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Private benefits, block transaction premiums and ownership structure

Giovanna Nicodano*, Alessandro Sembenelli

Faculty of Economics, University of Turin, Corso Unione Sovietica, 218bis, 10134 Turin, Italy

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Abstract

A simple model shows that both price premiums and standardized block premiums (SBPs) are biased measures of private benefits because they do not account for the transfer of control effectively taking place with the block. This depends not only on the fractional size of the block, but on the whole distribution of shareholdings. We propose an alternative methodology to measure private benefits which makes it possible to weight the size of traded blocks on the basis of their strategic power. We apply our method to a sample of Italian block transactions and show that the traditional method underestimates control rents. The sensitivity of private benefits to net worth, leverage, and nonvoting shares is also examined. Finally, we show how to forecast the price of out-of-sample blocks of shares on the basis of information on company capital and ownership structure.

JEL classification: G32; G12; G34; C51
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1. Introduction

The price of a voting share belonging to a negotiated block is usually higher than the price of a share traded on the floor. This block premium has been usually attributed by the corporate governance literature to the existence of private benefits from control. The latter consist in unobservable consumption and investment opportunities deriving from discretionary power to allocate company resources. Private benefits from control are often

* Corresponding author.
E-mail address: nicodano@econ.unito.it (G. Nicodano).

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assumed to accrue only to one controlling shareholder (or one manager) as long as he/she has a significant share of the votes. For this reason, since the seminal work of Barclay and Holderness (1989, BH thereafter), the average block premium in transactions exceeding a given fraction of voting equity (5% in BH) has been considered as a measure of private benefits from control.

In this paper, we show that this traditional measure leads to underestimate private benefits unless the traded block transfers full control of the company. The underlying intuition is very simple. A 5% block confers large control power—and therefore, a large share of private benefits—in a firm with a large number of smaller shareholders. However, it confers negligible power—and therefore, a trivial share of private benefits—when another investor holds 51% of the votes. Thus, private benefits are well approximated by the block premium in the first case, but are seriously underestimated in the second case. To overcome this shortcoming, we propose an alternative methodology which builds on the idea of Zwiebel (1995) that private benefits are divisible and that they are allocated to each member of the controlling coalition according to his/her strategic power. Our approach makes it possible to weight the size of traded blocks on the basis of their strategic power, that is of the probability for each block to be pivotal in a voting contest for achieving control of the company.

While it holds on theoretical ground, it might be argued that our claim has little practical relevance. For this reason, we apply our methodology to a sample of block transactions which occurred in Italy between 1987 and 1992 and we compare our estimates of private benefits with block premiums. Our estimates show that average (median) private benefits are equal to 27% (19%) of the value of voting equity while the average (median) block premium equals 16.1% (2.1%) on blocks larger than 10%. These empirical findings clearly show that the traditional method is likely to severely underestimate control rents.

The Italian case is interesting for two additional reasons. Firstly, the Italian governance structure resembles that of many continental European and developing countries (Becht & Roell, 1999; La Porta, Lopez-de-Silanes, & Shleifer, 1999), in which large block-holders either manage the firm directly or tightly monitor delegated managers.[1] Secondly, average private benefits in Italy were estimated to be far larger than in the United States and it was suggested that this is due to the dilution of minority property rights in Italy (Zingales, 1994, 1995b). Our estimates confirm that private benefits in Italy are large. Yet our insight suggests that private benefits in the United States might be seriously underestimated in the literature due to the lower concentration of ownership.

The relevance of private benefits is related not only to their price impact but also to their welfare effects. Insights on this issue can be gained by assuming that they are a

[1] Block shareholding is a common feature of corporate governance in the United States as well, and large blocks of shares also tend to be passed on in negotiated transactions rather than fragmented (Shleifer & Vishny, 1986; Barclay & Holderness, 1989, 1991). However, there is a lower concentration of ownership. Moreover, many block trades involve institutional investors—who usually refrain from influencing managerial choices—and are much smaller. Keim and Madhavan (1996) and the literature pioneered by Scholes (1972) focus on the information and liquidity impact on stock prices of these block transactions and overlook their negligible relations with corporate control.

function of observables, such as firm size, leverage, and the share of nonvoting shares. These firm level characteristics have been put forward by the corporate governance literature as potential determinants of control rents. In particular, it has been pointed out that a larger proportion of nonvoting stock is associated with larger equilibrium control rents, if they are obtained with the sacrifice of cash flows (Burkart, Gromb, & Panunzi, 1998a). Our estimates show a positive association between private benefits and nonvoting shares outstanding, indicating that their extraction reduces welfare.

Our estimates of the relation between control rents and firm characteristics can be exploited to forecast the price of out-of-sample blocks on any size. On the contrary, the traditional way of thinking about private benefits attaches a price premium only to the largest block. We show that the per-share price premium on a minority block is dramatically affected by ownership distribution, ranging in one example from 0% to 190%.

The remainder of the paper is organized as follows. Section 2 lays out our simple pricing model. In Section 3, we briefly summarize the relationship between total control rents and observable firm characteristics, as depicted by the corporate governance literature. Section 4 describes the data, presents empirical results on the difference between our method and the traditional one, and shows how to forecast out-of-sample block prices. Section 5 concludes.

2. Block premiums and partial benefits from control

In this section, we present a simple model of the block premium. The key assumption is that the portion of private benefits accruing to a block investor depends on the strategic importance of the investor's block in forming controlling coalitions. Such strategic power cannot in general be captured by the fractional size of the block, because it depends on the distribution of shareholdings. For instance, a moderate-sized block confers large power in a firm whose shares are held by many dispersed individuals but negligible power when one investor holds an absolute majority position.

