LEVIATHAN AS A MINORITY SHAREHOLDER: FIRM-LEVEL PERFORMANCE IMPLICATIONS OF EQUITY PURCHASES BY THE GOVERNMENT

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Abstract

Throughout the world, governments have retained minority equity positions in several firms. Yet, firm-level performance implications of such stakes remain poorly understood. We offer a theory of minority state participation in less-developed markets and test our hypotheses using panel data from 358 publicly traded firms in Brazil, where the government holds minority stakes through its development bank, BNDES. We find a positive effect of governmental minority stakes on firms' return on assets, likely due to an alleviation of their financing constraints. However, this positive effect is reduced when the government participates in pyramidal business groups and when local capital markets become more developed. Therefore, we shed light on the factors influencing whether minority governmental stakes will lead or not to superior firm-level performance.

Key words: *state-ownership, performance, business groups, institutions, development banks*

Introduction

Significant efforts over the past three decades to privatize state-owned enterprises and banks around the world notwithstanding, state capitalism (i.e., significant state ownership of productive assets) remains widespread and is in many places increasing (Bremmer, 2010). Whereas some countries have seen large-scale sales of full ownership and control of formerly state-owned enterprises (SOEs), in others privatization has been more gradual, with large numbers of companies only partially sold to private parties (Bortolotti & Faccio, 2009; Pistor & Turkewitz, 1996; Stark, 1996). Thus, Bortolloti and Faccio (2009) find that, after 2000, governments of OECD countries kept some degree of control in 62.4% of their privatized companies. According to a recent survey (OECD, 2005), companies with minority governmental equity encompass more than one third of state-owned firms in Denmark, France, Germany, the Netherlands and Spain, among others. A similar pattern of governmental ownership appears in emerging markets. In a sample of the largest 100 publicly traded corporations in the BRICs (Brazil, Russia, India, and China), firms with more than 10% of government ownership represent between 33% (Brazil) and 50% (China) of the total market capitalization of those top firms (2007 data from Capital IQ, our calculations). Instances with minority stakes are also nontrivial. Thus, in 39% of the observed cases, the state has less than 50% of the company's equity, through various vehicles such as allocations by development banks, sovereign wealth funds, pension funds, and many others. This new face of state capitalism, involving more dispersed and indirect governmental ownership, differs from more traditional forms of ownership involving majority governmental control of SOEs.

Despite their prevalence, minority stakes by the government remain a poorly understood phenomenon. Most theoretical and empirical work on state ownership has focused on companies that are fully owned by a government, with the general conclusion that SOEs underperform private or privatized companies in terms of profitability and other efficiency indicators (e.g. Anuatti-Neto, Barossi-Filho, Carvalho, & Macedo, 2005; Boardman & Vining, 1989; Kikeri, Nellis, & Shirley, 1992; La Porta & López-de-Silanes, 1999; Megginson & Netter, 2001; Yiu, Bruton, & Lu, 2005). Full state control has therefore been viewed as a dysfunctional or at best temporary organizational strategy. But what are the firm-level performance implications when the state acts as a minority shareholder? Although governments sometimes purchase minority equity positions as part of a bailout (as in the case of General Motors in 2008), in many countries governments actively invest in equity. Given strategy scholars' traditional interest in sources of performance heterogeneity (Barney, 2002; McGahan, 1999) and, especially, their more recent debate on the implications of country-level public policies and institutions (Hoskisson, Eden, Lau, & Wright, 2000; Mahoney, McGahan, & Pitelis, 2009; Peng, Sun, Pinkham, & Chen, 2009; Spencer, Murtha, & Lenway, 2005), assessing the role of minority stakes by the government can potentially contribute to our understanding of non-market determinants of differential performance.

In particular, we contend that firms with minority governmental control have outcomes that differ from the more traditional mode of state-controlled SOEs. Agency

problems of the type found in those SOEs may be less intense in private companies in which the government is only a minority shareholder. Thus, without full control of the company, the government may be less able to appoint managers using political criteria or force firms to maximize outcomes other than profitability (Alchian, 1965; Ehrlich, Gallais-Hamonno, Liu, & Lutter, 1994; Karpoff, 2001). Using Shleifer and Vishny's allegory (1998), governments will less likely extend their "grabbing hand" detrimental to performance. Furthermore, we posit that, under certain conditions, minority state equity may actually *increase* performance, as compared to firms with exclusively private ownership. In a nutshell, our theory is as follows. Institution-based strategy scholarship has argued that emerging economies are plagued with myriad voids that increase transaction costs and undermine performance (e.g. Hoskisson et al., 2000; Khanna & Palepu, 2000; Peng et al., 2009). In line with this argument, development economists have emphasized that an important void in less developed economies is the scarcity of long-term capital in private financial markets. Thus, state capital can help firms pursue profitable projects and undertake long-term, fixed investments when local capital markets are underdeveloped (Armendáriz de Aghion, 1999; Rodrik, 2004; Torres Filho, 2009; Yeyati, Micco, & Panizza, 2004). But why should *ownership* (equity) have this effect, instead of, say, loans (debt) from state-owned banks? Based on Williamson's (1988) transaction cost logic, we propose that equity will depend on the nature of the underlying assets. Compared to debt, equity does not imply a pre-specified rate of return and is more flexible to future strategic adjustments. Thus, equity should be particularly helpful when firms need to engage in long-term, fixed investments which can be largely nonredeployable. In some sense, the government will then act as a venture capitalist, in a context of underdeveloped equity markets. And if governmental allocations are carried out through minority stakes with restrained political interference, then the positive effect on firm-level outcomes may occur without the downside of the "grabbing hand."

We also propose two key contingencies affecting the benefits of minority governmental ownership. First, we submit that the positive effect of minority state equity will be attenuated when target firms belong to pyramidal *business groups*, i.e., collections of firms belonging to common controlling shareholders, usually in the form of cascading chains of ownership. Strategy scholars have proposed that business groups can help supplant institutional voids in emerging markets; they can provide financing through their internal capital markets as well as other critical resources not readily available in external market transactions (Khanna & Palepu, 1997, 2000; Wan & Hoskisson, 2003). However, if groups already reduce resource constraints through their internal markets, then governmental equity should be more beneficial when it is *not* allocated to group affiliates. Furthermore, minority governmental capital may be used to rescue other companies in the pyramid or simply be expropriated by the majority shareholders of the group (Bertrand, Mehta, & Mullainathan, 2002; Morck, Wolfenzon, & Yeung, 2005). Therefore, from the point of view of group affiliates, state and group capital will act as substitutes; however, business groups and minority states allocations can act as complements in the economy as a whole if governments preferably target independent firms. Second, we argue that the positive effect of minority governmental ownership is reduced when capital markets develop. Firms will more and more have access to external financing and alternative forms of capitalization, thereby reducing the need of governmental capital to promote new long-term investments. Thus, we not only

examine firm-level performance implications of minority governmental stakes, but also propose factors that should make those stakes conducive or not to superior performance.

