

# DETERMINANTS OF PERFORMANCE OF PRIVATIZED FIRMS: THE ROLE OF THE ECONOMY, COMPETITION, RESTRUCTURINGS FINANCIAL MARKETS, CORPORATE OWNERSHIP AND GOVERNANCE

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## Abstract

The aim of this work is to investigate the determinants and why and how the post-privatization firm's performance improvements occur in an application to the Portuguese case. We test the effects of some causes that may have effects on that performance behavior, based on the agency, property rights and public choice theories. We conclude that the privatization itself, the simple act of privatizing a firm, leads to performance improvements, independently of the effect of other determinants. We observe the same effect when there are favourable economic conditions, when they are in a competitive market, when companies are listed in a stock exchange after privatization, when they are privatized by an initial public offering and when companies develop restructurings before privatization.

**Keywords:** Initial Public Offerings; Privatization; Ownership Structure; Corporate Governance; Determinants of Performance of New Privatized Firms

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## 1 Introduction

Nowadays, there are many empirical studies that conclude that privatization has a relevant influence on the post-privatization firm's performance. So far, there has been very little work of why and how those performance improvements occur. Unlike other large-sample empirical work of share issue privatizations (SIPs), this study investigates the determinants of this performance improvement behaviour. Overall, our work shows that the financial and operational performance of the privatized Portuguese companies improves significantly after privatization, and the significant determinants for that performance are as follows: first, the privatization itself, the simple act of privatizing a firm leads to performance improvements, independently of the effect of other determinants. In addition, as significant determinants, we found the favourable economic conditions at the time of the SIP, the presence of the firm in a competitive market, when there are changes in ownership, when companies are listed in a stock exchange after privatization, when the firm is privatized by an initial public offering and when companies develop restructurings before privatization.

Privatization has turned into a major worldwide phenomenon, in both developed and developing

countries. It is, in general, acceptable that no single definition of privatization exists. (Nightingale and Pindus's, 1997) found that privatization covers a broad range of methods and models, including contracting out for services and even the outright sale of public assets to the private sector. In an attempt to clarify the distinction between public and private, (Savas, 2000) offers a typical view, contending that "privatization means changing from an arrangement with government involvement to one with less".

There have been persistent arguments about whether to limit or to encourage government control or participation as a regulator in the market place. Few arrangements stand long unchanged. The relationship between the public and private sectors is no exception. Clearly the responsibilities for specific activities shift between the public and private sectors from time to time. Hence, occasionally, the term "reprivatization" has been used to describe the event when government leaves some portion of an economic arrangement to the private sector.

It is by now acceptable that the privatization of state-owned enterprises (SOEs), mainly those privatizations developed through public share offerings leads, most of times, to improvements in the financial and operational performance of the privatized firms. It is not so far understandable *why* privatization improves performance. In Portugal,

there is only one study, (Clamote, 2000) that investigated the post-privatization of a small sample of privatized firms and concluded that privatization does work (i.e., improves financial and operating profit and efficiency).

Our study makes the following new empirical contributions. First, we present the first study to be realized in Portugal, to empirically examine why privatization works, which are the main determinants of those performance improvements. In second place, we do not limit our analysis to share-issue privatizations (SIPs), since we also include companies privatized by direct sale or public contest. Third, our database includes information about privatizations from 1988 to 2010 for forty two companies. Therefore, our data span a larger time period than any other privatization study and we feel that our database allows us to undertake the single most thorough multi-sector, multi-industry and multi-privatization method of the financial and operational consequences of privatization.

Using regression tests, we intend to identify causes, determinants of the performance improvements in newly-privatized firms. Using panel data estimations, we look for possible explanations for operational and financial performance of firms over time, using some independent variables, namely, in terms of ownership changes, wealth of the economy, privatization method, etc. Such insights regarding the determinants of post-privatization performance improvements should provide valuable guidance to investors, managers and financial economists.

This study is organized as follows. Section 2 provides the literature revision. Section 3 describes the methodology, empirical proxies and testable predictions. Data and sample collection we employ are described in Section 4. Section 5 presents the empirical results. Section 6 summaries and concludes.

## **2 Literature Revision**

Throughout history, economists have debated the role of government in the economy. Among them, this debate now spans many areas including welfare economics, public choice, public finance, industrial organisation, law and economics, corporate finance, and macroeconomics.

The economic theory of privatization is a subset of the large literature on the economics of ownership and the role for government ownership (or regulation) of productive resources. An initial question to be asked is "what is the proper role of government?" Implicitly, we assume that the goal of government is to promote efficiency. The effects of privatization on productive efficiency or, at least, observable on variables that are proxies for productive efficiency, are the focus of most of the empirical literature we review here.

The theoretical argument for government intervention based on efficiency grounds rests on an argument that markets have failed in some way, one or more of these assumptions do not hold, and that the government can resolve the market failure. Intellectual arguments for government intervention based on efficiency considerations have been made in many areas. Governments perceive the need to regulate (or own) monopolies, intervene in the case of externalities (such as regulating pollution), and help provide public goods (such as providing national defence and education, or in areas where there is a public good aspect to providing information).

The finance and economic literatures suggest reasons why privatization might cause firms to operate more productively. First, the change in the firm's ownership redefines the firm's objectives and the manager's incentives; as a matter of fact, SOEs suffer from having multiple objectives, many of which are imposed on them by political masters. Second, releasing the firm from government control provides greater entrepreneurial opportunities. In the following paragraphs, we investigate these changes brought on by privatization and identify the main causes of potential performance improvements.

An important consequence of privatization and the correspondent change in ownership is the redefinition of the firm's objective function. While state-owned firms typically pursue multiple and often conflicting objectives, privatized firms focus on profit maximization and efficiency. A government's commitment to capitalism and to creating a pro-business environment should be a determinant of a newly-privatized firm's efficiency improvements.

Since SOE's pursue objectives that frequently conflict with profit-maximization, the level of post-privatization ownership retained by the state should affect the newly-privatized firm's efficiency improvements. (Boycko, Shleifer and Vishny, 1996) predict efficiency gains from privatization only if control rights pass from the government to private investors. In addition, (Claessens, 1997) contends that, if the state maintains majority ownership, the firm is more likely to delay restructuring and maintain excessive employment.

The presence of foreign allocation of control may also affect the degree of post-privatization performance improvement. Foreign direct investment (FDI) has been one of the more popular means of foreign participation in privatizations in developing countries. (Anderson, Makhija and Spiro, 1997) identify 41 Czech privatizations with direct foreign investment and 947 firms with no foreign investment. They find that profitability as measured either by return on equity or revenue per employee is significantly higher for the firms with foreign allocation of control.

In addition, before or immediately after privatization, turnover among members of the Board of Directors and the change of CEO is very frequent,

most of times, due to political reasons; therefore, there is no stability inside the Board. Changes in the privatized firm's upper management may also trigger efficiency gains. Replacing the often politically-appointed manager of the CEO with a profession businessperson should lead to performance improvements. (Crutchley, Garner and Marshall, 2002) results indicate that privatized firms with greater board stability is associated with improvement in subsequent performance and retaining boards that experience good performance is associated with continued success.

(Lopez-de-Silanes, 1997) recognize that the existing SOE management may lack the appropriate human capital to effectively guide the privatized firm in the new competitive market. He also finds a positive relation between a change in the CEO and the market value of the privatized firm. (Megginson, Nash and Van Randenborgh, 1994) also examine how executive change affects the operating performance of the newly privatized firm and report stronger efficiency gains for firms with larger changes in top management.

The choice of the offering method is, most of times an important determinant of post-privatization performance. As a matter of fact, a key decision to be made by the privatizing government is the method through which the state-owned asset is transferred to private ownership. This decision is difficult because, in addition to the economic factors such as valuing the assets, privatizations are generally part of an ongoing, highly politicized process. Some of the factors that influence the privatization method include: (1) the history of the asset's ownership, (2) the financial and competitive position of the SOE, (3) the government's ideological view of markets and regulation, (3) the past, present, and potential future regulatory structure in the country, (4) the need to pay off important interest groups in the privatization, (5) the government's ability to credibly commit itself to respect investors' property rights after divestiture, (6) the capital market conditions and existing institutional framework for corporate governance in the country, (7) the sophistication of potential investors, and, (8) the government's willingness to let foreigners own divested assets.

One of the most important methods of privatization is through the sale of state property, under which a government trades its ownership claim for an explicit cash payment. This category takes two important forms. The first form is direct sales (DS) (or asset sales) or public contest (PC) of state-owned enterprises to an individual, an existing corporation, or a group of investors. The second form is share issue privatizations (SIPs), in which some or of a government's entire stake in a SOE is sold to investors through a public share offering. This second method used more frequently since government intends to jump-start development of the national

stock market and to spread ownership of the firm's equity as broadly as possible throughout the citizenry.