It is possible to capture such strategic importance with the power index of shareholder i, φ_i. This quantifies his ability to change the outcome of voting contests by joining a losing coalition and turning it into a winning one.[2] Thus, a 5% block confers a power of 1/3 if there are other two blocks each with 47.5% of the votes, and a power of 0 if there is a block with 51%. We accordingly set control rents accruing to block-holder, i, equal to a share, φ_i, of total control rents, C. We are therefore using the idea that private benefits are divisible and are allocated according to the power index (Zwiebel, 1995) to study the relation between private benefits and block premiums.

Several simplifying assumptions allow us to focus on voting power as the key determinant of block premiums. Postulating investor's risk neutrality and symmetric

[2] The Shapley and Shubik (1954) power index for a shareholder is calculated by considering each possible coalition of shareholders and how frequently he can make a difference in the voting contest. It has already been used for measuring ownership concentration (Leech, 1988), as well as compared with other measures of strategic power (Felsenthal & Machover, 1998).

information permits us to ignore the risk premium and market liquidity.[3] We further assume that managers are induced to act, through monitoring and incentive contracts, in the interest of the controlling shareholders. Finally, the stock market has an upstairs market where blocks are transferred in bilateral negotiation and a multilateral exchange.[4]

2.1. Block price and market price

The amount received by a seller in a negotiated block transaction must be at least as large as his or her valuation of the block. The seller must be compensated for the loss in private benefits, which is proportional to the reduction in the power index, and for the loss of pecuniary benefits, which increases with the number of shares in the block, N^{T}. Let $\varphi_{\mathrm{s}}(\varphi'_{\mathrm{s}})$ be the seller's power index before (after) the transaction; q, the (per-share discounted) company profits; and P, the price paid for one share in the block. Then:

$$PN^{\mathrm{T}} \geq (\varphi_{\mathrm{s}} - \varphi'_{\mathrm{s}})C + qN^{\mathrm{T}} \tag{1}$$

The buyer's valuation of the block, in turn, cannot be smaller than the sum paid for the block:

$$PN^{\mathrm{T}} \leq (\varphi'_{\mathrm{b}} - \varphi_{\mathrm{b}})C + qN^{\mathrm{T}} \tag{2}$$

where $\varphi_{\mathrm{b}}(\varphi'_{\mathrm{b}})$ is the buyer's power index before (after) the transaction.

The exchange price of common shares after the transaction, P'_{e}, should similarly depend on the valuation of the shares by those investors who trade on the floor—the "outsiders". Thus, P'_{e} equals expected control rents plus pecuniary benefits accruing to outsiders:

$$P'_{\mathrm{e}}N'_{\mathrm{o}} \equiv \phi' C + qN'_{\mathrm{o}} \tag{3}$$

where N'_{o} is the number of common shares held by them and ϕ' is their fraction of total control rents after the block transaction.

Eq. (3) allows for outside shareholders' strategic power. This assumption is not crucial for Proposition 1, which goes through when $\phi' = 0$. However, $\phi' > 0$ is consistent with evidence showing that common shares trade at a premium relative to nonvoting shares in several countries (Lease, McConnell, & Mikkelson, 1983; Modigliani & Perotti, 1998; Rydquist, 1992). Indeed, it has been suggested that the value of control rents is reflected in the exchange price of a vote in proportion to outsiders' strategic power, and that this proportion may change when an event modifies the distribution of ownership (Zingales, 1994 for Italy; Zingales, 1995b for the United States).

[3] When traders are risk neutral and there is no asymmetric information, market liquidity is infinite. In other words, the demand for shares is infinitely elastic at a price equal to the expected cash flow, discounted at the risk-free rate (O'Hara, 1995).

[4] We do not address traders' choice between negotiation, public tender offer, or trading in the market. Motivation for negotiated block trading is offered by Burkart, Gromb, and Panunzi (1998b), Shleifer and Vishny (1986) and Zingales (1995a).

2.2. The block premium

The block premium which is observed after a transaction is equal to $(P - P'_e)N^T$. It can be obtained by combining previous equations:

$$\bar{v}_s C \leq (P - P'_e)N^T \leq \bar{v}_b C \tag{4}$$

where $\bar{v}_s \equiv \left(\varphi_s - \varphi'_s - \frac{\phi' N^T}{N'_o}\right)$

and $\bar{v}_b \equiv \left(\varphi'_b - \varphi_b - \frac{\phi' N^T}{N'_o}\right)$

The block premium increases with the voting power lost (acquired) by the seller (buyer), assuming positive control rents, C, and a given distribution of bargaining power between the seller and the buyer. It decreases with outsiders' voting power, because the latter raises the market price. It is now straightforward to relate control benefits to the price premium, $((P - P'_e)/P'_e)$, or the standardized block premium (SBP):

$$\text{SBP} = \frac{(P - P'_e)N^T}{E'} \tag{5}$$

where $E' = P'_e N'_e$ is the market value of voting equity and N'_e is the number of voting shares after the transaction. We can divide all terms in Eq. (4) by E', so as to obtain bounds on the value of the SBP:

$$\bar{v}_s \frac{C}{E'} \leq \text{SBP} \leq \bar{v}_b \frac{C}{E'} \tag{6}$$

We obtain bounds on the price premium if we multiply all terms by $(N'_e)/(N^T)$:

$$\bar{v}_s \frac{C}{E'} \frac{N'_e}{N^T} \leq \frac{(P - P'_e)}{P'_e} \leq \bar{v}_b \frac{C}{E'} \frac{N'_e}{N^T} \tag{7}$$

Because the seminal work of Barclay and Holderness (1989), the ratio of private benefits to (voting) equity has been approximated with either the SBP or the price premium.

