OWNERSHIP AND CONTROL STRUCTURES AND PERFORMANCE OF FIRMS IN BRAZIL

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Introduction

Berle and Means (1932) claim that the modern corporation's main characteristic feature lies in the separation between ownership, scattered among a great number of small outside shareholders, and control, exerted by professional managers owning, at best, a paltry fraction of its capital. Thereafter, a huge literature on corporate finance emerged, taking for granted that this characterisation of the agency problem, circumscribing it to the potential conflict between shareholders and management, fitted in all countries. Since the 1980s, however, and gaining momentum in the 1990s, studies have been focusing, both at the theoretical and empirical level, on the agency problem between minority shareholders and controlling shareholders, whose holding of a large block of voting shares in the firm confers them power and incentives for expropriating minority shareholders.

To a great extent the debate around the costs and benefits of firms' shareholding concentration can be understood under the lens of the trade-off between relinquishing liquidity and risk diversification on the one hand and incentives to monitor management on the other hand. Indeed, it can be argued that holders of a big chunk of shares contribute to create wealth for the firm: if they are outsiders, they would have the incentives to monitor the managers, mitigating therefore the free-rider problem; if they are managers themselves, they would have direct incentives to be efficient, on top of signalling to the market that their interests are aligned with the firm's profit maximisation. Nonetheless, by entailing the concentration of investors' wealth on the ownership of a large stake in the firms, the renunciation of the diversification benefits would reward only if it gave rise to private benefits of control, such as those resulting from the diversion of the firm's assets – the so-called "tunnelling" effect.

However copious, the literature focusing on the effects of the concentration of the firm's ownership and control in the hands of its largest shareholders on its performance is far from definitive, except perhaps for the negative effect of the wedge between cash-flow rights and voting rights. One of the pioneering analyses on that issue is Morck et al. (1988). They distinguish two opposing effects stemming from ownership concentration on corporate performance: the positive incentive effect and the negative "entrenchment" effect, the latter associated with the private benefits controlling shareholders obtain at the expense of minority shareholders. They provide empirical evidence, based on a sample of U.S. firms, that the relationship between managerial stake and the valuation of the firm is non-monotonic. For levels of managerial shareholdings below 5 percent these two variables are positively correlated, suggesting that the incentive effect overwhelms the entrenchment effect. For managerial ownership varying between 5 and 25 percent the entrenchment effect dominates, rendering the relationship negative (a manager possessing a small faction of the cash-flow rights would be able to control the company and expropriate minority shareholders). Above 25 percent managerial ownership, the relationship becomes again positive.

Analysing the ownership structure of large publicly traded companies in 27 developed countries, La Porta et al (1999) document that, except in the United States and the United Kingdom – countries wherein the common law prevails – the great majority of companies around the world are controlled by large shareholders. Moreover, as a rule, these investors' voting rights exceed materially their cash-flow rights. Hence, so they argue, Berle and Means' widely-accepted view of corporations would only be suitable to those two countries, prevailing in the rest of the world as the main agency problem the potential for expropriation of minority shareholders by controlling shareholders.

Bianco e Casavola (1999) in turn investigate the effect of both pyramidal structures and the largest shareholder's identity on Italian firms' returns. They contend that *ex ante* the net effect of pyramidal structures on the firm performance is ambiguous. On the one hand, that type of structure leaves plenty of room for expropriating outside investors and for dynamic inefficiency – since it facilitates the controlling shareholder's entrenchment and hinders her contestability. On the other hand, pyramidal arrangements may overcome constraints surround the financing of good projects because, creating an internal capital market, they mitigate the informational asymmetry. Their empirical model provides two findings. First, the significance of the negative effect on the rate of return on both investment and sales of the dummy representing controlling shareholder holding 66 percent or more of the firm's voting rights. Second, belonging to an economic group tends to engender a significant negative impact on the firm's return rate on investment.

In the same vein, Claessens et al. (2002) attempt to disentangle the incentive and entrenchment effects of large ownership using a sample of 1,301 publicly traded corporations in eight East Asian countries. Their regression analysis found that the firms' market-to-book ratio increases with the share of cash-flow rights in the hands of the largest shareholder (the positive incentive effect) and decreases with the share of control rights (the negative entrenchment effect). They also show that deviations between control rights and cash flow rights for the largest shareholders tend to reduce corporate valuation, and that the value discount increases with the size of the wedge, suggesting that discrepancies in rights widen agency costs when there is a controlling shareholder.

Further evidence on the links between ownership structures and performance of firms is furnished by La Porta et al. (2002). They build a model to evaluate the influence of both legal protection of outside investors and controlling shareholder's cash-flow rights on corporate valuation, applying it to data about 539 corporations from 27 developed countries. Using Tobin's q as a proxy for the valuation of the firms, they show that higher fractions of cash-flow ownership by controlling shareholders (a measure of their incentives to maximise firm value) are associated with higher valuations, notably where investor protection is poor. Furthermore, they conclude that deviation between control rights and cash-flow rights by the controlling shareholder may lead to the expropriation of minority shareholders.

Based on a sampling universe comprising 5,829 Korean firms subject to outside auditing during the period of 1993-1997, Joh (2003) carried out a microanalysis of the determinants of their profitability rates. Controlling for firm and industry characteristics as well for macroeconomic effects, she found that firms with low ownership concentration tended to yield low rates of return. Likewise, firms with a high disparity between control rights and ownership rights were also leaned to low profitability rates. Additionally, her investigation furnishes some empirical support for non-linear ownership effects on firm profitability.