One empirical paper explicitly studies the choice between an asset sale and a share issue privatization. Using a sample of 1992 privatizations that raised \$720 billion in 92 countries, (Megginson et al., 2000) examine why 767 firms are divested using share offerings (in public capital markets), but 1225 companies are privatized via direct sales (in private markets). They found robust results that the choice is influenced by capital market, political and firm-specific factors and report that SIPs are more likely to be used when capital markets are less developed, presumably as a way to develop capital markets, and when there is less income inequality.

In addition, according to (Megginson et al., 2000), SIPs are also more likely the larger the size of the offering. They also found that the post privatization operating and financial performance is much higher for SIP's than for DS firms. On the other contrary, governments that have a greater ability to commit to property rights are more likely to privatize via direct asset sales and the degree of post-privatization performance improvement is much lower.

Also, privatization may also expose the firm to the discipline of product market competition. Having to compete with other firms for customers and market share may provide the pressure required to stimulate greater efficiency and profitability. Ramamurty [1997], Newbery and Pollitt [1997] and Vickers and Yarrow [1991] identify competition as a major determinant of post-privatization performance improvements. Vickers and Yarrow [1991] suggest that while privatization should stimulate efficiency gains in competitive environments, there is no advantage to private ownership when market power exists.

The pressure of national and international product market competition may force the newly-privatized firm to operate more efficiently. (Vickers and Yarrow, 1992) defend that the introduction of competition is the driving force behind post-privatization performance improvements. Therefore, firms privatized in competitive industries may experience the major efficiency gains. On the other hand, some privatized firms remain insulated from competition and, therefore, they do not have to operate efficiently to survive in national and international markets. According to (D' Souza and Megginson, 1999), competitive firms are defined as "those that are subject to international product market competition, and non-competitive firms as those that are relatively free of product market competition".

### 3 Methodology, empirical proxies and testable predictions

#### 3.1 Searching reasons for Post-Privatization Operational and Financial Performance; Tests of casual relations for the post-privatization operational and financial performance effects

##### 3.1.1 Regression Analysis

With regression analysis, we are not looking for evidence that privatization improves performance of divested firms; rather, we are interested to develop research of why the performance improvements occur. This methodology was firstly used by (D'Souza, Megginson and Nash, 2001) to examine how various firm, industry and country factors affect the post-privatization performance. In each of their models, the dependent variable was the change in the value of the performance proxy (mean value after privatization / mean value before privatization). In addition, in their models the independent variables were factors identified as possible determinants of post-privatization efficiency gains.

Using a similar methodology as (D'Souza, Megginson and Nash, 2001) but with different factors, this work wants to contribute to a better knowledge of the determinants of the performance improvements. In this stage of testing, we perform a multivariate regression analysis (Ordinary Least Squares methodology (OLS), in order to investigate how several firm and industry factors affect post-privatization performance. In this empirical stage, the data base was structured to be feasible this kind of empirical testing. This method is applied to a multivariate regression model with the generic form:

$$Y_i = f(X_{i0}, X_{i1} \dots X_{in}) + U_i, \quad (1)$$

where  $i = 1, 2 \dots m$ ;  
 $n$  is the number of firms.

Assuming a stochastic and linear form, the method can be written as follows:

$$Y_i = b_{i0} X_{i0} + b_{i1} X_{i1} + b_{i2} X_{i2} + b_{in} X_{in} + U_i, \quad (2)$$

where  $i = 1, 2 \dots m$ ;  
 $n$  is the number of firms.

(Y) is the dependent variable, (X<sub>0</sub>, X<sub>1</sub>...X<sub>n</sub>) are the explanatory variables, and  $i$  index the  $k$  number of observations in the sample. The term  $u$  is a random disturbance. In each of the models, the dependent variable (Y<sub>i</sub>) is the change in the value of the performance proxy (mean value after privatization/mean value before privatization). The explanatory variables identify the potential causes of post-privatization performance improvements.

The assumptions of the OLS multivariate regression model are verified with specific tests to analyse the homocedasticity, the autocorrelation of the residuals (estimators of the disturbance), the stationarity of the variables and the structural stability of the regression model; given the general assumptions of the OLS regression model, it is expected that the matrix  $X_{(k \times n)}$  is deterministic; the disturbance term follows a normal distribution with mean value zero and variance value constant and that the OLS estimator of  $b_n$  parameters, also follows a Gaussian distribution; in order to ensure that the mean value of the disturbance is zero, it will be included and maintained a constant term in the linear regression function; this methodology, the multivariate OLS regression, was used by D' Souza, Megginson and Nash [2000].

The assumptions of the OLS model will be analysed with specific tests during the regressions of the performance proxies on the factors (regressors) appointed in the empirical literature as possible determinants of gains after privatization. These specific tests will analyse the homocedasticity and the autocorrelation of the residuals (estimators of the disturbance) of the regression model. Since the regression is a cross-section analysis, the question of the model homocedasticity is crucial; therefore, it will be used, in this study, the White's general test that does not imply any specific assumptions about the nature of the heteroscedasticity. If a regression model has heteroscedasticity, then it will be used the White's estimator for the correction of the covariance matrix, so, it will be used, as an estimator, the OLS estimator combined with the covariance matrix of White's estimator.

In sum, we perform multivariate OLS regressions to examine how several firms, industry and other factors affect the post-privatization performance. Our database includes privatizations of 42 firms. These transactions take place from 1988-2010. Thus, our data span a larger time period than any other privatization study ever developed in Portugal.

##### 3.1.2 The Panel Data Analysis

Panel data estimation has many benefits in what concerns the capture of the variations over time, the pre and post-privatization periods, of the economic indicators of the firms. It is possible to control differences in individual's specificities and temporal chances over time in every individual; this study will focus in this last one.

In this investigation area, the panel data estimation techniques were former employed by (Bortolotti et al., 2001) to account for both regulatory and ownership effects on firm performance of privatized firms on the telecommunications industry. That is, the principal aim of their panel data analysis was to test how changes in the ownership structure

and in the domestic competitive and regulatory environment affect the financial and operating performance of privatized companies over time. To do that, they reused many of the same variables of the univariate analysis and they also developed additional variables to measure ownership and regulation. With different factors in mind, we use the same methodology as used by (Bortolotti et al., 2001) convinced, as they were, that this estimation has more information and more efficient estimators than de cross-section estimation; as a matter of fact, panel data estimation, based on same data base but with a different structure, when compared with the regression analysis, is one of the most suitable method of capturing the variation over time of our operational and financial indicators; in addition, it is able to control for individual, firm-specific heterogeneity, as well as for temporal changes in the firms' operating environment and the results tend to be more robust.

The general specification of a panel data regression is as follows:

$$y_{it} = \mathbf{x}'_{it} \beta + \mathbf{z}'_i + \varepsilon_{it}, \quad (3)$$

The individual effects are reflected in the vector  $\mathbf{z}'_i$ .

As is usual in panel data analysis, as in (Baltagi, 1995), this study will estimate both a fixed effect and a random effect model for each performance indicator. The fixed effect specification assumes that company-specific effects are fixed parameters to be estimated, whereas the random effect model assumes that companies constitute a random sample. In a fixed effects model, it is assumed that differences between individuals will be obtained by the constant term, so that, for each individual, the model is as follows:

$$y_i = \mathbf{X}_i + 1\alpha_i + \varepsilon_i, \quad (4)$$

where 1 is a vector of 1's.

For all individuals, we have the following equation:

$$y = \mathbf{X}\beta + D\alpha + \varepsilon, \quad (5)$$

where  $D$  is a matrix of 1's and zeros;

$\varepsilon$  is the error term that is uncorrelated with the independent variable.

In a random effects model, the constant term is unique for every individual and there exists a random specific effect for each individual, so, this effect will be obtained, but it will not be seen. The equation for estimation of this model is, as follows:

$$y_{it} = \mathbf{x}'_{it} \beta + \alpha + U_i + \varepsilon_{it}, \quad (6)$$

where  $U_i$  is the specific random effect;

$\varepsilon_{it}$  is the common error term.

In order to test which model is more appropriate, it will be used the Hausman test that, following the estimation of both models, will infer which model has the most efficient estimator. In other words, the Hausman test measures whether the random effects are correlated with the explanatory variables, which in turn implies that coefficients estimated by the fixed-effect estimator and those estimated by the random effect estimator do not statistically differ.