The proposition below establishes the exact relationship between the three:

Proposition 1. *(a) The SBP underestimates the ratio of control benefits to equity, (C/E'), unless the traded block transfers full control of the company. (b) The price premium may over- or underestimate such ratio. If the block transfers full control of the company, the price premium overestimates (C/E') by a factor which is equal to the number of outstanding shares divided by the number of shares in the block.*

Proof. Without loss of generality, let the seller have all the bargaining power. In this case, Eq. (6) becomes: $\mathrm{SBP} = \bar{v}_b(C/E')$. Dividing both sides by $\bar{v}_b$ we obtain the ratio of control benefits to equity as a function of the SBP: $(C/E')=(\mathrm{SBP})/(\bar{v}_b)$. But $\bar{v}_b \leq 1$. Control benefits are thus larger than the SBP in general. Only if a majority controlling block is traded, the seller transfers all voting power to the buyer and consequently, outsiders have no power. In this case, we can impose $(\varphi_s - \varphi_s')=(\varphi_b' - \varphi_b)=1$ and $\phi = \phi' = 0$ into $\bar{v}_b \equiv (\varphi_b' - \varphi_b - \frac{\phi' N^T}{N_o'})$, obtaining $\bar{v}_b = 1$. Only in this situation do control benefits coincide with the SBP. This proves the first part of the proposition.

From Eq. (7), we obtain $\frac{C}{E'} = \frac{(P-P_e')}{P_e'} \frac{N^T}{N_e' \bar{v}_b}$ if the seller has all the bargaining power. The product $\frac{N^T}{N_e' \bar{v}_b}$ can be greater or lower than 1 because $(N^T)/(N_e') \leq 1$ and $(1)/(\bar{v}_b) \geq 1$. When a majority controlling block is traded, $\bar{v}_b$ is equal to 1, and the price premium overestimates $(C)/(E')$ by a factor equal to the inverse of $(N^T)/(N_e')$. This proves (b). □

This is the key insight of our model. The implication of Proposition (1a) is that the lower the strategic power of traded blocks, the more the SBPs underestimate control benefits. In Barclay and Holderness (1989), control benefits are set equal to the SBP for blocks with fractional size exceeding 5%. In other words, φ_i is implicitly set equal to 1 if the fractional size of the block exceeds 5% and equal to 0 otherwise. A 5% block is unlikely to transfer full control power, however, hence control benefits are likely to be underestimated.

This observation is also important when comparisons of private benefits across countries are carried out (as in Dyck & Zingales, 2004), if countries under analysis are characterized by different ownership structures. For instance, ownership structure is concentrated in several continental European and developing countries while it is dispersed in Anglo-Saxon countries. It follows that private benefits suffer from a larger underestimate in countries with minority controlling blocks, such as the United States or the United Kingdom, when the inference is based on transactions premiums involving control blocks.

2.3. Extensions

We now allow for a difference between post- and pre-transaction company profits. The upper and lower bounds for the value of the block become:

$$(\varphi_s - \varphi_s')C + qN^T + (q - q')N_s' \leq PN^T \leq (\varphi_b' - \varphi_b)C + q'N^T + (q' - q)N_b \qquad (8)$$

The term $(q - q')N_s'$ shows that the seller's valuation is affected by pecuniary losses or gains proportional to the N_s' shares that are retained by the seller after the transaction. Similarly, $(q' - q)N_b$ indicates that the buyer's valuation increases if pecuniary gains attach to the initial toehold, N_b, as a consequence of the block purchase.

The market price of common shares after the transaction is equal to:

$$P_e' N_o' \equiv \phi' C + q' N_o' \qquad (9)$$

It follows that the post- transaction SBP can be written as:

$$v_s C - (q' - q)\chi_s \leq \text{SBP} \leq v_b C + (q' - q)\chi_b \tag{10}$$

$$\text{where } v_s \equiv \frac{\bar{v}_s}{E'}, \quad v_b \equiv \frac{\bar{v}_b}{E'}, \quad \chi_s \equiv \frac{N_s' + N^T}{E'}, \quad \chi_b \equiv \frac{N_b'}{E'} \tag{11}$$

Hence, private benefits differ from the block premium because of both the effects mentioned in Proposition 1 and the expected change in company profits. In the Empirical analysis section, we will therefore estimate both control rents, C, and the change in cash flows, $q' - q$, by applying Eq. (10) to our sample of block transaction premiums. As explained in the next section, we will also parameterize C as a function of observables to derive further insights on the determinants of private benefits.

3. Control rents, pecuniary benefits and capital structure

The corporate governance literature relates control rents to the size of company assets, because larger firms potentially offer greater nonpecuniary (and pecuniary) benefits (Barclay & Holderness, 1989). Assets can be increased by resorting to both debt and equity financing. We could therefore expect a positive correlation of control rents with both debt and net worth. However, corporate debt may reduce private benefits by constraining managerial discretion through both restrictive covenants and the obligation to pay out future cash flows (Harris & Raviv, 1988). It follows that the effect of debt on control rents is uncertain while net worth is expected to have an unambiguous positive correlation with control rents.

