Corporate ownership and control contestability in emerging markets: The case of Colombia

Luis H. Gutiérrez [a], Carlos Pombo [b],[*]

[a] *Department of Economics, Universidad del Rosario, Bogotá, Colombia*
[b] *School of Management, Universidad de los Andes, Bogotá, Colombia*

Abstract

This study examines the structure of voting control and blockholders' contestability for a sample of 233 non-financial listed firms in Colombia during 1996–2004. Corporate control is characterized by high ownership concentration and blockholder power, which implies low separation ratios between cash flow rights and voting rights. On average the separation ratios for the largest voting block is 0.95, while that for the fourth largest shareholder is 0.75. Corporate control is privately biased when there is direct monitoring of firm management by controlling owners. Regression results show that a more equal distribution of equity among large blockholders has a positive effect on firm value. Contestability matters most when firm shares are liquid and actively traded on the stock market. This finding is reinforced when the probability that the largest block can form a winning coalition decreases and performance variables, such as market to sales ratio and return on equity, are included in the estimating equations as substitutes for firm value. In addition, our estimations provide evidence that diversion of rents (tunneling) is limited by blockholders' contestability.
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1. Introduction

Recent empirical studies of corporate governance in developing and emerging economies have addressed the relationship between ownership and control rights, with firm performance measured by either valuation or accounting measures. For a cross-sectional sample of 23 countries, La Porta,

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[*] Corresponding author. Tel.: +571 3394949x3976; fax: +571 3324551.
E-mail addresses: lgutierr@urosario.edu.co (L.H. Gutiérrez), cpombo@uniandes.edu.co (C. Pombo).

Lopez-de-Silanes, and Shleifer (1999) found that ownership was highly concentrated around the world. Using a sample of 2980 companies in nine countries in East Asia, Claessens, Djankov, and Lang (2000) corroborated the results of La Porta et al., and the studies in Barca and Becht (2001) for the most representative European countries also found very high levels of direct ownership concentration. Further, Holderness (2006) presents evidence that, contrary to widespread belief (and studies), U.S. ownership concentration is similar to that elsewhere.

Gutiérrez, Pombo, and Taborda (2008) carried out the first calculations of direct ownership and control rights for an average of 140 non-financial listed corporations in Colombia during 1996–2002. Their results show that the stakes of the four largest shareholders in listed corporations increased from an average of 60% in 1996–1999 to 65.3% in 2000–2002. The mean of the ratio of cash flow rights to voting rights for the top four voting blocks was 0.77, relatively high. On average, Colombian levels of ownership concentration and separation of control from ownership resemble those found in continental Europe and East Asia.

Findings about the effect of ownership and control rights on a firm's performance have been mixed, but it has frequently been found that a large owner may have incentive to monitor management, what is called the *incentive effect*. It has also been shown theoretically that a negative effect called *tunneling* may take place if large shareholders extract private rents to the detriment of the minority shareholders. Researchers have approached this second effect empirically, using some wedge measure of the difference between control rights and ownership rights or its ratio.[1] Gutiérrez and Pombo (2007) tested both effects for Colombian listed companies. Their findings give strong support to the incentive effect when taking Tobin's Q as the dependent variable. The entrenchment or tunneling effect was found when using accounting variables ROE and ROA as the dependent variables.

Lately, theoretical development and empirical studies in corporate governance have addressed settings with more than one large blockholder, which allows some level of contestability to emerge on the basis of coalitions that can be formed among the large blockholders.[2] This type of contestability may limit the power of the largest blockholder to divert funds (tunneling) for his own benefit. To assess the relationship between a firm's performance and control contestability exerted by large blockholders, excluding the largest one, in Colombian listed corporations, we use data for 233 non-financial listed firms with at least one large blockholder having 10% or more of direct ownership or cash flow rights. Afterward, we measure some proxies for control contestability, which allowed us to test the hypothesis already verified by Maury and Pajuste (2005) on how control contestability relates to a firm's performance. We then try to go further in revealing the nature of corporate governance in Colombian listed companies. Our main hypothesis is corroborated: as control contestability increases, in the sense that either ownership or control rights among the four largest blockholders tend to be better distributed, opportunities to carry out expropriation or extract private rents decrease, which leads to better firm performance. This finding is dependent on the degree of liquidity of the share of listed companies, which may help explain the positive and strong finding in Gutiérrez and Pombo (2007) of a link between affiliation of firms to business groups and firm value. Lastly, our findings show that regardless of the level of stock market development, investor protection through control contestability is a key corporate governance mechanism that enhances good firm performance.

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[1] See Claessens et al. (2002, 2006) among others.
[2] For more details, see Pagano and Roell (1998), Bennedsen and Wolfenzon (2000), Bloch and Hege (2001), and Gomes and Novaes (2006).

The recent studies collected by Chong and Lopez-de-Silanes for Latin America (2007) on investor protection and corporate governance, provide evidence of the existence of multiple large shareholders across Latin American corporations. They also present measures of separation between cash flow rights and voting rights due to business group affiliation and the issuance of non-voting shares, in accordance with the above-mentioned cross-country studies done for East Asian and European markets. This study deep the analysis about the role of multiple large shareholders in listed companies by modeling their strategic interactions that might involve either contestability vis-à-vis the largest blockholder or the possibility of forming a sustainable coalition to get firm control, in a emerging market with poor legal protection in the sense of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998).[3]

Empirical studies close to ours are the one by Gutiérrez and Tribó (2004) for a large sample of non-public Spanish corporations and the one by Maury and Pajuste (2005) for a sample of listed Finnish firms. Gutiérrez and Tribó found that the contestability proxy is positively related to performance, observing that "the similarity in the stakes of the first and second shareholders is likely to enhance both the bargaining power and the monitoring incentives of the second shareholder" (2004, p. 17). Maury and Pajuste (2005) constructed refined proxies of contestability and also found that firm value is greater as distribution of control rights is more egalitarian.

This paper is organized as follows. Section 2 analyzes the theoretical linkages between blockholder control contestability and firm value. It also describes the baseline model that supports our testable hypothesis. Section 3 describes the data sources and sample selection of companies. Section 4 analyzes the structure and bias of corporate control for the 1996–2004 period. Section 5 evaluates how control contestability has affected firm value and performance and presents robustness checks on the basic results. Section 6 concludes.

2. Control contestability and corporate governance

Ever since the publication of Berle and Means (1932) there has been agreement that the main governance problem in listed corporations, given their dispersed ownership, is the separation of ownership and control in the sense that management controls the firm without any ownership stake. Work by Jensen and Meckling (1976) modeled the main agency problem arising from this separation. In the 1980s, the theoretical research of Shleifer and Vishny (1986) and Demsetz and Lehn (1985) established a second agency problem in listed corporations that arises between a large shareholder and a widely dispersed ownership.

How a large shareholder affects a firm's performance and valuation has elicited two opposite views. Some have argued that large shareholders have an incentive to seek private benefits of control and expropriate minority shareholders (tunneling).[4] Others claim the incentive large blockholders have to monitor management yields good governance since their ownership stakes are high and most of the benefits of good governance will transfer to their own pockets, with the gains of better performance more than compensating for the costs of monitoring management.[5]

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[3] In particular, La Porta et al. (1998) measure a country's investor protection through an anti-directors rights index that takes into account minority shareholders rights, such as cumulative and proxy voting, pre-emptive rights to new security issues, and percentage of votes needed for calling an extraordinary shareholder meetings, among others. The main result is that civil law countries perform better and their corporations exhibit greater market valuation and performance.

[4] See, Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000), Barclay and Holderness (1989) for early empirical research about private extraction of rents by large shareholders.

[5] See Harris and Raviv (1988), Hart (1995), and Burkart, Gromb, and Panunzi (1997, 1998).

Research on corporate governance has also focused on environments with more than one large blockholder. For instance, Bennedsen and Wolfenzon (2000) argue that control structures with multiple shareholders may be the most efficient ownership structure in environments with poor shareholder protection because controlling coalitions can align their incentives to prevent extraction of rents.[6] Bloch and Hege (2001) also claim that multiple blockholders can compensate for the poor legal protection for minorities. They argue that the relevant concept of control is the contestability of the incumbent shareholder's position and that corporate control is contestable if the incumbent cannot increase the level of control rents without losing in a control contest. In their model, the presence of two large blockholders acts to limit private rent extraction and attracts the votes of the minority shareholders when proposals are contested.