The principal objective of our panel data analysis is to test why and how changes in the ownership structure, the economic growth of the economic, the competitive environment, the pre-restructuring measures, the capital structure, the privatization method and the possibility of being present in an official capital market, affect the financial and operational performance of privatized companies over time. In order to pursue that objective, we reuse many of the same variables used for regression analysis and we also develop additional variables. As a matter of fact, with the objective of performing both fixed effect and random effect estimations we use the post-privatization dummy variable (POSTPRIV) and a constant term.

We perform fixed and random effect estimations with these proxies in mind, ownership, competitive environment, real GDP, privatization method and the effect of the presence of officially quoted markets. The level of significance of the Hausman test is used to inform us about the type of model to use. If this test is significant, our attention is concentrated on the fixed effect model. On the contrary, if the Hausman test is insignificant, we concentrate on the random effect model.

### 3.1.3 Empirical Proxies and Testable Predictions

We next specify empirical proxies for each factor predicted to affect post-privatization performance. The following section presents these proxies and describes how we expect each variable to impact the newly privatized firm's financial and operating performance. Table 1 defines the variables used in our regression models to identify the determinants of post-privatization operational and financial performance improvements.

*Changes in Investment.* (Boubakri and Cosset, 1998), (D'Souza and Megginson, 2000), (Boardman, et al., 2000), (Jain and Kini, 1994) and (Megginson et al., 1994) concluded that firms, after their IPO, tend to restructure and increase their capital spending, conducting to profit maximization and efficiency improvements, because companies have greater

access to private debt and equity markets than most SOEs and, to the extent that privatizations promote entrepreneurship, the newly-privatized firms will have the incentive and the means to invest in growth not only nationally but also internationally.

Based on the findings of these studies, we expect that improvement changes in the financial performance will be very pronounced in the case of companies that develop medium and long run investment programs, in order to become more prepared, with new technologies, that is, more developed firms. We perform regression and panel data analysis to confirm the effect of investment spending as a determinant of post-privatization performance. We use the variable "Investment" as independent variable that is measured by the total amount of euros invested.

*Changes in State Ownership.* During the post-privatization period, when the firm's ownership becomes private, it is expectable a change in the owner's incentives, a new direction on firm's objectives, toward a more efficient and profitable organization. Since most of times, SOEs pursue objectives inconsistent with profit maximization, it will be natural to expect that privatizations with a greater percentage of private ownership will show the best operational and financial results. In order to confirm that assumption, we examine the effect of the proportion of ownership retained by the government using regression and panel data analysis.

(Boycko et al., 1996) predict efficiency gains from privatization only if control rights pass from the government to private investors. (D' Souza and Megginson, 1998), (Boubakri and Cosset, 1998) and (Megginson, et al., 1994) report larger efficiency improvements following divestitures in which the government relinquished majority control and (D' Souza et al., 2000) concluded that the proportional post-privatization ownership is an important indicator of the firm's success following privatization.

We use the percentage of shares owned by government after privatization as a proxy for state ownership. We expect that improvement changes in the post privatization operational and financial performance will be much more pronounced when firms were privatized with a percentage greater than fifty percent (control sample), than in the case of firms that were privatized with less than fifty percent private ownership (no-control group), since in control privatizations, the new owners have conditions to make structural management decisions in order to improve performance.

*The Pressure of Competition.* When a company, after its privatization process, faces the national and international market competition, it is decisive for its future that some kind of internal restructuring must be done in order to improve its operating and financial efficiency. (Clamote, 1999) and (D' Souza and Megginson [DSM], 1999), concluded in their work that privatization of enterprises in competitive

industries, such as, airlines, retail operations, or manufacturing, yielded more robust and rapid performance improvements, than in non-competitive industries, as long as there are no economy distortions that constrain competition. Also, (Yarrow, 1992) in his investigation concluded that the maximization of profits and efficiency after privatization was frequently higher for companies in competitive environments. In sum, these and other findings, suggest that firms operating on competitive markets, experience the greatest post-privatization performance improvements.

*The Impact of Restructuring.* Organizational changes, acquisitions, divestitures, financial reorganizations and other restructuring measures are, more and more, developed before privatizations. (Nellis and Kikefi, 1989) defended that governments should restructure SOEs prior to the sale, since after privatization, the operational and financial improvements would be more remarkable. Because these and other thesis about restructuring, we became convinced that firms restructure because they want to improve their operational and financial performance. Thus, we expect that restructuring improve profitability, efficiency and financial equilibrium of firms after privatization and changes in the financial performance will be much more pronounced when firms were restructured prior to the SIP. The fundamental explanation is that a restructured firm is better prepared to face the marketplace and, thus, to improve more it's operational and financial performance.

*Capital Markets and Listed Firms.* (Dewenter and Malatesta, 1997), (Anderson et al. 1997) and (Estrin and Perotin, 1991) argue that state-owned firms are less efficient because they are immune to capital market scrutiny. As a result, managerial performance is inadequately monitored. The public trading of shares establish the possibility of takeover by outsiders introduces the discipline of the managerial labour market and provides the ability to link compensation to performance; as a result, when shares trade in the public equity markets, owners and managers have enhanced capacity to spur greater managerial effort and accountability.

Additionally, the capital market may also contribute to an economic and regulatory environment conducive to the post-privatization operational and financial performance improvements. (Subrahmanyam and Titman, 1999), (Boubakri and Cosset, 1998), identify a link between the presence of firms in capital markets scrutiny and profitability and efficiency, that is, the presence in the financial market allows the newly-privatized firm greater access to the capital required for further restructuring and modernization. According to (Dow and Gorton, 1997) and (Vickers and Yarrow, 1992) stock prices must be informationally efficient to provide an accurate retrospective of managerial performance.

We perform regression and panel data analysis to test the effect of firms in being listed in an official financial market after privatization. We expect that improvement in the economic and financial performance lead by the listing of firms in a stock exchange. This variable will assume the value 1 if the firm has its listed stock and 0 (zero) otherwise.

*Firms Privatized by Share Issue Privatization (SIP) or by Direct Sale (DS) or Public Contest (PC).* The share issue privatization and the direct sale or public contest is the most known methods of privatization. According to (Megginson and Netter, 2001), sales of shares through public capital markets (SIPs), are more likely in less developed capital markets and for larger and more profitable state owned enterprises. The countries decision to use IPO's more frequently result from the governments' need and desire to use IPO to develop the national market's liquidity. IPO's are more likely when income is more equal through the country, providing more potential investors and avoiding the need for extensive underpricing of the offerings (Megginson and Netter, 2001).

We perform regression and panel data analysis to test the effect of a SIP and the effect of a direct sale or public contest on post-privatization performance. We expect that improvement changes in the financial performance will be much more pronounced in the case of SIPs than in the case of direct sales or public contest. Based on actual findings, such as, (Megginson and Netter, 2001), we expect that using the method of share issue privatizations (SIPs), in which some or of a government's entire stake in a SOE is sold to investors through a public share offering will positively impact the degree of post-privatization performance improvement. Indicator variable will have the value 1 if the firm is privatized by SIP, zero (0) if privatized by direct sale or public contest.

*Changes in Capital Structure.* (Macquieira and Zurita, 1996) expect capital structure to improve dropping the leverage ratios after privatization, because SOEs, traditionally, have very high debt levels and the switch from public to private ownership should lead to more consistent capital structure because the government's removal of debt guarantees will increase the firms' cost of borrowing and because companies will have increased access to public equity markets and this more consistent capital structure, will may lead to significant financial cost reductions, to significant performance improvements after privatization.

We perform regression and panel data analysis to test the effect of capital structure and leverage as determinants of post-privatization performance. We use the ratio of total debt to total assets as the independent variable. We expect that improvement changes in the financial and operational performance will much more relevant in the case of companies

which have low leverage and a balanced capital structure.

*Growth in the Economy.* A nation's economic environment may also affect the magnitude of the change in the firm's operational and financial performance following privatization. (Megginson et al. 1994) noted that the Thatcher government (1979-1990), companies privatized in the U. K. during this period should be expected to show greater profit and efficiency gains than companies operating under less market-friendly regimes. In addition, (Kikeri, et al. 1992) suggest that a country with a sophisticated economy and higher income is more likely to have a market-friendly policy framework. Such factors should increase the chances of successful privatization. If this factor becomes to be true, this means that privatization success is no more a result of a change in any of the other factors, but only the result of the economic growth that would affect every firm. Therefore, this variable acts as a central variable.

To determine the effect of growth in the economy during the pre and post privatization window, we use the Real GDP Growth in the economy (percentage growth in Real GDP for three years post-privatization period over the three year pre-privatization period), as the proxy for the growth in the Economy. We expect that privatizations done in high growth economy periods will generate the greatest operational and financial performance improvements.