The extraction of private benefits is socially inefficient if US$1 of private benefits requires the sacrifice of more than US$1 of cash flow. The incentive to refrain from inefficient rent extraction increases in the portion of cash flow that the controlling coalition is entitled to. The larger the ratio of nonvoting shares to voting shares outstanding, the smaller are both the cash-flow rights that the controlling coalition must own to keep control and the incentive to correct inefficient self-serving choices (Burkart et al., 1998a).[5] A larger proportion of nonvoting stock should therefore be associated with larger equilibrium control rents, if they are inefficient.

Monitoring block-holders are often managers who derive satisfaction from on-the-job consumption, while outside shareholders derive no utility from on-the-job consumption. Thus, independent members of the board, who represent outside shareholders, are usually willing to reduce the control rents enjoyed by delegated managers. This reasoning implies that outsiders' power index, ϕ, is expected to be negatively correlated with control rents and positively with per-share profits, q (Burkart, Gromb, & Panunzi, 1997).

[5] An example of rent extraction which reduces cash flows is hiring a lazy relative. Hiring a relative provides control benefits but is not inefficient if his or her ability and effort are comparable to those available in the market.

These observations lead us to the following specifications for control rents:

$$C = \alpha_1(\text{net worth}) + \alpha_2(\text{leverage}) + \alpha_3\left(\frac{\text{nonvoting equity}}{\text{voting equity}}\right) + \alpha_4\phi + u \tag{12}$$

and for the change in per-share profits:

$$q' - q = \beta_1(\phi' - \phi) + u' \tag{13}$$

where u and u' are error terms with standard properties and ϕ measures outsiders' strategic importance. The above arguments imply that α_1 and α_3 are expected to be positive. The sign of α_2 is uncertain because leverage permits increasing the amount of assets under control, but on the other hand, it limits the controlling party's discretion in allocating such assets. We also expect α_4 to be negative and β_1 to be positive if control rents fall when outsiders' strategic importance increases. In the empirical analysis, Eqs. (12) and (13) are substituted in Eq. (10), to recover firm specific estimates of both private benefits and the expected change in company profits.

4. Empirical analysis

4.1. Data

Our sample consists of 94 block transactions in the shares of 64 Italian-listed manufacturing companies between 1987 and 1992. In this sample, we expect no influence of both tender offer regulation and market design on block prices. Enforcement of takeover regulation and trading restrictions were almost nonexistent in the years of our empirical analysis. In the Milan upstairs market, there was nothing like the NYSE obligation to "clear the book;" nor were there rules concerning maximum deviations from market prices, such as those prevailing in Paris or Brussels. Moreover, there were neither disclosure provisions on takeover bids nor compulsory public tender offers as in France (Eckbo & Langhor, 1989) and Belgium (Van Hulle, Vermaelen, & De Wouters, 1991).[6]

For each transaction, the number of shares and the price, the names of the company and of block traders come from the commercial directory *Data on Mergers and Acquisitions* published by Nomisma, an Italian consulting firm. The date of announcement of the transaction to the public and further information on block prices were retrieved from the business newspaper *Il Sole-24 Ore*. Daily exchange prices were collected from 120 days before to 120 days after the announcement. Balance-sheet data come from the directory *Taccuino dell'Azionista*, and refer to capital structure before the transaction. Our original sample consists of 545 transactions. We exclude 344 observations that were either within-group transactions or cases when the announcement was missing or incomplete. For the remaining observations, in 41 cases, the exchange price was missing (because the

[6] Beginning in January 1992, block size and prices had to be disclosed within 1 h of the transaction. Regulators also set a (small) lower bound on the size of blocks that were allowed in the upstairs market. Mandatory tender offer requirements were enacted in August 1992, but not enforced until much later.

company was not listed until after the transaction) or drawn from the third market; in 26 cases, the block price had not been reported; in 8 cases we could not identify the seller or the buyer. After eliminating 5 extreme observations, we retained 121 observations, 94 of them involving manufacturing companies.[7]

Our estimation method requires further data collection relative to previous work on block transaction premiums, in that we need information on ownership structure. As noted earlier, the Italian ownership structure is institutionally characterized by the presence of both majority shareholders and controlling coalitions of smaller block-holders. The separation of cash-flow rights from control rights is allowed and widespread, achieved by both the issue of nonvoting shares and the creation of a hierarchy of companies—a pyramidal business group—controlled at the top by a holding company.[8] This last feature requires special care in measuring voting shares, as it is necessary to consolidate shareholdings that are controlled by the same shareholder through the pyramid. The distribution of shareholdings before and after the transaction comes mainly from the directory *Taccuino dell'Azionista*, supplemented by the *R&S* directory and the *Archivio Sperimentale delle Partecipazioni* database provided by Banca d'Italia-Consob. Our data sources identify the top shareholders and the size of their holdings. Typically, top shareholders are either the majority shareholder or the members of controlling coalitions, complemented by other large (>1%) block-holders. We set outsiders' share equal to the difference between the total number of voting shares and the sum of the top shareholders' holdings.

Knowing both their identity and their shareholdings, we calculate the voting power indexes for buyers, sellers, and outsiders using an algorithm described in Gambarelli (1996). We then compute $\bar{v}_s$ and $\bar{v}_b$, which measure the transfer of voting power implied in the block transaction relative to the voting power of one share traded by outsiders.