Corporate ownership patterns in Latin America are similar to those observed in other markets, such as those in continental Europe and East Asia. They have high equity concentration and complex business group structures that take several forms (e.g., pyramids, cross-shareholdings, rings, and intricate webs). This allows controlling shareholders to leverage their voting power though business group affiliation and to deviate from the one-share-one-vote rule. Three other mechanisms also imply deviation from this principle: the issuance of non-voting shares, dividend-preferred share outstanding and dual shares. Corporate law in most of Latin America explicitly forbids the issue of dual shares, and some countries (e.g., Belgium and Chile) restrict cross-shareholdings and impose a cap on the issue of preferred stocks relative to shares outstanding.[7]

Table 1 shows the cash flow rights (the total votes implied by direct ownership) for the four largest shareholders in a sample of European, East Asian, Latin American and U.S. markets. It also presents the separation ratios, defined as the ratio of cash flow to voting rights. Voting rights are the total votes that a shareholder is entitled to on the basis of direct investment in a firm and indirect ownership. The table shows that ownership concentration is high except in the Japanese, U.S., U.K., and Korean markets. Corporate control is achieved in most countries by the top three blockholders under the one-vote-one-share rule. On average, the top three stakeholders hold 60% of a firm's equity. Yet, in most cases the largest blockholder does not have 51% of control or an absolute majority. The largest voting block, usually the controlling shareholder has 21% of cash flow rights on average in East Asian markets, 42% in continental Europe, and 48% in Latin America. In particular, the data shows that ownership concentration is lower in Colombia for the largest blockholder but higher at the second, third or four levels, in contrast to other Latin American economies in the sample.

The cash flow to voting rights ratios (a wedge proxy between ownership and control) exhibit low levels in all markets on average. Thus, separation is low when this indicator gets close to 1, meaning that equity holders do not get additional voting power by indirect ownership. There is a full separation when that ratio tends to 0, as in the case of a shareholder who exerts control with no direct investment. The international evidence summarized sug-

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[6] Specifically, they state that "the greater the cash flow possessed by the controlling coalition, the more this coalition internalizes the costs of its actions. Hence the fewer costly private benefits it extracts" (p. 115). They called this the alignment effect. However, they also model a type of coalition that can dominate over the alignment effect. They argue that this is a negative effect since, among the many coalitions that can arise, the one with the smallest joint cash flow stake will take control and will have an incentive to extract private rents from the largest possible group of shareholders excluded from the coalition.

[7] For example, these are the cases of Belgium and Chile. In Colombia, there is no restriction to cross-shares and preferred stocks have a cap of 50% firm equity.

Table 1

Corporate ownership: cash flow rights (direct ownership) and separation ratios for larger stakeholders in non-financial listed firms for selected countries

Country	Year	*N*	CR1	CR2	CR3	CR4	Cash flow/voting rights
Austria	1996	95	47.16	57.76	60.66		0.8510
Belgium	1999	120	35.14	45.44	49.94	50.64	0.7790
France	1996	674	46.68	55.68	60.68	63.18	0.9300
Germany	1996	372	49.60	52.50	53.10		0.8420
Italy	1996	204	38.33	46.03	49.53	50.38	0.7430
Spain	1995	193	32.13	40.08	47.06	49.96	0.9410
UK	1992	207	14.44	21.74	27.74	33.00	1.0000
USA-NYSE	1996	1309	8.50	12.20	14.00	14.15	0.9596
Hong-Kong	1996	330	24.30	–	–	–	0.8820
Indonesia	1996	178	25.61	–	–	–	0.7850
Japan	1996	1117	6.90	–	–	–	0.6020
Korea	1996	211	13.96	–	–	–	0.8580
Malasya	1996	238	23.89	–	–	–	0.8530
Philipines	1996	99	21.34	–	–	–	0.9080
Singapore	1996	211	20.19	–	–	–	0.7940
Tawian	1996	92	15.98	–	–	–	0.8320
Thailand	1996	135	32.84	–	–	–	0.9410
Argentina	2003	54	60.70	–	–	–	0.9650
Brazil	1998	240	47.00	–	59.00	–	0.6812
Chile	1998	195	46.00	–	55.00	–	0.8070
Colombia	1998	149	37.90	53.80	63.34	69.60	0.9483
Mexico	1996	20	–	–	64.00	–	0.8225
Average Continental Europe		41.51	49.58	53.50	53.54	0.85	
Average East-Asia		20.56				0.83	
Average Latin America			47.90		60.34		0.84
Colombia/average, continental Europe		0.9131	1.0851	1.1840	1.3000		

This table presents the cash flow rights (direct ownership) and concentration ratios up to the four largest stakeholders and the separation between ownership and control proxied by the ratio of cash flow to voting rights. *Continental Europe*: CR1 refers to the ultimate controlling blockholder cash flow rights according to Faccio and Lang (2002); CR2 to CR4 adds the direct votes for the second to the fourth voting blocks reported in Barca and Becht (2000). Separation ratios are at the controlling blockholder's level reported in Faccio and Lang (2002); *USA and UK* refer to direct cash flow rights of main blockholders according to Barca and Becht (2000). Separation ratios are from La Porta et al. (1999); *East Asia*: CR1 is the cash flow rights of controlling blockholders level. Data from Claessens et al. (2000); *Argentina and Chile*: CR1 refers to direct equity of the controlling blockholder. Separation ratios derived from total voting rights at controlling shareholder level. Data from Bebczuk (2007) and Leffort and Walker (2007); CR3 is the total voting rights of the three largest blockholders for Chile; *Mexico*: Cash flow rights of the three largest stakeholders in the 10 largest publicly traded companies, data from La Porta el al. (1998 and 1999). *Brazil and Colombia*: refer to direct votes from direct equity ownership (cash flow rights) for the larger shareholders. Separation ratios estimated from total voting rights measured by total direct plus indirect ownership. Data for Brazil is from Leal and Carvalhal-da-Silva (2007); the estimates for Colombia are our own.

gests that the separation between ownership and control is 0.85, which means the largest shareholder needs 43% of direct votes to get a simple majority of 51% at a general meeting.

Two opposite corporate structures explain this result. In the first instance, equity is concentrated in hands of few large shareholders who can achieve an absolute majority by making a simple voting pact. There is no need for further voting leverage, and monitoring a firms' management becomes

costless. However, the risk of outright expropriation increases for minorities. For instance, in Colombia the top four shareholders have 70% of direct equity and the top 10 shareholders have 85%. The mean for minorities is 15–25% of a firm's equity. Thus boards can declare earnings retentions and increase their portfolio holdings in related firm investments or implement a policy of transfer prices to related suppliers and get extra dividend payments through diversion of a firms' cash flow.

This does not imply that there are no cases of voting leverage within business groups around the world and wide separation of controlling blockholders. For example, the largest Italian conglomerate is the Agenlli group. Bianchi, Bianco, and Enriques (2001) report that this family controls more than 50 firms through pyramiding its investments in one holding company (ISI) and FIAT Corporation. Claessens et al. (2000) give an account of the Ayala group, the largest conglomerate in the Philippines, which controls by pyramiding 34 affiliated firms through Ayala Corporation, an investment firm that is the largest listed company by market capitalization on the Manila stock exchange. Gutiérrez et al. (2008) show how the Santo Domingo family in Colombia exerted control over 50 companies through two investment firms (Union de Valores and Valores Bavaria) until 2002.

A second corporate structure results when ownership is atomized across small shareholders. This is the case in widely held firms where an individual's total votes are derived from direct investment in a company's equity. This holds mainly in the U.S. and the U.K. markets, where the typical agency problem arises between management and the shareholders because there is no direct monitoring. This implies that executives and directives enjoy excessive internal power and discretion. According to Barca and Becht (2001) more than half of U.S. non-financial incorporated companies listed on the NYSE do not have a single blockholder with a stake of 5% or more. Hence, governance in U.S. public corporations is not driven by the existence of controlling blockholders. Fig. 1 summarizes the different outcomes that result from the separation between ownership and control, and charts the role of contestability among multiple large blockholders.

Despite the many country case and cross-section studies that followed the La Porta et al. (1999) study of corporate control, only a few have tried to test how control contestability relates to firm value. In their study of Spanish firms, Gutiérrez and Tribó (2004, p. 10) state that "performance improves as the control group's ownership stake increases and, for a given ownership stake, as the number of members increases." They also found that minority expropriation is more generalized in closely held corporations than in listed companies. Looking at Finnish firms, Maury and Pajuste (2005) studied the effect of multiple large shareholders on firm valuation and developed a model consistent with the Bennedsen and Wolfenzon (2000) insight that the marginal cost of extracting private rents can be high when there are multiple blockholders. This means that higher contestability (by other large blockholders) will lead to a better firm valuation.

2.1. The baseline model and the hypotheses on control contestability

The baseline model of control contestability is borrowed from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2002), who modeled managerial rent extraction, and from Maury and Pajuste (2005) who extended the baseline model to reveal contestability behavior more explicitly among multiple large shareholders. The model has two main assumptions: that the existence of multiple large shareholders can reduce profit diversion (i.e., that control contestability is value-enhancing) and that diversion of profits by the controlling coalition is costly.