#### 4 Data and sample collection

We limit our analysis to Portuguese companies that were fully or partially sold to private investors through a public share offering and direct sales or public contest, primarily because companies that are privatized by this way continue to generate post-issue financial and accounting data that are directly comparable to preinvestiture data. We select forty two privatized firms with available information since 1988 to 2010 and have at least three annual observations in the years N- 5 to N- 1 and another three observations in the period N+1 to 2010, where the year of privatization is defined as year N.

In all cases, we directly solicited from the privatized firms through mail requests: (1) the offering prospectus for their initial offer, which invariably presents multiple years of preprivatization financial data, as well as details about the offering itself, and (2) the annual reports from the postprivatization periods. Out data was personally collected by hand and approximately 90 percent of the companies we approached fully or partially complied with our requests.

In several cases, we supplemented the financial statements database, with secondary sources, namely, the Millennium BCP, Bank of Portugal and Euronext Lisbon databases. Additionally, we had also

personnel contacts with managers of some firms. In case of doubts about some aspects of the firms, we had also made phone calls contacts. We did not include any company by relying on secondary sources exclusively.

Our data span a larger time period than any other privatization study for Portuguese data on the subject. The following descriptive information of these companies: name of the company, type of industry, issue date and the percentage of capital that was privatized at the date of the issue. The sample is well diversified, exhibiting a wide temporal dispersion.

## 5 Empirical Results

In our first stage of our empirical testing, that is, the multivariate regression models, the dependent variables represent percentage changes after privatization in return on sales (ROS), sales efficiency (SALEFF), real capital expenditure to sales (RCESA), real sales (SAL), total employment (EMPL), dividend to sales (DIVSAL), treasury applications (TA), sales to total assets (STA), cash and banks to short term debt (CBTSTD), net cash flow to long term debt (NCFTLTD), total debt to assets (TDTA), respectively.

In the second stage of our empirical testing, that is, the panel data regression model, the dependent variables are: Profitability I (Operating Income),

Profitability II (Return on Sales), Operational Efficiency (Sales Efficiency), Capital Investment (Capital Investment), Real Output (Real Sales), Employment (Employment), Dividend Policy (Dividend to Sales), Treasury (Treasury Applications), Activity Levels (Sales to Total Assets), Short Term Equilibrium (Cash and Banks to Short Term Debt), Long Term Equilibrium (Net Cash Flow to Long Term Debt) and Capital Structure (Total Debt to Total Assets). Our panel results indicate that for almost all performance indicators the more suitable model is the random effects model. Therefore, it can be said that firms have a random specify effect, which can be derived from the specificity of their pre-privatization life, combined with the specificity of their sector; nevertheless, all firms that were privatized have common signs of evolution in certain performance indicators.

Trying to investigate the causes of the post-privatization operational and financial performance, we employ the following independent variables: investment, state ownership, competitive firms, and restructured firms, officially listed firms, firms privatized by SIP, capital structure and real GDP growth. Table 1 presents all the independent variables. Table 2 presents the results of our regressions. Tables 3 to 14 present the results of our panel data estimations.

**Table 1.** Definitions of Explanatory Variables

Variable	Proxy for	Empirical Definition
Investment	Firms Investment	Firms Investment
State Ownership	State Ownership	Percentage of shares owned by the government after the privatization
Competitive Firms	Competitive versus non-competitive	Indicator variable with value = 1 if firm is from a competitive industry, else 0. A firm is in competitive industry when is subject to international product market competition
Restructured Firms	Restructure	Indicator variable with value = 1 if firm has restructured in the form of management / organization restructure and/or acquisitions and divestures and / or financial restructure during the seven year window period, 0 if not
Listed Firms	Official List	Indicator variable with value = 1 if firm is listed, else 0. A firm is listed when it is traded in the official financial market
Firms Privatized by SIP	Privatization by SIP	Indicator variable with value = 1 if firm is privatized by SIP, else 0. A firm is privatized by SIP when there is an issue of shares.
Capital Structure	Financial Structure	Ratio of total debt to total assets
Real GDP Growth	Growth in the Economy	Percentage growth in Real GDP for three year post-privatization period over the three year pre-privatization period

### 5.1 The main determinants and its effects in the operational, social and financial performance of privatized firms

#### 5.1.1 The privatization process

We found that the privatization itself, “per si”, is a significantly relevant determinant for improvements in the operational, social and financial performance

after privatization. That is, independently of certain casual relations with performance after privatization referred above, the act of privatization alone implies better performance results for the new private company. Thus, the privatization process itself, is a significant driver, a significant determinant for the operational, social and financial performance improvements during the post-privatization period.



**Table 2.** Regression results to Identify Sources of Performance Improvements

Regression results to identify the sources of performance improvements in newly-privatized firms. The dependent variables in the eleven models are change in return on sales (ROS), change in sales efficiency (SALEFF), change in real capital expenditure to sales (RCESA), change in real sales (SAL), change in employment (EMPL), change in Dividend to Sales (DIVSAL), change in Treasury Applications (TA), change in sales to total assets (STA), change in cash and banks to short term debt (CBTSTD), change in net cash flow to long term debt (NCFTLTD) and change in total debt to total assets (TDTA) respectively. Change in each of dependent variable is defined as percentage growth rate of the average of the year's post-privatization data over the average of year's pre-privatization data. T-statistics are in parentheses.

	ROSa/ ROsb	<sup>□</sup> SALEFFa/ SALEFFb	RCESAs/ RCESAb	SALa/ SALb	<sup>□</sup> EMPLa/ EMPLb	<sup>□</sup> DIVSALa/ DIVSALb	TAa/ TAb	STAA/ STAb	<sup>□</sup> CBTSTDa/ CBTSTDb	<sup>□</sup> NCFTLTDa/ NCFTLTDb	<sup>□</sup> TDTAa/ TDTAb
<b>Constant</b>	-2.786 (-0.35)	6.163 (0.68)	13.162 (0.43)	9.211 (1.77)	8.667 (1.63)	2.251 (1.14)	1.549 (0.23)	3.359* (2.84)	0.129 (0.13)	0.288 (0.81)	3.794 (1.14)
<b>Investment</b>	1.991 (1.02)	5.442* (2.28)	3.242* (2.92)	3.453* (2.61)	-4.545* (-2.79)	-3.949 (-1.48)	7.993* (3.75)	2.544* (2.74)	-2.343 (-1.23)	-1.654 (-0.97)	-1.922 (-0.58)
<b>State Ownership</b>	-4.585* (-2.36)	-3.585* (-2.63)	-2.023 (-1.66)	- 2.585* (-1.56)	3.642 (1.85)	-2.434* (-2.36)	-5.242* (-2.38)	-4.048* (-2.96)	1.454 (1.36)	1.022 (1.37)	2.585 (1.38)
<b>Competitive Firms</b>	1.991 (1.19)	3.334* (2.43)	9.798 (0.97)	8.930* (1.39)	1.233 (0.95)	1.774 (1.34)	1.222* (1.79)	5.604* (2.69)	1.245 (1.12)	1.114 (1.11)	2.822 (1.43)
<b>Restructured Firms</b>	5.456* (2.98)	6.546* (2.28)	9.456* (3.528)	8.232* (3.33)	-2.446* (-1.54)	-0.222 (-0.12)	-0.456 (-1.21)	4.666 (1.48)	1.121 (1.28)	1.456 (1.12)	-1.222 (-1.42)
<b>Listed Firms</b>	2.924* (2.34)	3.745* (2.83)	3.542* (2.54)	3.533* (2.11)	-4.774* (2.71)	4.434* (2.33)	5.435 (1.92)	2.848* (2.44)	1.788 (2.01)	1.099 (0.78)	2.112 (1.31)
<b>Firms Privatized by SIP</b>	1.991* (3.12)	3.992* (2.45)	3.003 (1.53)	4.232* (3.12)	-3.998* (-2.62)	8.456* (2.48)	7.664* (4.90)	4.773 (1.51)	2.930 (1.12)	1.234 (0.96)	2.090 (1.24)
<b>Capital Structure</b>	-3.222 (-1.35)	2.044 (1.28)	-2.023 (-1.56)	0.090 (0.28)	2.332* (2.53)	2.232 (1.45)	1.897 (1.44)	2.048 (2.02)	0.232 (1.27)	1.022 (1.26)	1.999* (2.98)
<b>GDP at constant prices</b>	8.456* (2.98)	6.546* (2.28)	5.456* (3.58)	9.232* (3.33)	2.446* (2.54)	8.333* (2.18)	9.456* (3.24)	4.666 (1.49)	3.444 (1.79)	2.456 (1.28)	4.222 (1.58)
<b>Adjusted R-Squared</b>	0.412	0.497	0.245	0.332	0.462	0.023	0.398	0.323	0.197	0.176	0.394
<b>F-value</b>	2.955*	2.824*	1.657	2.773*	2.349*	1.283	1.477	1.595	1.156	1.142	2.872*
<b>Observations</b>	42	42	42	42	42	42	42	42	42	42	42

### **5.1.2 Ownership**

Ownership changes proved to be a very significant determinant of performance of newly privatized firms. Following the transfer of ownership from the state to private investors, we found significant improvements in profitability, efficiency, activity levels, etc. These performance improvements should indicate, on one hand, a redefinition in the owner's and manager's incentives and, in the other hand, a change in the firm's objectives and more efficient organization.