4.2. Descriptive statistics

Below, we measure both price premium and SBP and analyze how they vary with the size of the transaction, which averages 20.4% of voting shares. We also compare price premiums in our sample to those found by BH.[9]

The average per-share price in the block is 27.4% higher than the posttransaction market price (Table 1).

As expected, the premium is larger when larger blocks are traded. When the block contains more than 10% of voting shares, the average premium is 31.1%, whereas for blocks smaller than 10%, it falls to 23.6%. The quartile distributions yield further

[7] Extreme observations are defined as those observations for which the price premium is greater than 3 or smaller than −0.75. In other words, observations are excluded if the price paid for one share in the block is more than four times or less than one quarter than the corresponding market price observed after the transaction has occurred.

[8] These features are common to a number of industrial and developing countries, primarily not part of the Anglo-American legal tradition (La Porta et al., 1999).

[9] For detailed studies of control transfers in listed Italian companies, see Caprio and Floreani (1996) for 1970–1991 and Bianchi, Casavola, and Cipolletta (1996) for 1990–1995.

Table 1
Post- transaction premiums

	Cases	Mean (S.D.)	First quartile	Median	Third quartile
Price premium					
Full sample	94	0.274 (0.637)	− 0.029	0.083	0.327
Blocks ≥ 0.10	48	0.311 (0.604)	− 0.023	0.121	0.434
Blocks < 0.10	46	0.236 (0.674)	− 0.034	0.068	0.158
Standardized block premium (SBP)					
Full sample	94	0.087 (0.221)	− 0.002	0.005	0.057
Blocks ≥ 0.10	48	0.161 (0.290)	− 0.003	0.021	0.229
Blocks < 0.10	46	0.011 (0.032)	− 0.001	0.002	0.007

This table shows descriptive statistics for the price premium, defined as $(P - P'_c/P'_c)$ and the standardized block premium, defined as SBP $= \frac{(P-P'_c)N^T}{E'}$. The symbol P denotes the price paid for a share in the block, $P'_c(E')$ is the market value of a (all) common share(s) after the transaction and N^T is the number of shares traded in the block. The market price after the transaction is computed as an average of daily prices in the interval $[t+7, t+30]$ where t is the announcement date. Both premiums are reported for the whole sample as well as for blocks larger–equal than or smaller than 10% of common shares.

information. First, median values are systematically lower than the corresponding means, suggesting that the distributions are positively skewed with a limited number of blocks commanding a very high premium. This explains why we also make use of median values to perform our simulations in Sections 4.4 and 4.5. Furthermore, first quartiles are always negative, implying that there is a nontrivial number (30.9%) of cases where the block is traded below the market price. This result also holds when only large blocks are considered. Finally, third quartiles look high, both in absolute and in relative terms (43.4%) for the subsamples including only larger blocks. As expected, it is here that a significant number of large premiums can be found. By comparison, BH had a sample with a lower mean and a higher median price premium (20.4% and 15.7%, respectively), and 20% of blocks traded at a discount to the post- announcement exchange price. Our mean SBP is also larger (8.7%) than BH's estimate (4.2%). Note that 8.7% is the estimate of private benefits from control in Italian companies according to BH's method, which sets private benefits equal to block transaction premiums.

In our restricted model (Eq. (4)), block premiums are entirely due to transfers of voting power alone. It is thus reassuring to observe that block transactions transfer large voting power in our sample. Table 2 shows that the seller's mean power index is almost cut in half (from 0.529 to 0.279) while the buyer's rises dramatically (from 0.040 to 0.326). This is

Table 2
Pre- and post- transaction voting powers (VP) for sellers, buyers, and outsiders

	Mean (S.D.)	
Seller's voting power (φ_s and φ_s')	0.529 (0.471)	0.279 (0.424)
Buyer's voting power (φ_b and φ_b')	0.040 (0.146)	0.326 (0.446)
Outsiders' voting power (ϕ and ϕ')	0.167 (0.319)	0.136 (0.300)

This table reports the average voting power of block sellers (first row), of block buyers (second row), and of outsiders (third row). The second and third columns measure voting power before and after the transaction, respectively. Standard deviations are in parentheses.

associated with a modest fall in outsiders' power index. Block transactions result therefore in more concentrated ownership in our sample.

It will be recalled that $\bar{v}_i$ (with i = s,b) measures the transfer of voting power relative to the outsiders' voting power. Eq. (4) implies that $\bar{v}_s$ should not exceed $\bar{v}_b$ if a transaction has taken place, otherwise the seller's valuation of the block would exceed the buyer's. Table 3 reports information on $\bar{v}_i$ (with i = s,b) to check whether this prediction is borne out by the data. It is reassuring to observe that $\bar{v}_s$ is on average not greater than $\bar{v}_b$. It is indeed smaller even if the difference is not significant at conventional statistical levels. Furthermore, Table 3 also shows there are several cases (42 or 36, depending on the seller's or the buyer's valuation) in which minority blocks are traded in majority-controlled companies ($\bar{v}_i = 0$) and a few (13 or 15) in which minority blocks are traded in companies where outsiders' power index is positive ($\bar{v}_i < 0$).

Finally, Table 4 reports the mean values of all the accounting figures later used to approximate unobservable private benefits. We refer the reader to the legend of Table 4 for details on each variable, and just note here that the ratio of nonvoting to voting shares looks on average rather small (14.4%). Not all firms issue nonvoting shares, however, and for those that do, the average ratio is high (30.8%).

