account the economic sector.[19] We also include the percentage of shares sold, a variable that takes into account whether foreign participation was allowed, as well the type of privatization sale, in particular, public offerings and direct sales. 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. The third group reflects labor-restructuring policies applied prior to privatization, namely, employment guarantees, pay cuts, and labor cuts, including whether such downsizing was compulsory or voluntary, and whether there are any skills, age, or gender bias in the labor downsizing operation. Finally, the last group includes country-specific macroeconomic variables, in particular, the gross domestic product, and the rate of inflation.[20]

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19. These dummies are not reported in the regressions. We considered the following economic sectors: (i) mining (metallic minerals and nonmetallic minerals); (ii) manufacturing (canned fish and seafood; sugar mills; tobacco products; beverages; textiles, clothing, and leather; wood; paper and printing; heavy machinery; transportation equipment); (iii) services (hotels and restaurants; land and sea transportation; communications; and recreation); (iv) others (land; unclassified firms)

20. Since the country-specific macroeconomic variables do capture any specific variation among countries in our sample, country dummies are excluded when using them and vice versa. Results do not change. Also, other macroeconomic variables were considered and results are very similar.

The first column in Table 8 presents our basic results. We first use a simple ordinary least squares approach and assume that labor-restructuring policies are exogenous. In this case, sixteen observations are excluded from our sample as they represent failed operations, that is, privatizations of state-owned enterprises that for one reason or another did not find a buyer and consequently have no privatization price. With respect to the first group of variables, firm and industry characteristics, we find, as expected, a negative and statistically significant coefficient in the case net liabilities. The result suggests that when net total liabilities are present, the privatization price decrease by 31 percent (López-de-Silanes 1997). With respect to privatization characteristics, we find that the coefficient of the share of the firm that was privatized yields a negative and statistically significant link with privatization prices. This result suggests that an additional 10 percent of privatized share decreases the privatization price by 3 percent. Additionally, foreign participation yields a positive and statistically significant sign at 1 percent. This result suggests that allowing foreign participation is associated with a 32 percent increase in privatization prices. Public offerings yield a positive and statistically significant sign and are associated with a 19 percent increase in the privatization price. Direct sales yield a negative and statistically non-significant sign (Dewenter and Malatesta 1997, López-de-Silanes 1997). With respect to labor characteristics we find that the presence of unions up to three years prior to privatization is associated with a privatization price 25 percent lower, as the sign of the coefficient is negative and statistically significant at 1 percent. Similarly, we also find that the strikes and other forms of physical protest are negatively linked with privatization prices though it is not statistically significant.[21] These findings are similar to the ones by López-de-Silanes (1997) for the case of Mexico.[22]

When focusing on the set of labor policy variables, our key set of interest, we find that the downsizing summary measure is associated with a privatization price 8 percent lower, as the sign of the coefficient is negative and statistically significant at 5 percent. Again this is under the assumption of exogeneity and when excluding failed privatizations. Similarly, we find that using employment guarantees prior to privatization is linked with a privatization price 16 percent lower, as the corresponding sign is negative and statistically significant at 1 percent. If maximizing revenues is the sole objective of policymakers, applying this kind of policy contradicts such an objective.[23] On the other hand, pay cuts prior to privatization yield a negative sign that is not statistically significant.

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21. Since unions and strikes are relatively highly correlated it is not a surprise that the latter yields a statistically non-significant coefficient. When excluding the unions variable or constructing a combined unions-strikes variable the signs are negative and statistically significant at 1 percent.

22. They are consistent with the political view of labor restructuring by which unions may try to block privatizations which are costly to buyers (Shleifer and Vishny 1994; Lopez-de-Silanes, Shleifer and Vishny 1997; Boycko, Shleifer, and Vishny 1996).

23. However, governments frequently have more than one, and 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.

The second column in Table 8 provides results when failed privatizations, but not endogeneity, are taken into account. As mentioned above, we use tobits (censored below at zero) to include observations from failed privatizations from which we did obtain labor restructuring. Our findings using this technique to account for failed privatizations are similar to our previous results. For instance, we find unions associated with a privatization price 25 percent lower, as the sign of the coefficient is negative and statistically significant at 1 percent. Similarly, the downsizing variable is associated with a 12 percent decrease in privatization prices, as the sign of coefficient is negative and statistically significant at 5 percent. Finally, employment guarantees are associated with a privatization price 18 percent lower. In general, the results provided so far support the idea that labor force restructuring, and more importantly, labor retrenchment *decrease* privatization prices. A problem with the empirical results above is, however, that they do not take into account potential endogeneity problems. This may arise as governments try to restructure the labor force of the state-owned enterprises before the sale in order to raise the privatization price. The negative sign may be simply a reflection that the firms in the worst shape are shedding labor. 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 dismantle such union.

Using a method by López-de-Silanes (1997) we apply a two-step instrumental variables approach by estimating a non-linear reduced-form equation that describes the probability that a particular labor restructuring policy may be implemented.[24] The instruments used are classified in two groups, macroeconomic-level determinants and firm-level determinants. The macroeconomic variables considered are (1) the average growth rate in the three years prior to privatization, (2) the average unemployment rate three years prior to privatization, (3) the average fiscal deficits over gross domestic product three years prior to privatization, (4) the size of the public sector, (5) openness, (6) law origin, and (7) continental dummies. The firm-level variables included are (1) a dummy variable to reflect whether the firm had profits greater than zero in any of the three years prior to privatization, (2) the presence of a leading agent bank in the country, (3) management change, (4) political affiliation of unions, and (5) sector variables. In general, these variables correspond with the variables employed in López-de-Silanes (1997). As required in this procedure, none of these variables is statistically significant when included in the price equation. Also the *F*-statistic for the excluded instruments is statistically significant at 1 percent. Appendix 2 shows the first stage probit for the case of the key labor downsizing summary measure.[25] The set of instruments used for each labor-restructuring variable is shown in Table 9.

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24. These variables are 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 restructuring actions of the firm, as shown by applying F-statistics to test for the joint hypothesis that they are all equal to zero (Lopez-de-Silanes 1997).

25. Because of space considerations, the first stage for all the other labor restructuring measures and for the firm labor conditions are not presented. We would be happy to provide them upon request.

The third and fourth columns in Table 8 present our findings when correcting for endogeneity using the method above. The former excludes failed privatizations, while the latter includes them. In general, the results do not differ much with respect to previous results presented. In terms of firm characteristics, net total liabilities are negative and statistically significant at 1 percent. This result suggests that when net total liabilities are greater than zero, the privatization price decreases by 29 percent.[26] With respect to privatization characteristics the results are very similar to the regressions assuming exogenous independent variables.[27] On the other hand, the coefficients of the labor characteristics variables are always negative and statistically significant in the case of unions. This result suggests that unions are associated with a privatization price 25 percent lower. Again, these results are identical to the non-instrumented findings. With respect to our key group of variables of interest, labor-restructuring policies, we find that even though the variables keep the same signs as the non-instrumented regressions, two out of the three variables included (in particular, the summary downsizing measure) yield no statistical significance. These findings indicate that when controlling for endogeneity, labor retrenchment policies do not appear to significantly increase privatization prices. Moreover, employment guarantees, the only labor restructuring policy that has statistical power is, as expected, and contrary to the aim of policymakers, negatively linked with net privatization priced as its presence is associated with a 22 percent decrease in prices. While the conventional wisdom has it that prospective buyers will prefer governments to get rid of labor before privatization, our results so far show that such may not be the most adequate policy. As seen above, our findings assuming exogeneity in the explanatory variables yield a negative link with privatization prices, whereas those taking endogeneity into account also yield negative signs, which though non-statistically significant at conventional levels are barely so.[28]

4. Voluntary and Targeted Downsizing and Adverse Selection

Governments sometimes intervene in the labor downsizing process by using voluntary downsizing schemes as well as indicators of skills, age, or gender of the firm's workforce. The inclusion of these variables in our regressions are shown in columns 5-8 in Table 8, when a dummy accounting for voluntary downsizing is included as an explanatory variable. Voluntary downsizing schemes usually account for a very large

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26. All the coefficients of economic sectors have positive signs and are not statistically significant in the ordinary least square regression. However, they become statistically significant at 10 percent when including failed privatizations.

27. As in the regressions that do not control for endogeneity, the direct sale variable changes sign although, as before, it yields no statistical significance.

28. These results are actually similar to those by López-de-Silanes (1997) regarding labor restructuring in Mexico. In fact, he finds that labor cuts yield a negative sign at 10 percent statistical significance when not controlling for endogeneity, and a positive sign also at 10 percent statistically significance. Both results are not robust.

percentage of total labor downsizing (Haltiwanger and Singh 1999).[29] The reason for their popularity is simple. Such schemes are politically non-costly, are attractive to workers and thus, by-pass the power of unions, and can be relatively easily designed and administered by governments (Rama 1999, Jeon and Laffont 1999). We find that regardless of the econometric method and inclusion of failed privatizations, this variable yields a negative and statistically significant sign.[30] Our results suggest that voluntary downsizing is associated with about a 12 percent decrease in privatization prices. It appears that prospective buyers do not favor labor retrenchment. This negative link may be a reflection of adverse selection, as workers with the best outside prospects will leave and those with the worst outside perspectives will tend to stay. Human capital of the firm has deteriorated and the privatization price will reflect this. When the government is in charge of downsizing, and uses voluntary schemes it will tend to separate the wrong workers from their jobs at an excessively high cost (Haltiwanger and Singh 1999, Rama 1999). The resulting wrong composition of separations may occur, as governments may not be able to make the adequate decisions or apply proper mechanisms to identify whom to retain and whom to lay-off.