### **5.1.3 Wealth of the economy**

A very significant determinant of performance of privatized firms is the timing of the offer, that is, if the share issue privatization happens when the economy is in a good shape and the GDP growth is high, we observe significant higher improvements in the operational, social and financial performance of the newly privatized firms. To determine the effect of growth in the economy, we use the real GDP growth in the economy. If the share issue privatization happens in years of weak economic growth rates, the performance improvements are not significant.

### **5.1.4 Listing in the stock exchange**

A very significant determinant of performance improvements is to be listed in the Portuguese stock market after the share issue privatization. Listed new privatized companies showed, in the years following privatization, higher profitability and efficiency, a greater output and, in general, much better operational, social and financial performance than no listed firms. The exchange trading of shares introduces new rules on firm's behaviour and the listed firms become subject to greater capital market discipline and these firms organize themselves, implementing a more professional management, being the performance results significantly improved.

### **5.1.5 Restructurings before privatization**

A restructuring before privatization is a significantly relevant determinant for improvements in the operational, social and financial performance after privatization. We found that firms that decide to organize, to prepare, to cut costs, to restructure before privatization, present much higher performance improvements during the post-privatization period, than firms that did not restructure before privatization. It seems that restructuring "adds value" for the newly privatized firms. Restructuring leads to higher levels of output growth and higher profitability improvements

### **5.1.6 Competitive markets**

Doing business in a competitive environment is a significantly relevant determinant for improvements in the operational, social and financial performance after privatization. Firms in competitive markets got higher performance improvements that did firms in no competitive markets that remain insulated from competition. The pressure of international product market competition may force the privatized companies to work more efficiently and competitive industries may experience the largest efficiency gains

### **5.1.7 Initial public offering**

Being private through an initial public offering, instead a direct sale or public contest, is a significant determinant for improvements in the operational, social and financial performance after privatization. When a company is privatized by an initial public offering, its equity becomes much more disperse than in a direct sale. These equity dispersion lead to performance improvements that should indicate, on one hand, a redefinition of the manager's objectives and incentives and, in the other hand, a change in the firm's goals and more efficient and professional organization.

## **5.2 The determinant's results in performance of the newly privatized firms**

### **5.2.1 Profitability**

One of the most significant determinants of changes in post-privatization profitability is ownership; First of all, we identify a significant negative relation between profitability and the state ownership relation after privatization. After privatization, for one percent increase in state ownership stake, leads to a 4,5% decrease in profitability performance. Profitability presents a significant positive relation with the dummy variables relatively to the share issue privatization (SIP), restructured firms, listed firms and economic growth. As a matter of fact, for example, each firm that restructured before privatization shows a 5, 4% higher performance improvement on its profitability than firms that did not restructure. This is consistent with our testable predictions and is in accordance with what we expect, that is, performance improvements to increase as state ownership decrease, on the post-privatization period. Our findings that higher state ownership retention leads to lower profitability improvement are consistent with (Boycko et al., 1996).

With the panel data empirical tests, we measure profitability using two of the ratios employed in the previous empirical tests: operating income (in absolute terms) and return on sales (ROS). The results for operating income are presented in Table 3

(Profitability I), while the results for ROS are presented in Table 4 (Profitability II). All sets of estimations confirm the results of our previous analysis; privatization is directly linked with profitability. The same results emerge both in the fixed and random effect models. It can be seen that the results for the models (fixed and random effects)

for operating income have almost the same results. The coefficient on the dummy for the post-privatization period (POSTPRIV) is always positive and, most of times, much significant for profitability I and profitability II. The same results happen both in the fixed and random effect models.

**Table 3.** Results of Panel Data Estimations: Profitability I

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Operating Income	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.223 (0.112)	0.234 (0.102)
<b>FC</b>	-3.017* (-2.114)	-4.579* (-2.788)
<b>INVEST</b>	0.274 (1.633)	0.236 (1.684)
<b>CS</b>	2.190 (1.485)	2.903 (1.753)
<b>GDP</b>	2.174* (2.569)	2.762* (2.966)
<b>POSTPRIV</b>	1,129* (2.786)	1,148* (2.103)
<b>LF</b>	0.825 (1.192)	1.254 (1.364)
<b>SIP</b>	1.495* (2.232)	1.627* (2.162)
<b>STAKE</b>	-2.330 (-1.926)	-2.723* (-2.139)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	6.27	7.64
<b>Hausman</b>	2.55	1.42

\*rejection of H0 at five percent level of significance

Apart from the fact of privatization itself, other causes, determinants, significantly influence post privatization profitability. As a matter of fact, the positive coefficients of competitive markets, capital structure and share issue privatizations (SIP). As a consequence, a significant part of profitability gained in the post privatization period is related with market competition, strong balance sheet structure and the dispersion of capital by the public, through the emission of new shares. Also, the economic wealth of the economy (GDP level) means these variables have

influenced positively the increase in profitability after the privatization. In an opposite direction, are the fixed costs and the percentage retained by the government (STAKE), that is, when fixed costs increase and we have a revenue (partial) privatization, the profitability levels decrease after privatization. These conclusions are similar to the return on sales results (ROS) (Profitability II) and, again, almost equal in the two models.

**Table 4.** Results of Panel Data Estimations: Profitability II

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Return on Sales	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.03 (0.012)	0.102 (0.233)
<b>FC</b>	-2.329* (-5.897)	-3.870* (-9.202)
<b>INVEST</b>	0.122 (0.434)	2.443 (1.688)
<b>CS</b>	1.646 (1.922)	1.403 (2.321)
<b>GDP</b>	3.656* (4.986)	3.454* (5.966)
<b>POSTPRIV</b>	1.323* (2.885)	1.676* (4.332)
<b>LF</b>	1.622 (1.940)	3.977* (3.254)
<b>SIP</b>	1.495 (1.874)	2.932* (4.434)
<b>STAKE</b>	-1.878 (-1.884)	-3.443* (-3.664)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	4.98	7.22
<b>Hausman</b>	2.41	1.56

\*rejection of H0 at five percent level of significance

Overall, it is demonstrated that state ownership stake is probably one of the major drivers of the change in the profitability that generally follows privatization, that is, the higher private ownership, the greater profitability increase. Besides ownership, the GDP growth also represents a decisive determinant of post-privatization.

### 5.2.2 Operating Efficiency

The efficiency regression provides evidence that the amount of national wealth, Gross Domestic Product (GDP) at constant prices, has a significant positive relation with post-privatization efficiency improvements, as we expected. Our tests show that, after privatization, one percent increase in state ownership stake, leads to 3, 5% decrease on efficiency. Also, the significant positive sign of firms officially quoted after privatization, indicates that a one percentage point increase in firms that are officially quoted leads to 3.7 percent increase in post-privatization sales efficiency. The significant positive sign of firms privatized by SIP indicates that a one percentage point increase in firms that are privatized

by IPO leads to 3.9 percent increase in post-privatization sales efficiency. Our results are consistent with Boubakri and Cosset [1998], who also document strong efficiency improvements for companies that were privatized by IPO in developing countries. Additionally, Anderson et al., 1997) and (Estrin and Perotin, 1991) argue that companies, after privatization, if officially quoted, are much more efficient, since they are not immune to capital market scrutiny. The independent variables explain 40 percent of the change in the sales efficiency after privatization.

On the panel data methodology, we employ sales per employee (SALEFF) in thousands of euros, to test for changes in efficiency after privatization, and we control for different levels of the economic development. The results of these estimations are presented in Table 5. Since the Hausman test is insignificant, we focus on either fixed or random effects. In our model, the POSTPRIV dummy is highly significant and the variable OQF is significantly positively related to SALEFF, since the presence in the financial markets leads companies officially quoted to restructure, to be more efficient

and competitive. On the contrary, STAKE and fixed costs are significantly negatively related to SALEFF.