4.3. Private benefits: the role of company size and capital structure

To measure private benefits, we rely on estimates of the parameters in Eq. (10), having substituted Eq. (12) for unobservable control rents, C, and Eq. (13) for the change in company profits, $q' - q$. Because we cannot observe bargaining power, our strategy consists in regressing the SBP on the seller's and the buyer's valuation independently—which represent the left- and the right-hand side of Eq. (10), respectively. In summary, we estimate the coefficients αs and βs in the equations:

$$\begin{aligned}\text{SBP} = {} & \alpha_1 v_s(\text{net worth}) + \alpha_2 v_s(\text{leverage}) + \alpha_3 v_s\left(\frac{\text{nonvoting equity}}{\text{voting equity}}\right) \\ & + \alpha_4 v_s \phi - \beta_1 \chi_s(\phi' - \phi) + \varepsilon_s \end{aligned} \tag{14}$$

$$\begin{aligned}\text{SBP} = {} & \alpha_1 v_b(\text{net worth}) + \alpha_2 v_b(\text{leverage}) + \alpha_3 v_b\left(\frac{\text{nonvoting equity}}{\text{voting equity}}\right) \\ & + \alpha_4 v_b \phi - \beta_1 \chi_b(\phi' - \phi) + \varepsilon_b \end{aligned} \tag{15}$$

with $\varepsilon_s = v_s u - \chi_s u'$ and $\varepsilon_b = v_b u + \chi_s u'$

after having computed the values for v_s, v_b, χ_s, and χ_b. Estimating the same specification twice, on the basis of the seller's and the buyer's valuation, respectively, provides an additional check on the robustness of our empirical findings which, as we will see, are similar across the two regressions.

Table 3
Relative voting power

	Mean	S.D.	Number of cases		
			$\bar{v}_i<0$	$\bar{v}_i=0$	$\bar{v}_i>0$
Seller's relative voting power ($\bar{v}_s$)	0.219	0.409	13	42	39
Buyer's relative voting power ($\bar{v}_b$)	0.253	0.426	15	36	43

This table reports the voting power of one share belonging to the block relative to the voting power of one share held by outsiders. The power of the block is assessed with respect to the seller's power $[\bar{v}_s \equiv (\varphi_s - \varphi'_s - (\phi' N^T / N'_o))]$ in the second row, and to the buyer's power $\left[\bar{v}_b \equiv (\varphi'_b - \varphi'_b - \frac{\phi' N^T}{N'_o})\right]$ in the third row. The block size is N^T while φ'_i, ϕ', and N'_o, respectively, denote the power of the block traders, outsiders' power, and their holdings of common shares after the transaction.

We discuss three technical aspects before commenting on the regression results. Firstly, we limit our analysis to post- announcement premiums because the exchange price should then incorporate new information on profitability (Barclay & Holderness, 1989). Secondly, the market price is averaged to reduce the impact of idiosyncratic liquidity shocks. The dependent variable is thus an average of the standardized premium over Days +7 to +30 after the announcement. Regression results do not significantly change when the average is taken over Days +1 to +7. Premiums are however smaller when measured from $t+1$ to $t+7$ because there is a temporary price increase around the announcement of the block transaction. Thirdly, we compute standard errors using White's consistent estimator of the covariance matrix because heteroskedasticity in the residuals cannot be rejected.

Our econometric results are presented in Table 5. Company net worth as well as nonvoting equity have a positive sign and are statistically significant in all equations. The first result ($\alpha_1>0$) is consistent with previous findings by BH showing that control rents increase with controlled assets. We also investigated whether pyramiding increases private benefits by substituting consolidated net worth and debt to the corresponding company figures, following Nicodano (1998). However, company figures turn out to have higher explanatory power.

The positive coefficient attached to nonvoting equity ($\alpha_3>0$) lends support to the hypothesis that the extraction of private benefits is inefficient and dilutes outside shareholders' property rights. This evidence could be reinforced by the observation of a negative correlation between the amount of the controlling coalition's investment and private benefits, as suggested by Burkart et al. (1998b). However, we cannot measure

Table 4
Balance sheet and ownership data (descriptive statistics)

	Mean	First quartile	Median	Third quartile
Net worth (billions of lire)	407.0	54.7	171.1	439.6
Leverage (%)	69.7	8.1	38.4	84.9
Nonvoting/voting shares (%)	14.4	0.0	0.0	17.3

This table reports descriptive statistics for net worth (first row), leverage (second row), and the ratio of nonvoting to voting shares (third row). Net worth is the sum of the value of outstanding shares and other reserves. Leverage is the ratio of financial debt to net worth. Both figures are computed using book values.

Table 5
Determinants of block premiums and private benefits

Explanatory variables	Parameters	Seller's valuation (Eq. (11))	Buyer's valuation (Eq. (12))
v_i (Net worth)	α_1	0.362(0.108)***	0.339(0.093)***
v_i (Leverage)	α_2	0.005(0.005)	0.007(0.004)*
v_i (Nonvoting/voting shares)	α_3	1.510(0.289)*	1.661(0.340)***
v_i (Outsiders' voting power)	α_4	− 0.189(0.128)	− 0.217(0.082)***
χ_i (Δ Outsiders' voting power)	$-\beta_1$	− 0.551(0.361)	
χ_i (Δ Outsiders' voting power)	β_1		1.062(0.512)**
Adjusted R^2		0.427	0.490
F statistic		18.33[4]	23.34[4]
Breusch–Pagan test		57.81[4]	45.68[4]
Estimates of private benefits (C/E′)			
Mean (%)		28.27	27.01
Median (%)		20.25	19.00

The upper part of this table reports econometric estimates of Eq. (13) and of Eq. (14), with the SBP as dependent variable. The first column lists explanatory variables, and the subscript indicates the seller (s) or the buyer (b). The second column lists the parameter to be estimated, while the third and fourth columns report estimates with standard errors robust to heteroskedasticity in round bracket. The adjusted R^2, F test, and Breusch–Pagan test follow, with degrees of freedom in square brackets. The lower part of the table reports estimates of mean and median private benefits relative to the value of common shares.