Governments also try to manage the downsizing process by focusing on three downsizing categories that are particularly predominant: age-biased, skill-biased, and female-biased downsizing. As described in the data section, age-biased retrenchment focuses on age as the deciding variable, skill-biased downsizing usually focus on workers along measures of skills, for instance, written tests, and female-biased downsizing focuses on gender as the critical retrenchment factor.[31]

Table 10 shows our findings using these measures. Controlling for endogeneity we find that downsizing using age as a benchmark results in a decrease of around 10 percent in privatization prices as the sign of the corresponding coefficients are negative and statistically significant at 1 percent (columns 3 and 4).[32] On the other hand, our findings suggest that downsizing using skills is barely positively significant with respect to privatization prices (columns 3 and 4 in Table 10). According to this finding, using skills

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29. In our sample, for instance, voluntary downsizing accounts for about 41 percent of total downsizing as shown in Table 5.

30. The statistical significance ranges from 1 percent in the simple ordinary least squares case, to 10 percent in the tobit instrumental variables case.

31. Notice, regardless of the legal issues that may preclude the use of gender or age to downsize, firms themselves reported such actions. Also, rule enforcement tends to be much less predominant in developing countries (Knack and Keefer 1995).

32. In the case of age-biased downsizing, ordinary least squares coefficients are statistically significant at 1 percent (columns 1 and 2). In the case of administered downsizing by skills, ordinary least squares yield similar signs as in the instrumental variables methods, but the coefficients are not statistically significant in the former. As we argue above, and as López-de-Silanes (1997) shows, endogeneity is a problem.

as a benchmark indicator may increase prices by 22 percent. When controlling for endogeneity, the female bias variable is negative but statistically non-significant.[33]

The results above suggest that adverse selection may be an issue since both voluntary downsizing and age-biased downsizing appear to reduce privatization prices. Workers that are let go using these methods are not necessarily the least productive or least skilled as asymmetric information theory shows. Furthermore, the fact that skill-biased downsizing yields a positive, though marginally statistical significant link with privatization prices, provides some further evidence towards this, especially if one believes that skill-biased retrenchment better identifies productive from unproductive workers.

We further explore the adverse selection issue. While downsizing may be classified as voluntary or compulsory, when introducing group targeting, the corresponding resulting categories may be labeled as voluntary-targeted downsizing and compulsory-targeted downsizing. Furthermore, as before, voluntary or compulsory targeted downsizing may be age-biased, skilled-biased or female-biased driven which results in three voluntary targeted downsizing categories and three compulsory targeted downsizing categories (see Table 4). Voluntary targeted results are shown in Table 11 and compulsory targeted results are shown in Table 12. The classic example of voluntary age-biased downsizing is early retirement programs.[34] As Table 11 shows, voluntary age-biased downsizing is negative and statistically significant at one percent when using the uncorrected method, and negative and statistically significant at 5 percent in the two-step procedure. This result further confirms the idea that adverse selection is a problem when applying administered downsizing in the public sector. Moreover, the voluntary skill-biased downsizing variable is, as before, positive but it is non-significant.[35] On the other hand, Table 12 shows results when using compulsory targeted variables. As the name implies, in this category there is no choice element by worker. Firms simply choose the workers that will stay and those that will leave using age (for example, older workers), skills (for example, managers in each division choose the most skilled ones), or gender, as a retrenchment reference. Though the signs in the compulsory age-biased variable and compulsory skill-biased variable are similar to our previous results, the age coefficient, unlike the voluntary targeted case, is now statistically non-significant. There is no impact on privatization prices. This result is consistent with the fact that voluntary programs are

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33. In fact, this variable is never statistically significant and does change signs depending on the methodology employed. People admitting to gender bias were few. This is clearly not surprising, as people may not be truthful for fear of retaliation. Also, legal and particular society considerations may be at issue.

34. In the skill-biased category finding a clean example is somewhat more difficult. After all, who would want to take a voluntary test when she will know it may be used to fire her? Somewhat like the Fifth Amendment though, where, for all practical purposes taking it is frequently associated with a presumption of guilt, not taking a suggested exam may expose the worker to retaliation. While one may argue that this mechanism is not really voluntary, from the perspective of firms, ministries, and privatization agencies—from whom we mainly got the data from—the explicit method is clearly understood as voluntary.

35. While high correlation with the voluntary age-biased variable may be a problem, as 14 out of the 20 observations that are positive are also voluntary age-biased (Table 4).

theoretically expected to produce somewhat larger adverse selection problems than compulsory ones (Jeon and Laffont 1999, Levy and McLean 1997, Kahn 1985). In fact, while in voluntary age-biased programs it may be expected that the more productive workers may leave rather than the more unproductive ones, in compulsory programs it is reasonable to expect that the good and the bad will leave and thus, the net effect will tend to cancel out. On the other hand, in the case of the compulsory skill-biased downsizing variable we find that the corresponding coefficient yields a positive and marginally statistically significant coefficient in the two-step Tobit procedure that includes failed privatizations, only. Compulsory exams, as a relatively good objective measure of productivity, may help keep the more productive workers, which is reflected in an increase in privatization prices. From a practical perspective, however, this policy prescription is highly controversial, as its applicability will clearly depend on the political climate of the country.[36]

In summary, so far we have found that when controlling for endogeneity labor retrenchment and pay cuts do not have any bearing on net privatization prices. Employment guarantee programs affect prices negatively as their imposition lowers the privatization prices by 16 percent, ceteris paribus. Furthermore, our results show that, if anything, administered labor downsizing appears to produce a selection of the wrong group of workers, the less productive ones as voluntary and age-biased downsizing reduce net privatization prices between 10 and 15 percent, ceteris paribus. In fact, while governments resort to a different array of productivity-identification methods in order to select which workers to fire and which to keep, the evidence above shows that their application results in the opposite effect to the one originally desired, that is, lower privatization prices instead of higher ones. In other words, it appears that the labor downsizing process ends up marred with adverse selection problems, which appears to be reflected in penalized prices as potential buyers suspect that governments do not have the capacity to collect adequate information on the productive abilities of workers.

5. Re-Hiring After Privatization

As much as adverse selection appears to be a reasonable factor why buyers may not be willing to bid higher prices for state-owned enterprises on sale, it may also be the case that some other unobserved factor may produce a negative link between labor downsizing and privatization prices. The question is whether there is anything close to a silver bullet that can provide further, robust, evidence on the presence of adverse selection in the downsizing process prior to privatization. We believe re-hires, defined as workers that were dismissed prior to privatization but were re-hired after privatization, provide a quite reasonable proxy that allows us to understand the pervasiveness of adverse selection

36. In fact, countries where skill-biased programs have been used rather successfully did so under not-so-democratic regimes. Two examples in our sample are Chile (Pinochet) and Peru (Fujimori).

in the labor downsizing process prior to privatization.[37] After all, it is by no means obvious that a firm would need to re-hire a worker that was deemed expendable a relatively short time ago.[38] According to our data nearly 70 percent of firms did hire more personnel after privatization. However, this number is misleading for total increases in personnel after privatization are due not only to new hires of workers not previously associated with the firm, but, as explained above, also with re-hires. While the former may be attributed with the natural progression of privatized firms as an on-going concern, the latter may be reasonably linked with the quality of the downsizing prior to privatization

An indication that re-hires may be a useful measure of quality in the downsizing managerial process prior to privatization may be illustrated by studying its relationship with voluntary downsizing as an explanatory variable. As the theory and the empirical evidence on net privatization prices above shows, this latter variable is a primary suspect in producing adverse selection. Using re-hires as the dependent variable, we find that the coefficient of the voluntary downsizing variable is positive and statistically significant at 5 percent. That is, voluntary downsizing before privatization increases the probability of re-hiring workers after privatization.[39] Results are shown in the upper panel of Table 13, specification 1. In fact, since typical voluntary downsizing mechanisms are theoretically flawed with adverse selection problems, this finding is not surprising (Jeon and Laffont 1999, Kahn 1985). Workers that leave voluntarily are usually those that have the highest chances of obtaining work outside in less time. They are also the ones that are more able to find better-matched jobs to their abilities and skills outside of the public sector and quasi-public sector.

On the other hand, it may be argued that the incidence of re-hires after privatization may not necessarily reflect the presence of voluntary downsizing but the presence of high labor firing costs and related rigidities. Possible firm buyers may want to take advantage of regulations that allow for a clean slate approach so that state-owned enterprises are permitted to have as many workers as possible retrenched before privatization only to be re-employed by the privatized firm. In this way, high labor costs are avoided while the human capital of the firm is preserved. To test for this idea, two labor cost measures are employed. The first is an indicator of labor rigidities as measured by the extent to which the country has signed agreements with the International Labor Organization (ILO) and comes from Rama and Artecona (2001). This variable is defined as the cumulative number of ILO conventions ratified by the country at the time of privatization and is based on legal documents as compiled by Rama and Artecona.

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37. While the concept was first introduced by Haltiwanger and Singh (1999), we are the first to apply rigorous econometric methods using re-hires. We work with re-hires up to 18 months after privatization. We tested shorter periods (12 months) and longer ones (24 months) and the empirical results do not vary.

38. Nearly 35 percent of firms did some re-hiring after privatization, of which Latin America was the most active with upwards of 40 percent, and Asia the least active with a little more than 10 percent.

39. This, when controlling for share sold, sectoral dummies (see footnote 18), macroeconomic controls (rate of growth, rate of inflation, initial gross domestic product), and continental dummies.

The second variable is an index of labor firing costs constructed from legislation from Heckman and Pages (2001). This measure summarizes the tenure-severance pay profile using a common set of dismissal probabilities across countries and computes the expected future costs, at the time a worker is hired, of dismissing her in the future (also see Table 1).[40] We find that the coefficients of both labor rigidity measures are negative but statistically non-significant using re-hires measures. This is also shown in the upper panel in Table 13. It appears that labor rigidities do not change the probabilities of re-hires when controlling for voluntary downsizing.

