

UNIVERSITA' CATTOLICA DEL SACRO CUORE

WORKING PAPER

DISCE

Dipartimenti e Istituti di Scienze Economiche

Shareholders' Agreements and Voting Power
Evidence from Italian Listed Firms

Angelo Baglioni

IEF0081 - May - 2008



UNIVERSITA' CATTOLICA DEL SACRO CUORE
- Milano -

**QUADERNI DELL'ISTITUTO DI
ECONOMIA E FINANZA**

Shareholders' Agreements and Voting Power
Evidence from Italian Listed Firms

Angelo Baglioni

n. 81 - maggio 2008



Quaderni dell'Istituto di Economia e Finanza
numero 81 maggio 2008

Shareholders' Agreements and Voting Power
Evidence from Italian Listed Firms

Angelo Baglioni (*)

(*)Istituto di Economia e Finanza, Università Cattolica del Sacro Cuore,
Largo Gemelli 1 – 20123 Milano, e-mail: angelo.baglioni@unicatt.it

Comitato Scientifico**Redazione**

Dino Piero Giarda
Michele Grillo
Pippo Ranci
Giacomo Vaciago

Istituto di Economia e Finanza
Università Cattolica del S. Cuore
Largo Gemelli 1
20123 Milano
tel.: 0039.02.7234.2976
fax: 0039.02.7234.2781
e-mail: ist.ef@unicatt.it

* Esemplare fuori commercio per il deposito legale agli effetti della Legge n. 106 del 15 aprile 2004.

* La Redazione ottempera agli obblighi previsti dalla Legge n. 106 del 15.04.2006, Decreto del Presidente della Repubblica del 03.05.2006 n. 252 pubblicato nella G.U. del 18.08.2006 n. 191.

* I quaderni sono disponibili on-line all'indirizzo dell'Istituto <http://www.unicatt.it/istituti/EconomiaFinanza>

* I *Quaderni dell'Istituto di Economia e Finanza* costituiscono un servizio atto a fornire la tempestiva divulgazione di ricerche scientifiche originali, siano esse in forma definitiva o provvisoria. L'accesso alla collana è approvato dal Comitato Scientifico, sentito il parere di un referee.

SHAREHOLDERS' AGREEMENTS AND VOTING POWER
Evidence from Italian Listed Firms

Angelo Baglioni

Abstract. This work provides an empirical investigation of shareholders' agreements signed in Italy over the last decade. The focus is on the impact of agreements on the voting power (Shapley value) of participants. The evidence shows that agreements produce a remarkable reshuffling of voting power. Two views are confronted. First: agreements allow the largest shareholder to increase his power beyond his own voting rights, exploiting a leverage effect. Second: agreements are a way to share control among a coalition of large shareholders, thus limiting the ability of the first one to extract private benefits of control. The leverage effect seems to prevail at lower levels of ownership concentration, while the shared control view works better at higher levels of ownership concentration. Supermajority rules – a tool to reach a more balanced distribution of power – are more likely to be adopted when the first owner has a larger equity stake.

Keywords: Corporate governance; shareholders' agreements; large shareholder; voting power; one-share-one-vote.

JEL Code: G3

1. Introduction

The literature on corporate governance has recently begun to analyze the strategic interaction among multiple large shareholders¹. This approach goes beyond the more traditional “large shareholder” framework, where the ownership structure is made up of one dominant owner and many small dispersed investors². It gives a deeper understanding of the ways in which agency issues – due to the separation between ownership and control – are tackled in corporations with a significant level of ownership concentration.

This work contributes to this literature by providing an empirical analysis of shareholders’ agreements: these are contracts through which some large shareholders bind themselves (for a pre-specified period) to coordinate their voting behaviour in the general shareholders’ meeting. In Italy – the country analyzed here – agreements have become widely used in recent years. They have a quite significant presence also in other European countries and in the US.³

Do agreements worsen or improve corporate governance? Two views are confronted. Under the first one (labelled “leverage” here), agreements are seen as a device to deviate from the one-share-one-vote principle: the idea is that an agreement enables the dominant shareholder to increase his power beyond that implied by his own voting rights, thus making it easier the extraction of private benefits of control. Following this approach, agreements play the same role as pyramids and dual-class shares. Under the second view (labelled “shared control” here), agreements are a way to form a coalition of large shareholders, sharing control over firm’s assets: by reaching a more balanced distribution of power among participants, the first owner limits his ability to take decisions in his own exclusive interest (this effect is even stronger when supermajority rules are applied). Following this approach, agreements are a way to commit to a lower extraction of private benefits of control, playing a role similar to other corporate governance institutions – like independent directors and audit committees⁴.

In order to verify which of these two views is more empirically grounded, I analyze a sample of agreements signed by shareholders of Italian listed companies over the last decade. They include a binding provision to coordinate participants’ votes in the shareholders’ meeting and/or to achieve a specific composition of the Board of Directors. The analysis is focussed on the impact of

¹ The empirical relevance of companies with multiple large shareholders is documented (among others) by Laeven – Levine (2008) and Faccio – Lang (2002). Further references to the theoretical and empirical literature are given below (Section 3).

² See for example: Shleifer – Vishny (1986) and Burkart – Gromb – Panunzi (1997).

³ EU (2007) provides data for the European countries (summarized in Section 3 below). Gomes – Novaes (2005) report some information for the US: in a random sample of 115 public firms announcing privately negotiated block transactions, they find the presence of agreements in 46% of them.

⁴ The literature on board structure stresses the role of such institutions in limiting the agency costs due to the separation between ownership and control. Some references are provided in Baglioni (2008).

agreements on the voting power of participants, measured by their Shapley value: such impact crucially depends on the equity holdings of participants and of all the other shareholders, together with any supermajority rule governing the decision process taking place among participants. As far as I know, this is the first study taking this approach in analysing shareholders' agreements – and more broadly the strategic interaction among large shareholders.

The evidence shows that agreements produce a remarkable reshuffling of voting power, weakening the link between voting rights and voting power. The leverage hypothesis works better for lower levels of ownership concentration, while the shared control view is more supported when ownership concentration is higher. The rationale behind this result is quite intuitive: a first owner with a small equity stake may want to exploit the leverage effect to strengthen his power; to the contrary, a first owner with a large equity stake may have the opposite need, namely to limit his own power in order to commit to a lower extraction of private benefits. The likelihood that a supermajority rule is included in an agreement contract is increasing in the first owner's share of equity: thus the shared control hypothesis is confirmed to be more realistic for higher levels of ownership concentration.