* Statistical significance at 10%.

** Statistical significance at 5%.

*** Statistical significance at 1%.

such a regressor, because data on the ownership of nonvoting shares by controlling coalitions are not available.

The coefficient of leverage (α_2) turns out to be positive and statistically marginally significant in the specification based on the buyer's valuation. Yet, it is so small that the influence of leverage on private benefits must be considered negligible. This neutrality of debt can be ascribed to its two-edged nature, as discussed in Section 3: it permits the acquisition of more assets without losing control, but at the same time, it limits discretion in allocating them. Again, this is consistent with previous findings by BH.

Control rents are negatively correlated with outsiders' power index, suggesting that the extraction of private benefits is curbed by outsiders' monitoring. Moreover, the expected change in profits is positively correlated with an increase in outsiders' voting power. This supports the idea that their relevance increases pecuniary benefits. Let us emphasize that outside shareholders in our sample are those who are not considered as the top shareholders by our data sources. Hence, they do not necessarily coincide with the atomistic shareholders of the corporate control literature.

Similar results hold when the sample is extended to include banks and insurance companies. We also ran additional regressions after including industry and/or time dummies to control for time-invariant, industry-specific and general business cycle effects. In all cases, these variables were statistically insignificant. For reason of space, we do not report these results.

4.4. The size of private benefits: sensitivity analysis

In this section, we recover estimates of control rents for our sample on the basis of Eq. (10) and the estimated αs in Table 5.

Estimates of average private benefits can be recovered by using data on corporate financial structure in our sample. The estimates based on mean values of all independent variables (27–28% of the value of voting equity, see Table 5) by far exceed our average block premiums (8.7% for all blocks and 16.1% for blocks larger than 10%, see Table 1). This empirically confirms that block premiums are unreliable measures of private benefits. Surprisingly, mean control rents coincide with our mean price premium in Table 1. This is however pure coincidence, because, as we showed in Section 2, price premiums may under- or overestimate private benefits even when the expected change in profits is equal to 0. This coincidence disappears when we focus on estimates based on median values of all independent variables. Indeed, the median price premium falls to 8.3%, while the median private benefit equals 19–20%.

We propose a simulation, based on the buyer's valuation, to assess how changes in capital structure influence private benefits. In Table 6, we report estimates for alternative values of both the nonvoting/voting equity ratio and leverage, while holding the other explanatory variables to their sample medians. For instance, private benefits increase from 19.0% to 46.5% of the market value of voting shares as the portion of nonvoting equity rises from 0 (first decile) to 0.51 (ninth decile), while leverage is kept to its median value. As already anticipated, the sensitivity to leverage is much smaller.

4.5. The size of private benefits: comparison across estimation techniques in Italy and the United States

We now compare our estimates of private benefits to alternative ones based on the voting share premium in Italy. We also use the insight provided by Proposition 1 to discuss existing estimates for the United States.

Table 6
Private benefits simulations for different financial structures (%)

		Nonvoting/voting shares				
	Percentiles	10	25	50	75	90
Leverage	10	18.91	18.91	18.91	28.27	46.44
	25	18.93	18.93	18.93	28.30	46.46
	50	19.00	19.00	19.00	28.37	46.53
	75	19.11	19.11	19.11	28.47	46.63
	90	19.26	19.26	19.26	28.63	46.79

This table computes the distribution of private benefits for firms characterized by different combinations of leverage and of the ratio of nonvoting to voting shares. Percentiles are drawn from the actual distribution of these two financial variables in our sample. Simulations are based on the estimated parameters for buyer's valuation.

Our estimates for average control rents in Italy are close to those of Zingales (1994), who obtained them using both a different sample and another estimation technique.[10] This may appear comforting at first sight, because they are based on two very different samples: our method selects companies which experienced block transactions, while he selects companies with nonvoting shares outstanding. Hence, complementary methods seem to give converging results. Unfortunately, this is not completely true because the mean fraction of nonvoting shares in our sample is 14.4, while it equals 34.9% in his sample. Our implied estimates of private benefits (using mean values for comparability) for such a company would then be 32–33%. Clearly, other less obvious differences in the two samples may reconcile the two estimates. At present, this comparison only confirms that estimated private benefits in Italy are large.[11]

Estimates for the United States are usually found to be lower in the literature. For instance, BH set private benefits equal to the block premium which in turn is 4.22% of the value of equity. On the basis of our analysis, we conjecture that private benefits are a multiple of this figure. Indeed, their blocks are unlikely to transfer full control given that the percentage of common stocks traded ranges from 6.6% to 63% (with a mean of 20.7%), and given the frequency distribution of fractional ownership they report in Table 1 (p. 377).

4.6. Forecasting the price of out-of-sample control blocks

Eq. (10) can be used to price a block of shares of any fractional size if a block-holder is interested in knowing the value of her stake before a negotiation begins. The traditional way of thinking about private benefits only allowed to price the largest block in a given company, because it was thought that smaller blocks only provided an uncertain opportunity to gain control—which is hard to measure.