Re-hiring after privatization occurred not only at the firm level, but also in some instances, from the very same departments or areas from which the workers had been previously fired. When exploring this more restrictive measure of re-hires as the dependent variable we find that the coefficient of the voluntary downsizing variable is not statistically significant. This is shown in the lower panel in Table 13, specification 2. Data are the likely culprit of this result as only 4.7 percent of the sample re-hired in the same department or area, compared to more than 34 percent that simply re-hired. Thus, not too much weight should be attributed to this result.[41] Additionally, and similar to the re-hires variable, labor rigidity measures yield negative and statistically non-significant coefficients with respect to the re-hires-same variable. This is also shown in the lower panel in Table 13.

Voluntary downsizing is only part of the story. In fact re-hires after privatizations are closely linked with the labor-administered process applied before privatization according to skills, age, and gender. This is shown in fist column in the upper panel of Table 14. Using re-hires as the dependent variable, we find that the age-targeted retrenchment variable yields a positive and statistically significant sign at 1 percent. Age-targeted retrenchment prior to privatization increases the probability of re-hiring by a huge 31 percent after privatization. On the other hand, the skill-targeted coefficient is negative and statistically significant at 5 percent. Skill targeting decreases the probability that firms will employ re-hires after privatization by 16 percent. Finally, the female-biased retrenchment is positive but it is not statistically significant. These results are quite consistent with our findings regarding net privatization prices. In fact, this finding suggests that adverse selection may be a problem as voluntary downsizing increases prices but age-biased downsizing reduces prices and increases the probability of re-hiring after privatization, while skill-biased downsizing marginally increases net privatization prices

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40. Since the Heckman and Pages (2001) sample is relatively limited we also use an alternative measure suggested by them, law origin. They show that French law origin is very highly correlated with labor separation costs. In fact, we find very similar results. We would be happy to provide these additional estimations upon request.

41. Another explanation may be related with the fact that enticing the best workers back after having them fired entails an additional cost. It is not easy to lure good workers back, especially given their potential alternatives outside. Additional pay, perks, or higher position may be necessary. The fact that the more restrictive measure of re-hires after privatization is not significantly linked with voluntary downsizing before privatization is not surprising.

and reduces the probability of re-hiring after privatization. Even more revealing, the results above hold when using the more restrictive re-hiring measure. These findings are shown in the lower panel of Table 14. Again, the corresponding coefficient for the age-biased variable is positive and statistically significant at 1 percent while the coefficient of the skill-biased variable is negative and statistically significant at 5 percent.[42]

Similar to the case with voluntary downsizing, the incidence of re-hires after privatization may not necessarily reflect poor management, but high labor firing costs and related rigidities. To explore this issue, we run probit regressions using the same two measures of labor costs used above. This is also shown Table 14. When using ILO conventions as an additional explanatory variable we find that such control is negative but statistically non-significant. Excessive labor costs and regulations do not seem to be a determinant on the probability of re-hires after privatization. Moreover, the signs and statistical significance of the age and skills variables do not change. The age-bias variable is always positive and is statistically significant at 1 percent in both re-hires and re-hires-same. Age-biased downsizing prior to privatization increases the probability of re-hires increase by 32 percent and increases the probability of re-hires in the same department by 16 percent. On the other hand, the skill-bias variable is always negative, implying a lower probability of re-employment as it is statistically significant at 5 percent for both re-hires in general and re-hires from the same department or area in the firm. Skill-biased downsizing prior to privatization is linked with a lower probability of re-employment that ranges between 1 percent (re-hires-same) and 17 percent (general re-hires). Very similar results are obtained when using the Heckman-Pages firing costs variable instead. In fact, this variable is negative but statistically non-significant suggesting that high firing costs do not seem to have a bearing in the probability of re-hires. The signs of the skill-bias and age-bias variables are maintained, as well as their corresponding statistical significance. However, the statistical coefficient of the skill-bias variable decreases to 10 percent in the case of general re-hires.[43]

Finally, analogous to the analysis performed with privatization prices, Tables 15 and 16 provide evidence related with voluntary targeting and compulsory targeting, respectively.[44] According to our results in Table 15, voluntary age-biased downsizing increases the probability of re-hiring between 18.2 percent and 20.1 percent, as the corresponding coefficients in the three specifications presented are positive and

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42. As before the coefficient of the female-biased variable is positive but it is not statistically significant.

43. We also use data for temporary workers, defined as those workers that were downsized prior to privatization but were re-hired after privatization on a temporary basis, presumably in order to take advantage of lower labor costs. As expected, we find that both the ILO and firing cost variables increase the probability of temporary hiring. Also, we find that voluntary downsizing increases the probability of temporary hiring which is also somewhat consistent with the idea that adverse selection may be present.

44. Lack of enough observations did no allow us to provide further evidence using re-hires same as the dependent variable for these two tables.

statistically significant.[45] This finding further provides evidence of adverse selection. On the other hand, voluntary skill-biased downsizing yields the expected, negative sign, as before but in this case the corresponding coefficients are statistically non-significant. Similarly, Table 16 shows that compulsory age-biased downsizing does imply a higher probability of re-hiring as the corresponding signs are positive and statistically significant at 5 percent or better regardless of the specification. When labor downsizing was done according to age and in a compulsory manner, the probability of being re-hired will increase between 19 and 22 percent after privatization. Similarly, compulsory skill-biased downsizing prior to privatization appears to lower the probability of re-hiring after privatization. The results in this case are, however, not very clean as the skill-biased measure becomes barely significant when including labor costs (Heckman-Pages measure) or not significant at all (ILO conventions case).

In summary, our findings with respect to rehiring policies are consistent with the adverse selection hypothesis in labor restructuring by the government before privatization. What governments do before privatization does have a direct bearing on how firms behave after privatization. Voluntary downsizing is associated with a 13-15 percent higher probability of re-hiring workers that were previously fired prior to privatization. Age-biased downsizing yields a higher probability of re-hiring workers, which in the case of voluntary age-biased downsizing reaches around 20 percent, and in the case of compulsory age-biased downsizing reaches around 22 percent, sometimes re-hiring workers even in the same exact departments. The one exception to these results is skill-based downsizing which in some specifications leads to significantly lower rehiring rates by private firms.

6. Conclusions

Despite its importance, labor has probably been the single least addressed issue in privatization (Megginson and Netter, 2001). There is ambivalence with respect to the optimal policy approach to labor restructuring in privatization processes as reflected by the recommendations of development agencies around the world. In fact, such institutions have had a difficult time taking a position on whether or not it is a good idea to restructure a firm and, in particular, how to deal with labor force changes prior to privatization. Early advice called for labor restructuring prior to privatization under the premise that governments are better able to cushion any financial blow to displaced workers mainly through safety nets (Nellis and Kikeri 1989). Subsequent recommendations called for a less meddlesome approach by discriminating between large firms and smaller ones. It was suggested that smaller firms with relatively little overstaffing were sold with essentially no labor restructuring, under the logic that such a decision should be left to the new owners who would be in better position to choose which workers they would like to retain or dismiss (Kikeri, Nellis, and Shirley 1992). A final view came later when prior

45. However, statistical significance using the Heckman-Pages labor firing costs reaches only 10 percent.

restructuring in privatization, including the labor area, was found to be associated with lower net privatization prices paid by winners (López-de-Silanes 1997).

This paper is the first to provide a formal cross-country analysis of the effects of a detailed list of labor restructuring measures before privatization to provide guidance for those countries still embarking in the privatization process. The lack of information on what happens to workers during the privatization process has exacerbated the fears and concerns of workers and governments, and delayed privatization in several countries (Kikeri, 1999).

In this paper we address some policy concerns above by testing several competing theories that aim to answer the following key question: should governments restructure labor before privatization, as measured by privatization prices? While as a general principle, getting rid of redundant workers should increase the privatization price, in practice, governments have a very difficult time identifying the genuinely redundant workers as asymmetric information problems remain. Firing the wrong workers may even reduce the privatization price.

Our data allows us to analyze the impact of labor restructuring measures not only in prices, but also in the rehiring policies followed by firms after they are privatized. The benefit of such data is that we are able to say something about the management quality of retrenchment policies followed by governments around the world.

We find that labor retrenchment does not significantly impact privatization prices, if anything, voluntary retrenchment has a negative impact on net prices, suggesting a potential problem of adverse selection. Through a detailed analysis of various targeting policies, the paper also shows that government administration of the downsizing process, can be subject to political considerations and may also result in adverse selection leading to rehiring of the same workers after privatization. We did find that it may be possible for governments to achieve some positive results through the managing of the process by using a skill-focused retrenchment. This type of policy is associated with lower probability rates of rehiring of the same workers after privatization. This type of policy is one associated with negative political effects as workers may find it too aggressive and may react negatively towards the whole process of privatization. The fact that the political costs of this type of program are higher, suggests that there may be some not easily observable or measurable firm characteristics that could explain the marginally positive results of this policies. Another reason for this result is the possibility that the level of documentation and design of this type of program simply makes it more palatable to buyers. The political difficulties of using such policy and the problems it might cause in terms of the overall objective of achieving privatization should be considered.

The summary of this paper is that governments should think long and hard before they restructure labor force in preparation for privatization. The political consequences may be large, the impact on privatization prices is not there, and the data on rehiring policies shows that firms where retrenchment takes place may end up losing some of its

most valuable workers. A qualified do not intervene appears to be the safest bet in labor retrenchment before privatization.