Some analysts have pointed out that investors' poor legal protection can magnify agency costs by facilitating the leverage of voting power over ownership. Notwithstanding the advantage of promoting monitoring without impairing liquidity, the divergence of the "one-share-one-vote" tenet has the drawback of providing the large shareholder with incentive and power for expropriating minority shareholders. This happens because the gap between cash-flow and voting rights enables the large shareholder to control a firm with a relatively small direct participation in its capital, making it much more rewarding expropriating minority shareholders than trying to maximise firm's profits. Among the devices more often used to create a gap between voting rights and ownership, the following can be mentioned: (1) pyramidal arrangements of ownership – the most prevalent according La Porta *et al.* (1999); (2) dual-class shares; and (3) cross-shareholdings. Bebchuk (1999), Bebchuk *et al.* (1999), La Porta *et al.* (1999) and Bertrand and Mullainathan (2002), for instance, have understood pyramids as a mechanism for expropriating minority shareholders. Contesting this view, Almeida and Wolfenzon (2004) argue that pyramids operate primarily as a means of ensuring financing to new enterprises. A family may tap the profits of a firm they already control to establish a new enterprise, sharing with the former company's shareholders the "security benefits" of the new one, that is, the returns generated by the latter that are not appropriated as private benefits by the controlling family. Undeveloped capital markets and low security benefits of the new company, characteristic features of countries wherein the investor protection is poor, may favour the emergence of pyramids, which could represent an efficient response to financial market failures. Firms requiring high levels of investment and/or with low profitability ratios would be more willing to be involved in pyramidal arrangements of ownership. Besides providing higher payoff to the controlling family and implying lower security benefits to outside investors, firms with these characteristics face stronger financial constraints and, consequently, are those most benefited from intra-group transfer of resources.

This paper has as its main objective to investigate the effects of ownership and control concentration as well as of characteristics of the controlling shareholders on the performance of Brazilian limited liability companies. The analysis relied on data compiled from 4,478 reports these firms filed to the Brazilian agency responsible for securities and exchange regulation. As the adopted sample provides data for a large number of companies (more than 600) for every year from 1997 to 2002, panel data analysis was carried out. As possible contributions of this paper, it can be pinpointed the sample comprehensiveness (covering six years and including the whole set of limited liability companies, and not only companies with shares traded at the stock market) and the methodology employed both to reckon deviation of rights of the largest ultimate shareholder and to test the potential links between ownership and control structures and firms' rates of return.

Besides this introduction, the paper encompasses five additional sections. Section I describes the data set explored to undertake the investigation and specifies the methodology followed to calculate rights of cash flow and of voting. Section II presents some relevant findings related to Brazilian firms' ownership and control structures. Section III introduces the econometric model and the following section reports the principal results of the panel data analysis on the relationship between ownership and control characteristics and firm performance. The closing section concludes and makes some comments on the main challenges corporate governance encounters in Brazil.

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I. Data Sources and Methodology

The data set used for the empirical research was the "Informativo Anual" (IAN) and the "Demonstrações Financeiras Padronizadas" (DFP) limited liability companies in Brazil are required to file annually to the "Comissão de Valores Imobiliários" (CVM) – the Brazilian capital market watchdog. The analysis relied on data collected out of a sample embracing all the firms that furnished these forms to the CVM. The investigation based on 4,478 IANs and the same number of DFPs. The number of firms that complied with these disclosure requirements was 670 in 1997, 836 in 1998, 807 in 1999, 772 in 2000, 727 in 2001 and 666 in 2002. Among other types of data, the IANs disclose: i) the company's shares of capital held by the largest shareholders; ii) the identities of the directors and the top executives; iii) directors' compensation and whether they have participation in the company's capital; iv) whether there is any agreement among a group of shareholders; v) whether the company issued preferred stocks without voting rights; vi) companies' general information – such as their main activity. The DFP in turn contain: i) the balance sheets; ii) the income statement; iii) the sources and uses of funds; iv) changes in the net worth; v) and the board's report.

As regards the methodology that guided the empirical investigation (the key concepts and definitions as well as the main criteria and techniques to deal with the data), despite having drawn extensively on the corresponding literature, it endeavoured to take into account peculiarities embracing Brazilian corporate environment.

The first step was to identify the "largest ultimate shareholder" (henceforth LUS) for every sample company for every year. LUS is defined as the shareholder who holds the largest stake, directly and indirectly, in the firm's voting rights. By indirect ownership or pyramidal ownership of a firm it should be understood the ownership structure showing at least one limited liability company between the company under scrutiny and its corresponding ultimate shareholder. Once reconstituted the chain of share stakes in intermediate firms leading the ultimate shareholder to the firm analysed, and verified whether she was a controlling shareholder, a diagram was drawn to represent the shareholding structure, wherein were cash-flow rights and voting rights of the main shareholders in each of the firms belonging to the ownership chain were specified. The LUSs were classified into six categories: i) an individual or a family (people connected by blood or marriage); ii) the state or agencies subordinated to it; iii) a foreign firm; iv) a partnership; v) a mutual fund; vi) a pension fund; vii) an offshore firm; viii) a foundation or a cooperative; ix) a privately-held company; x) a legally-registered voting agreement among shareholders.

Before presenting how the ultimate shareholder's voting rights and cash-flow rights were reckoned, it should be noted that companies in Brazil have been allowed to issue preferred stocks that may not entitle their holders to vote. Whilst voting rights are mandatory for nominated common stock (*ações ordinárias nominativas*, henceforth ON), holders of preferred stocks (*ações preferenciais nominativas*, PN) can be awarded no voting rights. According to the Brazilian corporate law before its amendment in 2001, a firm was allowed to issue up to two-thirds of its capital as PN with no voting rights, implying that control could be ensured to a shareholder owning just one-sixth of the firm's capital. Indeed, this sort of deviation from the one-share one-vote rule has been largely employed by Brazilian listed companies.

The calculation of the ultimate shareholder's stake in the firm's cash-flow rights depends on whether there is a structure of pyramidal ownership. If the company being analysed involves no pyramidal arrangement, the fraction of the ultimate shareholder's cash-flow rights equals to the ratio between the number of shares she owns – the sum of her ON and PN shares – and the firm's total number of shares.

Having pyramidal ownership, the stake in cash-flow rights is determined by the product of the percentages of shareholdings each firm has in the next one. For example, if firm A has 60 percent of its capital owned by firm B, which in turn has 80 percent of its capital held by firm C, therefore firm C is the firm A's ultimate shareholder with 48 percent of its overall capital (0.8 x 0.6 = 0.48) and thus with the same percentage of its overall cash-flow rights.