**Table 5.** Results of Panel Data Estimations: Operational Efficiency

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Sales Efficiency	
	Fixed Effects	Random Effects
CONSTANT	0.005 (0.011)	-0.213 (-1.102)
FC	-2.278* (-3.221)	-4.987* (-5.323)
INVEST	1.002 (1.803)	2.093 (1.512)
CS	0.939 (0.234)	1.535 (1.028)
GDP	2.837 (1.231)	2.923 (1.634)
POSTPRIV	2.898* (3.546)	3.935* (5.398)
LF	2.646* (2.567)	4.578* (4.767)
SIP	0.897 (1.675)	2.356* (2.786)
STAKE	-2.455* (-2.848)	-4.120* (-4.192)
Nobs	164	164
Tests		
F	2.55	4.32
Hausman	1.41	1.12
*rejection of H0 at five percent level of significance		

Overall, our data indicate that GDP at constant prices, quotation in the financial markets, and privatization by SIP are the key determinants of post-privatization efficiency improvements.

### 5.2.3 Capital Investment

The results presented in Table 6 for capital investment show us a significant positive sign with economic growth, not surprisingly, to a real 12, 5 percent. When the economy is growing, there are much more investment opportunities. In addition, a variable that has a significant positive sign is related with share issue privatizations. As a matter of fact, by our tests, capital expenditure presents a significant relation with the dummy variable relatively to the share issue privatization. Therefore, there is a positive relationship between profitability and firms that were privatized through a SIP. That is, there is a significant positive sign of firms privatized by SIP which indicates that a one percentage point increase in firms that are privatized by SIP leads to 3 percent increase

in post-privatization capital investment. As a matter of fact, capital expenditure presents a significant relation with the dummy variable relatively to the share issue privatization, that is, there is a positive relationship between profitability and firms that were privatized through a share issue privatization.

In addition, there is a significant positive sign between economic growth, capital structure, and restructured firms before privatization, and capital investment spending. For example, one percentage point increase in economic growth leads to 5, 4 percent increase in post-privatization capital investment. This is comprehensive, since with economic growth, the entrepreneurs have more confidence on the economy and, because of that, they increase their investment plans. Another positive relation with capital spending is the restructurings variable. As a matter of fact, the regression analysis reveals that restructuring has the expected positive impact on capital investment spending.

**Table 6.** Results of Panel Data Estimations: Capital Investment

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Capital Investment	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.012 (0.002)	1.323 (1.478)
<b>FC</b>	0.101 (0.838)	1.002 (0.322)
<b>INVEST</b>	12.232* (6.293)	14.985* (8.453)
<b>CS</b>	1.867* (1.577)	3.737 (2.023)
<b>GDP</b>	11.232* (5.839)	17.255* (7.422)
<b>POSTPRIV</b>	4.983* (5.929)	5.828* (7.232)
<b>LF</b>	1.232 (1.430)	2.807* (2.609)
<b>SIP</b>	0.399 (0.782)	1.345 (1.893)
<b>STAKE</b>	-3.627* (-3.425)	-6.405* (-5.845)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	2.79	3.32
<b>Hausman</b>	1.01	0.31

\*rejection of H0 at five percent level of significance

Our empirical results are confirmed by (Lopez-de-Silanes, 1997). This author examined whether companies that developed restructurings before privatization, increase their capital investments after privatization. He found evidence that after restructuring before privatization, a significant part of firms increase their capital spending significantly after privatization.

Additionally, we test capital investment spending using normalized real capital expenditures in thousands of euros. The panel data estimation results are presented in Table 6 and are quite interesting since the POSTPRIV dummy is highly significant. Rather than the privatization itself, in our model, the variables CS, INVEST and GDP are significantly positively related to Real Capital Expenditures to Sales (RCESA). On the contrary, the negative influence of the STAKE can be interpreted as follows: as far as the retention proportion of shares by the government is higher, there is a logical sense by the SOE not to invest till privatization.

#### 5.2.4 Real output

The real output regression provides evidence that the amount of national wealth (GDP) has a very significant positive relation with post-privatization real output increase. On the other hand, in our tests, real output, presents a significant relation with the dummy variable relatively to companies that are officially quoted: there is a positive relationship between real output and firms that are officially quoted. Specifically, privatizations of firms that are officially quoted show a 4, 2 % greater increase in real output than firms that were not officially quoted.

The results are consistent with (Boubakri and Cosset, 1998), who also document strong real output improvements for companies in developing countries. This is consistent with our testable prediction. Our regression results are much closed to (Jain and Kini, 1994), (Macquieira and Zurita, 1996), (Boardman, et al., 2000), (Clamote (2000) and (Megginson et al., 1994).

We use the normalized value of inflation-adjusted sales (real sales), in constant euros, as the proxy for output. The estimation results are presented

in Table 7. In our panel data regression model, the POSTPRIV dummy is highly significant and the variables INVEST, GDP and OQF are significantly positively related to Real Output. In addition, the variable STAKE (percentage of shares owned by

government after privatization) is negatively related with Real Output, meaning that firms with a strong retention of shares by government tend not to increase their output.

**Table 7.** Results of Panel Data Estimations: Real Output

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Real Sales	
	Fixed Effects	Random Effects
CONSTANT	0.003 (0.014)	1.482* (2.519)
FC	0.982 (0.782)	1.772 (1.822)
INVEST	4.757* (2.932)	6.040* (3.404)
CS	0.747 (0.677)	1.643 (1.785)
GDP	5.656* (4.219)	9.454* (8.039)
POSTPRIV	3.756* (3.454)	4.675* (5.988)
LF	2.546* (2.403)	3.934* (3.450)
SIP	1.456* (2.894)	2.345* (2.977)
STAKE	-5.040* (-4.748)	-7.856* (-6.302)
Nobs	164	164
<b>Tests</b>		
<b>F</b>	1.12	1.77
<b>Hausman</b>	0.94	0.49

\*rejection of H0 at five percent level of significance

In summary, according to our empirical tests, the independent variables, officially quoted firms, economic growth and firms privatized by share issue privatisation, are the major drivers of changes in the real output of newly privatized firms.

### 5.2.5 Employment

Investment appears to be one of the major sources of changes in employment after privatization; as a matter of fact, our regression tests for employment at five percent significance level, presents a negative relation with investment expenditure. This relationship means that as investment increases, companies become more capital intensive and, for that fact, the employment levels of privatized companies decrease. The independent variables explain 46 percent of the change in employment after

privatization. Our empirical results confirm most of the expectations about employment, that is, a very significant decrease, as (Dewenter and Malatesta, 2000), (Boardman, et al., 2000) among others.

Our panel data estimations of privatization-related employment changes, measured by normalized number of employees (EMPL), are presented in Table 8. In general, we observe a relevant change in employment linked to the post-privatization period. In our model, the POSTPRIV dummy is highly significant and the variable GDP is significantly positively related to Employment. In addition, the variables INVEST, OQF and SIP are negatively related with Employment, meaning that employment is not favoured when firms develop modernization projects, when firms are officially quoted in the financial markets and when firms are privatized by the issuance of shares.

**Table 8.** Results of Panel Data Estimations: Employment

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Employment	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.001 (0.005)	0.482 (0.236)
<b>FC</b>	1.756 (1.232)	1.986 (1.923)
<b>INVEST</b>	-0.623 (-0.264)	-1.734* (-3.848)
<b>CS</b>	0.563 (0.398)	1.238 (1.876)
<b>GDP</b>	8.897* (6.832)	10.230* (9.192)
<b>POSTPRIV</b>	-4.342* (-4.354)	-5.802* (-6.023)
<b>LF</b>	-1.398* (-2.022)	-2.002* (-3.410)
<b>SIP</b>	-1.017 (-1.102)	-2.878 (-1.904)
<b>STAKE</b>	0.140 (0.122)	0.656 (0.505)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	7.21	4.18
<b>Hausman</b>	1.16	0.53

\*rejection of H0 at five percent level of significance

Overall, our data indicate that GDP at constant prices, quotation in the financial markets and privatization by IPO are key determinants of post-privatization performance. All these independent variables have negative relations with employment levels.

### 5.2.6 Dividend Policy

Our regression tests of dividends to sales shows three not significantly negative relations, with investment spending, state ownership and restructured firms, which means that a positive change of these independent variables implies a negative change of the dividend to sales indicator. On the other hand, our regression tests show us a positive relation with economic growth, firms privatized by SIP, firms officially quoted and firms that improve their capital structure after privatization.