We test our theory using panel data from 358 publicly listed Brazilian companies observed between 1995 and 2009. Brazil is an appropriate empirical context for our purposes. In that period, Brazil's average stock market capitalization to GDP was 43.1% compared to 98.7% in Chile and 129.7% in the United States. Thus, relative to other countries, firms were more constrained in terms of equity financing. At the same time, over that period, stock market capitalization to GDP in Brazil jumped from 19% in 1995 to 73% in 2009, therefore allowing us to examine how the effect of minority stakes changes when capital markets develop. Moreover, in our chosen temporal window there was an important privatization wave—which is, by itself, an external shock that changed the ownership structure of many companies. Interestingly, the process of privatization was accompanied in Brazil by the rise of a new form of indirect state ownership of corporations via equity purchases by the Brazilian National Development Bank, BNDES, through its investment subsidiary, BNDESPAR. Responsible for executing Brazil's privatization program, the bank actively sought to form consortia with private acquirers, relinquishing majority control even in cases where it provided loans and equity (De Paula, Ferraz, & Iootty, 2002). The size of these allocations—US$ 53 billion by 2009—triggered criticism that equity purchases favored large local business groups with financial clout to execute their projects alone, without help from the development bank (e.g. Almeida, 2009). Thus, minority stakes by the government remain not only a poorly explained phenomenon, but also a controversial issue in the public debate (see e.g. *The Economist*'s special report on state capitalism: Wooldridge, 2012).

We develop our analysis in the following way. In the next section, we explain our theory and outline testable hypotheses. We next provide details of the privatization process in Brazil and role of remaining governmental (minority) stakes, followed by a description of our data and methods. Results are discussed in subsequent sections. Our concluding remarks then present implications for theory and practice.

Theory: Minority governmental equity and firm performance

Majority versus minority stakes by governments

The bulk of the literature on governmental ownership has compared two polar modes of ownership: privately controlled firms and SOEs in which governments hold *majority* stakes. Several theoretical arguments have been outlined to explain why these modes may differ in terms of performance (profitability, productivity, and so forth). The *social* view of SOEs suggests that governmental control helps solve market failures and implement pricing policies that pursue societal needs instead of profit maximization (Shapiro & Willig, 1990). The *political* view argues that SOEs will suffer interference from politicians trying to use those firms as mechanisms to transfer rents to their particular constituencies (Shleifer, 1998; Shleifer & Vishny, 1998). Finally, according to the *managerial* view, there will be an acute agency problem within SOEs because public employees lack the high-powered incentives commonly found in private firms (e.g. aggressive profit sharing) and are not subject to close monitoring by private owners acting as residual claimants (Gupta, 2005; Vickers & Yarrow,

1988). Thus, if governments require SOEs to charge lower prices for their products and services (the social view), if SOEs meet specific demands of politicians (the political view), or if managers within SOEs exert less effort (the managerial view), then one could expect majority governmental control to have a negative impact on firm-level profitability. The privatization wave that started with Margaret Thatcher in the 1980s and spread to several other developed and emerging countries in the 1990s was based on the idea that private control of governmental assets can boost productivity and economic returns. Indeed, various studies assessing post-privatization effects confirm that, in general, private firms outperform SOEs (e.g. Megginson & Netter, 2001).

Fewer studies have examined cases in which the government holds *minority* stakes. From a theoretical standpoint, if governments are minority shareholders, then they will relinquish control of SOEs to other owners holding majority stakes. As a consequence, the ability of governments or politicians to interfere in pricing or allocation decisions will be curtailed, if these actions conflict with the objectives of controlling owners. Furthermore, if majority owners are profit-maximizers, then they will want to closely monitor executives or implement pay-for-performance practices that help reduce agency conflicts. Consistent with this prediction, some studies have found that partially privatized firms perform better than state-owned, although not necessarily better than private, companies (Boardman & Vining, 1989; Majumdar, 1998). [1]

However, if minority government stakes only attenuate agency problems rampant in SOEs and therefore are not expected to improve over privately owned firms lacking state-induced agency distortions, then why are such minority stakes prevalent? A possible explanation is that those stakes result from complex political processes whereby governments try to preserve their influence in the economy through embedded, intertwined networks with local capitalists (McDermott, 2003; Pistor & Turkewitz, 1996; Stark, 1996). But this explanation says little about the conditions under which minority stakes may or may not affect performance. In what follows, we offer a theory proposing conditions in which minority stakes may actually *improve* firm-level profitability.

Minority stakes by the government in less-developed markets

Our first and central set of hypotheses predicts a positive effect of minority governmental equity when those stakes help reduce constraints in less-developed economies. Institution-based arguments suggest that debt and equity markets in emerging and underdeveloped countries are frequently inhibited by poor legal protection and high transaction costs (North, 1990; Peng et al., 2009; Stone, Levy, & Paredes, 1996). With poorly developed financial markets, investment is severely constrained (Levine, 2005), especially when firms need to undertake large-scale projects with long maturity. Governments can thus act as lenders or venture capitalists in conditions where private sources of capital are scarce. Indeed, a large literature on development banking proposes that state-owned banks can alleviate credit constraints in the private sector and promote projects with positive net present

[1] Gupta (2005) refers to the sale of minority stakes by the government as "partial privatization." In our usage of the term, however, partially privatized firms are those in which *majority* control is held by private owners.

value that might otherwise not have been undertaken (Rodrik, 2004; Torres Filho, 2009; Yeyati *et al.*, 2004). With new long-term capital unavailable or excessively costly in existing (private) markets, firms will be able to achieve economies of scale, improve their operations, revamp new technology, and so forth—all factors that should lead to superior performance

Development scholars, however, have focused on the role of debt (i.e. loans, often subsidized) provided by governmental banks. How can *equity stakes* help in the context of shallow financial markets, compared to what can be achieved through governmental loans? Here we borrow from Williamson's (1988) discussion on the relative merits of debt and equity as a function of firms' asset profile. Williamson (1988) argues that investments in nonredeployable assets (such as dedicated industrial plants and machinery) are best served by equity due to the higher flexibility of this financing mode. While debt requires a fixed return over the duration of the contract, equity can better adapt to changing circumstances that might negatively affect the value of such assets. Shareholders have more discretion to meet and discuss strategies to reorganize the company and provide a longer-term time frame for the necessary changes. Applying Williamson's logic to our context, we can thus predict that minority equity stakes will help improve firm performance by expanding their investment opportunities. This should be observed especially when long-term, fixed assets are involved. Although not all fixed assets are nonredeployable (e.g. generic land), the extent to which the firm invests in fixed capital is a signal that its business involves longer-term, riskier projects which can benefit from the flexibility of equity as a financing mode.

In sum, we argue that minority equity allocations by the government should improve performance and help firms accomplish large capital expenditures to build productive fixed assets. And because, as discussed before, minority stakes do not grant direct governmental control of the target firm, the costs of state participation as a shareholder (e.g. SOEs' pursuit of political or managerial objectives instead of profitability) should be greatly attenuated. Thus, we arrive at the following hypotheses:

Hypothesis 1. In less-developed capital markets, minority governmental equity positively affects firm-level performance.

Hypothesis 2. In less-developed capital markets, minority governmental equity promotes investments in fixed assets.