As regards voting rights, as the great majority of Brazilian firms have an ultimate owner holding voting rights exceeding 50 percent, the cut-off point of 50 percent was adopted as the criterion to distinguish between firms with dispersed ownership and firms with an ultimate controlling shareholder. Hence a firm is said to have an ultimate controlling shareholder if it has a shareholder controlling directly and indirectly at least 50 percent of the firm's total voting rights.[1] The calculation of voting rights depends on whether the LUS is also the controlling shareholder. If that is not the case, the reckoning is analogous to that for cash-flow rights, that is, the product of the percentages of voting rights along the chain of control. For example, if C holds 20 percent of firm B's voting capital, and firm B holds in turn 80 percent of firm A's voting capital, then C is the ultimate shareholder of firm A (but it is not its controlling shareholder) with 16 percent (0.20x0.80) of firm A's voting rights. Contrariwise, if the ultimate shareholder is also a controlling shareholder, the percentage of voting rights is determined by the percentage of voting rights the last intermediate along the chain of control has in the sample firm. For instance, if C controls 60 percent of the voting rights in the firm B, which in turn holds 80 percent of firm A's overall voting rights, then C is the firm A's ultimate shareholder as well as its controlling shareholder, commanding 80 percent of firm A's voting rights.

In order to illustrate this approach, it is briefly reported below how the rights of control and the rights of cash flow (and the wedge between them) were figured out for two companies representing one of the most intricate cases of the whole sample. They are Norquisa and Politeno, both belonging in 2001 to the same control chain, as can be observed by Figure 1. These companies embrace pyramidal schemes, a circle cross-shareholding (comprising Politeno, Norquisa, Copene, Econômico and Conepar), and shareholder agreements. Furthermore, they involve several types of shareholders: families, foreign corporations, holdings, partnerships, and limited liability companies. Among the companies exhibited in that figure, thirteen belong to the 2001 CVM sample.

In the case of Politeno, the control is ensured through a voting agreement among Sumitomo, Itochu, Conepar and SPP Nemo. The first two companies are Japanese; SSP Nemo is a Brazilian company entirely controlled by the Feffer family; and Conepar is also a Brazilian firm but is controlled by Norquisa through a pyramidal scheme that results in a circle cross-shareholding. Given that Norquisa has no controlling shareholder according to the adopted criteria, the effective participants of the agreement are, besides the two Japanese corporations, the Feffer family and Norquisa. The Feffer Family has in turn a stake in the Politeno by means of two channels: via SPP Nemo and via Norquisa. The longest pyramidal chain in that case comprises six intermediate companies between the Feffer Family and Politeno: Polibrasil, Polipropileno, Norquisa, Copene, Econômico, and Conepar. For Politeno, cash flow rights were reckoned to exceed voting rights by 49.7 percentage points.

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[1] For La Porta et al (1999), a firm has a controlling shareholder if a shareholder has direct and indirect voting rights exceeding 10 percent or 20 percent. Besides those two cutoff points, Claessens et al (2002) adopt the 40 percent cutoff to define control for East Asian companies.

Figure 1: Ownership and Voting Rights of Norquisa and Politeno
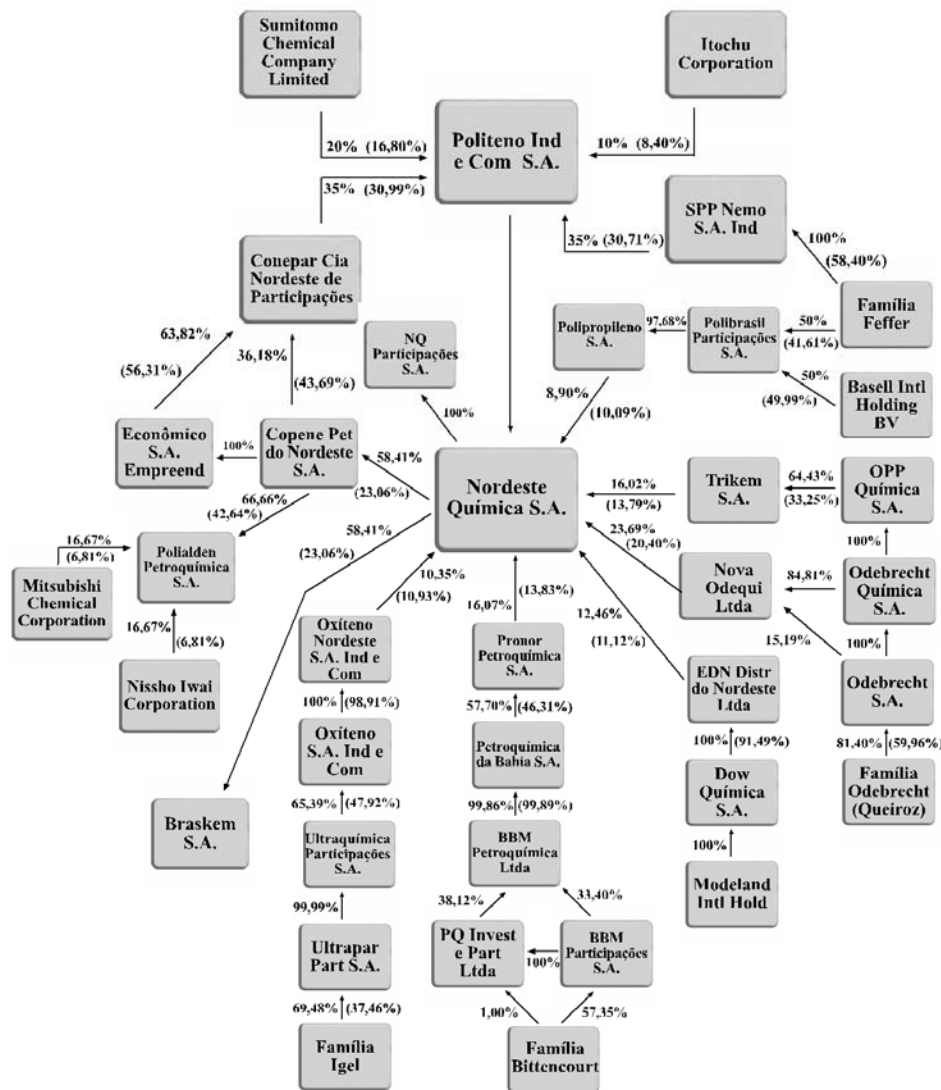
Source: Elaborated out of the reports these firms filed to CVM