The paper is organized as follows. The next section provides some institutional information. Section 3 discusses the two hypotheses to be tested: *leverage* versus *shared control*. Section 4 provides the empirical evidence and Section 5 summarizes the main results. The Appendix presents some robustness checks and a list of the agreements included in the sample.

2. Institutional background

Shareholders' agreements have become increasingly popular in Italy. Between 1990 and 2006, the share of companies controlled through agreements over total listed companies has increased from 18% to 22% in value – and from 5% to 11% in number (see Bank of Italy, 2007). Agreements are regulated by the Italian “Consolidated Law on Finance”.⁵ This imposes a disclosure requirement on shareholders of listed companies: agreements must be notified to Consob and published in abridged form in the daily press⁶. It also sets a limit – three years – to the duration of fixed-term agreements, which are renewable; most contracts do fix a three-year term⁷.

The most relevant clauses frequently included in agreements are the following. *Voting*. Participants are committed to meet before any shareholders' meeting and to reach a binding decision about the way of exercising their voting rights. This coordination usually takes place in a

⁵ Legislative Decree no.58 of 24 February 1998, articles 122-123.

⁶ Consob is the Italian Authority on Financial Markets. The disclosure requirement has been detailed by Consob in its Regulation no.11971 of 14 May 1999 (articles 127-131). Extracts of the agreements are publicly available at Consob web-site (<http://www.consob.it>).

⁷ Contracts may also be concluded for an indeterminate period; in this case a party may withdraw by giving a six month notice.

body called “General Meeting/Managing Committee” (hereafter “Committee”) of the agreement, where a decision is passed if it is supported by those participants owing – at least – the simple majority of voting shares involved in the agreement. Sometimes a supermajority – even unanimity – is required.

Consulting. Participants are committed to consult among themselves, in order to possibly reach a common way of voting in shareholders’ meetings, but they are not committed to reach a binding decision.

Board composition. The composition of the Board of Directors is agreed upon. More specifically, each participant is given the right to indicate a number of Directors. Sometimes some voting rules are also agreed upon, requiring that all relevant decisions of the Board be taken by a supermajority.

Transfer restriction. Trades on shares involved in the agreement are restricted. Very often pre-emption rights are given to participants.

3. Why do shareholders sign agreements? Two competing hypotheses

In this work I try to identify how the allocation of voting power among shareholders is reshaped through agreements. To this aim, the “voting power change” (VPC) for each participant in an agreement is defined in the following way. First, his “voting power *outside* agreement” is the probability of being pivotal in the general shareholders’ meeting, absent any agreement: the indicator used here is the Shapley-Shubik power index for “oceanic” games, which allows for the presence of an “ocean” of small shareholders. Second, the “voting power *inside* agreement” is the probability of being pivotal in the decision making process taking place within the agreement: the indicator used here is the Shapley-Shubik power index for finite-person voting games applied to the relevant governing body of the agreement. Third, the VPC of each participant is defined to be the difference between his voting power *inside* agreement and his voting power *outside* agreement (some examples are provided below)⁸.

The empirical analysis of this work is focussed on agreements such that the voting rights of their participants sum up to the absolute majority of total voting shares. Consequently all relevant corporate decisions – that should be taken by the general shareholders’ meeting – are *de facto* taken within the agreement, with the shareholders’ meeting playing only a formal ratifying role. Then, in general, the redistribution of power among the participants to an agreement is not a zero-sum game: their VPCs sum up to a positive number equal to the overall voting power outside agreement of the non-participating shareholders, who loose their power due to the agreement.

⁸ The Shapley-Shubik power index was introduced by Shapley – Shubik (1954). It was extended to "oceanic" voting games by Milnor – Shapley (1978), considering a finite number of players endowed with finite voting weights and a continuous infinity of players (the "ocean") each with infinitesimal weight. See Leech (2001) for a discussion of different voting power indexes and for an application to corporate governance. I will be more specific about the nature of the relevant governing body in the next section, describing the data set.

The purpose of the analysis is to discriminate between two alternative hypotheses.

Hypothesis 1: leverage. The agreement enables the first shareholder (the one owing the largest equity share) to increase his own voting power beyond the level implied by his voting rights. Consider Example 1. A firm has three large shareholders: A, B, and C, whose (voting) equity shares are shown in the second column; the remaining equity (45%) is held by dispersed small investors (the “ocean”). Absent any agreement, the voting powers are those shown in the third column (with the ocean retaining 0.38 as a whole). By signing an agreement including a Voting clause⁹, the three large shareholders are able to dominate the shareholders’ meeting: the agreement can rely on 55% of the voting rights. So shareholders’ decisions are taken within the agreement, where A retains the absolute majority of voting rights. This is an extreme example of the “leverage effect”: thanks to the agreement, the largest shareholder is able to reach a complete control of the firm, while retaining 30% of the voting rights. Other cases may be seen where the leverage effect is at work, although not so strongly. The VPC variable is able to capture the leverage effect, as it is apparent in the last column.

Example 1

Large Shareholder	Share of equity	Voting power outside agreement	Voting power inside agreement	VPC
A	30%	0.39	1	0.61
B	15%	0.13	0	-0.13
C	10%	0.10	0	-0.10

Agreements are one among several ways available to obtain a leverage effect. The recent Report commissioned by the European Commission includes agreements among the Control Enhancing Mechanisms (CEMs) employed by European companies to deviate from the “proportionality” (or “one-share-one-vote”) principle, summarized as follows: “...share capital should normally carry control rights, in proportion to the risk carried” (EU 2007, page 7). In the sample of 464 companies analyzed in the Report, 44% have one or more CEMs, the most common of which are pyramid structures (27% of occurrences of CEMs), followed by multiple voting rights shares (21%) and by shareholders’ agreements (14%). The latter have a quite significant presence in Italy and Belgium, followed by France and Spain.¹⁰ In particular, their relevance has been rapidly growing in the governance of Italian listed companies: Bianchi – Bianco (2007) show that over the last 15 years pyramids have been increasingly substituted by agreements – and by other types of “coalitions” among shareholders – as a way to implement the leverage of control (at the same time, non-voting shares have almost disappeared). Gianfrate (2007) analyzes a sample of Italian listed

⁹ The following three examples rely on this clause. It is easy to make similar examples relying on the Board composition clause. For instance, the same leverage effect shown in Example 1 is obtained if shareholder A is entitled to appoint 3 Directors, while B and C gets 1 Director each.