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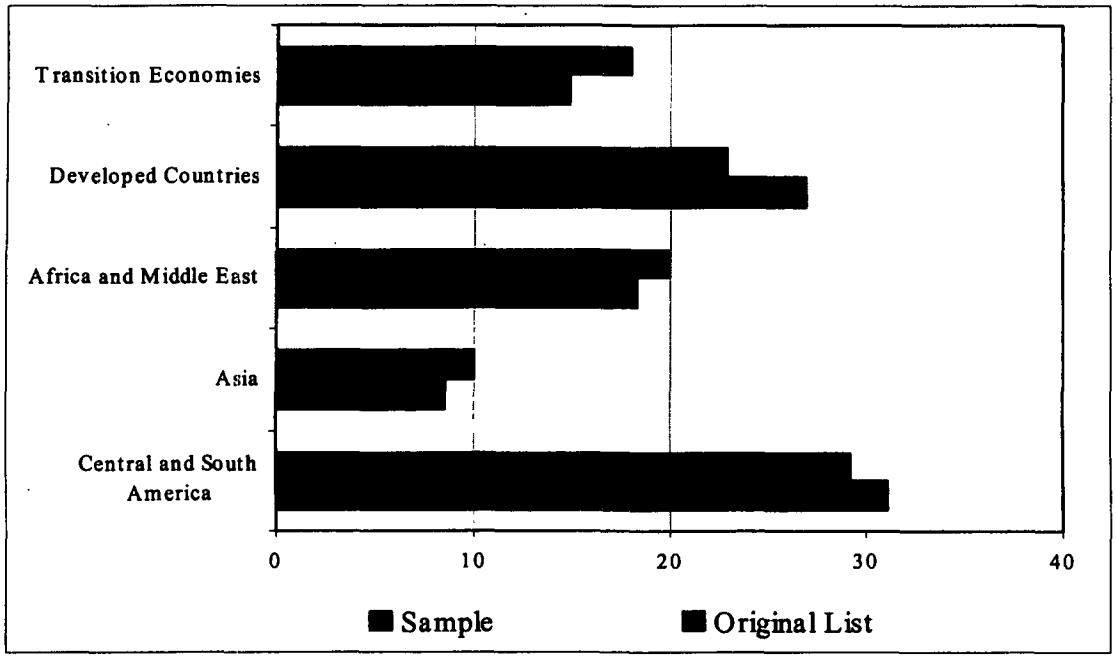
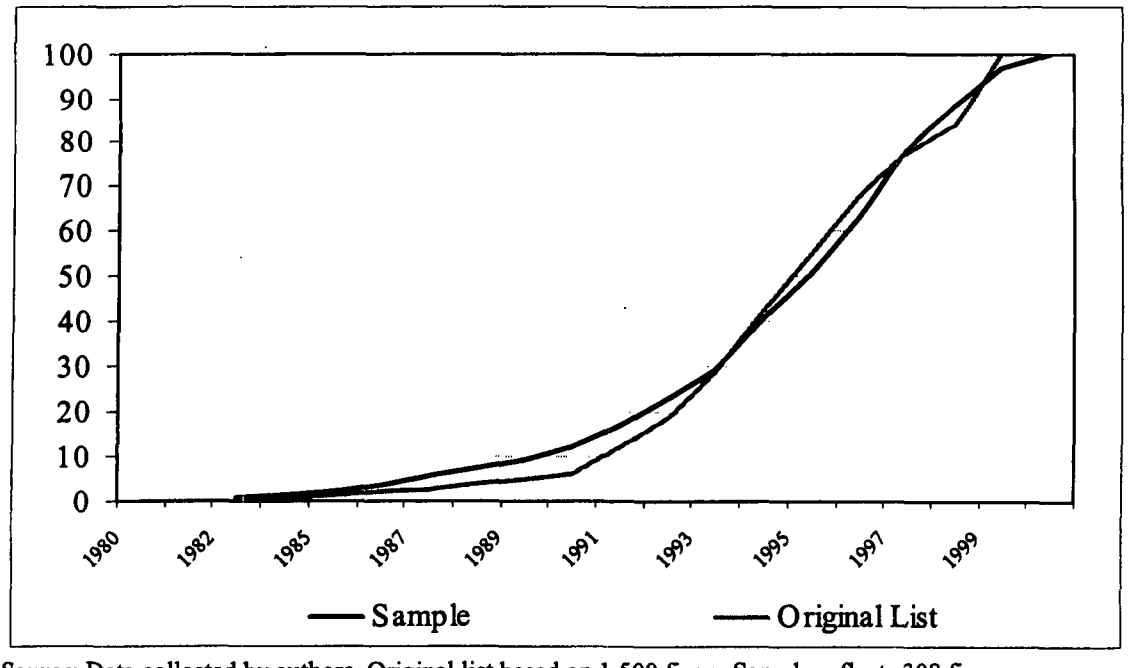
Figure 1. Distribution of Privatizations by Region (percent)



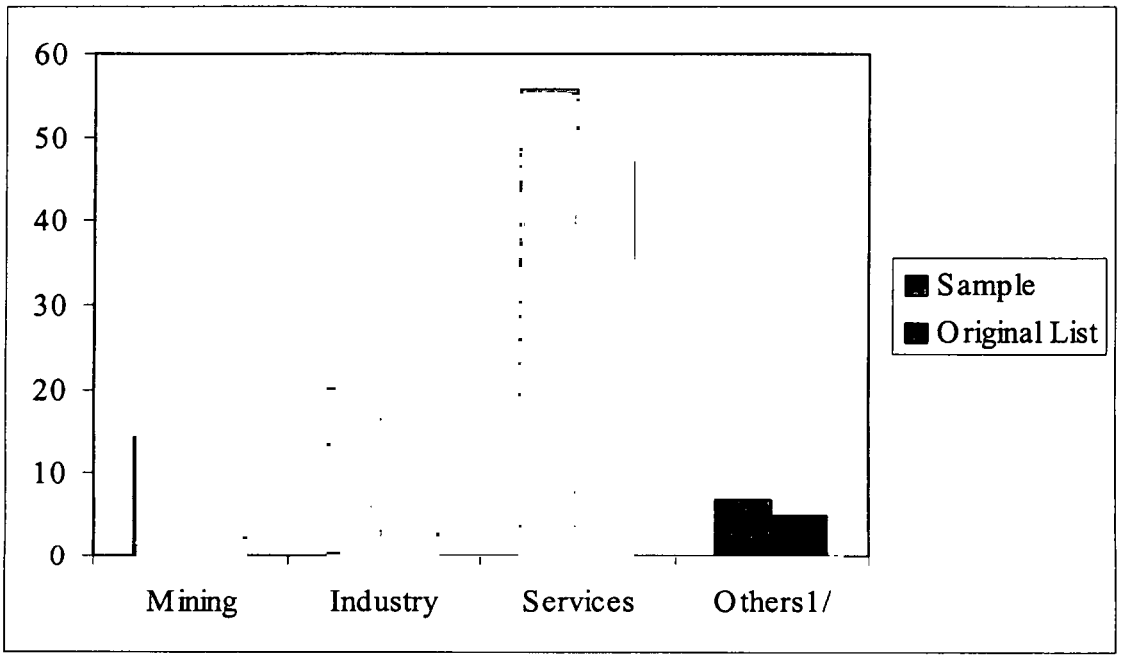
Source: Data collected by authors. Original list based on 1,500 firms. Sample reflects 308 firms.

Figure 2. Accumulated Distribution of Privatizations by Year (percent)



Source: Data collected by authors. Original list based on 1,500 firms. Sample reflects 308 firms.

Figure 3. Distribution of Privatizations by Sector (percent)



1/ Includes land and unclassified firms.
Source: Data collected by authors. Original list based on 1,500 firms. Sample reflects 308 firms.

Table 1. Description of Variables

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 made any profits up to three years prior to privatization, and 0 otherwise
Sector	Dummy variable equal to 1 to take into account for economic sector. Three dummies are considered that account for mining, industry, and services, respectively, and 0 otherwise (reflecting land, natural resources,agriculture, or unclassified)
Management change	Dummy variable equal to 1 if the company changed CEO 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 and direct (non-competitive) sales respectively, and 0 otherwise (reflecting other methods such as purchases by employees, joint ventures, or secondary offerings).
Agent bank	Dummy variable equal to 1 if leading agent bank organized privatization process. Leading agent bank is defined as bank that organized most privatizations in the country at the time of our research. Agent banks are in charge of obtaining information on the state-owned enterprise, suggest restructuring measures, and organize the sale itself.
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 kind of protests, picketing, or strikes up to three years 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, and may be targeted according to age (age-biased downsizing), skills (skill-biased downsizing), gender (female-biased downsizing), or may be neutral (no particular group targeted)
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.
Age-biased downsizing	Dummy variable equal to 1 if there was any age-biased labor downsizing up to three years prior to privatization, 0 otherwise. Age-biased programs may be voluntary (early retirement, pension enhancements) or involuntary.
Skill-biased downsizing	Dummy variable equal to 1 if there was any skill-biased labor downsizing up to three years prior to privatization, 0 otherwise. Skill-biased programs restrict the program along detailed occupational or skill groupings (Haltiwanger and Singh, 1999) for example, through the passing of written or oral exams, panel interviews, and so on. Skill-biased programs may be voluntary or involuntary.
Female-biased downsizing	Dummy variable equal to 1 if there was any female-biased labor downsizing up to three years prior to privatization, 0 otherwise. Female-biased programs may be voluntary or involuntary. Since typically there are no explicit policies on this, there tends to be underreporting as firms would not want to admit on gender discrimination.
Employment Guarantee	Dummy variable equal to 1 if there was any promise of employment guarantee up to three years prior to privatization, 0 otherwise.
Pay Cut	Dummy variable equal to 1 if there was any pay cut to the total salary or wage of the worker three years prior to privatization, 0 otherwise.
Re-hires	Dummy variable equal to 1 if the privatized firm re-hired previously fired workers (up to three years prior to privatization) after privatization, 0 otherwise
Re-hires same	Dummy variable equal to 1 if the privatized firm re-hired previously fired workers (up to three years prior to privatization) and placed the worker in the same department or are from which he was originally fired, 0 otherwise
Country-Specific Variables	
Law origin	Legal origin of the country from which company is geographically based upon. Five possible legal origins considered origin: English common law; French civil Code ; German commercial code; Scandinavian 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 to privatization (World Bank, 2001a)
Inflation	Average rate of inflation in the country three years prior to 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, Africa, Developed Countries, 0 otherwise.
Economic growth	Average rate of growth of the country three years prior to privatization (World Bank, 2001a)
Fiscal deficits	Average fiscal deficits as a percentage of gross domestic product three years prior to privatization (World Bank, 2001a)
Size of the public sector	Employment in the central government, in thousands of persons as a percentage of the labor force. Includes workers of both sexes. Based on payroll and civil service censuses (Rama and Artecona, 2001)
ILO Conventions	Cumulative number of International Labor Organization (ILO) conventions ratified by the country at the time of privatization. Based on legal documents (Rama and Artecona, 2001)
Labor firing costs	Measure that summarizes the tenure-severance pay profile using a common set of dismissal probabilities across countries. The measure computes the expected future cost, a the time a worker is hired, of dismissing her in the future due to unfavorable economic conditions. The index is constructed to include only firing costs that affect firm's decision's at the margin. It includes the cost of providing statutory advance notice and severance pay conditional on each possible level of tenure that a worker can attain in the future. Measure thus reflects marginal costs of dismissing full-time indefinite workers (Heckman and Pages, 2001)
Unemployment Rate	Average unemployment rate of the country three years prior to privatization (World Bank, 2001a, Rama and Artecona, 2001)