The contingent effect of target firms' participation in business groups

We also have reason to expect the effect of governmental equity to vary with the ownership structure of target firms. Since Leff's (1978) original contribution, scholars have proposed that *business groups*—i.e., collections of firms under the same controlling entity—provide credit-constrained firms with financing opportunities that flow through *internal* capital markets. Because capital allocations within groups are defined by fiat, according to the objectives of controlling shareholders, groups will then help substitute for financial markets when external financing is scarce or costly (Khanna & Palepu, 2000; Khanna & Yafeh, 2007; Wan & Hoskisson, 2003). But if capital markets internal to groups reduce the need for external financing, we should expect development banks' equity purchases to be

more effective at promoting capital expenditures and increasing firm performance when target firms are *not* affiliated to groups. The latter should be relatively more constrained in their investment opportunities than firms that have internal, group-level capital at their disposal.

Moreover, groups may be associated with the risk of minority shareholder expropriation. Most business groups are organized through complex *pyramids* involving firms that have stakes in other firms (Morck *et al.*, 2005). In countries with weaker protection for minority owners, equity from a development bank may be "tunneled" through complex pyramids to support controlling owners' private projects or rescue struggling internal units (Bae, Kang, & Kim, 2002; Bertrand, Djankov, Hanna, & Mullainathan, 2007). The government may thus add value for a business group's majority owners without necessarily improving the performance of the companies in which it invests. Furthermore, while credit-constrained firms may be able to boost fixed investments with the help of governmental capital allocations, the possibility of tunneling within business groups implies that new allocations may be redirected for reasons other than to support those fixed investments. Consistent with this prediction, Giannetti and Laeven (2009) find that minority holdings by public pension funds increase firm value, but the effect is reduced when firms are part of business groups.

These two effects—groups substituting for external financing and their potential use of tunneling—lead to the following hypotheses:

> *Hypothesis 3.* In less-developed capital markets, the positive effect of minority governmental equity on firm-level performance is attenuated when the firm belongs to a pyramidal business group.

> *Hypothesis 4.* In less-developed capital markets, the positive effect of minority governmental equity on fixed asset investment is attenuated when the firm belongs to a pyramidal business group.

The contingent effect of capital market development

We contend that minority equity purchases by the state can help firms to alleviate credit constraints in less-developed economies. Consequently, as capital markets develop, the positive effect of those governmental stakes will likely decline. In more developed capital markets, firms can raise equity capital in various forms. While firms that are already listed can issue new equity in stock markets, private firms can go public for the first time (e.g. IPOs); or, alternatively, lure private equity investors who could use stock markets as a future exit (divestment) mechanism. But shallow capital markets not only pose constraints in terms of scarce capital; they also lack more transparent mechanisms to reveal company-level information and monitor managers. Dyck and Zingales (2004) and Nenova (2005) assert that underdeveloped capital markets make takeovers less likely and magnify governance conflicts. Lending some support for this claim, Sarkar's et al. (1998) comparison of state-owned and private banks in India indicate that, in the absence of well-functioning capital markets, private companies are not unambiguously superior to SOEs. However, as capital markets develop,

with more sophisticated mechanisms for capitalization and monitoring, new private investors will tend to emerge and gradually replace governments as sources of equity capital.

Strategy scholarship adopting an institution-based view also provides support for this argument. Thus, in emerging market contexts firms benefit from a more network-based strategy of growth as a form to overcome the lack of scarce resources (Boisot & Child, 1996; Peng & Heath, 1996). Such networks can involve complex entanglements between firms and governments acting as providers of capital (e.g. McDermott, 2003). As the economy moves towards market-oriented institutions, with diminishing transaction costs and increasing reliance on market capabilities, network-based strategies based on public-private connections should become relatively less important (Li, Park, & Li, 2004). Peng and Luo (2000), for instance, argue that relationship-based strategies with governments can have a positive effect on performance in less-developed economies, but these strategies alone may not be sufficient to sustain competitive advantage in the long run. Keister (2004) also submits that, over time, firms may attract external sources of capital so as to reduce their dependence on the state. Collectively, these arguments lead to our final hypothesis:

> *Hypothesis 5*. The positive effect of minority governmental equity on firm-level performance is reduced as capital markets develop.

Privatization and minority government ownership in Brazil

State-owned enterprises have prevailed in myriad sectors in Brazil, including banking and railways, since the nineteenth century. But the state's sphere of influence increased after World War I and especially in the 1940s when the government of Getúlio Vargas inaugurated an ambitious plan of government investment in steel mills, mining, chemicals, and a wide array of other sectors (Baer, Kerstenetzky, & Villela, 1973; Musacchio, 2009). Throughout the subsequent decades, pyramidal business groups began to be organized with ten or more state-owned enterprises in multiple sectors linked to a holding company at the top. Notorious among these groups were Eletrobras in utilities, Telebras in telecommunications, Vale do Rio Doce in mining and logistics, and Siderbras in steel (Trebat, 1983).

A series of joint studies conducted in 1952 by the governments of Brazil and the United States concerned with investing in the expansion of Brazil's infrastructure led to the creation of a national development bank to provide long-term credit for energy and transportation investments. The Brazilian National Bank of Economic Development (BNDE in Portuguese, later changed to BNDES when "social development" was added to its mission) assumed over the following decade other roles including financing machinery purchases in foreign currency, serving as guarantor in credit operations abroad, and lending directly to Brazilian companies. In the 1970s, BNDES began through different programs to invest directly in the equity of Brazilian companies. In 1982, it created BNDESPAR ("BNDES Participations") to manage those holdings.

In the early 1990s, in the midst of financial instability, hyperinflation, and high budget deficits, the Brazilian government began to reconsider investment in SOEs, thanks to the high opportunity cost of holding equity in these companies. For instance, the dividends paid by

Vale do Rio Doce (a mining firm), one of the most profitable SOEs, ranged between 0.5% and 5.2% during the 1980s and early 1990s, while at the same time the government had to pay interest rates on its debt on the order of 20% per year (Pinheiro & Giambiagi, 1994). Thus, the governments of Fernando Collor (1990-1992) and Fernando Henrique Cardoso (1995-2002) undertook a major program of privatization aimed at reducing debt and liberalizing the economy (collecting about 87 billion dollars in privatization revenues).

BNDES played three roles in the privatization process between 1990 and 2003. First, it served as an agent of the government in privatization transactions, selling and sometimes financing operations. Second, it provided loans to private and public enterprises. Third, through its equity-holding arm BNDESPAR, the bank purchased minority stakes in a variety of publicly traded firms. BNDES was involved in the privatization process not only to deflect criticism that the state was losing its grip on the economy, but also, by making available substantial capital, to attract private players to the ongoing auctions. Approximately 86% of the revenues collected from privatization auctions came from block sales, acquirers typically forming consortia that included domestic groups, foreign investors, and public entities such as BNDESPAR and pension funds of state-owned companies (Anuatti-Neto *et al.*, 2005; De Paula *et al.*, 2002; Lazzarini, 2011).