¹⁰ 23% of the Italian companies included in the sample have shareholders’ agreements; the percentage is 31% for Belgium, 18% for France and 13% for Spain.

companies, finding that agreements are typically used to get a leverage effect (measured as the ratio between board rights and voting rights), enjoyed mostly by the first shareholder; he also finds that the announcement of a new agreement is a “bad news” for the stock market.

Following this approach, agreements may be seen as a way through which a dominant shareholder increases his ability to extract private benefits of control – or equivalently he reduces the cost of achieving the control of the firm¹¹.

Hypothesis 2: shared control. The agreement allows the first shareholder to limit his own voting power to the advantage of other large shareholders, achieving a more balanced distribution of power; since the agreement increases his need to find support by some other shareholders in the decision making process, the first shareholder commits to share control with them. Consider Example 2: those who gain from the agreement are the second and third large shareholders, while the first one loses some voting power; as a result, the voting power is evenly allocated under the agreement. Example 3 provides a case where the redistribution of power is even stronger, assuming that the agreement contract includes a unanimity clause: a decision is passed only if all of the three participants agree. The outcome is that the first shareholder gives up his full power and accepts an evenly distributed power. This is an extreme example: other supermajority rules – milder than unanimity – lead to similar though weaker redistributions of power. The last column shows how this effect of agreements is captured by the VPC of participants.

Example 2

Large Shareholder	Share of equity	Voting power outside agreement	Voting power inside agreement	VPC
A	30%	0.37	0.33	-0.04
B	20%	0.20	0.33	0.13
C	15%	0.18	0.33	0.15

Example 3

Large Shareholder	Share of equity	Voting power outside agreement	Voting power inside agreement with unanimity clause	VPC
A	55%	1	0.33	-0.67
B	10%	0	0.33	0.33
C	5%	0	0.33	0.33

The rationale behind this hypothesis may be found in the contributions to the theory of corporate ownership structure, stressing the role of multiple large shareholders in reducing the

¹¹ The value of voting rights increases by deviating from the one-share-one-vote rule: this is a well documented phenomenon, and it is particularly relevant in Italy. Zingales (1994) shows that the value of control is extremely high in Italian listed companies: voting shares trade at an 82% premium over non-voting shares. Nicodano (1998) provides an explanation for this high premium, pointing to the combined leverage effects of pyramids and non-voting stock. Nenova (2003) shows how the value of control – measured by the price difference between multiple- and limited-voting shares – varies considerably across countries.

agency costs due to the ability of the dominant shareholder to extract private benefits of control – the assumption underlying this approach is that such costs are paid by the dominant shareholder himself through a higher cost of raising external equity. Following the seminal work of Jensen – Meckling (1976), Pagano – Roell (1998) analyze the choice of an entrepreneur, who has to decide how to allocate equity stakes to external investors: in their model, “the ownership structure acts as a pre-commitment device to limit agency costs”; in particular, the entrepreneur allocates shares to large minority shareholders, in such a way that they have the right incentive to monitor himself. Gomes – Novaes (2005) highlight the potentially positive role of bargaining between large shareholders sharing control over firms’ assets: this may prevent decisions that benefit only the controlling group and harm minority shareholders (although bargaining problems might result in corporate paralysis as well). Bennedsen – Wolfenzon (2000) stress that a controlling coalition of shareholders may have a larger cash flow stake than an individual owner, inducing it to internalize the consequences of its actions; the same incentive alignment argument points to a positive role for shareholders’ agreements.¹²

On empirical grounds, Volpin (2002) finds that shareholders’ agreements in Italian listed companies lead to a better governance (measured by the sensitivity of managerial turnover to firm performance) and to a higher Q ratio. A more even distribution of equity stakes among several large shareholders exerts a positive effect on firm value: this is shown by Laeven – Levine (2008) using a large sample of companies listed in 13 European countries, and by Maury – Pajuste (2005) for Finnish listed firms (the latter find a negative relation between the Shapley value of the largest shareholder and firm value). The positive role played by multiple large shareholders is also shown by Faccio – Lang – Young (2001) for a large sample of European companies, finding that their presence increases dividend rates: this is taken as evidence of lower expropriation of small shareholders.

Summing up, by following the shared control approach agreements may be seen as a device to commit to a lower extraction of private benefits of control, thus enhancing firm value.

4. Empirical evidence

4.1 Data and methodology

The data set was built up by making use of agreements signed by shareholders of Italian listed companies in the last decade. The information (extracts available at the Consob web-site) is updated as of July 2007. Only those agreements where at least one of the following two clauses is present

¹² The role of multiple large shareholders is also analyzed by Bloch – Hege (2003). In their model two block-holders compete for control, by committing to a maximal amount of private benefits. A more even distribution of equity stakes between them leads to a lower extraction of private benefits by the controlling party.

have been selected: *Voting* and *Board composition*. All the agreements included in the sample are such that the voting rights of their participants sum up to the absolute majority (more than 50%) of total voting shares – with a few exceptions where participants altogether hold a strong relative majority. Therefore when the Voting clause is present, the agreement is supposed to be able to have his decisions passed in the general shareholders’ meeting. When the Board composition clause is present, the list of Directors presented by the agreement is supposed to be approved in the shareholders’ meeting.

The information used for computing the voting power *outside* agreement is the share of voting equity owned by each participant as well as by all other relevant shareholders (namely those with an equity stake of at least 2%). When the Voting clause is present, the voting power *inside* agreement is the voting power index of each participant in the Committee of the agreement: the information used here is the equity shares owned by all participants together with any supermajority rule (if present). When the Voting clause is not present but the Board composition clause is present, the voting power *inside* agreement is the voting power index of each participant in the Board of Directors: here the relevant information is the number of Directors a participant is entitled to appoint, together with any supermajority rule (if present)¹³.