Ownership and Control

Market control bias
Widely-Held firms
Berle & Means story

Dominant Investors
Private control bias

Business group
leverage voting

Non voting shares

Direct Monitoring on CEOs

Distortions to one
share one vote rule

High ownership concentration

Blockholders

Contestability

Coalitions

Improve firm
valuation & performance

incentive effect (+)

rent extraction

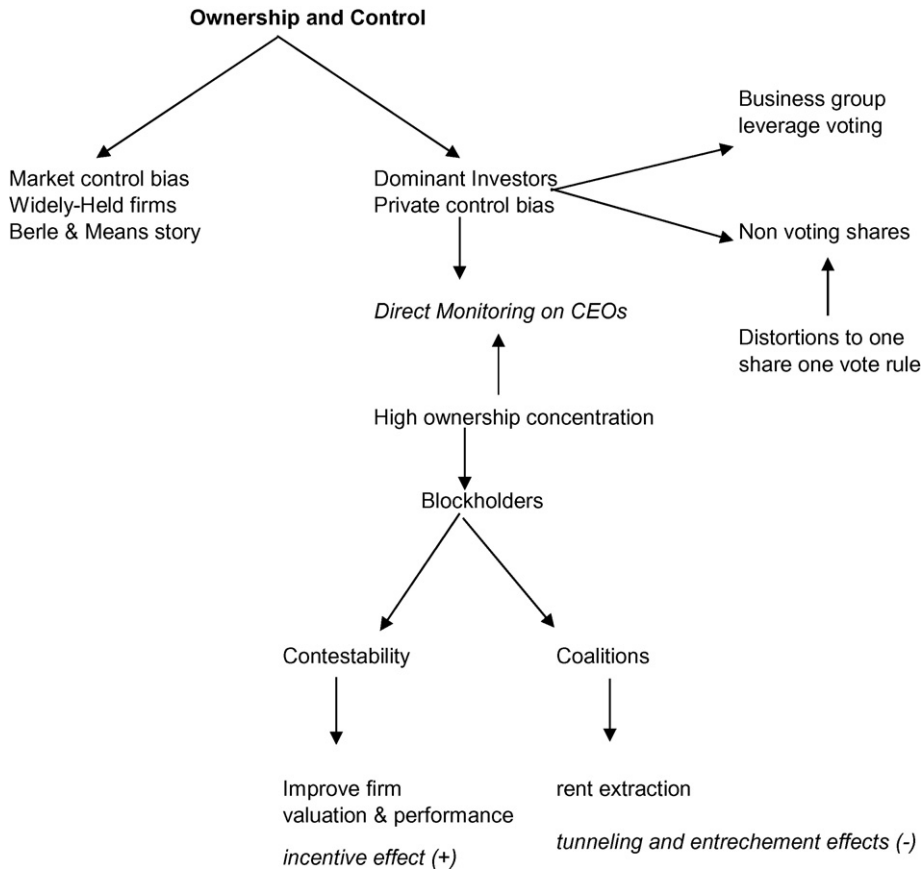*tunneling and entrechement effects (-)*

Fig. 1. Ownership and control.

Under efficient capital markets the capital asset pricing model (CAPM, Sharpe, 1964) states that, in equilibrium, the return of any risky asset is given by the following condition

$$r_i - \beta_i(r_m - r_f) = r_j - \beta_j(r_m - r_f) = \ldots = r_n - \beta_n(r_m - r_f) \tag{1}$$

where r_i is the return of asset i; β_i is the asset i's systematic risk; r_m is the market return; r_f is the risk-free asset. In other words, in equilibrium, the returns of all risky assets are equal once they have been adjusted by risk. This condition can be rewritten by means of its relation to a risk-free asset; therefore

$$r_i - \beta_i(r_m - r_f) = r_f \quad \text{or} \, \bar{r}_i = r_f + \beta_i(r_m - r_f) \tag{2}$$

which is the CAPM equation that defines the market equilibrium return of a risky asset i.

Let s be the share of profit diversion of firm i's dominant coalition, $\bar{r}_i$ be the equilibrium return of firm i equity, and

$$r_i = \bar{r}_i(1 - s) \tag{3}$$

Eq. (3) states that firm *i*'s equity return is less than its equilibrium level if there is a diversion of profits, $s > 0$. Multiplying equity return by an investment amount *I* of new projects and knowing that there is a voting pact among large shareholders with a weight α of firm equity, one gets the total coalition cash flow after profit diversion from firm *i*'s project; that is

$$\alpha(rI) = \alpha[\bar{r}(1-s)]I \tag{4}$$

where the subscript *i* has been removed to simplify the exposition.

The dominant coalition can internalize the benefits of diverting firm profits before distributing the rest, if any, in dividends to the outside coalition shareholders. Thus, the benefits of expropriation of the controlling coalition, π^c, are

$$\pi^c = s(\bar{r}\,I) - c(s, v)(\bar{r}\,I) \tag{5}$$

The first term of Eq. (5) is the diverted dividend, while the second term represents the cost of rent extraction. Because the model assumes that diversion is costly, the cost-of-theft function – $c(s, v)$ – is an increasing function of the parameter *s*. It therefore follows that $c_S > 0$ and $c_{SS} > 0$. The first inequality means the marginal cost of stealing is positive, while the second means that the marginal cost rises as more is stolen.

The cost function also depends on variable v, which is the coalition voting power. As long as the voting power of the controlling block increases, it can reduce the cost of rent extraction attributable to better rent hiding, easy consensus, and the additional knowledge that each member contributes to the coalition. Thus, the marginal cost of rent diversion is negative as long as the voting power increases, given a level of diverted rents; that is, $c_{SV} < 0$.[8]

The dominant coalition maximizes its value function, which is the sum of the diverted cash flows of the firm's projects and the benefits of rent extraction. That is

$$\underset{S}{\text{Max}}\, V^C = \alpha[(1-s)\bar{r}]I + s(\bar{r}\,I) - c(v, s)(\bar{r}\,I) \tag{6}$$

where *s* denotes the share diversion that is the control variable of the program.

The first order condition of Eq. (6) is given by

$$c_s(s, v) = 1 - \alpha \tag{7}$$

Eq. (7) states that the optimal share diversion *s** is defined when the marginal cost of profit diversion equals the outside coalition votes. The higher the coalition's cash flow rights, the lower will be the marginal cost of rent diversion and therefore the lower will be *s**.[9] In other words, high cash flow rights of the majority coalition lessen expropriation from minority shareholders because there is a lesser amount of rents to divert.

Maury and Pajuste (2005) extend this result and model control contestability more explicitly by including a conditional probability that large shareholders outside the dominant coalition can recover part of the extracted profits, Prob (recover/s) = *k*. Therefore, Eq. (7) becomes

$$c_s(s, v) = (1-\alpha)(1-k) \tag{8}$$

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[8] In La Porta et al. (2002) this variable captures the quality of investor protection.

[9] For instance, if the cost-of-theft function is quadratic, it can be shown that $s* = (1-\alpha)/2$.

From Eq. (8) the comparative statics of the model follows; that is

$$\frac{\partial s*}{\partial \alpha} = \frac{-(1-k)}{c_{ss}} < 0 \quad \text{and} \quad \frac{\partial s*}{\partial k} = \frac{-(1-\alpha)}{c_{ss}} < 0 \tag{9}$$

Thus, optimal share diversion $s*$ decreases when *contestability* from outside blockholders increases, $k > 0$, and when their own cash flow rights increase because they have fewer rents to extract. This leads to the first working hypothesis.

Hypothesis 1. Firm valuation and performance should increase as contestability of the controlling coalition's power increases.

The second hypothesis is related to the tunneling effect captured by the separation of equity and voting rights of large shareholders. When a controlling shareholder leverages its voting power through pyramids within a business group, it has incentives to extract rents. In addition, an increase of the voting power of the controlling coalition allows for better coordination among its members and also may provide better knowledge that makes profits diversion less costly. Differentiating Eq. (8) with respect to voting power v and assuming that share diversion s and the probability of recovering extracted profits k by the outsider voting block is endogenous to v, one gets

$$\frac{\partial s*}{\partial v} = \frac{-(1-\alpha)(\partial k/\partial v) - C_{sv}}{C_{ss}} > 0 \tag{10}$$

The first term on the numerator depicts the negative effect that an increase of voting power has on contestability. The second term captures the positive effect that voting power has on reducing the costs of diverting firm resources. The overall effect is positive; therefore the second working hypothesis is

Hypothesis 2. Larger separation between ownership rights and control rights will lead to a decrease in firm valuation.

Hypothesis 2 implies that high voting power relative to cash flow rights gives more discretion to ultimate owners. In the next section we describe the data characteristics and sample selection.

3. Data and sample selection

We collected data on financial statements and ownership structures of Colombian listed companies during 1996–2004. The assembled dataset of corporate shareholders comes from the Superintendence of Securities (Superintendencia de Valores, SVAL) and the Superintendence for Commercial Societies (Superintendencia de Sociedades, SSOC). These two institutions are respectively responsible for inspecting and overseeing equity-issuing corporations and larger unlisted firms. The SVAL ownership database is based on National Equity Registry Forms (Registro Nacional de Valores e Intermediarios, RNVI), which record information on a company's top 20 shareholders. This form is mandatory for all equity issuers that are under the oversight of SVAL and must be updated on a yearly basis. The form also records the names of board members, the number of outstanding shares, the number of preferred dividend shares and the nominal value for each type of shares.[10]

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[10] In 2005 the Superintendence of Securities and the Banking Superintendence were merged to set up today's Financial Superintendence with the purpose of centralizing financial and capital markets regulation. The ownership information of

The database on ownership and control in Colombian corporations was borrowed from the study of Gutiérrez et al. (2008). This covered through year 2002, and basic ownership information was then updated for years 2003 and 2004. Having a panel dataset of ownership improves the analysis because we can capture ownership dynamics, an element not usually included in international studies of corporate control. At most, this database provides information on the first property layer. To complete a company's second, third, and further ownership layers, we assembled a dataset of information on major shareholders of unlisted firms who showed up as major shareholders of a listed corporation and who were affiliated with a business group. This information came from the SSOC records of the largest stakeholders for non-public corporations, as well as from partnership distributions for limited liability and all other legal types of firms. Hence, we could assemble financial and ownership information on 245 listed companies for the 1996–2004 period, and gather complementary ownership information for 431 unlisted firms to trace ownership control from year 1996 to year 2002 of each listed company included in the study sample.