Table 1 shows how BNDES' holdings (through BNDESPAR) increased for our sample of firms between 1995 and 2009. Such holdings can be *direct* or *indirect* (i.e. BNDES owning an intermediate firm that in turn owns the final target firm). As an illustration, consider the case of Vale, depicted in Figure 1. In that year, BNDES' stake in Vale was indirect because BNDES had stakes in a holding company, Valepar, which in turn had stakes in Vale. Because pyramidal structures are complex and often involve non-listed companies, the size of BNDES' indirect holdings is not always publicly available. Table 1 shows that, in each of these years, BNDES held equity stakes in several companies, more than half being direct equity purchases rather than indirect purchases of equity by a BNDES-owned company. BNDES' direct equity stakes averaged 16% of the firms' total equity. Active bailouts and conversions of debt for equity notwithstanding, most of these equity holdings were part of an explicit strategy of investment management formulated by BNDESPAR analysts in tandem with the restructuring events of the 1990s.

Using this empirical context, we next describe our database and then proceed with the test of our hypotheses.

<<Table 1 and Figure 1 around here>>

Data and methods

Database and econometric approach

We use a database that tracks basic financial information and ownership for 358 Brazilian firms between 1995 and 2009. All enterprises listed in the stock market during that period for which we could collect reliable financial and ownership information are included. We analyze these firms' ownership profiles and financial information using such diverse

sources as reports filed with the Brazilian Securities and Exchange Commission (Comissão de Valores Mobiliários, CVM), as well as the *Economática*, *Interinvest*, and *Valor Grandes Grupos* databases. We cleaned the database in several ways. First, we dropped financial firms and publicly listed holding corporations (i.e. we only kept their affiliates). Second, we eliminated inconsistent financial information, such as cases where total assets were different from total liabilities. Third, to mitigate distortions brought by extreme values, we winsorized at the 1% and 99% percentiles some key performance variables that were shown to vary substantially (especially return on assets). The panel is unbalanced due to mergers, acquisitions, and business attrition, as well as missing information for some financial variables.

In an ideal experimental situation, we would like BNDES to buy shares of Brazilian companies randomly. But BNDES buys stakes in firms that it chooses or that choose it. Consequently, we pursue a second best solution, which is to study what happens to firm performance when BNDES becomes a shareholder, using company fixed effects and time-varying industry-level effects (i.e. industry membership dummies interacted with year dummies) to control for unobservable factors that might affect ownership choice and performance (Wooldridge, 2002). We thus essentially measure within-firm performance variations and how our variables of interest explain those variations. This is possible in our data because our period of analysis is associated with intense corporate restructuring and changes in corporate control (e.g., privatizations). In other words, our database exhibits variation over time in terms of ownership, essentially caused by external events that restructured the local economy. Although we adopt several controls in our analysis, we also perform additional robustness checks to verify if our results are driven by alternative explanations (e.g. BNDES selecting high-performance firms to invest).

Our variables are described below; for descriptive statistics, please refer to Table 2.

<<Table 2 around here>>

Dependent variables

Firm-level performance. We employ return on assets (*ROA*) as a measure of financial performance. Our goal is to directly examine how governmental allocations may allow firms to pursue more profitable projects, which (as per Hypothesis 1) would otherwise remain unfunded in scarce capital markets.

Fixed investment. To check whether BNDES' equity affects firms' propensity to undertake risky, long-term projects, we employ two variables: *ΔFixed*, which is the yearly change in the ratio of the company's fixed to total assets, and *CapEx*, measured by firm-level capital expenditures to total assets. A limitation of these measures is that not all fixed assets are nonredeployable. Unfortunately our database lacks precise information on the asset profile of our sample firms. We believe, however, that the extent of fixed asset investments is correlated with firms' orientation towards complex, long-maturity projects, for which the flexibility of equity can be of particular help. Furthermore, this measure is consistent with

previous work underscoring the role of governments in promoting fixed investments (Armendáriz de Aghion, 1999; Rodrik, 2004; Torres Filho, 2009; Yeyati *et al.*, 2004).

Explanatory variables

Minority governmental stakes through BNDES. Given the prevalence of pyramidal ownership structures in Brazil (Valadares & Leal, 2000), we code both direct and indirect equity stakes. BNDES' direct equity holdings constitute a continuous variable, *BNDESDir*, which measures the percentage of equity held by the bank (from 0 to 1). Our measure of total stakes (direct *or* indirect) is discrete because, as discussed before, we do not have precise information on indirect BNDES' equity holdings in pyramidal chains. We thus create a dummy variable, *BNDES*, which is set equal to one for a company among the owners of which is another company in which BNDES has equity, and 0 otherwise. [2]

Membership in business groups. We code as well for when BNDES owns equity in a company that belongs to a pyramidal business group. Figure 1 shows that Vale is, itself, a pyramidal group, given that the company has stakes in several other firms (Samitri, MRS, Samarco, and so forth). Thus, in 2003 BNDES had an indirect state in a pyramidal group. Our criteria to classify firms into groups are as follows. Membership in a group was considered when a firm is controlled by an owner or group of owners who control other firms in our database. To detect the existence of controlling stakes, we conducted a detailed analysis of shareholders' agreements available at the web site of the Securities Exchange Commission. Thus, we identified owners who had distinctive control rights over the firm (i.e. more seats in the board of directors). Multinationals with single subsidiaries in Brazil were not treated as groups even though they usually control multiple units across the world. Our goal was to find instances in which local controlling shareholders could use new allocations to transfer funds to *local* units. About 46.7% of the observations in our database came from firms belonging to *some* group. To test our hypotheses that the effect of BNDES' equity depends on business group membership, we multiply the *BNDESDir* and *BNDES* variables with the dummy variable coding whether the company belongs to a group or not.

Capital market development. To test our hypothesis that the positive effect of BNDES' equity is reduced when equity markets develop, we interact the *BNDES* and *BNDESDir* variables with measures that capture changes in capital market development (e.g. Levine, 2005). Two variables were used in the analysis: *ΔSMC*, which is the variation in the total stock market capitalization of the São Paulo Stock Exchange divided by total GDP; and *ΔIPO*, which is the yearly variation in the number of initial public offers (IPOs).

Control variables

Control variables include ownership dummies coded for whether a firm's majority (controlling) owner is state, foreign, or domestic-private; gross revenues (as a proxy for size);

[2] We focus on at most two layers of ownership, that is, cases in which BNDES participates in a firm that, in turn, has stakes in another firm.

and year, company, and industry-year fixed effects.[3] When *ROA* is a dependent variable, we also add as controls *Fixed* (fixed assets to total assets), *CapEx* (capital expenditures to total assets) and *Leverage* (debt to total assets). When *ΔFixed* and *CapEx* are used as dependent variables, we use the same controls but also add *ROA* as an additional control variable because the extent of fixed investment should depend on available cash flow. The variables used in interactions with BNDES stakes (*Belongs to a group*, *ΔSMC*, and *ΔIPO*) are additionally used as controls to guarantee that any measured effect of the interactions is not driven by omitted main effects. When testing how the effect of BNDES stakes varies according to capital market development, we further include an interaction between BNDES' equity and year dummies to control for alternative temporal explanations.