These results confirm our expectations of dividend policy, which are perfectly closed to the findings of (Megginson et al., 1994), (Macquieira and

Zurita, 1996) and (Boubakri and Cosset, 1998) who concluded, on one hand, that, following privatization, dividend payments are closely related to the privatization method, since a dispersed ownership structure, as a result of a SIP, normally implies a higher dividend stream and, on the other hand, the same authors also concluded that, if a firm is listed, a great part of its private investors generally demand dividends yields.

Our panel data estimations of privatization related Dividend to Sales changes, measured by normalized value of dividends to sales (DIVSAL), are presented in Table 9. In our model, the POSTPRIV dummy is highly significant and the variables GDP and OQF are significantly positively related to Dividends. On the contrary, the variables INVEST, Fixed Costs and STAKE are negatively related with dividends, meaning that the payout ratio is not favoured when firms develop modernization projects, when firms have a heavy structure of fixed costs and in the case of partial privatizations when the governments keep the majority of the capital.



**Table 9.** Results of Panel Data Estimations: Dividend Policy

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Dividend to Sales	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.000 (0.001)	-0.021 (-0.254)
<b>FC</b>	-0.092 (-0.656)	-1.545 (-1.789)
<b>INVEST</b>	-2.989* (-3.039)	-6.499* (-7.292)
<b>CS</b>	-1.828* (2.203)	-1.020* (2.732)
<b>GDP</b>	7.545* (3.636)	9.010* (4.103)
<b>POSTPRIV</b>	1.012 (1.273)	2.203 (2.834)
<b>LF</b>	2.920* (2.430)	4.324* (4.354)
<b>SIP</b>	2.563 (2.012)	3.023 (3.288)
<b>STAKE</b>	-2.438* (-2.129)	-4.362* (-4.624)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	6.45	4.34
<b>Hausman</b>	0.95	0.47

\*rejection of H0 at five percent level of significance

### 5.2.7 Treasury

Our treasury application regression test shows the major factors that have a direct influence over the treasury applications. Investment spending, firms privatized by SIP, the economic wealth of the economy and officially quoted firms are the significant drivers to improve the treasury structure of the privatized companies. Additionally, in our regression analysis, treasury presents a negative relation with the dummy variable relatively to companies that restructured and there is a negative relation with state ownership, that is, for an additional one percentage point of shares that are retained by the government, after privatization, the treasury applications decrease by 5,2 %. The independent variables explain 39 percent of the change of treasury applications after privatization.

Our panel data estimations of privatization treasury applications changes, measured by the sum of Cash and Banks, Dividends and Capital Expenditures, are presented in Table 10. In our model, the POSTPRIV dummy is highly significant and the variables INVEST, CS and GDP are

significantly positively related to Treasury Applications. On the contrary, the variables Fixed Costs and STAKE are negatively related with treasury applications, meaning that as the fixed costs increase, the treasury application tend to decrease. The same seems to happen when government keeps the majority of capital.

Overall, our data indicate that GDP at constant prices, investment spending and firms privatized by SIP are key determinants of post-privatization treasury applications improvements.

**Table 10.** Results of Panel Data Estimations: Treasury

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Treasury Applications	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.006 (0.002)	0.017 (0.019)
<b>FC</b>	-1.427 (-1.211)	-1.892 (-1.934)
<b>INVEST</b>	3.764* (4.184)	7.202* (9.646)
<b>CS</b>	1.727 (1.462)	2.348 (1.929)
<b>GDP</b>	2.392* (2.411)	3.987* (4.020)
<b>POSTPRIV</b>	2.340* (2.599)	3.020* (4.646)
<b>LF</b>	1.674 (1.392)	1.939 (1.894)
<b>SIP</b>	1.282 (1.376)	1.577 (1.903)
<b>STAKE</b>	-2.103* (-2.547)	-3.271* (-3.044)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	7.23	3.42
<b>Hausman</b>	0.65	0.24
*rejection of H0 at five percent level of significance		

### 5.2.8 Activity levels

The most significant causes of changes in post-privatization activity levels are ownership, restructuring before privatization and a competitive environment. In first place, we identify a significant negative relation between activity levels and the state ownership relation after privatization. The regression table shows that, after privatization, for one percent increase in state ownership stake, leads to a 4% decrease in the activity level indicator. Our findings show that higher state ownership retention implies a worst way of working capital and short term debt management. Also, activity levels present a significant positive relation with the dummy variables relatively to the share issue privatization (SIP), competitive firms, officially quoted firms and economic growth. As a matter of fact, for example, each firm in a competitive environment before privatization shows a 5, 6% higher activity level indicator than firms that included in a non-competitive environment. This is consistent with our

testable predictions. The independent variables explain 32 percent of the change in activity levels after privatization.

In the panel data regression, we employ Sales to Total Assets (STA) in thousands of euros, to test for changes in activity levels after privatization. The results of these estimations are presented in Table 11. In our model, the POSTPRIV dummy is highly significant and the variable OQF is significantly positively related to Activity Levels. On the opposite side, the variable STAKE is negatively related with activity levels, meaning that this indicator is directly dependent on the government position after privatization.

Overall, our data indicate that GDP at constant prices, quotation in the financial markets, competitive markets and privatization by SIP are the most relevant determinants of post-privatization activity levels improvements.

**Table 11.** Results of Panel Data Estimations: Activity Levels

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Sales to Total Assets	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.045 (0.078)	1.322 (1.426)
<b>FC</b>	0.037 (0.383)	0.056 (0.067)
<b>INVEST</b>	1.121 (1.262)	1.163 (1.484)
<b>CS</b>	0.023 (0.102)	0.045 (0.343)
<b>GDP</b>	1.001 (1.032)	1.212 (1.324)
<b>POSTPRIV</b>	3.479* (3.898)	4.442* (5.848)
<b>LF</b>	1.923* (2.012)	2.120* (2.433)
<b>SIP</b>	1.255 (1.322)	1.822 (1.898)
<b>STAKE</b>	-4.898* (-3.323)	-7.949* (-5.090)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	7.9	5.7
<b>Hausman</b>	1.11	0.14
*rejection of H0 at five percent level of significance		

### 5.2.9 Short term equilibrium

Analyzing the cash and banks to short term debt (short term equilibrium regression), the negative relation with investment spending indicates that an increase of one percent on investment spending implies a 2.3% decrease in short term equilibrium represented by the cash and banks to short term debt. In our regression analysis, short term equilibrium presents a negative relation with the dummy variable relatively to restructured companies before privatization. All other variables have insignificant coefficients.

We employ Cash and Banks to Short Term Debt (CBTSTD) in thousands of euros, to test for changes the short term equilibrium after privatization. The results of these estimations are presented in Table 12. In our model, the POSTPRIV dummy is negative, meaning that after privatization, our panel data tests

show a lightly worst short term equilibrium situation. On the other hand, the variables CS and GDP are positively related with short term equilibrium, meaning that this indicator is directly dependent on the financial wealth of the economy.

**Table 12.** Results of Panel Data Estimations: Short Term Equilibrium

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Cash and Banks to Short Term Debt	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.001 (0.002)	0.004 (0.008)
<b>FC</b>	0.109 (0.104)	0.203 (0.201)
<b>INVEST</b>	0.102 (0.203)	0.205 (0.377)
<b>CS</b>	2.302 (2.752)	3.678 (2.784)
<b>GDP</b>	2.678* (2.822)	3.908* (2.765)
<b>POSTPRIV</b>	3.242* (4.333)	2.777* (3.610)
<b>LF</b>	0.064 (0,035)	0.022 (0.047)
<b>SIP</b>	-0.103 (-0.193)	-0.266 (-0.433)
<b>STAKE</b>	0.505 (0.948)	0.944 (1.784)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	4.2	2.6
<b>Hausman</b>	2.6	0.27
*rejection of H0 at five percent level of significance		

### 5.2.10 Long term equilibrium

In our regression empirical tests, there is no evidence of a significant relation - at a significance of five or ten percent level - with long term equilibrium. The only sign relation that can be interpreted, with low significance, is a negative sign relation with investment, suggesting that more investment level leads to less net cash flows to long term debt and, therefore, less long term equilibrium. In addition, long term equilibrium presents a no- significant negative relation with the dummy variable relatively to restructured companies. Specifically, privatizations of non-restructured firms show a greater increase in long term equilibrium than restructured companies. All other variables have insignificant coefficients.

We employ Net Cash Flow to Long Term Debt (NCFTLTD) in thousands of euros, to test for changes the long term equilibrium after privatization.

The results of these estimations are presented in Table 13. In our model, the POSTPRIV dummy is negative, meaning that after privatization, our panel data tests show a lightly worst short term equilibrium situation. On the other hand, the variables CS and GDP are positively related with long term equilibrium, meaning that with a rational capital structure, profitability and economic growth, companies become more prepared and in a more favourable financial position in the long run.