Notation

a) Each rectangle represents either a shareholder or the company under scrutiny.

b) Arrows linking the rectangles indicate ownership and voting relationships: the origin from which they come informs who controls/owns; the other extremity what is controlled/owned.

c) Percentages outside the brackets refer to the fraction of the company' voting capital the shareholder owns; percentages within the brackets refer to the same shareholder's cash flow rights. When there is only one figure with no brackets, cash-flow rights and voting rights are equal.

II. Some Findings about the Brazilian firms' Ownership and Control Structures

This section presents some descriptive statistics that help to portray the sample firms' ownership and control profiles. For the whole set of firms that filed their IANs to CVM over the period 1997-2002, the following main aggregate were found:

a) The LUS's cash-flow rights average 51.6 percent and the LUS's voting rights average 72.9 percent, implying an average discrepancy between rights of voting and cash flow of 21.3 percentage points.

b) Companies whose shares are traded at the Brazilian stock exchange, Bovespa, show similar percentages vis-à-vis the whole sample: the mean concentrations of cash-flow rights and voting rights are lower, respectively, 5.2 and 2.2 percentage

points, resulting in a larger wedge of rights (3.0 percent points) (see Table 1). Changes in the percentages of rights throughout the period are minimal.

Table 1
Cash-Flow Rights, Voting Rights, and Discrepancies between Rights
Limited Liability Firms and Firms Listed at Bovespa
Mean Percentage over the Period 1997-2002

		1997	1998	1999	2000	2001	2002	Mean
Voting Rights	**All Firms**	71.0	71.6	73.7	72.7	73.7	75.0	72.9
	Listed	69.1	70.5	71.6	70.4	70.7	72.0	70.7
Cash Flow Rights	**All Firms**	49.3	50.4	51.0	51.2	53.5	54.9	51.6
	Listed	44.5	45.7	46.3	46.4	47.1	48.1	46.4
Divergence	**All Firms**	21.8	21.2	22.8	21.5	20.2	20.1	21.3
	Listed	24.6	24.7	25.3	24.0	23.5	23.9	24.3

c) Firms wherein the LUS holds more than 50 percent of the firm's capital represent 47.9 percent of the sample firms over the period (for firms listed at the Bovespa, it is 41.8 percent. Firms whose LUS holds more than 90% percent of the firm's capital account for 18.4 percent of the sampled firms (10.0 percent for Bovespa-listed firms). Only in 25.9 percent of the sampled companies (29.2 percent for Bovespa-listed companies) the LUS holds cash-flow rights exceeding 25 percent.

d) In average terms, there is one controlling shareholder in 77.6 percent of the firms analysed, 77.3 percent in the case of listed companies (see Table 2). 39.0 percent of the firms have a LUS owning more than 90 percent of the firm's voting capital (31.8 percent for Bovespa-listed companies). These percentages are very high as compared with those obtained by Claessens *et al.* (2002, p. 2748) – for a 40 percent cut-off, only 23 percent of their sample of Asian companies had a controlling shareholder. Following the 20 percent cut-off adopted by La Porta *et al.* (1999) to define control, less than 6 percent of the CVM sample (less than 7 percent of the Bovespa-listed companies) do not have controlling ultimate shareholder. For a 10 percent cut-off, 99.6 percent of the whole firms of the sample and 99.75 percent of all Bovespa-listed sample firms have a controlling shareholder.

Table 2
Distribution of Largest Ultimate Shareholders' Voting Rights
Mean Percentage over the Period 1997-2002

Percentage of the Overall Capital	Limited Liability	Listed Firms
10% or less	0.4	0.2
> 10% and ≤ 25%	5.6	6.8
> 25% and ≤ 50%	16.4	15.7
Total for ≤ 50%	22.4	22.7
> 50% and ≤ 75%	22.1	25.9
> 75% and ≤ 90%	16.5	19.7
> 90% and ≤ 100%	39.0	31.8
Total for > 50% and ≤ 100%	77.6	77.3
Total	100.0	100.0

e) With respect to the wedge of rights for the LUS, Table 3 evinces that in average terms for the whole period it exceeds 10 percentage points in 55.9 percent of the sample firms (in 64.9 percent of the Bovespa-listed companies). There occurs deviation higher than 25 and 50 percentage points in, respectively, 36.2 percent and

13.2 percent of the sample firms (and in, respectively, 42.4 percent and 15.5 percent of the Bovespa-listed companies).

Table 3
Distribution of the Largest Ultimate Shareholders' Divergence of Rights
Mean Percentage over the Period 1997-2002

Percentage of the Overall Capital	Limited Liability	Listed Firms
Less than 0%	3.8	4.7
Equal to 0% (no discrepancy)	20.7	10.3
> 0 and ≤ 10%	19.6	20.1
> 10% and ≤ 25%	19.7	22.5
> 25% and ≤ 50%	23.0	26.9
Total for ≤ 50%	86.8	84.5
> 50% and ≤ 75%	9.0	11.9
> 75% and ≤ 100%	4.3	3.5
Total for > 50% and ≤ 100%	13.2	15.5
Total	100.0	100.0

f) Concerning the identity of the largest ultimate shareholders, families predominate among them, averaging 54.7 percent over the period 1997-2002. Foreign investors (averaging 18.4 percent), governments (7.5 percent) and mutual funds (5.2 percent) followed in importance (see Table 4).