Findings

Effect of BNDES' equity on performance

We report the results of our regressions assessing the effect of BNDES on performance in Table 3. The first two models examine the effect of direct or indirect equity allocations, whereas the last two models focus on direct allocations only. The BNDES variables are only significant when group interactions are added to the model, thus confirming a strong moderating effect of group ownership. Model 2 shows that companies with BNDES as a minority shareholder (directly or indirectly) have a return on assets 7 percentage points higher than other firms ($p < 0.05$). Model 4, in turn, reveals a significant effect of BNDES 'direct equity purchases (i.e., the variable *BNDESDir*). Recall that this variable is continuous, capturing the fraction of the firm's equity owned by BNDES (from 0 to 1). The coefficient for the direct ownership variable is significantly positive ($p < 0.05$) and large in magnitude: it implies that an increase in 10 percentage points of BNDES' direct equity is associated with an increase in the firm's return on assets by 7.25 percentage points. Thus, lending support to Hypothesis 1, we have evidence that BNDES' equity participation, whether direct or indirect, has a sizeable impact on firm performance.

<<Table 3 around here>>

However, as noted before, the effect is strongly influenced by group membership. Namely, when BNDES buys equity in a company that belongs to a business group, the positive effect on performance is practically neutralized. Models 2 and 4 indicate that the coefficients for the interaction terms *BNDES*Belongs to a group* and *BNDESDir*Belongs to a group* are significantly negative ($p < 0.05$ and 0.01 respectively) and with an absolute value generally above the coefficient of BNDES' equity itself (i.e. its main effect). Again, this is aligned with our prediction (Hypothesis 3) that the effect of governmental equity diminishes when it targets firms belonging to business groups. Incidentally, it worth noting that belonging to a group, according to the estimates of all models, is positively associated with ROA. This finding is consistent with previous work suggesting that business groups supplant

[3] We code industries at the 2-digit SIC level because we would otherwise have few representative firms per industry. Note that our firm level fixed effects already control for industry membership effects, which are time-invariant.

institutional and capital market voids in emerging economies (Khanna & Palepu, 2000; Khanna & Yafeh, 2007; Wan & Hoskisson, 2003). However, if groups help solve dysfunctional voids, then the benefit of governmental equity participation should be relatively lower when firms belong to those groups. Thus, our data indicate that state and group capital are substitutes when it comes to voids brought by scarce capital markets—even though they may be complements for the whole economy if governments target instead unaffiliated firms.

Effect of BNDES on fixed investments

We next examine channels through which equity purchases might affect firm-level investment. Models 1 and 2 of Table 4 examine whether BNDES' allocations influence variations in fixed assets. Although we do not observe a significant effect of *BNDES* (i.e. total direct or indirect stakes) on *ΔFixed* (model 1), we note a positive and highly significant effect when we consider only BNDES' direct equity, i.e., *BNDESDir* (model 2, $p < 0.01$). Models 3 and 4 next examine whether BNDES' equity affects the extent of *CapEx*. Again consistent with our prediction, we find that *BNDES* and *BNDESDir* have a positive effect on capital expenditures ($p < 0.10$ and $p < 0.05$ respectively), although the effect is only moderately significant when indirect stakes are taken into account (i.e. variable *BNDES*). Thus, our prediction that minority governmental stakes will foster fixed-level investment (Hypothesis 2) is supported mostly when stakes are *direct* instead of through pyramidal chains of ownership. Direct stakes probably make it more likely that capital injections will be used to trigger new investment by the target firm.

<<Table 4 around here>>

Hypothesis 4 asserts that the effect of minority equity on firm-level investment will also be attenuated when firms belong to groups. Also in line with this prediction, the coefficients of the interactions between the BNDES variables and the group dummy are negative. However, they are moderately significant ($p < 0.10$) and more consistent across the various model specifications only when *BNDESDir* is used. Thus, we conclude that Hypothesis 3 receives moderate support.

The effect of capital market development

Hypotheses 5 predicts that our observed effect of BNDES' equity on profitability will be reduced as capital markets develop. Table 5 tests this hypothesis by using ROA as a dependent variable and then interacting the BNDES variables with measures of stock market development. While model 1 shows no significant association between *BNDES* and *ROA*, model 2 reveals a positive and significant effect of *BNDESDir* on *ROA* and a negative and significant coefficient in the interaction between *BNDESDir* and changes in stock market capitalization. We find, however, no significant effect in the interaction between *BNDESDir* and yearly variations in the number of IPOs. Possibly, stock market capitalization is a better indicator of the extent to which capital markets develop and lure private investors who can capitalize firms through mechanisms other than IPOs. Thus, if we take stock market capitalization as an indicator of capital market development, and consider the effect of direct governmental stakes, our results lend support for Hypothesis 5.

<<Table 5 around here>>

Robustness check: are our results driven by selection?

As noted before, BNDES does not randomly select the firms in which it invests. Thus, we should further investigate if our results are driven or not by a process of selection. For instance, suppose that the government is selecting the best companies in which to invest, thereby increasing the probability of having the government as a new shareholder when firm-level performance is good. If, as critics of industrial policy contend, governments frequently "pick winners" (e.g. Pack & Saggi, 2006), the apparent positive effect of governmental stakes may be spurious; that is, past performance may be affecting governmental equity, instead of the other way around. However, a negative selection process may also be likely. If managers of firms on the receiving end of governmental capital injections perceive their new shareholder to be able to bail out the firm if things go wrong and hence become willing to take greater risks (Haber, 2002; Kang, 2002), we should expect having the government as a new shareholder to be associated with lower performance.

Another source of concern related to our results is that our period of analysis covers the term of two distinct presidents, Fernando Henrique Cardoso (1995-2002) and Luiz Inácio Lula da Silva (2003-2010), with distinct orientations in terms of public policy. While most privatizations occurred during Cardoso's term, in the subsequent term of Lula there was increased emphasis towards active industrial policy and creation of "national champions"—large domestic firms—using BNDES' capital (Almeida, 2009). Thus, our finding that the effect of BNDES has changed over the years may also be a result of changes in the government itself. Because no precise directional effect can be established *ex ante*, we leave this process of selection as an empirical question to be examined in a *post-hoc* fashion.

Therefore, as an additional robustness test complementing our fixed-effect approach, we unveil the selection process by performing additional regressions using *BNDES* as a dependent variable. Our goal is to determine whether firm-level variables such as *ROA*, *Leverage*, or *Fixed* are associated with the likelihood of BNDES being a minority owner. We use *lagged* values of these variables because BNDES will likely observe past performance in its allocation decisions. Also, given that *BNDES* is a discrete variable and we want to control for unobservable firm-specific characteristics that may affect BNDES' choice of companies in which to participate, we adopt the so-called conditional Logit model (Chamberlain, 1980), which is a fixed-effect specification for discrete data. To check whether effects change when we consider the percentage of direct stakes held by BNDES, we run additional OLS regressions with fixed effects using our continuous measure, *BNDESDir*, as a dependent variable. Moreover, we separate our regressions in the two aforementioned periods—Cardoso (1995-2002) and Lula (after 2002)—to detect possible structural regimes in the process of selection.

Models 1 and 2 of Table 6 show results for the whole period. All variables are insignificant at conventional levels, thereby suggesting that our results are apparently not

driven by selection. [4] Thus, models 1 and 2 of Table 6 indicate that, during the period of study (1995-2009), the bank has not systematically selected companies based on past performance or other financial indicators. Models 3 to 6 then perform split-sample regressions to investigate whether the pattern of selection has changed during the two sub-periods of our analysis (1995-2002 and 2003-2009). Again, in both periods, we do not find BNDES systematically choosing companies with better or worse performance. The only exception is model 5, which shows a significant effect of the variable coding whether the firm belongs to a group. Thus, group membership positively affects the likelihood that the firm will receive direct or indirect BNDES' equity on in the period 2003-2009 ($p < 0.01$), although there is no significant effect when we consider direct stakes only (*BNDESDir*). However, this should not be a source of concern in our regressions because group membership is itself a control variable in our regressions where *ROA* is a dependent variable.