It is important to note that the participants’ voting powers in the Committee and in the Board of Directors show a strong linear relationship: a correlation coefficient equal to 0.88.¹⁴ This allows to say that the VPC variable is built up in a consistent way across the whole sample. Indeed, when both clauses – Voting and Board composition – are present, they are typically used in a very consistent way, pointing to the same direction in the redistribution of power among shareholders. Fig.A-1 (see the Appendix) provides further support to this statement: the VPCs computed by using the voting powers in the Committee and in the Board are plotted against each other, showing a strong linear relationship.

The number of agreements initially considered was 102. However, for some of them (28) the VPC turns out to be zero for all the parties involved; most often, in such cases there is a dominant shareholder owing the absolute majority of equity, so that his voting power is 1 (with all the other parties having zero power) both outside and inside the agreement. These cases have been discarded, since they bear no interest for the issue at hand: of course, these agreements have been signed for other purposes (e.g. restricting ownership transfers) rather than for altering the voting power of

¹³ The information on relevant shareholders is available at Consob web-site. The Shapley-Shubik power indexes for oceanic and finite-person games have been computed by using the algorithms (*ssocean* and *ssdirect* respectively) available at Leech’s web-page: <http://www.warwick.ac.uk/~ecaee/>. See Leech (2002) for computation methods of voting power indexes.

¹⁴ This value has been computed for those agreements – involving 132 participants altogether – for which it is possible to compute the VPC in both ways: by applying the Shapley-Shubik index to the Committee and to the Board as indicator of the voting power inside agreement.

participants. In addition, 3 agreements involve only local authorities as owners of public utilities: these have been discarded too, since our interest is on the interaction among private shareholders. As a result, the following analysis is carried out on a sample of 71 agreements¹⁵, for a total of 381 participants: the latter is the number of observations available for the econometric analysis.

4.2 *The impact of agreements: reshuffling shareholders' voting power*

A look at the data is quite suggestive, pointing to a remarkable impact of the agreements on the distribution of voting power among shareholders. In Fig.1 the voting power *outside* agreement is plotted against the share of equity held by each participant in an agreement of the sample. It is easy to see that the voting power in the general meeting of a corporation increases rapidly and quite regularly as the equity stake of a shareholder grows; of course, any shareholder holding more than 50% of equity has a voting power equal to 1.

More interestingly Fig.2 shows that the picture becomes quite different when looking at the voting power *inside* agreement: the reshuffling of power is remarkable, as it is apparent by comparing the two figures. Fig.2 also highlights that the agreements make the link between voting power and ownership share become weaker; notice for example that a relevant number of participants with an equity stake lower than 50% get a voting power of 1, while someone else owing the absolute majority of equity gets a power lower than 1. A crude way of measuring this weakening of the relationship between power and ownership is by computing the correlation coefficient between the two variables: this turns out to be 0.88 for the voting power outside agreement and 0.68 for the voting power inside agreement.

Finally, in Fig.3 the VPC is plotted against share ownership: for each participant, the VPC is just the vertical difference between his triangle in Fig.2 and his square in Fig.1. As it is apparent, no simple relationship emerges between VPC and ownership share.

¹⁵ 43 of them have the Voting clause (of which 22 having the Board composition clause as well), and 28 have the Board composition clause only. A list of these agreements is provided in the Appendix.

Fig. 1- Voting power outside agreement

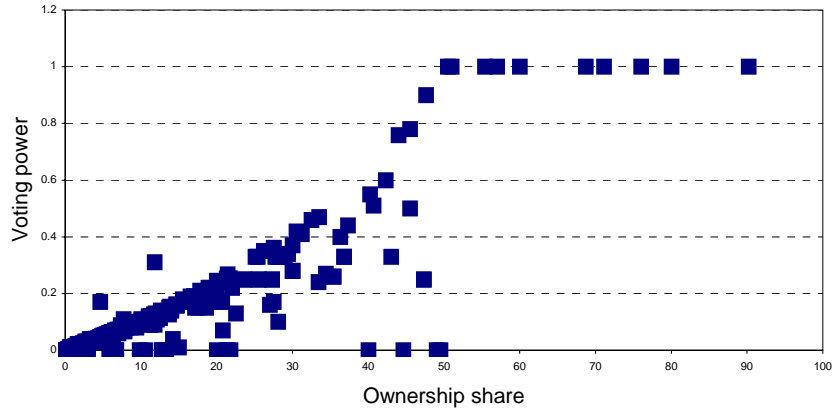


Fig. 2 - Voting power inside agreement

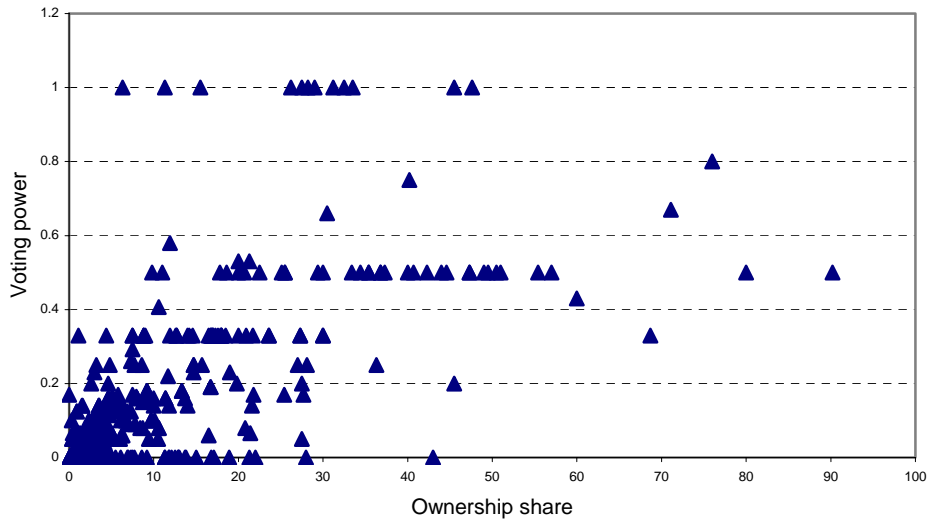
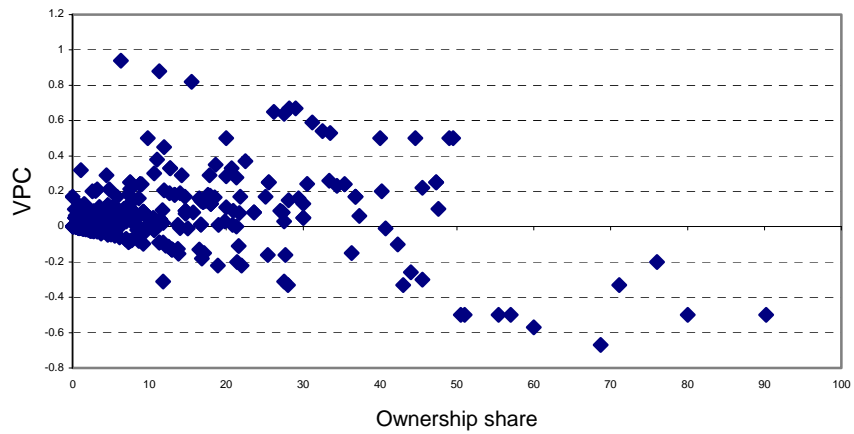