Table 4
The Largest Ultimate Shareholders' Identity
(Percentage)

Category of Shareholder	1997	1998	1999	2000	2001	2002	TOTAL
Government	9.0	8.1	7.2	6.6	7.0	7.5	7.5
Foreign Investors	14.5	18.9	19.6	19.7	19.1	17.7	18.4
Families	58.2	55.3	54.0	54.7	53.5	52.9	54.7
Foundations	2.5	1.0	1.4	1.4	2.2	2.1	1.7
Mutual Funds	1.9	4.8	6.2	5.8	6.3	6.0	5.2
Pension Funds	2.8	1.6	1.6	2.5	1.8	2.0	2.0
Privately-Held Firms	6.3	5.5	4.0	3.5	3.5	4.6	4.5
Others	4.8	4.9	6.1	5.8	6.6	7.4	5.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

g) There are significant inter-industry discrepancies of the largest ultimate shareholders' average cash-flow rights. While these means for transport and financial industries (65.3 and 60.7 percent) exceed significantly the overall mean (51.6 percent), the opposite happens for telecommunications and petroleum (32.9 and 33.8 percent). For the largest ultimate shareholders' average voting rights, inter-industry disparities are lower: commerce (83.7 percent), agriculture (79.0 percent), public utilities 77.8 percent) and banking (76.3 percent) present means above the overall mean (72.9 percent), which in turn is much higher than that for petroleum (62.0 percent). As regards the LUS's separation of rights, the leaders are telecommunications (averaging 39.0 percent, though the mean for 1999 is 49.7 percent), paper and cellulose (33.4 percent) and agriculture (31.5 percent) while the smallest wedges are observed for cement and glass (13.9 percent), transport (12.8 percent) and banking (15.6 percent).

h) Companies whose all shares granted voting rights represent on average 31.4 of the sample (se Table 5). In more than two-thirds of the sample firms, all PN shares have no voting rights. It is also noteworthy that on average 36.5 percent of the companies have more than 50 percent of their respective capital accounted for shares with no voting rights. Nonetheless, the number of firms with this type of characteristic has been decreasing since 1998 (from 314 to 235 in 2002).

Table 5
PN Shares: 1997-2002 (percentage)

	1997	1998	1999	2000	2001	2002	Mean
Firms with no PN shares	25.7	26.3	27.8	28.6	28.3	30.3	27.8
Firms with PN shares (1)	74.3	73.7	72.2	71.4	71.7	69.7	72.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Firms with VR PN shares (2)	4.6	5.0	5.2	5.8	5.9	4.7	5.2
-PN with and without VRs (3)	1.3	1.7	1.5	1.8	2.1	1.4	1.6
-All PN with VRs	3.3	3.3	3.7	4.0	3.9	3.3	3.6
Firms w/All PN without VRs (4)=(1)–(2)	69.7	68.7	67.0	65.5	65.7	65.0	67.0
Firms w/ PN without VRs (5) = (4) + (3)	71.0	70.3	68.5	67.4	67.8	66.4	68.6
Firms whose % of non-VR PN							
- is 0%	29.0	29.7	31.5	32.6	32.2	33.6	31.4
- lies between]0 ;10%]	6.0	6.8	6.7	6.2	6.6	7.1	6.6
- lies between]10% ; 20%]	3.6	3.7	3.5	3.1	2.8	3.0	3.3
- lies between]20% ; 30%]	5.5	4.7	4.3	5.1	3.9	3.5	4.5
- lies between]30% ; 40%]	6.6	4.7	5.0	4.5	4.4	4.7	4.9
- lies between]40% ; 50%]	13.3	12.9	12.4	12.4	12.9	12.9	12.8
- lies between]50% ; 66.67%]	36.1	37.6	36.7	36.0	37.3	35.3	36.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean of PN over firm's total K	33.4	33.4	32.4	32.0	32.6	31.6	32.6
Mean of non-VR PN /firm's K	32.0	31.7	30.8	30.3	30.8	30.0	31.0

i) Regarding companies involving pyramidal ownership structure (POS), their number shrinks from 431 in 1998 to 314 in 2002, though they still represent 47.1 percent of the total number of the sample in 2002. Defining the degree of pyramidal structure as the number of intermediate companies between the firm under scrutiny and the LUS, more than 50 percent of the firms belonging to POS show degrees higher than one (see Table 6).

Table 6
Number and Percentage of Firms with Pyramidal Ownership Structure (POS)
Mean Degrees of POS: All Firms and Firms with POS

	1997		1998		1999		2000		2001		2002		1997-02	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Firms with POS	336	50,1	431	51,6	425	52,7	389	50,4	367	50,5	314	47,1	2262	50,5
Firms w/out POS	334	49,9	405	48,4	382	47,3	383	49,6	360	49,5	352	52,9	2216	49,4
Total	670	100,0	836	100,0	807	100,0	772	100,0	727	100,0	666	100,0	4478	100,0
Mean Degree: All	0.97		1.03		1.19		1.05		1.04		0.96		1.04	
Mean Degr.: POS	1.93		1.99		2.26		2.09		2.05		2.04		2.06	

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III. The Empirical Model

This section analyses the relationship between firms' ownership and control characteristics and their performance. More specifically, it deals with the following issues:

a) Does the magnitude of the LUS's cash flow rights vary positively with the firm's performance? As pointed out in the introduction, Claessens et al. (2002) found evidence that higher cash-flow ownership translates into higher valuation of the firm. The underlying rationale is that the LUS's incentive to control the firm efficiently becomes stronger when her stake in the firm's capital increases.

b) Does the firm's rate of return vary inversely with the share of voting rights held by the LUS? The argument is that a higher fraction of voting rights enhances the room for expropriating minority shareholders.

c) Is the difference by which the LUS's control rights exceed her cash-flow rights inversely related with the firm's performance?

d) Do variables reflecting the LUS's characteristics (dummies expressing if it is a foreign firm, a family, the state, or a privately held firm) influence firm performance?

e) Is firm performance sensitive to other governance characteristics, such as whether the firm is listed on the stock market, whether it is part of a pyramidal scheme of control, or whether it issued preferred stocks with no voting rights?