Following Maury and Pajuste (2005) we focus on the role of blockholders, so we include only firm years that had a blockholder with at least 10% of cash flow rights. The RNVI do not provide information about investor voting. Therefore, following the portfolio methodology proposed by Baldone, Brioschi, and Paleari (1997) and applied in the studies collected by Barca and Becht (2001), we estimate shareholders' integrated ownership as a proxy of investors' control rights for companies affiliated with business groups under the one-share-one-vote rule.[11] For independent companies we followed the manual adding procedure under the 20% cut-off proposed in La Porta et al. (1999).[12] The maximum number of firm year observations that satisfy all the criteria amounted to 1092, and the number of firms up to 233, although that figure changes as we use different variables of analysis.[13] Hence, the panel is unbalanced.

Table 2 summarizes the number of equity-issuing companies in our working sample registered with SVAL during 1996–2004. The data clearly show that delisting has been a common pattern in Colombia, and this accords with what has been observed in other Latin American markets. Firm delisting was intensive during the second half of the 1990s, reaching a peak during 1998–1999 when the Colombian economy was in the midst of the worst recession in 80 years. Hence, listed companies in the sample dropped from 152 to 94 firms, a drop close to 40% in 9 years.

4. Corporate control

It is well known that corporate ownership and control is highly concentrated in Colombia. This fact has been tied to the formation of conglomerates and business groups from the 1950s to the late 1970s, when vertical control provided the incentive for controlling productive chains from

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listed companies is publicly available. In contrast, the ownership data from SSOC for all types of closely held companies is subject to *statistical reserve*.

[11] See Gutiérrez et al. (2008) for further details regarding the used shareholders' dataset, for an explanation of the portfolio approach and results for the case of Colombia in measuring firm voting rights.

[12] We excluded all companies subject to special regulations, such as public utilities, financial intermediaries, educational institutions, and livestock funds, since their performance might be affected by regulation and State property participation, and results might not be comparable. In addition, we discarded firm year observations that did not have a blockholder as well as those firms lacking reliable information on stock prices, financial statements or equity distribution. The listing status criterion refers to whether a listed firm was still listed by the end of 2004 or had canceled its equity registry and was delisted.

[13] For instance, Tobin's Q can be calculated only if firm valuation can be assessed. This requires that market value of equity be known, which can happen only if the stock of the firm was traded at least once during a year.

Table 2
Number of firms in the study sample by listing status and economic activity

Status/ISIC group	1996	1997	1998	1999	2000	2001	2002	2003	2004
DE-LISTED	15	29	29	22	5	14	6	3	1
LISTED	137	129	120	103	99	97	96	94	93
Agriculture, forestry and fishing	5	5	4	3	2	3	4	4	4
Mining and quarrying	4	4	3	3	2	2	2	2	2
Manufacturing	78	76	68	62	56	61	54	51	48
Construction	8	9	8	6	4	4	4	3	3
Wholesale, retail trade, lodging	27	23	19	13	11	10	9	7	6
Transport, storage and communication	10	13	16	11	8	7	8	9	9
Financing, insurance, real state	11	18	22	19	14	17	15	15	16
Community, social and personal services	8	8	7	7	7	7	6	6	6
Other non-classified business activities	1	2	2	1					
Total sample	152	158	149	125	104	111	102	97	94

Notes: Delisted firms are those that cancelled their Registry Equity Form from the Superintendence of Securities between 1996 and 2004. *Source*: Financial Superintendence—National Equity Registry Forms.

upstream to downstream industries. Most of these groups started as family businesses and then became corporate groups with strategic investments in their core business. Gutiérrez et al. (2008) show that there are four facts regarding corporate ownership and control for the entire sample of listed companies during the 1996–2002 period:

(1) Corporate ownership is highly concentrated. In almost all companies the four largest share-holders have more than 51% of a firm's cash flow rights.
(2) Ownership concentration has increased.
(3) Separation ratios are low for large stockholders, although there is evidence of full separation in some cases at controlling shareholders' level.
(4) Investment firms play a central role as controlling shareholders.

Regarding the first three elements, Table 3 summarizes the core results of the ownership and control statistics for the sample of firms that report at least one voting block. The findings conform to the above facts and, more important, the pattern is reinforced with the updated measurements that include the years 2003 and 2004. Ownership concentration is high and has risen in time, mainly for the largest blockholder, whose mean stake rose from 36.3 by the end of 1990s to 43.3 for the 2000–2004 period. The median, nonetheless, decreased between periods, signaling a change as the stake distribution becomes less skewed and more uniformly distributed (Fig. 2). The weight of smaller voting blocks remained fairly constant across periods.

Also, corporate ownership is in the hands of the top three or four largest shareholders. The mean of the concentration ratio of the top four stakeholders (CR4) increased from 67.9 to 72.9% between periods. Fig. 3 plots the histogram for the top four shareholders. The distribution is clearly left-skewed, meaning that cash flow rights are concentrated among the higher percentiles. In particular, the frequency distribution has two peaks. One shows that in 17% of the firm year observations the top four shareholders have between 72 and 82% of equity. Moreover, in about 25% of the firm year observations the four largest shareholders hold above 92% of companies' equity. Therefore, control contestability across voting blocks must take place among the top four players; otherwise, they must form a voting coalition of some kind to control boards.

Table 3
Ownership and corporate control statistics

Concentration indices			Separation ratios: equity to voting rights	
Indicator/statistic	1996–99	2000–2004	1996–99	2000–2004
Number of firms	146	102		
Share largest shareholder CR1			Largest voting block	
Mean	0.3628	0.4333	0.9592	0.9522
Median	0.4855	0.3712	1.0000	1.0000
Standard deviation	0.2161	0.2467	0.1020	0.1181
Min	0.1027	0.1066	0.4603	0.4321
Max	0.9584	0.9761	1.0000	1.0000
Share top four shareholders: CR4			Second-largest voting block	
Mean	0.6794	0.7296	0.9082	0.8384
Median	0.8708	0.7697	1.0000	1.0000
Standard deviation	0.2209	0.2198	0.2003	0.2769
Min	0.2127	0.2704	0.1753	0.0834
Max	1.0000	1.0000	1.0000	1.0000
Share Second-largest voting-block: Equity 2			Third-largest voting block	
Mean	0.1590	0.1544	0.8883	0.7977
Median	0.2012	0.1335	1.0000	1.0000
Standard deviation	0.0901	0.0983	0.2244	0.3038
Min	0.0057	0.0071	0.0162	0.0154
Max	0.4876	0.4862	1.0000	1.0000
Share third-largest voting block: Equity 3			Fourth-largest voting block	
Mean	0.0947	0.0867	0.8528	0.7535
Median	0.1221	0.0767	1.0000	0.9985
Standard deviation	0.0556	0.0643	0.2593	0.3299
Min	0.0000	0.0000	0.0000	0.0001
Max	0.3124	0.3066	1.0000	1.0000
Share fourth-largest voting-block: Equity 4				
Mean	0.0629	0.0552		
Median	0.0881	0.0512		
Standard deviation	0.0408	0.0419		
Min	0.0000	0.0000		
Max	0.1987	0.1749		

Source: Our own estimation based on a dataset compiled from SVAL National Equities Registry Forms.

These statistics imply evidence of control contestability involving the two largest shareholders because on average the data show that the median of direct votes within larger stakeholders decreased in the 2000–2004 period, from 48% in the second half of the 1990s to 37% for the largest blockholder, from 20 to 13% for the second largest blockholder, and from 12 to 7.6% for the third largest blockholder. To get firm control, the largest stakeholder needs to form a coalition with the second largest voting block. Further, in many cases the third or even fourth largest block can contest the top two blocks because their marginal votes are needed for 51% of control. These results are reinforced by the low separation ratios between cash flow rights and voting rights. This is 0.95 on average for the largest blockholder, which means this shareholder needs at least 48.5% of direct ownership to guarantee firm control of 51%.
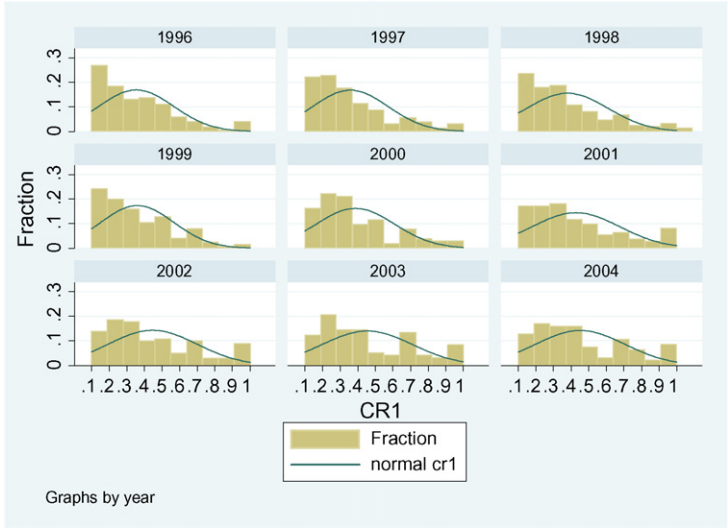
Fig. 2. Histogram evolution of the largest voting block by year. *Source*: Our own estimation based on a dataset compiled from SVAL National Equities Registry Forms.