Table 2. Observations in the Sample

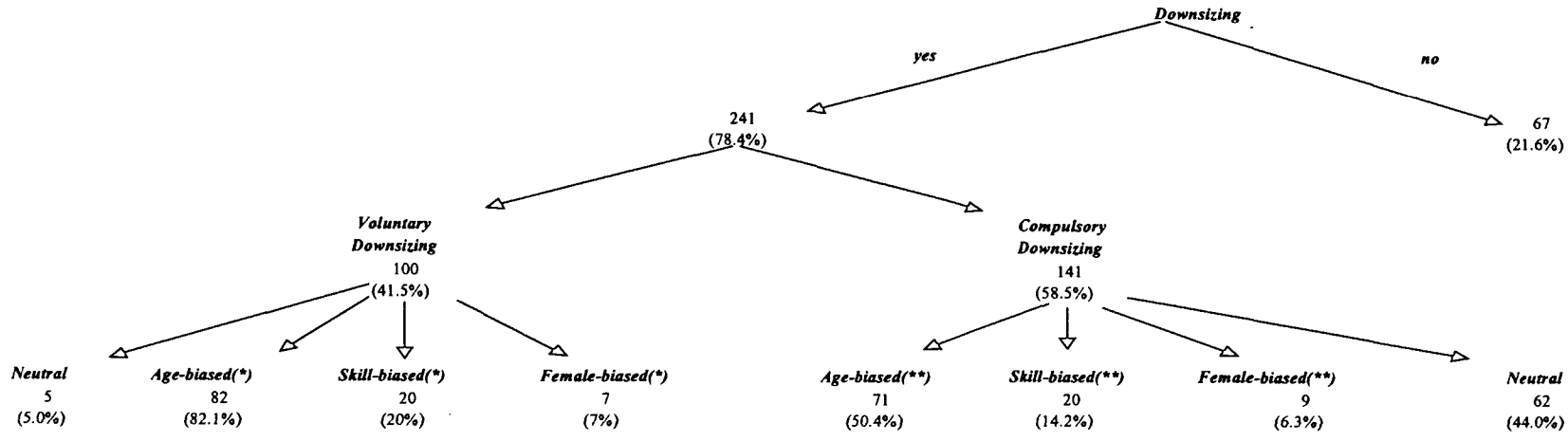
	Number	*Percentage of sales*
Firms in our final sample	308	97.21
Firms that supplied incomplete information	25	1.04
Firms merged and keep no independent records	19	0.12
Firms that were liquidated an no longer exist	22	0.78
Firms that denied or refused to give information	26	0.85
All Privatized Firms (1982-2000)	400	100.00

Note: This table breaks our world sample between 1982 and 2000 into two groups. For each group we provide the number of firms and the percentage of pre-privatization sales in the total. Source: Data collected by authors.

Table 3. Summary Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Firm Characteristics:						
Net Privatization Prices/sales	308	0.587	0.609	3.228	0.000	1.367
Sales	308	1.415	0.140	3.167	0.001	21.991
Net total liabilities	308	0.432	0.000	0.496	0.000	1.000
Preprivatization profits	308	0.455	0.000	0.499	0.000	1.000
Mining	308	0.143	0.000	0.350	0.000	1.000
Industry	308	0.231	0.000	0.422	0.000	1.000
Services	308	0.558	1.000	0.497	0.000	1.000
Management change	308	0.449	0.000	0.498	0.000	1.000
Privatization Characteristics:						
Foreign participation	308	0.682	1.000	0.467	0.000	1.000
Share sold	308	0.509	0.506	0.282	0.010	1.000
Public offering	308	0.653	1.000	0.477	0.000	1.000
Direct Sale	308	0.198	0.000	0.399	0.000	1.000
Labor Characteristics:						
Unions	308	0.844	1.000	0.363	0.000	1.000
Strikes	308	0.474	0.000	0.500	0.000	1.000
Labor Policies:						
Downsizing	308	0.782	1.000	0.413	0.000	1.000
Voluntary downsizing	308	0.325	0.000	0.469	0.000	1.000
Age-biased downsizing	308	0.497	0.000	0.501	0.000	1.000
Skill-biased downsizing	308	0.130	0.000	0.337	0.000	1.000
Female-biased downsizing	308	0.058	0.000	0.235	0.000	1.000
Employment guarantee	308	0.282	0.000	0.451	0.000	1.000
Pay cut	308	0.075	0.000	0.263	0.000	1.000
Re-hiring	292	0.345	0.000	0.475	0.000	1.000
Re-hiring Same	292	0.047	0.000	0.321	0.000	1.000
Country-Specific Variables:						
English common law	308	0.253	0.000	0.436	0.000	1.000
French commercial code	308	0.500	0.500	0.501	0.000	1.000
German commercial code	308	0.117	0.000	0.322	0.000	1.000
Scandinavian commercial code	308	0.019	0.000	0.138	0.000	1.000
Socialist/communist laws	308	0.110	0.000	0.314	0.000	1.000
Gross domestic product	308	25.398	25.452	1.851	19.448	28.856
Inflation	308	109.876	11.485	292.683	0.618	1667.207
Openess	308	31.137	28.158	31.953	0.000	314.588
Economic growth	308	3.028	2.726	3.811	-11.144	21.320
Fiscal deficits	308	-2.580	-2.279	3.475	-14.003	13.629
ILO conventions	221	54.164	52.000	28.883	1.000	123.000
Labor firing cost	151	2.526	2.718	1.216	0.443	4.756

Table 4. Decomposition of Labor Downsizing Measures



(*):

	#	%
Age-biased and skill-biased	14	(14)
Age-biased and female-biased	3	(3)
Skill-biased and female-biased	3	(3)
Age-biased, skill-biased and female-biased	0	(0)

(**):

	#	%
Age-biased and skill-biased	12	(8.5)
Age-biased and female-biased	5	(3.5)
Skill-biased and female-biased	3	(2.1)
Age-biased, skill-biased and female-biased	3	(2.1)

Note: This table shows the decomposition of labor downsizing cases in our sample in terms of cases and percentages (in parenthesis). Downsizing may be voluntary or compulsory (non-voluntary). Additionally, it may be classified according to its targeting nature as age-biased, skill-biased, and female-biased. Thus, voluntary and compulsory downsizing may be targeted. Since one firm may opt to pursue more than one targeted downsizing method, biases do not add up to 100 percent. For instance, one firm may concurrently pursue age-biased downsizing and skill-biased downsizing in its downsizing program. The corresponding numbers for all the possible combinations are shown in (*) and (**).

Table 5. Labor Restructuring Measures around the World
(percent)

	Latin America	*Asia*	*Africa and Middle East*	*Developed Countries*	*Transition Economies*	*All*
Downsizing	82.2	58.3	79.7	79.2	76.2	78.2
Voluntary downsizing	32.5	12.5	45.3	28.6	14.3	32.5
Age-biased downsizing	57.4	29.2	54.7	54.5	26.6	49.7
Skill-biased downsizing	12.5	13.9	9.4	15.6	11.9	13.0
Female-biased downsizing	5.0	8.3	14.1	0.0	4.8	5.8
Employment guarantee	8.4	20.1	51.6	13.0	52.4	28.2
Pay cut	8.9	0.0	1.6	13.0	7.1	7.5
Sample	32.8	7.8	20.8	25.0	13.6	100.0

Source: Data collected by authors.

Table 6. Simple Correlation of Labor Downsizing Measures

	Downsizing	Voluntary downsizing	Age-biased downsizing	Skill-biased downsizing	Female-biased downsizing	Employment guarantee	Pay cut
Downsizing	1						
Voluntary downsizing	0.3656[a]	1					
Age-biased downsizing	0.5239[a]	0.4483[a]	1				
Skill-biased downsizing	0.2037[a]	0.1447	0.1184	1			
Female-biased downsizing	0.0643	0.0342	-0.0261	0.1508	1		
Employment guarantee	0.1036	0.027	0.0113	0.0365	0.2126[a]	1	
Pay cut	-0.0456	-0.0099	-0.009	-0.0584	-0.0803	-0.0788	1

[a] Significant at 1 percent, [b] Significant at 5 percent., [c] Significant at 10 percent.