Since time-series cross-section data on more than 600 companies for every year from 1997 to 2002 can be tapped from the IANs and DFP firms filed to the CVM, a panel data model is used to test directly the impact of some ownership and control variables on firm performance. The form of the regression model is:

$y_{it} = \alpha_i + \beta' x_{it} + \gamma' z_{it} + \varepsilon_{it}$, where

- y_{it} is the dependent variable expressing some rate of return of firm i in the year t;

- x_{it} represents a set of explanatory variables involving different aspects of firms' ownership and control, such as the share of cash-flow rights and of voting rights for the LUS, the magnitude of deviation between these two variables, non-monotonic measures of the LUS's ownership and voting concentration (dummy with value 1 if the LUS has a stake above 50 or 66 percent of the total voting rights), a dummy for pyramidal arrangements of ownership, the percentage of the firm's total shares accounted for preferred stocks with no voting rights, characteristics of the controlling shareholders (dummies for foreign firms, family, and the state); and dummy for publicly traded firms;

- z_{it} is a vector of control variables representing firm, industry and macroeconomic attributes. Data availability limited the number of variables of control to the following ones: the firm's main sector of activity,[2] its size (measured by the value in real terms of the firm's total assets), its growth opportunities (proxied by the rate of growth in its assets over the previous year), and its financial structure. Two measures of financial leverage were calculated: the value of long-term liabilities

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[2] The 76 industries defined by the two-digit SIC were reclassified into 20 industries: 1) agriculture, forestry and fishing; 2) food; 3) textile and apparel; leather; 4) paper and allied products; lumber and wood products; 5) petroleum refining; oil and gas extraction; 6) chemicals; rubber and plastic products; 7) mining of nonmetallic minerals; stone, clay, glass and concrete products; 8) metal mining; primary metal industries; fabricated metal products, except machinery and transportation equipment; 9) industrial and commercial machinery and computer; transportation equipment; 10) electronic and other electrical equipment and components, except computer equipment; 11) electric, gas and sanitary services; 12) construction; 13) retail trade; 14) eating and drinking places; hotels and other lodging places; 15) transportation; 16) communications; postal service; 17) finance, insurance and real estate; 18) holdings; 19) health services; social services; 20) other services.

and the value of short-term liabilities as proportions of the total value of assets. Unavailability of data prevented the inclusion of a variable proxing for share in the product market. Fixed effects of firms and sectors as well as of time were taken into account;

- ε_{it} is the regression error.

Given that the sample involves both listed and unlisted companies and considering the low liquidity characterizing the shares of most of the listed firms, the measurement of firms' performance was based on accounting data instead on stock market data.[3] Two accounting rates of return were tested: the ratio of net profits over total assets and the ratio of operating profits over total assets. The data needed to calculate these ratios are available on the "Demonstrativos Financeiros Padronizados" (DFP) that limited liability companies have to file to CVM every year. Figures for net profits and operating profits are found in the income statement of the companies, while data for the total value of assets at the year-end are found in the balance sheets.

On the grounds of the incentive effects, it is expected that regressions present a positive sign for the coefficient of cash-flow rights and for the dummy representing whether the firm is listed on the stock exchange. Contrariwise, the entrenchment effect suggests that the sign is likely negative for the coefficients of the variables representing voting rights, the disparity between cash-flow and voting rights, the percentage of preferred stocks with no voting rights in the firm's capital, and dummies for offshore LUS and for firms belonging to pyramids.

For Jensen (1986) debt may operate as a mechanism of disciplining managers, preventing them from wasting free cash flows in bad investments. Increasing the risk of default, higher leverage would put pressure on managers to yield cash flow in order to service the debt, otherwise they would suffer the bankruptcy costs. On the other hand, high levels of leverage combined with limited liability may engender moral hazard behaviour, inducing management to adopt riskier projects. Thus, the sign of the coefficient of leverage variables is ex ante ambiguous. The regressor annual growth rate in the value of assets, used as a proxy for growth opportunities, generally presents a positive sign in former studies. As regards the size of the firm, bigger firms tend to be better monitored by outside investors, to disclose more information, and to have reputation concerns, but they face more limited prospects of growth.

IV. Results

We tried several regressions to assess whether some variables grasping ownership and control characteristics were associated with firms' performance. These experiments were based on insights stemming from previous empirical and theoretical studies. The regressions included the following potential explanatory variables: voting rights, cash-flow rights, dummies for voting rights above 50 and 66 percent, the divergence between voting rights and cash-flow rights, quadratic and cubic terms for voting and cash-flow rights, preferred stocks with no voting rights as a percentage of the firm's whole capital, dummies representing whether the firm is listed on the Brazilian stock exchange (*listed*), whether it belongs to a pyramid arrangement,

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[3] Many studies use rates of return involving stock market data – such as price-earnings ratio, dividend yield, market-to-book ratio, and Tobin's q. Joh (2003) argues that accounting profitability rates are likely a better performance measure than stock marked-based measures because capital markets are not perfectly efficient (implying that stock prices do not reflect all available information) and accounting profitability grapples more directly the level of "financial survivability" of firms than stock market value does.

whether it is involved with cross-shareholdings, and the largest ultimate shareholder's identity (if it is a mutual fund, a foundation, a foreign company, the state etc.). We also took into account two leverage variables (long-term liabilities over assets, *long leverage*, and short-term liabilities over assets, *short leverage*) and their respective lagged values, a proxy for firm size (the value of assets in 2006 real terms, and its lagged value), and a variable representing the annual growth rate in the value of assets. Furthermore, we broke down the sample into quartiles according to the value of firms' assets, in order to capture whether there were idiosyncratic characteristics distinguishing larger from smaller firms. Two measures of accounting performance were considered as dependent variables: net profits over assets and operational profits over assets. And finally, we include controls for fixed effects of time and sectors. The estimator employed was the OLS estimator with robust (Huber-White, "sandwich") standard errors.