Nevertheless, separation between ownership and control has increased over time. The mean for the third and fourth largest blockholders was 0.89 and 0.85, respectively, during the 1990s, 0.79 and 0.75, respectively, during 2000–2004. Thus, a large shareholder would need at least 38.3% of direct ownership for an absolute majority on a firm's board under the one-share-one-vote regime. Evidence of full separation at the third- and fourth-largest shareholder level means that their voting rights are fully leveraged by business group structures and there is no need for
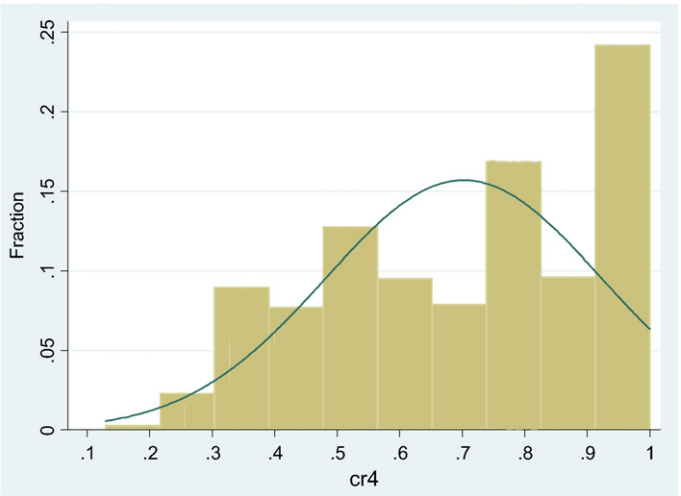

Fig. 3. Histogram—top four shareholders, 1996–2004. *Source*: Our own estimation based on a dataset compiled from SVAL National Equities Registry Forms. *Note*: The total sample consists of 1092 firm-year observations.
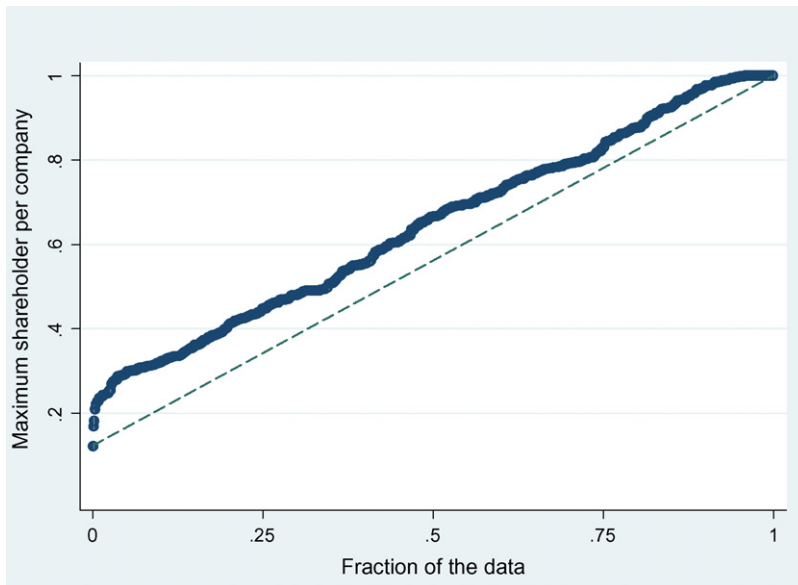
Fig. 4. Percentile plot of the three largest voting blocks 1996–2004. *Source*: Our own estimations based on a assembled dataset from SVAL National Equity Registry Forms.

direct equity investment to become a voting block. The table shows a minimum value of 0 for the fourth-largest voting block and values of less than 2% for the third-largest shareholder.

To illustrate the corporate control direction bias, we use the percentile rank functions for the largest direct voting block and for the top two to four direct voting blocks. The intuition behind these graphs is to determine how asymmetric ownership is. Concentration measures have a maximum value of 1, representing 100% of a company's net worth. If the distribution is uniform, with equally proportioned stakes across firms, its percentile rank function would be the 45% degree line. In other words, there is no dispersion with respect to the distribution median. A percentile rank function below the 45% degree line indicates low ownership concentration along with low levels of blockholder power. Control declines *more than* proportional with a reduction in ownership are indicative of a market control bias. A function above the 45° line represents high ownership concentration and blockholder power. This is associated with owner private bias, with declines in control *less than* proportional to a reduction in ownership. Fig. 4 is a percentile plot for the top three blockholders (CR3) for the total sample of 1092 firm year observations between 1996 and 2004. Control bias lies above the straight line that represents an even distribution between firms and equity share.[14] At the 50% fraction of data, the three largest shareholders have around 60% of direct votes. The implication on control is straightforward: a coalition among the top three stakeholders guarantees absolute firm control. At the same time the second- and third-largest equity holders have an incentive to contest the power of the largest voting block.

Table 4 describes the relation of block ownership with firm valuation and strengthens the results for shareholders' control bias and separation ratios. There was one blockholder in about 219 firm-year observations out of 686 (31.9%). This increased to 36.4% for two blockholders,

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[14] The straight line in this case is not the 45° line because the data sample is truncated at the 10% equity level. Otherwise, the percentile plot must yield the 45° line to represent the set of even points in the Cartesian plane.

Table 4
Blockholders and median Tobin's Qs

	One block		Two blocks		Three blocks		Four blocks		Total N
	N	Median Tobin's Q	N	Median Tobin's Q	N	Median Tobin's Q	N	Median Tobin's Q	
Panel A: block owners and Tobin's Q values									
Equity 1 + Equity 2 + Equity 3 < 50 [1]							58	1.003	
Equity 1 + Equity 2 + Equity 3 > 50 [2]							36	0.819	
Equity 1 + Equity 2 < 50 [3]			153	0.753	62	0.916	27	0.847	329
Equity 1 + Equity 2 > 50 [4]			97	0.751	61	0.780	67	0.893	357
Equity 1 < 50 [5]	87	0.839							
Equity 1 > 50 [6]	132	0.722							
Total	219	0.761	250	0.752	123	0.894	94	0.877	686
Panel B: Z-statistics for differences in medians									
Test:[1] vs. [2]								1.431	
Test: [3] vs. [4]				−0.085		1.396		−1.809*	
Test: [5] vs. [6]		1.844*							

Notes: The table shows the number of firm-year observations, voting power and firm valuation in each category of controlling blockholders. The total sample is formed by 233 listed firms subject to oversight by the Superintendence of Securities in the 1996–2004 period. A blockholder is defined as a shareholder with at least 10% of cash flow rights or direct ownership.

Source: Our own estimation based on a dataset assembled from SVAL National Equity Registry Forms.

decreased to 17.9 and 13.7%, respectively, for three and four blockholders. The results suggest that firm valuation proxied by Tobin's Q varies with the existence of several voting blocks and whether these have enough voting power to attain the majority rule of 51%. Firm valuation is greater in firms with three or four blocks. The median of Tobin's Q moves from 75 to 88% on average in companies that have more than two voting blocks. Further, firm valuation is lower if the largest or the two largest shareholders have a majority. Median tests are significant at 10%. For the remaining cases, the null hypothesis of differences in firm valuation if blocks have a majority is not rejected Thus, the findings partially support our working hypothesis of control contestability as well as rent extraction and tunneling by either the controlling shareholder or a voting coalition.[15]

5. Econometric analysis

5.1. Definition of variables

The main valuation measure is Tobin's Q, which is measured following Black, Jang, and Kim (2006), who defined it as the ratio between market value and book value of assets. Colombian accounting and tax regulations require that all firms update their book values yearly, so the use of book value of assets must be very close to replacement costs. Market value of assets was estimated as the sum of book value of debt plus book value of preferred stocks and market value of common stock. In turn, the yearly market value of common stocks was calculated as the product of the average market price times the number of common stocks. The value of liabilities (in Colombian pesos) was taken as the book value of debts.

Some studies have suggested that Tobin's Q is not a good proxy for firm value in emerging economies because of measurement problems, the limited offer of stocks, the non-competitiveness of the stock market and problems with the measurement of replacement cost of assets (see Claessens et al., 2000). Instead, they propose related value measures, such as the market-to-book ratio (MTBR), defined as the ratio between market value of common stock (as defined above) and book value of common stock, the latter estimated as the sum of the book value of assets minus the book value of liabilities and preferred stock. Another proposed value measure is market-to-sales ratio (MTS), market value of common stock divided by sales. The market value of equity, i.e., the yearly average, for the period 1996–2004 was provided by the Colombian Stock Exchange.