We thus conclude that there is no clear indication that our results are driven by selection, and that our detected temporal changes in the effect of BNDES are apparently not due to changes in governmental firm-level targeting.

<<Table 6 around here>>

Additional robustness check: are our results driven by improved access to debt?

Our key predicted mechanism is that BNDES ownership alleviates capital constraints, especially for companies with large capital investment needs. An alternative mechanism is that BNDES could increase *leverage* in a firm in which it has bought equity by opening lines of credit (from its own banking arm or from other banks). Unfortunately, during the period of our data, BNDES did not disclose the amounts lent, and companies are not required to report BNDES loans on their balance sheets (although some do). We thus have no way to measure whether BNDES increases its loans to companies it acquires. We can test, however, whether BNDES' ownership has an effect on leverage in general, and whether allocations are changing firm-level financial expenses.

We therefore run our regressions with two distinct dependent variables: *Leverage*, defined as total debt to total assets, and *FinEx*, defined as financial expenses (interests and amortizations) over total equity. Models 1 and 2 of Table 7 indicate that BNDES' equity allocations do not significantly change leverage. That is, BNDES does not appear, when it becomes a minority shareholder, to improve access to loans. Model 3 and 4, in turn, examine whether BNDES' equity is associated with lower financial expenses. Although we find that BNDES' (direct or indirect) equity is correlated with lower financial expenses, the effect is only marginally significant ($p < 0.1$) and is not observed when we consider BNDES' direct equity only. Thus, support for the alternative explanation that BNDES' equity may be affecting firms' ability to attract loans is at best weak.

[4] The number of observations in the conditional Logit model is substantially reduced because the model drops cases without within-firm variance in allocations (i.e. firms in which BNDES never invested or equally invested during the whole period).

<<Table 7 around here>>

Conclusion

From a theoretical standpoint, our paper contributes with a new framework explaining the performance implications of state minority ownership. Received agency-based theories stressing the detrimental effects of majority governmental participation (e.g. Shleifer and Vishny, 1998) suggest that private firms with minority stakes should outperform state-controlled SOEs because of reduced political interference and improved managerial monitoring. However, if the only benefit of those minority participations is to reduce the negative effects of governmental interference, then we should not expect any performance gain beyond what is found in privately-controlled firms without minority stake equity. The benefits of more dispersed forms of governmental ownership, compared to full private ownership, are therefore left unidentified. Yet, as discussed in the introduction, minority governmental stakes remain widespread and important in several countries. How can we explain this phenomenon? Can the "grabbing hand" of the state eventually become a "helping hand"?

Our theory posits that minority stakes can have a positive impact on firm performance especially in the case of firms constrained in their ability to assess external equity—which is often the case in developing and emerging economies. We also theorize—and find supporting evidence—that this performance effect is attenuated when target firms belong to business groups. Furthermore, we submit that the effect depends on capital market development. If minority governmental equity helps reduce capital constraints, then the value of those allocations should diminish as domestic capital markets develop. Thus, we unveil complex interactions between state ownership, group ownership, and environmental conditions commonly found in emerging markets.

In this sense, our theory advances our understanding of the relatively overlooked phenomenon of minority equity stakes by governments in emerging markets and, on a broader level, on recent discussions about the pros and cons of state capitalism (Bremmer, 2010). We inform this debate from the point of view of firms: why and in which conditions can governments affect firm-level performance and investment? Thus, given our emphasis on firm-level outcomes, our study also adds to the current debate in strategic management on non-market sources of performance heterogeneity associated with public policy and country-level institutional factors (Hoskisson *et al.*, 2000; Mahoney *et al.*, 2009; Peng *et al.*, 2009; Spencer *et al.*, 2005). Although there has been a flurry of research discussing how emerging market conditions affect firm-level strategies, studies focusing on the role of governments as sources of differential performance have been generally scant. Thus, a growing literature has proposed that private business groups supplant voids in emerging markets—including voids associated with scarce capital markets (see, for a review, Khanna & Yafeh, 2007). We complement this literature by showing that governmental equity not only helps solve capital constraints, but also negatively interacts with business group membership. This finding has the potential to promote further integration between the literatures on business groups and state capitalism.

Our study also has important practical implications. Some contend that governmental interference in the economy creates inefficiency and crowds out private entrepreneurship. Some fear that governmental capital can affect monetary policy, distort private credit markets, and generate moral hazard by either facilitating access to credit by firms with ill-considered projects or bailing out ailing industries. Our evidence suggests, however, that governmental purchase of equity stakes in publicly traded corporations may not be problematic depending on the governance profile of the target firm and the stage of capital market development. In a context of poorly developed capital markets, government-backed, long-term equity can allow firms to undertake performance-enhancing projects and promote capital expenditures needed to achieve efficiency gains. The potential for political distortions associated with government ownership are attenuated in the case of minority holdings because these holdings leave other investors and managers to be the key actors in the private companies in which it invests. Only when the government injects capital into pyramidal groups (especially domestic and state-owned ones) does its equity participation tend to be associated with negative effects. In such cases, capital injections apparently either become unnecessary (perhaps because of the existence of internal capital markets within groups) or are tunneled through the pyramid to support inefficient allocations. In conclusion, our results suggest that policy makers considering minority equity stakes as an industrial policy tool avoid pyramidal groups with poor governance and focus investments where there is a clear need to undertake productive capital expenditures by well-run private firms unable to finance these investments through existing capital markets.

Admitedly, some of our results may be idiosyncratic to Brazil and to its particular mechanisms of minority governmental participation. Thus, future work is need to verify the generalizability of our results in other developing and emerging economies using other channels of state-owned equity. More theoretical work is also needed to explain why minority governmental equity remain widespread in general, as we discussed in the introduction. Our theory rests on the idea that those minority stakes can help firms subject to scarce external financing, and therefore is unable to predict any performance-based impact in more developed economies with active and liquid capital markets (e.g. OECD 2005). Minority stakes also come in various forms and shapes: beyond development banks, governments have variously used public pension funds, life insurance companies, sovereigh wealth funds, state-owned holding companies, and so forth (Wooldridge, 2012). It would be interesting to assess how these various forms of equity differ and affect firm performance. Furthermore, scholars should examine the governance of such minority allocations in a more microanlytical way. Do governments, as minority shareholders, appoint representatives to sit on companies boards and influence decisions? Do they form alliances with other private owners to pursue certain types of strategies? Such an effort will be critical to improve our understanding of how more nuanced forms of governmental involvement can possibly affect firm performance. We sincerely hope that our study will help spark future work in strategic management and related disciplines to more closely assess alternative forms of state capitalism and their firm-level performance implications.