Fig. 3 - Voting power change



4.3 Regression analysis

Despite the complexity of the relationship between VPC and ownership share, it is possible to test which of the two hypotheses discussed in Section 3 is supported by the data collected in this work. This will be done by focussing on the VPC of the first shareholder versus the VPCs of all the other participants in an agreement. This analysis should enable us to say whether the reshuffling of voting power implemented through the agreements favours the first shareholder (*leverage*) or the other participants (*shared control*).

The following equation (Model 1) has been estimated:

$$VPC = c + \beta_1 S + \beta_2 D1 + \beta_3 D1 \cdot S + \varepsilon \quad (1)$$

where VPC is the voting power change of each participant in an agreement, S is his (percentage) share of equity, $D1$ is a dummy variable taking value 1 when a participant is the first shareholder in the firm where an agreement has been signed and zero otherwise.

**Table 1 – VPC and equity share:
first shareholder vs. others (Model 1)
OLS regression results**

Coefficient	Estimated Value (robust std.err.)*	p -Value
c	1.75 (0.75)	0.02
β_1	0.67 (0.15)	0.00
β_2	32.55 (4.49)	0.00
β_3	-1.60 (0.20)	0.00

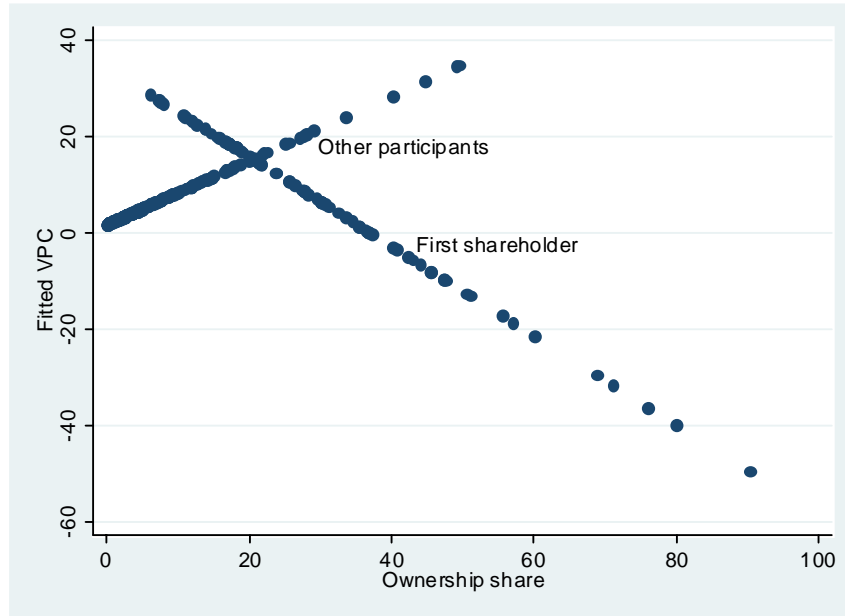
Dependent variable: $VPC(\%)$. N.Obs.: 381. R^2 : 0.23.

* Standard errors robust to heteroskedasticity: HC_1 are shown in the table; HC_2 and HC_3 are only slightly different (see MacKinnon – White 1985). The same holds for standard errors adjusted for clustering, where each agreement is a cluster (see Rogers 1993 and Williams 2000).

The results shown in Table 1 are quite suggestive. All coefficients are highly significant and provide the following information. The first shareholder enjoys a large VPC for low levels of ownership (the intercept for his estimated regression line is $1.75+32.55=34.3$), but his gain gets lower as his ownership stake increases (the slope of his line is $0.67-1.60=-0.93$, implying that a 1% increase in ownership share leads to an almost 1% reduction of VPC). The opposite holds for all the other participants: their VPC is quite small for low levels of ownership (intercept=1.75) and it increases as they retain more equity (slope=0.67). These patterns of the VPC are clearly illustrated by the fitted values plotted in Figure 4.¹⁶

¹⁶ These results are robust to other specifications of the model. The Appendix provides two alternatives, where families and banks are given explicit consideration: neither of them leads to different conclusions from those presented here.

Figure 4 – Fitted values for VPC (Model 1)



A simulation of Model 1 may help interpreting the regression results. Table 2 focuses on some interesting examples, where VPCs are computed by using the estimated parameters shown in Table 1. The first column shows a typical case of low ownership concentration (by Italian standards), with the first owner holding a 10% equity stake and any other participant holding (at most) a 5% stake: the VPCs are such that the former is able to further increase his own voting power relative to other shareholders; in this case the leverage effect is at work. The last column shows the opposite case, namely a representative firm with a high level of ownership concentration, say two large shareholders with 40% and 20% stakes respectively: it is apparent that the former loses some voting power in favour of the latter, leading to a more balanced distribution of power; this case supports the shared control hypothesis. The two intermediate columns refer to the median and mean ownership stakes held by the first and second shareholders of the firms included in the sample¹⁷.

The message given by the above results is quite clear. For low levels of ownership concentration, the reshuffling of voting power due to an agreement favours the first shareholder: this evidence points to the leverage effect. The opposite happens for high levels of ownership concentration, where the other shareholders benefit from the redistribution of power: here the shared control hypothesis receives an empirical support.