Because the sample includes firms whose stocks were not traded at least once during a year, their market value could not be obtained and so we used returns on assets (ROA) and returns on equity (ROE) as alternative performance variables. Contestability variables were constructed following Maury and Pajuste (2005), who used four proxies. The first is the Herfindal concentration index (*HI_concentration*) that captures the effect of voting block power. A second variable is the differences in the Herfindal indices (*HI_differences*), defined as the sum of the squares of the differences between the first and second largest voting stakes, the second and the third largest voting stakes and the third and fourth largest voting stakes.[16] These variables capture the actual contestability that the largest blockholder faces when unable to control the company directly.[17]

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[15] To see whether using control rights (direct and indirect ownership) instead of ownership rights produced different results, we repeated the tests, but none was statistically significant. This was surprising since medians of Tobin's Q were almost equal across the different number of blocks. Similar tests were performed for MTBR, MTSR, ROE and ROA.

[16] The formulas are: HI_concentration = $\sum_{i=1}^{4}(\text{Votes}_i)^2$ and HI_differences = $\sum_{i=1}^{4}(\text{Votes}_i - \text{Votes}_{i+1})^2$.

[17] Both measures are transformed into logarithms to control for distribution skewness.

Their expected relation with firm value is negative because, as voting power among the four largest shareholders becomes more egalitarian, there is more control contestability and so greater firm values.

Two complementary measures of control contestability are the Shapley value and the high contestability dummy. The Shapley value is the solution concept for coalitional games. In this case, it will measure the probability that individual blockholders (or groups of shareholders) form part of a winning coalition. Calculation of Shapley values is somewhat problematic since most shareholders' stakes are unknown, but since they are often very low, we can assume they do not affect main voting coalitions. Prior to estimating this Shapley value for the main blockholder in a coalition of four agents, we rescaled the sum of the four largest shareholders to 100%. If the largest blockholder held more than 50% of the votes, the Shapley value was set equal to 1; that is, the voting power of the largest stakeholder is treated as a winning coalition able to exert full control. If this blockholder could not hold a majority of voting, then its contestability power increased with lower Shapley values. The relationship between the Shapley value of the largest blockholder and firm performance should also be negative.

Maury and Pajuste (2005) suggest a dummy variable they call "high contestability dummy". It takes a value of 1 if the three largest blockholders cannot form a majority and the fourth largest holds at least 10% of the votes. The rationale is to capture cases where the first three main shareholders' power can be contested. One should expect firm performance to be better as contestability among the four largest shareholder increases. Hence, the relation is expected to be positive.

In contrast, many studies (Durnev & Kim, 2005; Claessens, Djankov, Fan, & Lang, 2002, and Claessens, Djankov, Fan, & Lang, 2006) have stressed that higher separation between voting rights and control rights in the hands of the main blockholders may be associated with lower firm valuation and worse accounting performance since a negative entrenchment effect of extracting private rents can overcome the positive effects of blockholders' aligned incentives to run firms properly. We employ the largest shareholder's stake of direct ownership, CR1, and the sum of the direct ownership of the top four largest blockholders, CR4, to measure the incentive effect, and use a wedge variable proxied by the inverse of equity to voting ratio of CR1 and CR4 to account for the entrenchment effect.

Other control variables used in the regression equations include firm size, financial leverage, sales growth and asset tangibility. Firm size is measured either by the natural logarithm of total assets (*log* assets) or by the natural logarithm of operating income (*log OI*).[18] As in most studies, we expect a negative relationship between size and the performance measures since size also proxies for firm age and older firms have less dynamism. Leverage is proxied by two measures. The first is the ratio of book value of long-term liabilities to book value of total assets (*leverage*). The second is the book value of total liabilities divided by total assets (*debt ratio*). There is no established expected relation of these variables with firm valuation or performance since the empirical evidence suggests that leverage can have either a positive disciplinary device over management's free use of cash flow or a negative effect if it increases the probability of bankruptcy.

To measure investment opportunities, we use past growth in sales, measured by a moving average of the two and three previous real annual percentage growths in operating income (*growth2* and *growth3*). It is expected that firms with better growth opportunities have faster growth rates, so sales growth should be positively related to the valuation and performance measures. The

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[18] Original value series are at 1998 prices.

last variable is *asset tangibility*, equal to plant, property and equipment valuation relative to the total assets ratio. Lower asset tangibility is a signal that a firm's cash flows are presumably generated by intangibles (know-how, branding) and hence implies high firm market value. The expected correlation is negative. Last, all regressions are controlled by industry dummies, SIC, to account for differences in asset structure, market competition, and other idiosyncratic aspects that may affect firm valuation, ownership or corporate governance.[19] Regressions also include year dummies to account for time effects.

5.2. Descriptive statistics

Table 5 is a summary of statistics for the contestability, performance and firm characteristic variables. The maximum number of firm-years observations is 1092, corresponding to 233 firms with at least one voting-block. Tobin's Q was quite low, with an average of 1.05 and a median of 0.79. However, there was clearly some variation year by year since Tobin's Q reached a maximum of 1.42 in 1998 and a minimum of 0.75 in 2002. The performance variables ROA and ROE also exhibit low levels. The medians are 2.5 and 4.3%, respectively. Control contestability variables by turn show an increasing trend. The mean (median) of the Herfindal index based on equity differentials for the top four stakes is 0.14 (0.04). Moreover, this number was 0.19 in 2004. The Shapley value averaged 0.71 and was increasing, which is relatively high compared to the 0.6 reported by Maury and Pajuste for Finnish firms, although their value stemmed from a three-player game instead of the four in our case. Thus, the numbers suggest that the higher the probability that the largest shareholder will form a coalition, the higher the contestability power of the next largest blockholders.

5.3. Regression results

We now consider the relationship between firm-level contestability and firm performance. Our hypotheses first test the relationship between control contestability and valuation measures and then test that between ownership and control rights. The econometric specification follows a general two-way error component model with a matrix dimension of $i \times t$:

$$Y_{it} = B_0 + B_k \mathbf{C}_{it} + \varphi_k \mathbf{X}_{it} + \mathrm{IND}_j + (\alpha_i + \lambda_t + \varepsilon_{it}) \tag{11}$$

where Y_{it} is the valuation/performance variable, such as Tobin's Q, MTSR, MTBR, ROA and ROE; $\mathbf{C}$ is the vector with the contestability variables and $\mathbf{X}$ is the vector with the standard controls above mentioned. The estimation of Eq. (9) is also controlled by industry and time dummies.

Bloch and Hege (2001) and Bolton and Von-Thadden (1998) found that large blockholders value liquidity in stocks, that the more liquid a stock is, the higher its transparency and the informational accuracy conveyed to investors, which could better its valuation. An important feature of the Colombian stock exchange has been the lack of actual offers of stocks and the low trading volume (the float) in the last 20 years. The delisting pattern shown in Table 2 reflects this corporate governance problem. Statistically, what one finds is that only a small fraction of firms trade their stocks, and from this small subset, a fraction of them had median or high trading volumes. Hence, the Colombian stock market is not liquid and taking the whole sample of firm-year observations for which Tobin's Q can be estimated can be misleading.

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[19] We classify industries with the two-digit United Nations Standard Industry Classification.

Table 5
Summary of statistics—valuation, contestability and performance variables

Variable	Panel A					
	Observed	Mean	Std.	Min	Max	P50
Value and performance						
TOBIN'Q	689	1.0593	1.4549	0.071	15.772	0.7906
Return on assests	1074	−0.0093	0.6064	−18.555	0.910	0.0257
Return on Equity	1074	−0.0554	1.1095	−28.619	1.638	0.0434
Market-to-book ratio	689	2.4253	27.6810	−0.187	711.817	0.6691
Market-to-sale ratio	678	18.1232	180.3946	0.003	4376.831	0.9274
Control contestability						
Herfindal index_concentration	1092	0.2612	0.2311	0.0112	1.0000	0.1997
Herfindal index_differences	1092	0.1415	0.2203	0.0000	1.0000	0.0404
High contestability dummy	1092	0.1703	0.3761	0.000	1.000	0.0000
Shapley value	1092	0.7086	0.2852	0.250	1.000	0.5000
Firm characteristics						
Log-operating income	1046	10.4724	2.1596	−1.292	15.350	10.9047
Log-assets	1074	11.3774	1.8174	4.556	16.276	11.5088
Asset tangibility	1074	0.2060	0.1936	0.000	0.915	0.1609
Debt ratio	1074	0.4001	0.5825	0.000	12.367	0.3445
Leverage	1074	0.1621	0.4780	0.000	12.367	0.0848
Growth-sales (T-3)	708	0.2155	1.3046	−0.871	19.174	0.0363

Mean	Panel B					
	1996	1998	1999	2000	2002	2004
TOBIN'SQ	1.1457	1.4211	1.1387	1.1024	0.7547	0.8639
Return on Equity	−0.0082	−0.2375	−0.2611	0.0508	0.0393	0.0970
Market to Book Ratio	1.8328	9.1806	1.3184	0.8306	0.7050	0.8043
Herfindal Index_concentration	0.2176	0.2489	0.2255	0.2537	0.3108	0.3153
Herfindal Index_differences	0.1036	0.1288	0.1038	0.1286	0.1902	0.1951
Shapley Value	0.6985	0.6756	0.6833	0.6987	0.7516	0.7633

See Section 5.1 for definitions of terms.
Source: Our own estimations based on an assembled dataset from SVAL National Equity Registry Forms, companies' financial statements and stock prices.