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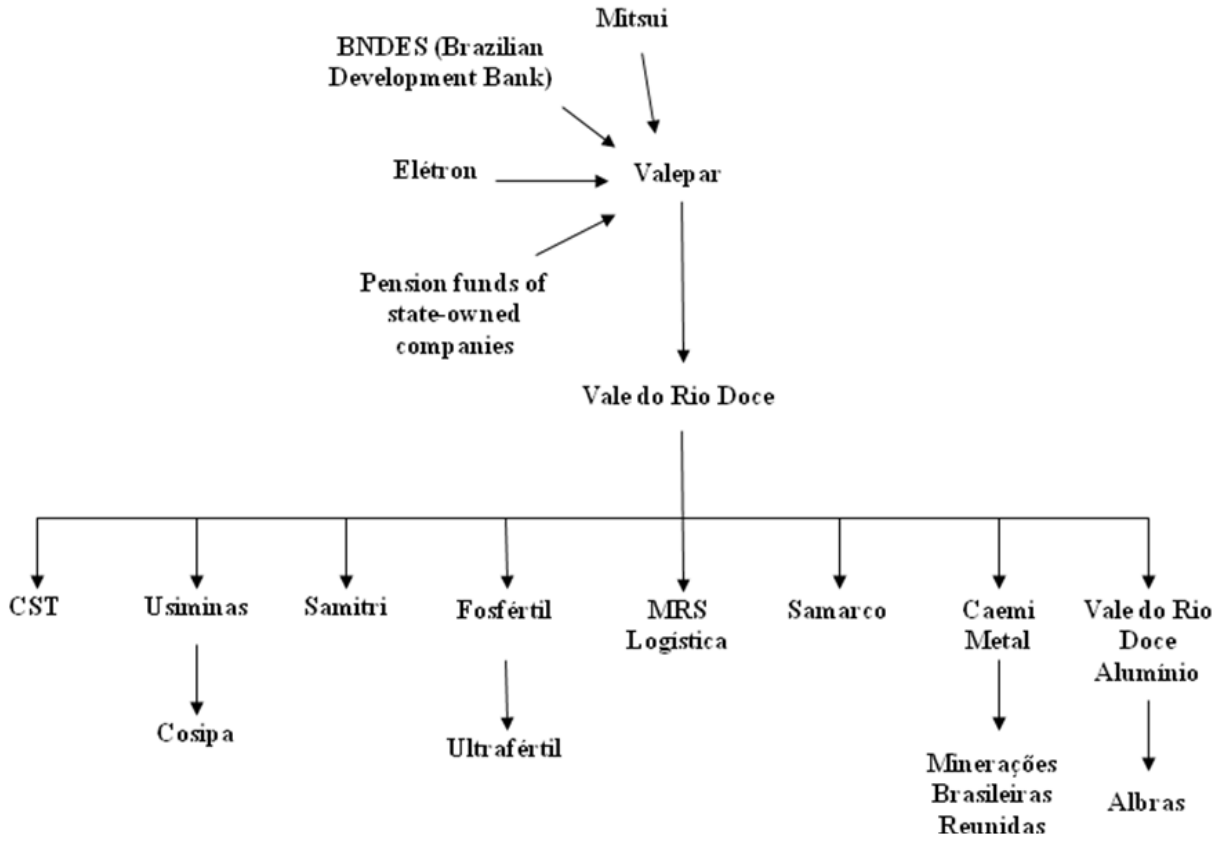

Figure 1. The pyramid of Vale (Brazilian mining group) in 2003.
Source: Brazilian Securities and Exchange Commission (CVM), *Valor Grandes Grupos*.

Table 1. Equity stakes by BNDESPAR (1995-2009)

Year	Number of BNDESPAR's equity stakes (direct or indirect)	Number of BNDESPAR's direct equity stakes	Average direct equity purchase as a percentage of total equity
1995	23	11	17%
1996	18	11	19%
1997	27	15	15%
1998	26	14	14%
1999	29	13	19%
2000	29	14	19%
2001	28	16	16%
2002	23	14	17%
2003	24	14	19%
2004	22	13	15%
2005	25	17	15%
2006	37	21	13%
2007	44	26	12%
2008	48	28	13%
2009	47	32	13%

Source: Compiled by the authors from data on publicly traded corporations. See the methodology section for further details. Indirect stakes occur when BNDESPAR participates in pyramidal ownership strucutures (e.g. BNDES owns Valepar, which in turn owns Vale).

Table 2. Variables and descriptive statistics

Variables	Description	Mean	Std. Dev.
ROA	Net profit over total assets	-0,045	0,308
Gross revenue	Gross revenue of the firm (in billion dollars)	0,859	4,104
Leverage	Total debt over total assets	0,516	5,792
Fixed	Fixed assets over total assets	0,299	0,250
ΔFixed	$Fixed_t$ - $Fixed_{t-1}$	0,000	0,145
CapEx	Capital expenditures over total assets	0,070	0,096
FinEx	Financial expenses over total debt	0,305	0,206
BNDES	Dummy variable equal to 1 if BNDES is a direct or indirect owner of the firm	0,126	0,332
BNDESDir	Fraction of the firm's equity that is directly owned by BNDES (0 to 1)	0,011	0,048
Foreign	Dummy variable equal to 1 if the majority shareholder is foreign	0,184	0,388
State-owned	Dummy variable equal to 1 if the majority shareholder is the state	0,070	0,256
Belongs to a group	Dummy variable equal to 1 if the firm belongs to a business group	0,450	0,498
ΔStock market capitalization (ΔSMC)	Market capitalization of listed companies$_t$ - Market capitalization of listed companies$_{t-1}$ (ratio to GDP)	0,015	25,681
ΔNumber of IPOs (ΔIPO)	Number of IPOs$_t$ - Number of IPOs$_{t-1}$	0,001	19,836

Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. ROA	1.0000													
2. Gross revenue	0.0821*	1.0000												
3. Leverage	-0.2778*	-0.0125	1.0000											
4. Fixed	-0.0408*	0.0140	0.0530*	1.0000										
5. ΔFixed	-0.0204	0.0006	0.0012	0.2900*	1.0000									
6. CapEx	0.0651*	0.0468*	-0.0062	0.0361*	-0.0139	1.0000								
7. FinEx	-0.0525*	-0.0426*	-0.0487*	-0.0043	-0.0516*	-0.1001*	1.0000							
8. BNDES	0.0455*	0.0992*	-0.0042	0.0978*	0.0309	0.0337	-0.1175*	1.0000						
9. BNDESDir	0.0175	0.0334	0.0190	-0.0174	0.0191	0.0141	-0.0690*	0.6001*	1.0000					
10. Foreign	0.1164*	0.0149	-0.0275	0.0115	-0.0198	0.0197	-0.0290	-0.0391*	-0.0171	1.0000				
11. State-owned	0.0482*	0.2523*	-0.0178	0.2780*	0.0787*	-0.0308	-0.0670*	0.1629*	0.0731*	-0.1307*	1.0000			
12. Belongs to a group	0.1001*	0.1581*	-0.0216	-0.0173	-0.0230	0.0257	-0.0663*	0.1742*	0.0616*	0.2326*	-0.0349*	1.0000		
13. ΔStock market capitalization (ΔSMC)	0.0209	0.0297	0.0059	-0.0481*	-0.1452*	-0.0482*	0.0002	0.0094	0.0141	0.0088	-0.0158	0.0066	1.0000	
14. ΔNumber of IPOs (ΔIPO)	0.0103	0.0084	-0.0193	-0.0145	-0.0644*	-0.0224	-0.0318	-0.0059	-0.0033	0.0014	-0.0104	-0.0001	0.7589*	1.0000