¹⁷ The equity stakes of the two largest participants in the agreements included in the sample are positively related to each other (their correlation coefficient is 0.39): thus the reasoning in the text – where *both* the first participant and (at least) another one are supposed to hold either a low or a high share of equity – is correct. Moreover, most agreements involve only a small number of participants (73% of the agreements in the sample involve up to 5 shareholders, as it is apparent from Figure A-2 in the Appendix), where the second large shareholder plays quite a relevant role: on one hand he is in the best position to share control with the first owner, on the other hand he has much to lose from the leverage effect. This justifies the focus on the second shareholder in the simulation (in addition to the first one, of course).

Table 2 – Simulation: some examples

	Ownership share	VPC	Ownership share (1)	VPC	Ownership share (2)	VPC	Ownership share	VPC
First shareholder	10	25	26	10.1	30	6.4	40	-2.9
Other participants	5	5.1	11	9.1	14	11.1	20	15.1

(1) Ownership shares are the *median* for the first shareholders (first row) and second shareholders (second row) participating in the agreements included in the sample.

(2) Ownership shares are the *mean* for the first shareholders (first row) and second shareholders (second row) participating in the agreements included in the sample.

One may wonder which of the two situations is prevalent in the sample. The answer is that both have a significant presence and none of them prevails. As Table 2 shows, at their median level of ownership the first two shareholders receive roughly the same VPC (around 9-10%), so that neither leverage nor shared control is prevalent. The cumulated frequency reported in the Appendix (see Figure A-3, whole sample) shows that, on one side, roughly 40% of the agreements included in the sample have a first shareholder with a stake lower than 20%: in this region the leverage effect prevails, with the first shareholder receiving the largest gain of voting power. On the other side, almost 40% of first shareholders in the sample have equity stakes larger than 30%: here the shared control effect becomes prevalent, with the first shareholder receiving a very small or even negative VPC.

4.4 Supermajority rules

As discussed in Section 3, a way to achieve a more balanced distribution of power among large shareholders is to include a supermajority rule in the agreement contract. Intuitively a supermajority rule limits the power of the first shareholder, since he has to find support by some other participants in the agreement (all of them in case of a unanimity clause) to be able to have his decisions passed. We saw in Example 3 a case where a unanimity clause produces a remarkable reduction of voting power of the first shareholder, in favour of the other two participants. Even milder supermajority rules have the effect of limiting the power of the first shareholder. Example 4 shows a case where the agreement contract is supposed to include a supermajority rule such that a decision is passed in the Committee only if it is supported by at least 2/3 of the participants' voting rights (37% of equity): the effect of the supermajority rule is that the first shareholder's voting power inside the agreement is limited to 0.67 instead of 1, which would obtain with a simple majority (28% of equity).

Example 4

Large Shareholder	Share of equity	Voting power outside agreement	Voting power inside agreement with 2/3 supermajority (VPC)	Voting power inside agreement without supermajority (VPC)
A	30%	0.39	0.67 (0.28)	1 (0.61)
B	15%	0.13	0.17 (0.04)	0 (-0.13)
C	10%	0.10	0.17 (0.07)	0 (-0.10)

Since supermajority rules are used to achieve a more balanced distribution of power among the large shareholders participating in agreements, the inclusion of such kind of rules in an agreement contract may be taken as evidence that the first shareholder is willing to share control with some other relevant owners. Then it is interesting to verify whether a higher level of ownership concentration increases the likelihood that a supermajority rule is included in an agreement contract: if this is the case, the above finding that the shared control hypothesis performs better at higher level of ownership concentration receives further support. We get a preliminary positive answer by looking at the cumulated frequency of the first shareholders' holdings (see Figure A-3 in the Appendix): the comparison between the whole sample and the sub-sample, including only the agreements with supermajority rules, definitely points to a higher ownership concentration in the sub-sample.

A rigorous analysis of the link between ownership concentration and supermajority rules is provided by the following probit model (Model 2) and linear probability model (Model 3), which have been estimated over the sample of 71 agreements selected in this work:

$$P(SM = 1|S1) = G(c + \beta_1 S1) \quad (2)$$

$$P(SM = 1|S1) = c + \beta_1 S1 \quad (3)$$

where: $SM = 1$ when an agreement includes a supermajority rule and zero otherwise, $S1$ is the (percentage) share of equity held by the first shareholder participating in each agreement, $G(\cdot)$ is the standard normal c.d.f..¹⁸

¹⁸ An alternative specification has been estimated, where the independent variable is the sum of the equity shares held by the *two* largest shareholders. The regression results are quite similar to those shown in Table 3: the only difference is that the change in probability of supermajority, due to a unit increase of ownership share held by the two largest shareholders together, is 0.55% (instead of 0.65%).

Table 3 – Supermajority and ownership concentration
Regression results

Coefficient	MLE – Model 2		OLS – Model 3	
	Estimated Value (std.err.)	<i>p</i> -Value	Estimated Value (robust std.err.)*	<i>p</i> -Value
<i>c</i>	-0.7910 (0.3008)	0.009	0.1997 (0.1040)	0.059
β_1	0.0170 (0.0084)	0.043	0.0064 (0.0029)	0.033
$\frac{dP}{dS1}$ at $S1=30.3^{**}$	0.0065 (0.0032)	0.043		
Observed <i>P</i> = 0.394				
Fitted <i>P</i> (at $S1=30.3$) = 0.391				

Dependent variable: *SM*. N.Obs.: 71. *Standard errors robust to heteroskedasticity: HC_1 are shown in the table, HC_2 and HC_3 are only slightly different. **30.3 is the average value of *S1*.

The regression results shown in Table 3 confirm the existence of a positive and statistically significant link between the two variables: a one percentage point increase in the ownership share of the largest shareholder leads to a 0.65% increase of the probability that a supermajority rule is included in an agreement contract.¹⁹ This outcome is quite robust and it is supported by both the linear and the probit models: not only they provide the same estimate of the change in probability due to an increase in ownership share, but also the probit model points to a linear relationship between the two variables – as it is apparent from Figure A-4. The goodness-of-fit, measured by the observed and fitted probabilities, is very satisfactory.

The estimated coefficients imply that in a firm with low ownership concentration, say a 10% first shareholder's equity stake, the probability of a supermajority rule being included in the agreement is 26%; this probability is remarkably larger (46%) in firms with high ownership concentration (40% first owner's share of equity), and it doubles (52%) when the first owner holds a 50% equity stake.