Assuming that liquidity really matters, we run Eq. (11) only for those firms with some share liquidity.

The estimating sample was divided in two. One includes all the firm-year observations that have at least one blockholder and stock classified as of at least median liquidity. We take the liquidity index calculated by the Financial Superintendence as our selection device.[20] The second sample comprises all firm-years observations for which a firm's stock was classified as highly liquid.

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[20] In fact, the contestability controls were not significant for the full sample regressions although they kept the expected sign. From 1992 to the present, the former Superintendence of Securities and today's Financial Superintendence ranks shares according to an index created for tax purposes. The index, known locally as the Indice de Bursatilidad Accionaria, is calculated by using data on the number of days that a given stock is traded, the daily volume and the monetary amount. The index ranges between 0, the lower bound, and 10, the upper bound.

Of course, the number of firm-year observations decreases as the liquidity threshold increases. Although it can be argued that there may be some sample selection bias, the liquidity index was created in 1991 and so is an exogenous factor that just selects a sample of firms for which control contestability really matters.

Table 6 depicts the value regressions controlling by contestability for the sample of firm-year observations according to share liquidity. Panel A reports the findings for those firm-year observations (148) with liquidity above the median threshold while panel B reports only those firm-year observations (69) ranked as high liquidity stocks. Regressions in (1)–(3) for both cases depict the effect of control contestability on firm value. Hypothesis 1 is strongly validated since contestability variables exhibit the expected sign and regression coefficients are statistically significant at the 5% level. The differences in the Herfindal index and the Shapley value of the largest block are robust variables. As long as there exists a more equal distribution of control rights among the four largest blockholders, investors assign a better valuation since none of the main blockholders can individually exploit its control rights to extract rents. Thus, the numbers suggest that if the differences in the Herfindal indices fall by 10%, Tobin's Q rises on average between 0.37 and 0.68%. The Shapley value for the largest shareholder is a proxy for the probability that the largest blockholder forms a coalition to exert firm control. If the main blockholder lacks enough control rights to hold a majority, the contestability increases as the voting rights of the second, third and fourth largest blockholders increase. In particular, if the probability of forming a coalition (Shapley value) decreases by 10%, firm value rises between 2.7 and 3.8%.[21]

The last column in both panels reports the effect of direct ownership and control rights on firm valuation. Regression Eq. (4) presents the results only for the joint effect of the four largest shareholders (CR4). Clearly, when one uses a sample of firm-year observations that includes only firms whose stocks are liquid, the positive incentive effect regarding direct control and monitoring exerted by the top four shareholders tends to disappear. Contestability implies a conflict of interest among main investors if stock liquidity is relevant to investors' wealth. This control power is value-enhanced, in contrast to an absolute ownership concentration by a voting coalition that makes extracting rents to its own benefit easy. Further, the results also show that the entrenchment effect, given by the separation ratio of voting rights to equity, was insignificant. This outcome is a consequence of the low separation ratios where ultimate owners exert direct control on managers and thus minimize the agency problem of control delegation. Hence, Hypothesis 2 is no longer verified. Contestability turns out to be important among dominant investors when a firm's equity is liquid and tradable.[22] Regression equations also show that the model explain about 50% of firm value.

Regarding standard controls, the results go in the same direction as reported in previous case studies, the debt to asset ratio and firm size for example. The former is associated with mature industries with low growth opportunities and the latter with the disciplinary role of leverage. In fact, leverage is used as a device to discipline incentives and retain control.[23]

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[21] Voting concentration was not significant at 10% but was close to that critical point (12%). All regressions exhibited a negative sign.

[22] If the estimating sample includes all firms regardless of the liquidity of their shares, we get a direct and positive effect of ownership concentration on firm value. This result was first reported in Gutiérrez and Pombo (2007).

[23] For details, see, for example, Black et al. (2006) for Korea; see Claessens et al. (2002) for East Asian countries; De-Jong (2002) for Holland; and Gutiérrez and Pombo (2007) for Colombia.

Table 6

Tobin's Q and control contestability regressions by shares classified as median and high liquidity

	Panel A: median liquidity				Panel B: high liquidity			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log HI_differences	−0.0678 (−2.5)**				−0.0368 (−1.98)*			
Log HI_concentration		−0.0925 (−1.63)				−0.0557 (−1.64)		
Shapley value 1			−0.2736 (−2.09)**				−0.3859 (−2.85)***	
CR4				−0.2197 (−0.93)				−0.2314 (−1.18)
Votes CR4/EquityCR4				−0.0701 (−0.60)				−0.0231 (−0.23)
Debt_ratio	0.6708(4.62)***	0.7234(5.18)***	0.6694(4.56)***	0.7180(5.02)***	0.5362(3.38)***	0.4887(3.36)***	0.8297 (3.53)***	0.4989 (3.30)***
Growth (t-3)	−0.1136(−1.31)	−0.1267(−1.37)	−0.1070(−1.26)	−0.1120(−1.18)	−0.0932(−1.20)	−0.0960(−1.21)	−0.1364 (−1.71)*	−0.1003 (−1.27)
Asset tangibility	−0.6511(−3.61)***	−0.5574(−3.08)***	−0.5829(−3.65)***	−0.4908(−2.75)***	−0.3035(−2.67)***	−0.2630(−2.34)**	−0.5097 (−3.80)***	−0.2299 (−2.01)**
Log-assets	−0.2026(−4.04)***	−0.1865(−3.73)***	−0.1979(−3.76)***	−0.1825(−3.76)***	−0.0393(−1.34)	−0.0240(−0.85)	−0.0638 (−2.17)**	−0.0186 (−0.73)
Constant	4.7885(5.73)***	4.6415(5.04)***	4.6570(5.5)***	4.4343(4.66)***	1.3014(2.99)***	0.9002(2.26)**	1.2231 (3.07)***	0.8960 (1.94)*
Observations	148	148	148	148	69	69	69	69
R-squared	0.533	0.504	0.503	0.489	0.496	0.476	0.566	0.471

Notes: Variable definitions are in Appendix A1. All regressions include year dummies and industry dummies (not reported). Robust t-statistics are in parentheses; (*) significant at 10%; (**) significant at 5%; (***) significant at 1%.

Source: Our own estimations based on a assembled dataset from SVAL companies' financial statements, RNVIs, and stock prices.

5.4. Robustness tests

A common point addressed by firm valuation regression is the issue of robustness and the endogeneity problem of ownership variables. Ownership affects firm value, but valuation has an impact on changes in ownership structure. To tackle this problem, we run instrumental–variable regressions. Table 7 depicts the two-stage least-squares regressions, which treat all contestability variables as endogenous variables. We use as instruments for those variables their own values lagged one period. Several comments are worth mentioning. First, all contestability variables keep the expected sign of negative relation and the size of the regression coefficients is similar. These effects are almost the same, in contrast to the original pooled OLS regressions. For instance, for the high liquidity sub-sample, a decrease of 10% on the HI-differences will raise firm value around 0.56%, whereas this effect is 0.37% unless instrumental variables are performed. Second, standard controls exhibit the same sign and are still significant at 5%. Hence, regressions that endogenize the proxies for control contestability confirm our first hypothesis; that is, firm value improves as control contestability increases.

Another robustness issue is how results differ from alternative performance measures. Table 8 displays the core results of firm performance and contestability regressions. The estimations are based on the full sample of firm-year observations. Performance accounting variables in contrast to firm value might be less sensitive to stock liquidity but more prone to diversion. Tobin's Q may suffer from measurements problems, especially when applied to firms in emerging markets where there exists local market power and market prices might be not in equilibrium. In addition, there are three elements that the full sample captures through performance regressions. First, the full panel includes firms with minimum stock trading. There are several firms whose stocks are traded one or two times per year at most. Second, there are observations of delisted companies that are lost if one takes only Tobin's Q as the dependent variable. Third, the sample includes bond issuers, which again are lost in the valuation regressions.

The econometric estimations use several alternative variables but the findings are best summarized by the market-to-sales (MTSR) and return-on-equity (ROE) ratios. The first important feature is that contestability results hold in these regressions. For all cases, contestability variables are statistically significant at the 10% level and have the expected sign for the MTSR and two of four cases for ROE regressions. A 10% reduction in the HI-differences will boost MTSR by 17%. Further, if ownership concentration or the Shapley value decreases by 10%, MTSR increases 31 and 91%, respectively. If the cash flow rights of the top four shareholders decrease by 10%, MTSR rises by 135%—regression Eq. (4). Regarding the ROE results, only the Shapley value and the high contestability dummy (HCD) variables were statistically significant at 10%. Again, if the probability of a winning coalition's pursuing absolute control drops by 10%, the ROE ratio will rise by 0.9%. The last equation in the regressions shows that the HCD reduces firm performance since the sign was negative instead of positive, which is the expected association. Recall that this dummy captures the control contestability held by the fourth largest shareholder over the top three voting blocks that cannot form a coalition with a simple majority. This implies that when the marginal voting block becomes a strategic player in a coalitional game, there is more control over cash flow extraction and tunneling made possible by other holding firms' operative leverage or investment capital.