Pricing requires an estimate of private benefits for the company under consideration. We now show how estimates obtained in the previous section can be translated into an implied per-share premium, given the size of the block and ownership distribution. For simplicity, we maintain the assumption that traders have equal ability to both extract private benefits and manage the company.

Pricing is straightforward when the block that will be traded consists of slightly over 50% of common stock. In this special case, the seller's and the buyer's valuations coincide and no particular distribution of bargaining power need be posited to derive

[10] He finds private benefits equal to 29.2% of pecuniary benefits. Comparison of estimates can be performed as follows. The value of voting shares E is equal to $V + C - P_{nv}N_{nv}$ where V is the amount of pecuniary benefits and the subscript nv refers to nonvoting shares. Hence, $(C/P_eN_e)=(1+(V)/(C))^{-1}(1+(P_{nv}N_{nv}))/(E))$.Using estimates that can be retrieved from his paper $(C/(V)=0.292$; $(P_{nv}/P_e)=0.551$, and $(N_{nv}/N_e)=0.349)$, we obtain $(C/P_eN_e)=0.269$. Estimated private benefits are therefore slightly larger in our sample than in Zingales'.

[11] High private benefits are ascribed—by the recent governance literature—to separation of control rights from cash-flow rights and/or weak legal protection of outside shareholders. Stricter regulation aimed at investors' protection began to be enforced in Italy after the sample period.

Table 7
The per-share premium of a 5% block in three hypothetical firms

	Size (number) of blocks			Price premium (%)
Firm A	51 (1)	5 (9)	4 (1)	0
Firm B	46 (1)	44 (1)	5 (2)	126.7
Firm C	46 (2)	5 (1)	3 (1)	190.0

This table reports in the third column the simulated price premium for a 5% block to three hypothetical firms. Such firms are characterized by a different ownership distribution, which is described in the second column. For instance, Firm B has one block commanding 46% of votes, one block commanding 44%, and two blocks with 5% of votes. In the computation of the price premium, private benefits C are set equal to our median estimate (19%).

estimates of the per-share premium. Given $q = q'$, Eq. (10) can be inverted to find the price premium:

$$\frac{P - P'_e}{P'_e} = v_i \frac{CN'_e}{E'N^T} \tag{16}$$

Unobservable control rents, C, are set equal to the value estimated for companies that have similar net worth, leverage, proportion of nonvoting shares, etc., while v_i, E', and N'_e are observable characteristics of the company under consideration. If this company has the median capital structure, then Table 6 shows that total private benefits should be equal to $C = 19.0\%$. This figure must be substituted in Eq. (16), together with the actual data from the company, namely, $v_i = 1$ and $(N'_e/N^T) = 2$, thus obtaining a price premium of 38.0%. The premium would be much higher if the company had the top 10% proportion of nonvoting shares, rather than the median, because 19.0% would have to be replaced with 46.5%.

When the block does not control the absolute majority of votes, information on relative bargaining power must be used because it is possible for seller's and buyer's valuations to diverge. Moreover, ownership distribution dramatically affects the size of the premium. An extreme example—assuming that bargaining power is equal for the two players—is offered in Table 7, where the per-share premium attaching to a 5% block is related to the pre- transaction distribution of ownership in three hypothetical companies. In Firm A, the premium is obviously 0, because the top shareholder already owns the majority of votes. In Firms B and C, the premiums are large because the traded block is strategically important. The increasing size of the premium is explained by the greater probability of the block's being pivotal in the case of Firm C. This example suggests the relevance of relying on voting power rather than on the fractional size of the block, as the price premium on a 5% block may vary from 0% to 190% depending only on ownership structure.

5. Summary and conclusions

We have shown that average premiums in block transactions exceeding a certain fractional size do not measure private benefits. A simple model has indeed highlighted conditions ensuring that block premiums understate the size of private benefits unless 51% of votes are transferred. Econometric results confirm that such understatement is empirically relevant (16.1% instead of 27%). We are able to avoid this problem by

accounting for the strategic importance of the block, which depends on the distribution of shareholdings.

Private benefits in Italy turn out to be a large proportion of the value of voting equity, especially with respect to the United States. While part of this difference may be ascribed to worse investor protection, it is likely that accounting for the voting power of the traded block would result in an upward revision of the estimate for the United States.

Econometric estimates of the sensitivity of private benefits to capital structure can be used to forecast the price of blocks that are not part of the original sample. We provide an example, showing that the same 5% block can indeed be traded at a price premium which ranges from 0% to 190.0%, depending on the distribution of shareholdings. Our example suggests that the fractional size of the block can be a very misleading indicator of strategic relevance, and therefore, of value. In practical applications of our method, it is however necessary to obtain information on both the traders' real bargaining power and the buyer's ability to increase company profits, to achieve reliable price forecasts.

Our results uncover a positive and large correlation between private benefits and the proportion of nonvoting equity, which cannot be ascribed either to an increase in net worth or to a decrease in outsiders' power, because both are controlled for. This correlation supports the view that the extraction of control rents is socially inefficient (Burkart et al., 1998a). Other results confirm existing evidence, namely, that private benefits increase with the value of company assets and are insensitive to leverage. This is consistent with the twofold nature of debt, which allows the borrower to acquire more assets without losing control but limits his or her discretion.

Our empirical analysis should be considered as a first application of our new method, because it uses only one measure of strategic relevance and one specification for both control benefits and the expected change in profits. Further research should check the robustness of our estimates by experimenting with available alternatives.

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