Summing up, we may say that a higher ownership concentration leads to a larger probability that an agreement contract includes a supermajority rule, which is used to limit the voting power of the first shareholder in favour of the other participants. This result confirms that the shared control hypothesis receives more empirical support when the ownership concentration is higher.

¹⁹ As it is well known, the estimated coefficients of the probit model cannot be directly given a probability interpretation (contrary to the linear model); so the estimated change in probability due to a unit increase of *S1* (at the average value of *S1*) has been reported in Table 3.

5. Concluding remarks

The link between voting rights and voting power (Shapley value) is severely affected by shareholders' agreements, which produce a redistribution of voting power among participants. The empirical analysis presented in this work delivers a clear result: for low levels of ownership concentration, the reshuffling of voting power favours the first shareholder, while for high levels of ownership concentration it favours the other relevant owners. This outcome is interpreted as follows. When the first shareholder retains a relatively small equity stake (say 10%), he may want to exploit an agreement with other shareholders to strengthen his decision power: in this case the "leverage effect" is the motivation behind the agreement. To the contrary when the first owner has a large stake (say 40%), his position is so strong that he may want to send a signal that he is ready to limit his own ability to extract private benefits of control, in order to reduce agency costs: so he gives up some decision power by sharing control with other participants in an agreement.

This result, obtained by analysing the voting power change of participants in agreements, is confirmed by the analysis of supermajority rules: these are employed to limit the power of the first owner, since a decision is passed only if it is supported by several participants in the agreement (all of them when unanimity is required). The empirical evidence shows that the larger the equity stake of the first owner, the higher the probability that a supermajority rule is included in an agreement contract: again, the "shared control" hypothesis works better for high levels of ownership concentration.

Appendix

Fig. A-1 - Alternative ways of computing VPC

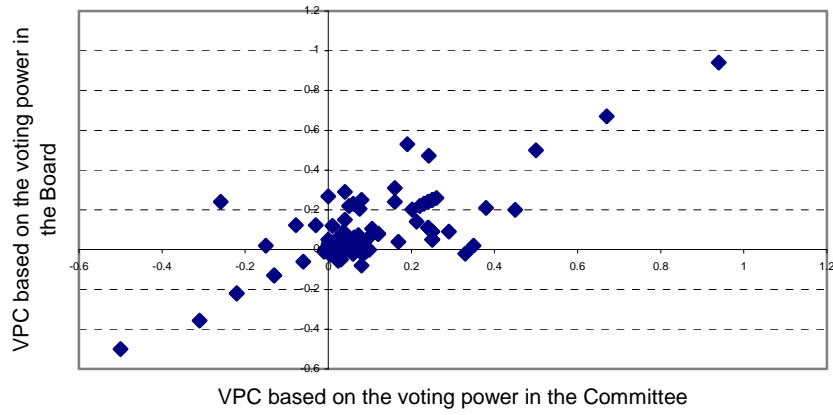


Fig.A-2 - Number of participants in agreements

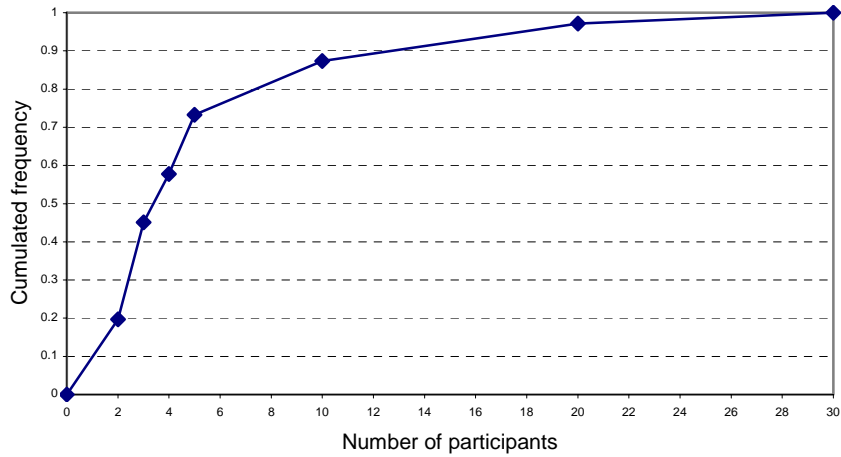
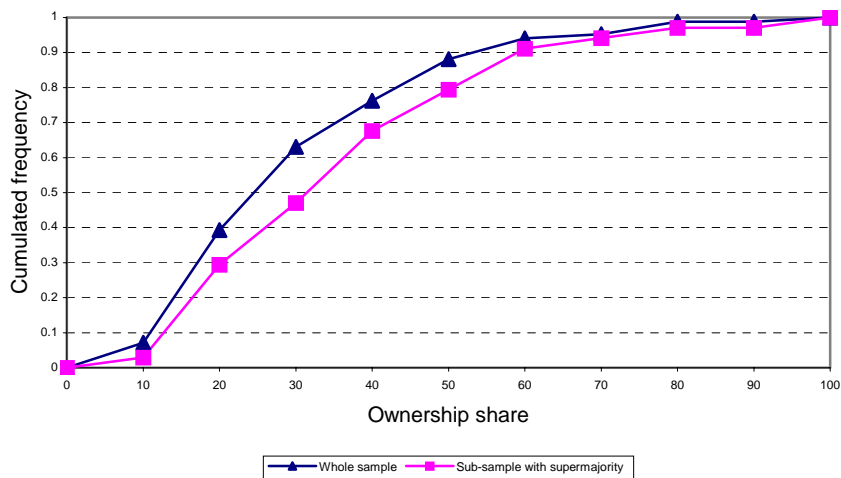
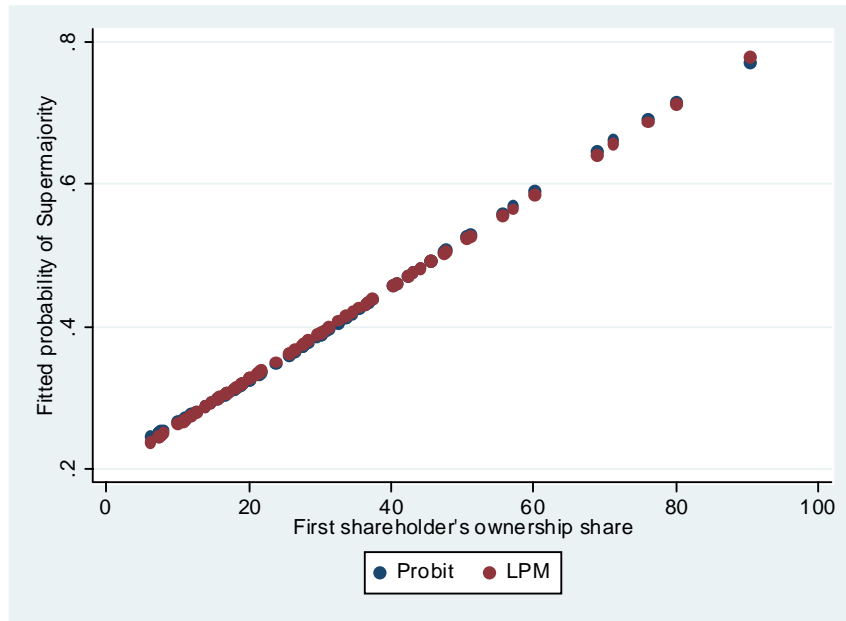