The main results of the panel data analysis are reported in Tables 7 and 8. When regressing operating profits on assets, cash-flow rights are not significant while the dummy representing voting rights exceeding 66 percent is significant (at 5 percent) and the two leverage variables (both presenting negative coefficients) as well as the size of firms (with positive coefficient) are highly significant.[4]

Regarding dummies for the identity of the largest ultimate shareholder, those for voting agreements, foundation and mutual fund are significant and show negative coefficients. This indicates that if the LUS belongs to one of those three categories her firm's operational return on assets tends to be lower than if she were a family. The dummy for offshore LUS is significant and its coefficient is positive. The R-squared is high (86.2 percent).

A telling result emerges when, using the same model, we broke down the sample into quartiles according to the value of firms' assets (see Table 8). Only for the smallest quartile the dummy for voting rights exceeding 66 percent is significantly (at 1 percent) related to the ratio of operational profits over assets, being the corresponding coefficient sign in accordance with what was expected. Cash flow rights become significant for just the two intermediate quartiles, but the sign of its coefficient (negative) runs counter what was predicted. Leverage measures keep their significance and coefficient signs along the four quartiles.

For the two largest quartiles, preferred stocks with no voting share as a percentage of total capital and the dummy for pyramid are significantly and negatively related with the ratio of operating profits over assets (respectively, at 1 and 5 percent). It is noteworthy that the dummy for foreign LUS is significantly and positively associated with the dependent variable. For the largest quartile, the dummies for listed firms (positive coefficient) and for firms whose LUS is a privately held firm (negative coefficient) present 1 percent significance. Dummies for voting agreements and for mutual funds are also significant (at 5 percent) and both have negative coefficients. It should be noted that while the R-squared is 89.7 percent for the first quartile, it plunges to 35.5 percent for the highest quartile, suggesting that other non-observable, firm-specific factors (such as product differentiation, market power, quality etc.) may be relevant to account for the largest firms' rates of return.

If performance is measured by the ratio of net profits over assets, the relationships with ownership and control variables lose significance, except the dummy for

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[4] Other regressions revealed that the regressors magnitude of voting rights, the dummy for voting rights above 50 percent, and divergence of rights are not significant. Adding quadratic terms for voting rights and cash-flow rights, the square of voting rights becomes significant; adding quadratic and cubic terms, none of them is significant. Neither is the rate of growth in assets.

offshore (positive coefficient). Short-term and long-term leverages and size maintain 1 percent significance.

In the light of the results above reported, some remarks can be made. First of all, there is fairly solid evidence that firms with high voting rights by the largest ultimate shareholders tend to exhibit low operating returns on assets, supporting the view of expropriation of minority shareholders by the controlling shareholder and the dominance of entrenchment effects. However, the empirical models tested here failed to provide evidence endorsing either the positive impact of cash-flow rights or the negative impact of the "wedges" separating voting rights from cash-flow rights on firms' profitability ratios, what runs counter the expropriation thesis. The non-significance of those two explanatory variables should be probably ascribed to the great chunk of Brazilian firms with very high cash-flow rights held by the LUSs. Whereas the mean ownership concentration of publicly traded firms in South Korea over the period 1993-1997 was 31.7 percent (Joh, 2003), in Brazil it averaged 46.4 percent between 1997-2002, with 42 percent of the sample LUSs holding more than 50 percent of their firms' capital.

With respect to the LUS's identity, the dummies capturing it, when significant, show as a rule negative coefficients, suggesting that families are not the worst category in terms of impact on the profitability ratio. That is the case for voting agreements, foundations, and mutual funds. Noteworthy exceptions are when the LUS is an offshore or, for the largest firms, a foreign investor, both tending to yield a positive effect on the operational return on assets. It can be argued that the positive coefficient for foreign firms is accounted for their higher disclosure requirements, but by the same token it was expected that lower disclosure of offshore firms entailed a negative coefficient.

For the biggest firms, there is a significant and negative association between on the one hand belonging to a pyramidal ownership and issuing preferred stocks with no voting rights and on the other the operating return on assets. This corroborates the account that mechanisms for diverting voting rights from cash-flow rights is driven by expropriation motives rather than to ameliorate the trade-off between liquidity and incentives for monitoring stemming from voting concentration. Being listed at the Bovespa affects significantly (at 1 percent) the operational return on assets for the top quartile firms.

The consistently and highly significantly negative association between leverage (for both short-term as well as long-term liabilities) and rate of return defies Jensen (1986), who argues that higher leverage disciplines management and curbs free cash-flow agency costs. One possible explanation of this divergence may lie in Brazilian firms' relatively low debt-equity ratios. Another possibility resides in firms' low availability of free cash flow.[5] Concerning the positive and highly significant relationship between the size of the firms and returns on assets (measured either by net or operational profits over assets), it may be reflecting returns on scale and market power.

Among possible shortcomings of the empirical models adopted, three should be emphasised. First, robustness concerning measures of the rate of return is not strong. Regressing the dependent variable net returns on assets makes non-significant almost all ownership and control variables; results are also highly sensitive if returns on net-worth are chosen as the measure for profitability. Second, the models did not tackle

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[5] See Joh (2003). She also finds a highly negative relationship between leverage and profitability ratios for Korean firms.

endeogeneity issues. Finally, lack of data led to the omission of a variable capturing the effect of product market structures (only partially caught by the variable firm size).

Table 7
Estimation Results

Variables	Operating Profits over Assets	Net Profits over Assets
cash-flow rights	0.036	0.025
	(0.045)	(0.066)
dummy for voting rights above 66%	-0.054 †	-0.039
	(0.025)	(0.043)
dummy for pyramid	0.013	-0.012
	(0.021)	(0.026)
dummy for listed	0.012	-0.010
	(0.025)	(0.033)
dummy for offshore	0.052 *	0.071 †
	(0.031)	(0.029)
long leverage	-0.609 ‡	-0.612 ‡
	(0.080)	(0.061)
short leverage	-1.199 ‡	-0.872 ‡
	(0.159)	(0.145)
pn with no voting rights	0.035	-0.018
	(0.045)	(0.085)
size (assets)	1E-09 ‡	8E-10 ‡
	(2.6E-10)	(2.5E-10)
dummy for voting agreement	-0.050 *	0.006
	(0.027)	(0.031)
dummy for state	0.040	0.031
	(0.035)	(0.033)
dummy for foreign	-0.017	0.027
	(0.026)	(0.043)
dummy for foundation	-0.080 †	-0.042
	(0.036)	(0.042)
dummy for mutual funds	-0.075 *	-0.032
	(0.040)	(0.049)
dummy for pension funds	-0.038	-0.061
	(0.066)	(0.064)
dummy for privately-held firm	0.083	0.067
	(0.060)	(0.055)
Constant	0.436 ‡	0.371 ‡
	(0.086)	(0.077)
Adjusted R^2	0.862	0.841
Sample Size	3,640	3,640

Notes
* Significant at 10%, † at 5%, and ‡ at 1% level.
Standard errors in brackets.
Time and Sector Fixed-Effects omitted.