Table 7. Labor Restructuring and Privatization Prices: Tests of Means and Medians

		SOEs where measure was taken (a)	SOEs where measure was not taken (b)	Difference (a)-(b)	T-statistic for change in mean[1/] Z-statistic for change in median[2/]
Downsizing					
	mean	0.5532	0.7085	-0.1552	3.547 [a]
	median	0.5711	0.7070	-0.1360	3.576 [a]
Voluntary downsizing					
	mean	0.4818	0.6376	-0.1557	4.064 [a]
	median	0.4716	0.6259	-0.1543	3.909 [a]
Age-biased downsizing					
	mean	0.5265	0.6467	-0.1202	3.320 [a]
	median	0.5136	0.6320	-0.1184	3.184 [a]
Skill-biased downsizing					
	mean	0.5616	0.5908	-0.0292	0.534
	median	0.6074	0.6157	-0.0083	0.371
Female-biased downsizing					
	mean	0.3533	0.6015	-0.2482	3.213 [a]
	median	0.3765	0.6150	-0.2385	2.977 [a]
Employment guarantee					
	mean	0.4200	0.6496	-0.2296	5.853 [a]
	median	0.3664	0.6508	-0.2844	6.936 [a]
Pay cut					
	mean	0.6893	0.5787	0.1106	-1.585 [c]
	median	0.7424	0.6006	0.1417	-1.725 [c]

Note: Table 7 reports mean and median values of the privatization price/sales in the group of firms both where the labor restructuring measure was taken compared to those firms where the labor restructuring measure was not taken. The particular measure taken is indicated in the lines (downsizing, voluntary downsizing, age-biased downsizing...) The third column shows the difference in mean and medians between the net privatization price of the group of firms that took the measure compared to the group that did not. The fourth column reports the resulting t-statistics and z-statistics of the difference in means and medians of the two groups respectively. 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). [a] significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent

Table 8. Labor Restructuring and Privatization Prices

Dependent variable is net privatization price/sales

Variables			Two-Step procedure				Two-Step procedure	
	OLS	TOBIT	OLS	TOBIT	OLS	TOBIT	OLS	TOBIT
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.- Firm and privatization characteristics:								
Net total liabilities	-0.0903 [b]	-0.0918 [b]	-0.2113 [a]	-0.2142 [a]	-0.0887 [b]	-0.0897 [b]	-0.1455 [b]	-0.145 [a]
	(0.043)	(0.044)	(0.072)	(0.062)	(0.041)	(0.043)	(0.057)	(0.053)
Share Sold	-0.0040 [b]	-0.0037 [b]	-0.0021 [b]	-0.0028 [b]	-0.0039 [b]	-0.0036 [b]	-0.0036 [b]	-0.0033 [b]
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Foreign participation	0.1502 [a]	0.1657 [a]	0.1229 [a]	0.1376 [a]	0.1439 [a]	0.1606 [a]	0.1413 [a]	0.1558 [a]
	(0.032)	(0.028)	(0.030)	(0.028)	(0.032)	(0.028)	(0.031)	(0.029)
Public offering	0.0911 [b]	0.1339 [a]	0.0855 [c]	0.1315 [a]	0.0927 [b]	0.1364 [a]	0.0895 [b]	0.1339 [a]
	(0.042)	(0.041)	(0.043)	(0.040)	(0.041)	(0.040)	(0.043)	(0.041)
Direct Sale	-0.0007	0.0482	-0.0079	0.0441	-0.0018	0.0481	-0.0044	0.0463
	(0.046)	(0.045)	(0.048)	(0.044)	(0.046)	(0.045)	(0.048)	(0.045)
2.- Labor Characteristics:								
Unions	-0.1484 [a]	-0.1250 [a]	-0.1536 [a]	-0.1314 [a]	-0.1487 [a]	-0.1242 [a]	-0.1641 [a]	-0.1413 [a]
	(0.035)	(0.038)	(0.034)	(0.036)	(0.035)	(0.038)	(0.035)	(0.037)
Strikes	-0.0075	-0.0172	-0.0191	-0.0197	-0.0069	-0.0179	-0.0323	-0.0386
	(0.028)	(0.026)	(0.043)	(0.044)	(0.027)	(0.026)	(0.038)	(0.040)
3.- Labor Policies:								
Downsizing	-0.0619 [b]	-0.0600 [b]	0.0284	0.0215				
	(0.030)	(0.030)	(0.033)	(0.038)				
Voluntary downsizing					-0.0773 [a]	-0.0692 [b]	-0.0572 [b]	-0.0561 [c]
					(0.028)	(0.027)	(0.027)	(0.029)
Employment guarantee	-0.0927 [a]	-0.0956 [a]	-0.0862 [b]	-0.091 [a]	-0.1005 [a]	-0.1024 [a]	-0.0996 [a]	-0.103 [a]
	(0.032)	(0.030)	(0.032)	(0.030)	(0.031)	(0.030)	(0.033)	(0.031)
Pay cut	-0.0650	-0.0723	0.0803	0.0692	-0.0688	-0.0762 [b]	0.0306	0.0155
	(0.045)	(0.044)	(0.091)	(0.104)	(0.044)	(0.044)	(0.093)	(0.110)
4.- Macroeconomic Variables:								
Gross Domestic Product	0.0514 [a]	0.0533 [a]	0.0525 [a]	0.0553 [a]	0.0512 [a]	0.0533 [a]	0.0447 [a]	0.0467 [a]
	(0.009)	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.010)	(0.009)
Inflation	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001 [c]	0.0001
	(0.000)	(0.000)	(1.128)	(0.728)	(0.000)	(0.000)	(1.841)	(1.353)
Constant	-0.7242 [b]	-1.1126 [a]	-0.8489 [b]	-1.2934 [a]	-0.7211 [b]	-1.1236 [a]	-0.6119 [c]	-1.0373 [a]
	(0.310)	(0.238)	(0.332)	(0.283)	(0.299)	(0.237)	(0.330)	(0.270)
Observations	292	308	292	308	292	308	292	308
R-squared	0.53		0.546		0.536		0.528	
F	21.99		24.59		23.39		22.97	
Prob > F	0.000		0.000		0.000		0.000	
Pseudo R2		1.327		1.3471		1.338		1.3184
LR chi2		314.26		317.23		316.86		312.24
Prob > chi2		0.000		0.000		0.000		0.000

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. Columns (1), (2) (5) and (6) consider prior restructuring measures and the rest of variable as exogenous and provide estimates from OLS and TOBIT regressions. Column (3), (4), (7) and (8) show the second stage of the two-step procedure in order to account for endogeneity. All regressions include sectoral controls and firm size controls. Robust standard errors are given in parentheses. a significant at 1 percent; b significant at 5 percent; c significant at 10 percent.

Table 9. Instruments for Potentially Endogenous Variables

	Agent Bank	Management Change	Political affiliation of unions	Pre-privatization profits	Law origin 1/	Continental dummies 2/	Macro controls 3/	F-statistic on excluded instruments
Downsizing	yes		yes	yes	yes	yes	yes	4.32
Voluntary downsizing	yes	yes		yes	yes	yes	yes	3.88
Age-biased downsizing		yes	yes	yes	yes	yes	yes	3.72
Skill-biased downsizing		yes	yes	yes	yes	yes	yes	3.23
Female-biased downsizing		yes	yes	yes	yes	yes	yes	3.09
Employment guarantee	yes		yes	yes	yes	yes	yes	3.18
Pay cut	yes		yes	yes	yes	yes	yes	3.36

1/ This set includes English Common Law, German Commercial Law, Scandinavian Commercial Law.

2/ This set includes Latin America, Asia, Africa and Middle East, Developed Countries.

3/ This set includes unemployment rate, fiscal deficit, openness, growth, and size of public sector.

Note: Table 9 reports the group of instruments used in the first-step regression. The rows give the names of the dependent variables in the first-step regression. The columns describe the different groups of instruments used in each regression writing a yes if that group is used in the estimation of each dependent variable. The last column gives the F-statistic on the excluded instruments.

Table 10. Labor Targeting and Privatization Prices

Dependent variable is net privatization price/sales

Variables			Two-Step procedure	
	OLS	TOBIT	OLS	TOBIT
	(1)	(2)	(3)	(4)
1.- Firm and privatization characteristics:				
Net total liabilities	-0.0891 [b]	-0.0926 [b]	-0.0932	-0.0952
	(0.040)	(0.043)	(0.080)	(0.069)
Share Sold	-0.004 [b]	-0.0038 [b]	-0.0038 [b]	-0.0035 [b]
	(0.002)	(0.002)	(0.002)	(0.002)
Foreign participation	0.1506 [a]	0.1652 [a]	0.142 [a]	0.1564 [a]
	(0.032)	(0.028)	(0.031)	(0.028)
Public offering	0.0863 [b]	0.1289 [a]	0.0971 [b]	0.1407 [a]
	(0.044)	(0.040)	(0.041)	(0.041)
Direct Sale	-0.0029	0.0462	0.0086	0.0585
	(0.047)	(0.045)	(0.046)	(0.045)
2.- Labor Characteristics:				
Unions	-0.1321 [a]	-0.109 [a]	-0.1784 [a]	-0.1537 [a]
	(0.036)	(0.038)	(0.036)	(0.037)
Strikes	-0.0041	-0.0128	0.009	0.0001
	(0.027)	(0.026)	(0.054)	(0.050)
3.- Labor Policies:				
Age-biased downsizing	-0.0832 [a]	-0.0843 [a]	-0.0833 [a]	-0.0823 [a]
	(0.026)	(0.026)	(0.029)	(0.030)
Skill-biased downsizing	0.0161	0.0039	0.1616 [c]	0.1532 [c]
	(0.036)	(0.037)	(0.097)	(0.086)
Female-biased downsizing	0.0082	0.0274	0.0170	0.0115
	(0.059)	(0.056)	(0.095)	(0.097)
Employment guarantee	-0.0992 [a]	-0.1025 [a]	-0.1029 [a]	-0.1064 [a]
	(0.031)	(0.030)	(0.034)	(0.031)
Pay cut	-0.0726 [c]	-0.0798 [c]	0.0749	0.0564
	(0.044)	(0.044)	(0.119)	(0.122)
4.- Macroeconomic Variables:				
Gross Domestic Product	0.0539 [a]	0.0565 [a]	0.0461 [a]	0.0483 [a]
	(0.009)	(0.008)	(0.010)	(0.009)
Inflation	0.0001	0.0001	0.0001	0.0001
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.8018 [a]	-1.1946 [a]	-0.3127	-0.7673 [b]
	(0.291)	(0.237)	(0.425)	(0.352)
Observations	292	308	292	308
R-squared	0.54		0.54	
F	20.05		19.73	
Prob > F	0.000		0.000	
Pseudo R2		1.357		1.364
LR chi2		321.34		323.04
Prob > chi2		0.000		0.000