* p<0.05

Table 3. The effect of minority governmental ownership (BNDES) on return on assets (ROA) (1995-2009)

Variables	Direct and indirect stakes		Direct stakes only	
	ROA	ROA	ROA	ROA
	(1)	(2)	(3)	(4)
BNDES ownership				
BNDES (direct and indirect stakes - dummy)	0.016	0.070**		
	[0.016]	[0.035]		
BNDESDir (direct stakes only - percentage)			0.227	0.725**
			[0.208]	[0.280]
Group ownership				
Belongs to a group	0.099**	0.108**	0.102**	0.104**
	[0.045]	[0.045]	[0.045]	[0.045]
Interactions with group ownership				
BNDES*Belongs to a group		-0.082**		
		[0.039]		
BNDESDir*Belongs to a group				-0.963***
				[0.319]
Controls				
Gross revenue	Y	Y	Y	Y
Leverage	Y	Y	Y	Y
Fixed	Y	Y	Y	Y
Ownership dummies (foreign, state, etc.)	Y	Y	Y	Y
Constant	Y	Y	Y	Y
Year, firm, industry-year fixed effects	Y	Y	Y	Y
Observations	2,920	2,920	2,919	2,919
Number of firms	367	367	367	367
Adjusted R-squared	0.161	0.163	0.162	0.167

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in brackets.

Table 4. The effect of governmental minority ownership (BNDES) on fixed investments

Variables	ΔFixed (1)	ΔFixed (2)	CapEx (3)	CapEx (4)
BNDES ownership				
BNDES (direct and indirect stakes - dummy)	0.043		0.020*	
	[0.033]		[0.011]	
BNDESDir (direct stakes only - percentage)		0.582***		0.236**
		[0.212]		[0.105]
Group ownership				
Belongs to a group	0.033	0.026	0.024	0.023
	[0.028]	[0.027]	[0.017]	[0.017]
Interactions with group ownership				
BNDES*Belongs to a group	-0.076*		-0.021	
	[0.039]		[0.015]	
BNDESDir*Belongs to a group		-0.846*		-0.258*
		[0.476]		[0.150]
Controls				
ROA	Y	Y	Y	Y
Gross revenue	Y	Y	Y	Y
Leverage	Y	Y	Y	Y
Fixed	Y	Y	Y	Y
Ownership dummies (foreign, state, etc.)	Y	Y	Y	Y
Constant	Y	Y	Y	Y
Year, firm, industry-year fixed effects	Y	Y	Y	Y
Observations	2,149	2,148	2,021	2,020
Number of firms	324	324	317	317
Adjusted R-squared	0.319	0.324	0.188	0.190

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in brackets.

Table 5. The effect of capital market development

Variables	ROA (1)	ROA (2)
BNDES ownership		
BNDES (direct and indirect stakes - dummy)	0.029	
	[0.056]	
BNDESDir (direct stakes only - percentage)		1.155**
		[0.489]
Interactions with stock market variables		
BNDES*Δstock market capitalization	0.001	
	[0.001]	
BNDES*Δnumber of IPOs	0.000	
	[0.002]	
BNDESDir*Δstock market capitalization		-0.012**
		[0.006]
BNDESDir*Δnumber of IPOs		0.026
		[0.016]
Controls		
Gross revenue	Y	Y
Leverage	Y	Y
Fixed	Y	Y
Capex	Y	Y
Stock market variables (ΔSMC, ΔIPO)	Y	Y
Ownership dummies (foreign, state, etc.)	Y	Y
Constant	Y	Y
BNDES(Dir)*year dummies	Y	Y
Year, firm, industry-year fixed effects	Y	Y
Observations	2,734	2,733
Number of firms	358	358
Adjusted R-squared	0.163	0.168

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in brackets.

Table 6. Factors affecting the likelihood that tye government (via BNDES) will be a minority owner

Variables	BNDES Conditional logit 1995-2009 (1)	BNDESDir OLS with fixed effects 1995-2009 (2)	BNDES Conditional logit 1995-2002 (3)	BNDESDir OLS with fixed effects 1995-2002 (4)	BNDES Conditional logit 2003-2009 (5)	BNDESDir OLS with fixed effects 2003-2009 (6)
Past performance						
ROA $_{t-1}$	0.054	0.011	-0.379	0.016	1.184	0.014
	[0.807]	[0.010]	[1.726]	[0.018]	[0.824]	[0.011]
Group ownership						
Belongs to a group $_{t-1}$	0.195	-0.002	-1.094	-0.009	15.357***	-0.001
	[0.564]	[0.006]	[0.756]	[0.008]	[0.908]	[0.004]
Financial variables						
Gross revenue $_{t-1}$	-0.131	-0.001	-0.329	-0.003	1.292	-0.002
	[0.156]	[0.003]	[0.245]	[0.004]	[0.897]	[0.002]
Leverage $_{t-1}$	-0.488	-0.000	-1.871	-0.002	3.393	0.000
	[1.243]	[0.000]	[1.648]	[0.003]	[2.367]	[0.000]
Fixed $_{t-1}$	-0.784	0.004	-0.803	-0.022*	2.950	0.015
	[0.890]	[0.009]	[1.467]	[0.012]	[2.489]	[0.012]
Controls						
Ownership dummies (foreign, state, etc.)	Y	Y	Y	Y	Y	Y
Constant	N	Y	N	Y	N	Y
Year, firm, industry-year fixed effects	Y	Y	Y	Y	Y	Y
Observations	637	2,460	234	1,402	176	1,058
Number of firms	63	341	37	291	32	242
Pseudo R-squared (conditional logit)	0.124		0.110		0.354	
Adjusted R-squared (panel)		0.155		0.145		0.223

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in brackets.

Table 7. The effect of minority governmental ownership (BNDES) on leverage and financial expenses

Variables	Leverage (1)	Leverage (2)	FinEx (7)	FinEx (8)
BNDES ownership				
BNDES (direct and indirect stakes - dummy)	-2.095		-0.055*	
	[2.063]		[0.031]	
BNDESDir (direct stakes only - percentage)		-13.613		-0.033
		[11.997]		[0.229]
Group ownership				
Belongs to a group	-0.258	-0.086	0.080*	0.073*
	[0.594]	[0.518]	[0.042]	[0.043]
Interactions with group ownership				
BNDES*Belongs to a group	2.534		-0.004	
	[2.320]		[0.044]	
BNDESDir*Belongs to a group		19.457		-0.483
		[16.334]		[0.438]
Controls				
ROA	Y	Y	Y	Y
Gross revenue	Y	Y	Y	Y
Leverage	N	N	Y	Y
Fixed	Y	Y	Y	Y
Ownership dummies (foreign, state, etc.)	Y	Y	Y	Y
Constant	Y	Y	Y	Y
Year, firm, industry-year fixed effects	Y	Y	Y	Y
Observations	2,153	2,152	2,153	2,152
Number of firms	325	325	325	325
Adjusted R-squared	0.014	0.014	0.237	0.235

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in brackets.