Table 8
Estimation Results for Operating Profits over Assets by Asset Quartiles

Variables	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
cash-flow rights	0.218	-0.060 *	-0.051 ‡	-0.017
	(0.177)	(0.034)	(0.018)	(0.013)
dummy for voting rights above 66%	-0.275 ‡	0.020	0.008	0.007
	(0.100)	(0.019)	(0.008)	(0.006)
dummy for pyramid	0.072	0.010	-0.030 ‡	-0.011 †
	(0.072)	(0.013)	(0.008)	(0.005)
dummy for listed	-0.167 *	0.053 ‡	0.012	0.052 ‡
	(0.092)	(0.018)	(0.010)	(0.009)
dummy for offshore	0.248	-0.090 ‡	-0.011	0.004
	(0.160)	(0.026)	(0.015)	(0.011)
long leverage	-0.629 ‡	-0.094 ‡	-0.294 ‡	-0.050 ‡
	(0.062)	(0.023)	(0.051)	(0.012)
short leverage	-1.245 ‡	-0.175 ‡	-0.172 ‡	-0.165 ‡
	(0.125)	(0.044)	(0.026)	(0.027)
pn with no voting rights	0.242	0.015	-0.059 ‡	-0.041 ‡
	(0.167)	(0.023)	(0.015)	(0.012)
size (assets)	-5E-07	-7E-08	2E-08 ‡	5E-11
	(9.6E-07)	(5.1E-08)	(5.4E-09)	(5.7E-11)
dummy for voting agreement	-0.206 †	0.071 †	0.015	-0.024 †
	(0.099)	(0.032)	(0.011)	(0.010)
dummy for state	-0.010	0.020	-0.014	-0.017
	(0.172)	(0.035)	(0.017)	(0.011)
dummy for foreign	-0.195	0.039 *	0.028 †	0.018 †
	(0.132)	(0.022)	(0.011)	(0.009)
dummy for foundation	-0.069	0.009	0.012	-0.015
	(0.153)	(0.021)	(0.023)	(0.012)
dummy for mutual funds	-0.313 *	0.042	0.023	-0.032 †
	(0.167)	(0.062)	(0.021)	(0.014)
dummy for pension funds	-0.356	-0.065	0.042 †	-0.002
	(0.270)	(0.055)	(0.018)	(0.019)
dummy for privately-held firm	0.309 *	-0.024	-0.026	-0.051 ‡
	(0.160)	(0.035)	(0.029)	(0.019)
Constant	0.934 ‡	0.180 ‡	0.277 ‡	0.151 ‡
	(0.215)	(0.061)	(0.037)	(0.015)
Adjusted R^2	0.897	0.200	0.415	0.355
Sample Size	910	910	910	910

Notes
* Significant at 10%, † at 5%, and ‡ at 1% level.
Standard errors in brackets.
Time and Sector Fixed-Effects omitted.

V. Concluding Remarks

It is widely acknowledged that corporate governance weaknesses in Brazil stem primarily from the ample latitude controlling shareholders have for expropriating minority investors. This is commonly attributed to poor investor protection granted by the Brazilian corporate law, which though the recent reform in 2001/2002 remains biased in favour of controlling shareholders. Corporate legislation provides unequivocally ample room for control rights in excess of cash flow rights, notably through the issuance of preferred shares with no voting rights, the use of pyramid schemes, and allowing formal voting commitment among shareholders. Albeit persuasive, this account lacks systematic empirical support. This paper tries to bridge that gap by means of a time-series cross-sectional analysis covering more than 600 Brazilian limited liability companies, with annual data from 1997 to 2002, with a view to evaluating the impact on firm performance of ownership and control variables and of other governance variables.

This panel data analysis found pieces of evidence that vindicate some expectations. First, LUS's high voting rights (over 66 percent) are negatively associated with firms' operational returns on assets. Second, pyramids and non-voting right shares as a percentage of total shares are negatively correlated with the same return measure for the largest firms. Third, the largest firms whose LUS is a foreign investor tend to yield higher returns on assets than those controlled by families, while the opposite occurs when the LUS is a privately-held firm or a shareholders' voting agreement. Forth, for the top 50 percent largest firms, pyramid ownership structures contribute to render them systematically under-performing, result in accordance with Bebchuk et al. (1999), Bebchuk (1999), Bertrand and Mullainathan and La Porta et al. (1999).

On the other hand, part of our findings does not endorse some expected results. First, LUS' higher cash-flow rights and lower discrepancy of rights are not associated with firm's higher performance, in disagreement with Jensen and Meckling (1976) and Claessens et al. (2002). Second, the tests do not confirm that managers of firms whose LUS is a mutual fund are better monitored and disciplined. Third, high debt-equity ratios do not seem to operate as a disciplinary device, as argued by Jensen (1986). Forth, an offshore LUS tends to deliver better, rather worse, firm performance.

The assessment of the effects on profitability rates of ownership and control variables as well of the type of owners may shed some light on the way legal reforms should be undertaken in order to remove the obstacles hindering the development of the Brazilian capital market. Needless to say that even compelling evidence supporting changes in the legal environment regulating corporate governance would be far from enough to put through efficiency-enhancement reforms in legislation. The frustrating experience of the Brazilian corporate law reform in 2001 and 2002 is an illuminating example of how politics of specific interest groups can defeat the economic logic.

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