**Table 13.** Results of Panel Data Estimations: Long Term Equilibrium

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Net Cash Flow to Long Term Debt	
	Fixed Effects	Random Effects
CONSTANT	0.022 (0.034)	0.067 (0.078)
FC	0.156 (0.198)	0.202 (0.496)
INVEST	0.177 (0.360)	0.593 (0.637)
CS	-2.109 (1.306)	-4.023 (2.030)
GDP	2.238* (2.734)	2.955* (2.756)
POSTPRIV	2.747* (2.618)	3.430* (2.777)
LF	0.112 (0,169)	0.139 (0.180)
SIP	-0.176 (-0.784)	-0.302 (-0.844)
STAKE	0.499 (0.877)	1.322 (1.022)
Nobs	164	164
Tests		
F	7.1	4.6
Hausman	0.22	0.16

\*rejection of H0 at five percent level of significance

### 5.2.11 Capital structure

Our regression tests show that the economic wealth of the economy and its growth is a very relevant cause of changes in the capital structure level following privatization. The GDP level in the economy is significantly positive related to the financial wealth of the firm, to its capital structure. The independent variables explain 39% of the change in the capital structure following privatization. All other variables have insignificant coefficients.

We employ Total Debt to Total Assets (TDTA) in thousands of euros, to test for changes in the capital structure after privatization. The results of these estimations are presented in Table 14. In our model, the POSTPRIV dummy is highly significant and the variable CS and GDP are significantly positively related to Capital Structure.

## 6 Summary and Conclusions

Over the last fifteen years, the privatization process has transformed the Portuguese economic landscape throughout a sweeping reduction of the role of the

state in the economy. An economic event this profound raises many important questions – most of which are, as yet, not completely answered. Given a strong evidence of the financial and operating benefits of privatization, the pressing issue is no longer whether privatization leads to performance improvements, but rather *why* and *how* do these post-privatization performance improvements occur. That is, while there is empirical evidence that privatization has a strong influence on the post-privatization firm's performance, to date, there has been very little investigation on the causes, on the determinants that explain that performance behaviour.

Our study is the first to make the following contributions. In first place, it is the first empirical work developed in Portugal, for Portuguese privatizations, to empirically examine *why* and *how* privatization works, to investigate *which* are the main determinants for those operational and financial performance improvements. In second place, we do not limit our investigation to share-issue privatizations (SIPs), since we also include on our study several companies privatized by direct sale or public contest. In third place, our database includes

information about Portuguese privatizations from 1988 to 2010 for forty two companies. For that reason, our data span a larger time period than any other privatization study, and we feel that our findings are especially valuable because our database

allows us to undertake the single most thorough multi-sector, multi-industry and multi-privatization method of the financial and operational consequences of privatization realized in Portugal so far.

**Table 14.** Results of Panel Data Estimations: Capital Structure

This table reports the estimates of panel data estimations for operating income of the 41 privatized firms in the pre and post-privatization period (years -2; years +2). FC is Fixed Cost. Invest is the Investment Spending. CS is the Capital Structure. GDP is the Gross Domestic Product. POSTPRIV is a dummy taking the value one in the post-privatization period. LF is a dummy taking the value one if the firm is a listed firm after privatization. SIP is a dummy taking the value one if the firm is privatized by share issue privatization (SIP). STAKE is the residual percentage of capital retained by the government. T-statistics are in brackets. The signal \* means significance at 5 percent level.

Independent Variables	Total Debt to Total Assets	
	Fixed Effects	Random Effects
<b>CONSTANT</b>	0.122 (0.312)	0.483 (0.573)
<b>FC</b>	0.201 (0.254)	0.384 (0.598)
<b>INVEST</b>	0.299 (0.575)	0.785 (0.859)
<b>CS</b>	2.848 (2.499)	6.747 (2.444)
<b>GDP</b>	4.445* (3.588)	8.656* (7.848)
<b>POSTPRIV</b>	-1.746* (3.847)	-3.334* (4.858)
<b>LF</b>	1.105 (1.334)	1.838 (1.456)
<b>SIP</b>	1.483 (1.939)	1.737 (1.747)
<b>STAKE</b>	0.593 (0.937)	1.433 (1.126)
<b>Nobs</b>	164	164
<b>Tests</b>		
<b>F</b>	5.4	9.6
<b>Hausman</b>	6.3	0.27

\*rejection of H0 at five percent level of significance

To examine the separate effects of the government stake, the conditions of the economy, the role of the financial market and the dispersion of capital by many investors, we use both random and fixed effect panel data estimation techniques for a four year period around privatization. We confirm that privatization is significantly related to increased profitability, output, efficiency, activity levels and an improved capital structure influenced by a declining in leverage and higher equity. A relevant retention stake by government after privatization means lower profitability, efficiency, capital expenditures, dividends and poor working capital management. A wealth economy has a positive impact in the financial and operational performance of the firm. Overall, our work shows that the financial and operational performance of the privatized Portuguese companies improves significantly after privatization, and the

significant determinants for that performance are as follows: first, the privatization itself, the simple act of privatizing a firm, leads to performance improvements, independently of the effect of other determinants. In addition, as significant determinants, we found the favourable economic conditions at the time of the SIP, a firm being in a competitive market, changes in ownership, being listed in a stock exchange, being privatized by an initial public offering and if there are restructurings before privatization.

Our data provide evidence of stronger profitability gains for control privatizations, with lower state ownership and with high GDP growth. Stronger efficiency gains are shown by firms that restructure before privatization and in competitive markets. Capital expenditures increase in share issue privatizations and in listed companies. Output

increases with the economy in good shape and with restructured firms. Employment normally decreases after privatization. The dividend yield tends to increase for listed companies and privatized by SIP. Treasury applications tend to increase with a growing real GDP and with less retained government ownership. Short and long term equilibrium of firms do not show a relevant change after privatization and capital structure is directly dependent on its profitability, efficiency and whether or not is listed on a stock exchange.

We verify that privatization itself is a factor significantly related with higher profitability, output efficiency, investment decisions, dividend policy, activity levels and financial equilibrium and with significant declines in employment and a worst capital structure. In our panel data analysis, we find that all the twelve performance results were affected by the privatization process. That is, the privatization process itself, independently of other specific determinants, is a major driver, a significant determinant for this operational and financial performance improvement.

In addition, it should be stressed that GDP proved to be a variable with a very high strong explanatory power. In fact, this determinant proved to be a significant variable in ten out of twelve tested variables in panel data analysis and eight out of eleven tested variables in regression analysis. The real output empirical tests provided evidence that the amount of national wealth has a very significant positive relation with post-privatization operational and financial performance. During the period under analysis, when Portugal observed a strong economic upgrade in income, it was more likely to have a market oriented policy framework and such factors proved to contributed for several successful privatizations.

Also, ownership adjustments contribute to changes on the operational and financial behaviour of the newly privatized firms. As a matter of fact, in both regressions, eight out of twelve and six out of eleven, in panel data analysis and regression analysis, respectively, this variable proved to be very significant. A privatization with lower amounts of state ownership retention by government leads to greater improvements in profitability, efficiency, output, activity levels, etc., that is, a partial (revenue) privatization (with a relevant retention of stake by the state) loses against a total (control) privatization, as far as, firm performance improvements are concerned.

At the same time, our study has another interesting finding: after the privatization, there are some firms that fill the formal conditions to be listed in the Portuguese stock market (now, Euronext Lisbon). The exchange trading of shares introduces discipline, and provides the ability to link compensation to performance. Since then, those firms become subject to greater capital market discipline

and, therefore, those firms must organize themselves, implementing a more professional management. This determinant proved to have a very strong explanatory power to most of the variables under test. In both regressions, this variable is significant in seven out twelve tested variables. The results of this market participation lead to operational and financial improvements, namely, profitability, output, efficiency, etc. In sum, the introduction of capital market monitoring lead to significantly post-privatization performance improvement.

Sometimes, government decides to organize, to prepare, to restructure the company prior to privatization. A restructured firm proved to have a strong explanatory power to most of the variables under test, being significant in six out of eleven tested variables. No matter the measures adopted (cost reduction, acquisitions, divestitures and financial restructurings), we conclude that there were several positive performance improvements after privatization for firms that restructured before going public, namely, increased efficiency, profitability, output and a wealthier financial structure.

Lastly, the pressures of the national and international competition are the driving forces to post-privatization operational and financial improvements. The competition itself may force the newly privatized companies to be more efficient. As a consequence, better efficiency leads to higher profits and output and an improved capital structure.

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