The negative sign on ROE suggests that this fourth contestant has the opposite result in terms of limiting tunneling. Perhaps, this shareholder generates more conflicts within boards, making

Table 7
Tobin's Q and control contestability for shares classified as median and high liquidity (two-stage least-squares regressions)

	Panel A: median liquidity			Panel B: high liquidity		
	(1)	(2)	(3)	(1)	(2)	(3)
Log HI_differences	−0.064 (−2.36)**			−0.056 (−2.69)***		
Log HI_concentration		−0.071 (−1.16)			−0.056 (−1.5)	
Shapley value 1			−0.282 (−1.71)*			−0.571 (−3.04)***
Debt_ratio	0.672 (4.72)***	0.715 (4.99)***	0.669 (4.7)***	0.630 (3.78)***	0.489 (3.16)***	1.056 (4.03)***
Growth (t-3)	−0.113 (−1.31)	−0.122 (−1.33)	−0.107 (−1.26)	−0.099 (−1.29)	−0.096 (−1.20)	−0.163 (−1.99)*
Asset tangibility	−0.640 (−3.84)***	−0.530 (−2.96)***	−0.587 (−4.14)***	−0.311 (−2.68)***	−0.263 (−2.36)**	−0.615 (−4.34)***
Log-Assets	−0.202 (−4.15)***	−0.186 (−3.69)***	−0.198 (−4.04)***	−0.041 (−1.44)	−0.024 (−0.87)	−0.077 (−2.88)***
Constant	4.826 (5.96)***	4.527 (5.00)***	4.672 (6.40)***	0.729 (2.14)**	1.217 (2.83)***	1.351 (3.72)***
Observations	148	148	148	69	69	69
R-squared	0.533	0.503	0.503	0.484	0.476	0.540

Notes: Variable definitions are in Appendix A1. All regressions include year dummies and industry dummies (not reported). Robust t-statistics are in parentheses; (*) significant at 10%; (**) significant at 5%; (***) significant at 1%.

Source: Our own estimations based on a assembled dataset from SVAL companies' financial statements, RNVIs, and stock prices.

Table 8
Firm performance and contestability: MTSR and ROE regressions

	Market-to-sales ratio				Return on Equity			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log HI_differences	−1.692 (2.37)**				−0.013 −0.990			
Log HI_concentration		−3.139 (2.10)**				−0.030 −0.860		
Shapley value 1			−9.166 (1.95)*				−0.087 (1.89)*	
High contestability dummy								−0.105 (1.96)*
CR4				−13.593 (1.72)*				
Votes CFW Equity CR4				−1.599 (−0.44)				
Debt ratio	−2.006 (−1.44)	−2.009 (−1.51)	−2.003 (−1.40)	−2.176 (−1.55)	0.026 (−1.3)	0.027 (−1.29)	0.026 (−1.30)	0.023 (−1.21)
Growth (T-2)	(3.66)***	12.377 (3.67)***	12.467 (3.70)***	12.416 (3.68)***				
Growth (T-3)					−0.006 (−0.81)	−0.005 (−0.77)	−0.006 (−0.92)	−0.006 (−0.97)
Asset tangibility	−2.492 (−0.54)	−0.847 (−0.20)	−1.796 (−0.42)	0.191 (−0.04)	−0.061 (−0.98)	−0.057 (−0.89)	−0.062 (−0.96)	−0.056 (−0.86)
Log-assets	−3.998 (2.54)**	−3.958 (2.54)**	−3.945 (2.53)**	−4.154 (2.41)**	0.019 (1.90)*	0.020 (1.89)*	0.019 (1.90)*	0.019 (1.83)*
Constant	41.477 (2.43)**	48.335 (2.49)**	45.252 (2.47)**	52.307 (2.44)**	−0.762 (1.67)*	−0.701 (−1.56)	−0.670 (−1.48)	−0.705 (−1.56)
Observations	554	554	554	554	696	696	696	696
R-squared	0.27	0.27	0.27	0.27	0.12	0.12	0.12	0.12

Notes: Variable definitions are in Appendix A1. All regressions include year dummies and industry dummies (not reported). Robust t-statistics are in parentheses; (*) significant at 10%; (**) significant at 5%; (***) significant at 1%.
Source: Our own estimations based on a assembled dataset from SVAL companies' financial statements, RNVIs, and stock prices.

decisions more costly, which might have a negative impact on firm performance.[24] Lastly, wedge variables were dropped from the final estimations since they were not robust regressors in all cases. Therefore, the separation of ownership and control does not affect firm performance because of the direct monitoring that main shareholders exert on companies' management. Thus, the private control bias eliminates managers' entrenchment effect but raises new concerns regarding small shareholders' protection and the risk of expropriation.[25]

6. Conclusions

Control contestability has been shown to be important in previous studies that relate it to firm value. In this work, we test the effect of multiple large shareholders on firm value for a sample of about 233 non-financial Colombian firms during the period 1996–2004. The results corroborate our main hypothesis. More contestability of the largest blockholder's control helps limit tunneling and private extraction of rents. In other words, voting power distribution is a market or governance mechanism that is equally effective regardless of the relative development of the stock markets. This is partly because control has become more equally distributed among the largest blockholders, so there are fewer opportunities for bad corporate governance. In addition, the low separation between large shareholders' cash flow rights and voting rights implies direct monitoring of firm managers, which eliminates the moral hazard problem typically observed in widely held corporations.

In sum, the entrenchment and tunneling effects are limited as a consequence of the low separation ratios that allow ultimate owners to exert direct control on managers, minimizing the agency problem of control delegation through control contestability among the larger shareholders. This study provides more evidence for understanding the link between a firm's control and its performance in emerging countries where the civil law environment is associated with poor investor protection in the sense of La Porta et al. (2002). In many ways, our findings are in accordance with the theoretical predictions of Bloch and Hege (2001), who assert that, regardless of the degree of legal protection, the existence of multiple large shareholders can enhance a firm's performance. The policy implications are straightforward for capital market regulation. Instruments that help to democratize equity capital, or levy personal taxes on blockholder dividends that surpass some threshold lower than an absolute majority, or set a mandatory ruling about independent board members, or promote minorities' representation on boards will all increase control contestability and better firm governance.

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[24] In most regressions HCD was not significant, but the regression coefficient exhibited a negative sign in all cases.

[25] The regression results of contestability variables on firm performance also hold for the sub-sample of medium and high stock liquidity, which are not reported for space reasons.

Appendix A. Variable definitions in regression equations

Variable	Definition	Source
Tobin's Q	The ratio between market value end book value of assets. Colombian accounting and tax regulations require that all firms update their book values yearly, so the use of book value of assets must be very close to replacement costs. Market value of assets was estimated as the sum of I book value of debt plus book value of preferred stocks and market value of common stock. In turn, the yearly market value of common stocks was calculated as the product of the average market price times the number of common stocks	FS and BVC
Return on assets ROA	The ratio of net profits after tax to total assets	FS
Return on equity ROE	The ratio of net profits after tax to equity	FS
MTSR	Market value of common stock divided by sales	FS
MTBR	The ratio between market value of common stock (as defined above) and book value of common stock; the latter is estimated as the sum of the book value of assets minus the book value of liabilities and preferred stock	FS
Votes 1–4	The fraction of the votes held by the first (second, third and fourth) largest shareholder	FS
Equity 1–4	The fraction of cash-flow rights held by the first (second, third, and fourth) largest shareholder, respectively	FS
Voting CR1/Equity CR1	The voting rights divided by equity rights of the first largest shareholder	FS
Voting CR4/Equity CR4	The sum of the voting rights divided by equity rights of the first four largest shareholders	
HI_concentration	The sum of the squares of the four largest voting stakes, $[(\text{Votes } 1)^2 + (\text{Votes } 2)^2 + (\text{Votes } 3)^2 + (\text{Votes } 4)^2]$	FS
HI_differences	The sum of the squares of the differences between the first and second largest voting stakes, the second and the third largest voting stakes and the third and fourth largest voting stakes, $[\text{Votes } 1 - \text{Votes } 2]^2 + [\text{Votes } 2 - \text{Votes } 3]^2 + [\text{Votes } 3 - \text{Votes } 4]^2$	FS
Shapley value 1	The Shapley value solution for the largest shareholders in a four-voting game	FS
Herfindal contestability dummy	Dummy variable that equals 1 if the sum of the voting power held by the three largest shareholders does not exceed 50%, and there is at least one more blockholder with at least 10% of the votes, and 0 otherwise	FS
Debt_ratio	The ratio of total liabilities to total assets	FS
Growth $(t - n)$	The moving average of the n-previous real annual percentage growth in operating income	FS
Asset tangibility	Total property, plants and equipments divided by total assets.	FS
Log assets	Natural logarithm of total assets, all in 1999 Colombian pesos	FS

Notes: FS = financial superintendence; BVC = Bolsa Valores de Colombia (Colombia's stock exchange).

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