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 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. Columns (1) and (2) consider prior restructuring measures and the rest of variable as exogenous and provide estimates from an OLS and TOBIT regressions. Columns (3) and (4) show the second stage of the two-step procedure to take account of endogeneity. All regressions include sectoral controls and firm size controls. Robust standard errors are given in parentheses. [a] significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent.

Table 11. Voluntary Targeting and Privatization Prices

Dependent variable is net privatization price/sales

Variables			Two-Step procedure	
	OLS	TOBIT	OLS	TOBIT
	(1)	(2)	(3)	(4)
1.- Firm and privatization characteristics:				
Net total liabilities	-0.0863 [b]	-0.087 [b]	-0.1331 [c]	-0.1348
	(0.040)	(0.043)	(0.073)	(0.065)
Share Sold	-0.0039 [b]	-0.0036 [b]	-0.0039 [b]	-0.0036 [b]
	(0.002)	(0.002)	(0.002)	(0.002)
Foreign participation	0.1464 [a]	0.1623 [a]	0.1433 [a]	0.1572 [a]
	(0.032)	(0.029)	(0.031)	(0.029)
Public offering	0.0863 [b]	0.1308 [a]	0.0932 [b]	0.1366 [a]
	(0.041)	(0.040)	(0.042)	(0.041)
Direct Sale	-0.0099	0.0408	0.0045	0.0545
	(0.046)	(0.045)	(0.047)	(0.046)
2.- Labor Characteristics:				
Unions	-0.1412 [a]	-0.1164 [a]	-0.1682 [a]	-0.1428 [a]
	(0.035)	(0.038)	(0.036)	(0.037)
Strikes	-0.0077	-0.0189	-0.0262	-0.0336
	(0.027)	(0.026)	(0.040)	(0.041)
3.- Labor Policies:				
Voluntary age-biased downsizing	-0.0933 [a]	-0.0823 [a]	-0.0517 [b]	-0.0494 [b]
	(0.031)	(0.029)	(0.020)	(0.022)
Voluntary skill-biased downsizing	0.0319	0.0252	0.0295	0.0136
	(0.050)	(0.054)	(0.057)	(0.056)
Voluntary female-biased downsizing	-0.1348 [c]	-0.132	0.0077	0.0134
	(0.069)	(0.103)	(0.052)	(0.046)
Employment guarantee	-0.099 [a]	-0.1005 [a]	-0.1037 [a]	-0.1071 [a]
	(0.032)	(0.030)	(0.033)	(0.031)
Pay cut	-0.0644	-0.0723	0.0029	0.0234
	(0.044)	(0.044)	(0.125)	(0.129)
4.- Macroeconomic Variables:				
Gross Domestic Product	0.0513 [a]	0.0533 [a]	0.0465 [a]	0.049 [a]
	(0.009)	(0.008)	(0.010)	(0.009)
Inflation	0.0001	0.0001	0.0001	0.0001
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.7168 [a]	-1.1205 [a]	-0.5996 [c]	-1.0611 [b]
	(0.296)	(0.237)	(0.361)	(0.294)
Observations	292	308	292	308
R-squared	0.54		0.53	
F	22.98		21.26	
Prob > F	0.000		0.000	
Pseudo R2		1.352		1.3558
LR chi2		320.13		313.97
Prob > chi2		0.000		0.000

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 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. Columns (1), (2) consider prior restructuring measures and the rest of variable as exogenous and provide estimates from an OLS and TOBIT regressions. Columns (3), (4) show the second stage of the two-step procedure to take account of endogeneity. All regressions include sectoral controls and firm size controls. Robust standard errors are given in parentheses. [a] significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent

Table 12. Compulsory Targeting and Privatization Prices

Dependent variable is net privatization price/sales

Variables			Two-Step procedure	
	OLS	TOBIT	OLS	TOBIT
	(1)	(2)	(3)	(4)
1.- Firm and privatization characteristics:				
Net total liabilities	-0.0888 [b]	-0.0925 [b]	-0.0641	-0.0697
	(0.042)	(0.044)	(0.074)	(0.069)
Share Sold	-0.0043 [a]	-0.0042 [b]	-0.0037 [b]	-0.0034 [b]
	(0.002)	(0.002)	(0.002)	(0.002)
Foreign participation	0.1517 [a]	0.1659 [a]	0.145 [a]	0.1584 [a]
	(0.032)	(0.029)	(0.031)	(0.028)
Public offering	0.095 [b]	0.1356 [a]	0.0962 [b]	0.139 [a]
	(0.044)	(0.041)	(0.043)	(0.041)
Direct Sale	-0.0007	0.0461	0.0004	0.0496
	(0.048)	(0.045)	(0.048)	(0.046)
2.- Labor Characteristics:				
Unions	-0.147 [a]	-0.1231 [a]	-0.1709 [a]	-0.1477 [a]
	(0.036)	(0.038)	(0.036)	(0.037)
Strikes	-0.0171	-0.0257	0.0278	0.0197
	(0.027)	(0.026)	(0.050)	(0.050)
3.- Labor Policies:				
Compulsory age-biased downsizing	-0.0211	-0.0322	-0.0137	-0.0425
	(0.033)	(0.031)	(0.100)	(0.104)
Compulsory skill-biased downsizing	0.0266	0.011	0.0624	0.0722 [c]
	(0.046)	(0.051)	(0.038)	(0.042)
Compulsory female-biased downsizing	0.0709	0.1081	-0.0504	-0.0559
	(0.071)	(0.068)	(0.065)	(0.069)
Employment guarantee	-0.1003 [a]	-0.1021 [a]	-0.0989 [a]	-0.1024 [a]
	(0.032)	(0.030)	(0.035)	(0.032)
Pay cut	-0.0704	-0.0786 [c]	0.2176 [c]	0.2135
	(0.046)	(0.045)	(0.132)	(0.142)
4.- Macroeconomic Variables:				
Gross Domestic Product	0.0517 [a]	0.0545 [a]	0.0499 [a]	0.0524 [a]
	(0.009)	(0.008)	(0.010)	(0.010)
Inflation	0.0001	0.0001	0.0001	0.0001
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.7866 [a]	-1.1795 [a]	-0.4776 [c]	-0.9101 [b]
	(0.300)	(0.242)	(0.475)	(0.460)
Observations	292	308	292	308
R-squared	0.53		0.53	
F	19.49		20.14	
Prob > F	0.000		0.000	
Pseudo R2		1.3248		1.3182
LR chi2		313.74		312.20
Prob > chi2		0.000		0.000

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 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. Columns (1), (2) consider prior restructuring measures and the rest of variable as exogenous and provide estimates from an OLS and TOBIT regressions. Columns (3), (4) show the second stage of the two-step procedure to take account of endogeneity. All regressions include sectoral controls and firm size controls. Robust standard errors are given in parentheses. [a] significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent.

Table 13. Voluntary Downsizing and Re-Hiring

	Dependent Variable: re-hire								
	Probit (1)		dF/dX	Probit (2)		dF/dX	Probit (3)		dF/dX
Voluntary downsizing	0.3476	(0.170) [b]	[0.1292]	0.3741	(0.198) [b]	[0.1374]	0.4027	(0.240) [c]	[0.1581]
Union	0.7863	(0.270) [a]	[0.2373]	0.5006	(0.313)	[0.1598]	1.1636	(0.888)	[0.3492]
ILO Conventions				-0.0002	(0.004)	[-0.0001]			
Labor Firing Cost							-0.1199	(0.096)	[-0.0468]
Constant	-1.947	(1.334)		-3.9402	(2.052) [b]		-1.1906	(0.617) [b]	
Observations	292			214			146		
Log likelihood	-179.87			-130.22			-94.92		
Wald chi2	16.8			9.19			7.92		
Prob > chi2	0.010			0.031			0.054		

	Dependent Variable: re-hire same								
	Probit (1b)		dF/dX	Probit (2b)		dF/dX	Probit (3b)		dF/dX
Voluntary downsizing	0.0758	(0.253)	[0.0068]	0.0897	(0.289)	[0.0087]	0.1010	(0.111)	[0.0187]
Union	0.2795	(0.458)	[0.0204]	0.1313	(0.486)	[0.0113]	0.1728	(0.346)	[0.0123]
ILO Conventions				-0.0030	(0.004)	[-0.0003]			
Labor Firing Cost							-0.0730	(0.152)	[-0.0072]
Constant	-4.9733	(1.680) [a]		-3.3286	(2.328)		-3.4810	(2.012) [c]	
Observations	292			214			146		
Log likelihood	-51.89			-39.81			-37.12		
Wald chi2	7.03			6.23			6.03		
Prob > chi2	0.060			0.07			0.08		

All Regression include: partial privatization dummy, sectoral dummies,country macro controls, and continental dummies. Standard errors and marginal effects are given in parentheses and brackets respectively.

[a] significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent

Table 14. Labor Targeting and Re-Hires

	Dependent Variable: re-hire								
	Probit (1)		dF/dX	Probit (2)		dF/dX	Probit (3)		dF/dX
Age-biased downsizing	0.885	(0.170) [a]	[0.3100]	0.9453	(0.198) [a]	[0.3200]	0.8354	(0.242) [a]	[0.3114]
Skill-biased downsizing	-0.512	(0.242) [b]	[-0.1624]	-0.5894	(0.288) [b]	[-0.1778]	-0.5827	(0.315) [c]	[-0.2089]
Female-biased downsizing	0.557	(0.360)	[0.2141]	0.7464	(0.450)	[0.2861]	0.0577	(0.825)	[0.0223]
Union	0.633	(0.283) [b]	[0.1936]	0.2859	(0.325)	[0.0931]	0.9826	(0.610)	[0.3090]
ILO Conventions				-0.0002	(0.000)	[-0.0001]			
Labor Firing Cost							-0.0450	(0.118)	[-0.0175]
Constant	-1.974	(1.390)		-4.1495	(1.976) [b]		-3.8461	(2.747)	
Observations	292			214			146		
Log likelihood	-164.49			-118.09			-88.48		
Wald chi2	47.13			34.17			20.38		
Prob > chi2	0.000			0.000			0.000		

	Dependent Variable: re-hire same								
	Probit (1b)		dF/dX	Probit (2b)		dF/dX	Probit (3b)		dF/dX
Age-biased downsizing	0.9907	(0.248) [a]	[0.1664]	1.0145	(0.245) [a]	[0.1612]	0.8945	(0.334) [a]	[0.1521]
Skill-biased downsizing	-0.1389	(0.070) [b]	[-0.0060]	-0.2741	(0.139) [b]	[-0.0140]	-0.2615	(0.115) [b]	[-0.0131]
Female-biased downsizing	0.1108	(0.583)	[0.0164]	0.1211	(0.620)	[0.0201]	0.1614	(0.609)	[0.0193]
Union	0.2801	(0.522)	[0.0380]	0.4801	(0.642)	[0.0488]	0.3814	(0.542)	[0.0512]
ILO Conventions				-0.0017	(0.004)	[-0.0029]			
Labor Firing Cost							-0.0585	(0.149)	[-0.0138]
Constant	-3.0785	(1.596) [c]		-3.7566	(1.901) [c]		-4.1594	(2.979)	
Observations	292			214			146		
Log likelihood	-87.91			-67.11			-62.51		
Wald chi2	20.1			22.15			12.21		
Prob > chi2	0.001			0.003			0.070		

All Regression include: partial privatization dummy, sectoral dummies,country macro controls, and continental dummies.
Standard errors and marginal effects are given in parentheses and brackets respectively.

[a] Significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent

Table 15. Voluntary Targeting and Re-Hiring

	Dependent Variable: re-hire								
	Probit (1)		dF/dX	Probit (2)		dF/dX	Probit (3)		dF/dX
Voluntary age-biased downsizing	0.486	(0.189) [a]	[0.1825]	0.5438	(0.223) [b]	[0.2012]	0.4696	(0.261) [c]	[0.1850]
Voluntary skill-biased downsizing	-0.230	(0.357)	[- 0.0793]	-0.6009	(0.433)	[-0.1778]	-0.4238	(0.506)	[-0.1571]
Voluntary female-biased downsizing	-0.276	(0.727)	[-0.0932]	-0.1348	(0.779)	[-0.0459]	-0.1241	(0.788)	[0.0323]
Union	0.499	(0.259) [b]	[0.1638]	0.1576	(0.292)	[0.0540]	0.8966	(0.495) [c]	[0.2993]
ILO Conventions				-0.0035	(0.004)	[-0.0012]			
Labor Firing Cost							-0.0772	(0.120)	[-0.0303]
Constant	-0.798	(0.648)		-0.8361	(1.149)		-1.3176	(1.177)	
Observations	292			214			146		
Log likelihood	-177.33			-125.82			-88.48		
Wald chi2	22.8			20.75			7.87		
Prob > chi2	0.000			0.000			0.040		

All Regression include: partial privatization dummy, sectoral dummies,country macro controls, and continental dummies.
Standard errors and marginal effects are given in parentheses and brackets respectively.
[a] Significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent

Table 16. Compulsory Downsizing and Re-Hiring

	Dependent Variable: re-hire								
	Probit (1)		dF/dX	Probit (2)		dF/dX	Probit (3)		dF/dX
Compulsory age-biased downsizing	0.713	(0.190) [a]	[0.2699]	0.726	(0.221) [b]	[0.2695]	0.5602	(0.257) [b]	[0.2201]
Compulsory skill-biased downsizing	-0.862	(0.353) [b]	[- 0.242]	-0.583	(0.366)	[-0.1738]	-0.7775	(0.435) [c]	[-0.2660]
Compulsory female-biased downsizing	0.738	(0.404) [c]	[0.2861]	1.008	(0.538) [c]	[0.3858]	0.3483	(0.869)	[0.1382]
Union	0.449	(0.252) [c]	[0.1480]	0.094	(0.301)	[0.0323]	0.8522	(0.490) [c]	[0.2858]
ILO Conventions				-0.0056	(0.004)	[-0.0019]			
Labor Firing Cost							-0.0496	(0.120)	[-0.0194]
Constant	-0.572	(0.649)		0.0014	(1.120)		-0.8201	(1.164)	
Observations	292			214			146		
Log likelihood	-171.05			-121.4			-92.4		
Wald chi2	32.59			24.44			11.66		
Prob > chi2	0.000			0.000			0.040		

All Regression include: partial privatization dummy, sectoral dummies,country macro controls, and continental dummies.
Standard errors and marginal effects are given in parentheses and brackets respectively.
[a] Significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent

Appendix 1. Country Sample

Africa:					
1.- Benin	(2)	30.- Saint Vincent	(1)	57.- Austria	(5)
2.- Cape Verde	(1)	31.- Peru	(13)	58.- Belgium	(1)
3.- Cote d'Ivoire	(10)	32.- Puerto Rico	(1)	59.- Bulgaria	(6)
4.- Egypt	(6)	33.- St. Kitts and Nevis	(2)	60.- Croatia	(3)
5.- Gabon	(1)	34.- Trinidad and Tobago	(2)	61.- Czech Republic	(6)
6.- Ghana	(8)	35.- Venezuela	(6)	62.- Denmark	(1)
7.- Kenya	(7)	36.- Barbados	(2)	63.- Estonia	(4)
8.- Lesotho	(1)			64.- Finland	(2)
9.- Senegal	(2)	***Asia:***		65.- France	(7)
10.- South Africa	(4)	37.- Bahrain	(1)	66.- Germany	(5)
11.- Tanzania	(2)	38.- China	(1)	67.- Hungary	(1)
12.- Uganda	(6)	39.- India	(1)	68.- Ireland	(3)
13.- Zambia	(3)	40.- Indonesia	(3)	69.- Italy	(7)
14.- Madagascar	(3)	41.- Israel	(1)	70.- Latvia	(2)
		42.- Japan	(8)	71.- Lithuania	(2)
Americas:		43.- Jordan	(1)	72.- Netherlands	(3)
15.- Argentina	(8)	44.- Korea, Rep.	(5)	73.- Poland	(10)
16.- Belize	(2)	45.- Kuwait	(2)	74.- Portugal	(3)
17.- Bolivia	(8)	46.- Lao PDR	(1)	75.- Russia	(3)
18.- Brazil	(16)	47.- Malaysia	(3)	76.- Serbia	(1)
19.- Canada	(4)	48.- Pakistan	(1)	77.- Slovak Republic	(2)
20.- Chile	(4)	49.- Philippines	(3)	78.- Spain	(5)
21.- Colombia	(9)	50.- Qatar	(1)	79.- Sweden	(3)
22.- Dominican Republic	(2)	51.- Singapore	(2)	80.- Switzerland	(2)
23.- El Salvador	(2)	52.- Sri Lanka	(1)	81.- Turkey	(2)
24.- Grenada	(1)	53.- Taiwan	(1)	82.- United Kingdom	(13)
25.- Guatemala	(1)	54.- Thailand	(1)		
26.- Guyana	(3)	55.- Yemen, Rep.	(1)	***Oceania:***	
27.- Jamaica	(4)			83.- Australia	(5)
28 - Panama	(2)	***Europe:***		84.- New Zealand	(4)
29.- Mexico	(8)	56.- Albania	(2)		

Appendix 2. First Stage Probit

Variables	Probit Model
Pre-privatization profits	-0.7573 [a]
	(0.168)
Political affiliation of unions	-0.1823 [b]
	(0.091)
Latin America	-0.1941
	(0.243)
Asia	0.1790
	(0.298)
Africa and Middle East	0.3652
	(0.304)
Developed Countries	0.3681
	(0.263)
English Common Law	-0.4983 [c]
	(0.277)
German Commercial Code	-0.3351
	(0.213)
Scandinavian Code	-1.0645 [b]
	(0.463)
Openness	0.0011
	(0.003)
Number of observations	308
Pseudo R Squared	0.205
F-statistics on excluded instruments	4.32
Prob>F	0.000

Note: This appendix presents the first-step regression of the two-step procedure for one of the potentially endogenous variables. Robust standard errors are given in parentheses. Regressions include agent bank dummy (not reported) [a] significant at 1 percent; [b] significant at 5 percent; [c] significant at 10 percent.

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