Fig.A-3 - First shareholder's ownership share*



*A similar picture obtains by considering the ownership share held by the two largest shareholders together: the cumulated frequency for the sub-sample lies below that for the whole sample.

Fig. A-4 – Fitted probability of supermajority



Robustness checks: families and banks

In order to test whether Model 1 is robust to the inclusion of other explanatory variables, let us first consider agreements among family members who are large shareholders of the same company: these will be labelled “family agreements”. One might suspect that in this kind of agreements the interaction among participants is somehow different from other agreements. Therefore Model 1 has been modified by distinguishing among four groups of shareholders: a base group including those who are not first shareholders and participate in “not family agreements”, a second group including those who are first shareholders and participate in “not family agreements”, a third group including those who are not first shareholders and participate in “family agreements”, and finally a fourth group including those who are first shareholders and participate in “family agreements”. Then we have to include three dummy variables into the following equation:

$$VPC = c + \beta_1 S + \beta_2 D1NF + \beta_3 D1NF \cdot S + \beta_4 DN1F + \beta_5 DN1F \cdot S + \beta_6 D1F + \beta_7 D1F \cdot S + \varepsilon \quad (A1)$$

where VPC is the voting power change of each participant in an agreement, S is his (percentage) share of equity, $D1NF$ is a dummy variable taking value 1 when a participant is the first shareholder in the firm where a “not family agreement” has been signed and zero otherwise, $DN1F$ is a dummy variable taking value 1 when a participant is not the first shareholder in the firm where a “family agreement” has been signed and zero otherwise, $D1F$ is a dummy variable taking value 1 when a participant is the first shareholder in the firm where a “family agreement” has been signed and zero otherwise.

The estimated coefficients shown in the upper four rows of Table A.1 have the same sign and similar magnitude compared to those shown in Table 1: the patterns of the first and other shareholders’ VPCs – as function of their ownership shares – are fully confirmed for “not family agreements”. Thus the analysis presented in Section 4 is robust to the separate consideration of agreements among family members. None of the coefficients in the lower four rows of Table A.1 is significantly different from zero: this means that it is not possible to detect any specific pattern of the VPC for “family agreements” – neither for the first shareholder nor for the other participants.

Table A.1 – Family vs. not-family agreements (Model A1)**OLS regression results**

Coefficient	Estimated Value (robust std.err.)*	<i>p</i> -Value
<i>c</i>	1.66 (0.68)	0.02
β_1	0.70 (0.17)	0.00
β_2	36.58 (5.88)	0.00
β_3	-1.70 (0.22)	0.00
β_4	0.93 (6.60)	0.89
β_5	-0.20 (0.50)	0.69
β_6	18.55 (15.17)	0.22
β_7	-1.21 (0.76)	0.11

Dependent variable: *VPC*(%). N.Obs.: 381. R^2 : 0.24.

* Standard errors robust to heteroskedasticity: HC_1 are shown in the table; HC_2 and HC_3 are only slightly different. The same holds for standard errors adjusted for clustering, where each agreement is a cluster.

Another robustness check has been done by focussing on agreements where the controlled company is a bank (hereafter “bank agreements”). In Italy banks hold significant equity shares in other companies (both financial and not financial), often retaining control over them through coalitions with other relevant shareholders. Actually some large banks included in the sample (e.g. Mediobanca, Capitalia, Banca Intesa) are quite active in the network of cross-ownerships and cross-directorships involving many important Italian firms.²⁰ Therefore the interaction among participants in an agreement controlling a bank might have specific features. To test whether this is the case, a model similar to (A1) has been estimated, where four groups of shareholders are distinguished: a base group including those who are not first shareholders and participate in “not bank agreements”, a second group including those who are first shareholders and participate in “not bank agreements”, a third group including those who are not first shareholders and participate in “bank agreements”, and finally a fourth group including those who are first shareholders and participate in “bank agreements”. The following equation includes three dummy variables:

$$VPC = c + \beta_1 S + \beta_2 D1NB + \beta_3 D1NB \cdot S + \beta_4 DN1B + \beta_5 DN1B \cdot S + \beta_6 D1B + \beta_7 D1B \cdot S + \varepsilon \quad (A2)$$

where the variable names have the same meaning as above, with “bank” replacing “family”.

The estimated coefficients shown in the upper four rows of Table A.2 have the same sign and similar magnitude compared to those shown in Table 1: the VPC patterns (as function of ownership) are again fully confirmed, both for the first shareholder and for the other participants in “not bank agreements”. Therefore the analysis presented in Section 4 is robust when controlling for “bank agreements”. As for the other coefficients, those of the first shareholder participating in “bank agreements” (β_6 and β_7) are highly significant and point to a VPC pattern similar to that of the first shareholder participating in “not bank agreements” (β_2 and β_3) – although the intercept is remarkably larger. Finally, β_4 and β_5 are not significantly different from zero: apparently “bank

²⁰ See the evidence provided by Santella – Drago – Paone (2006).

agreements” do not differ from others, as far as the VPC of participants other than first are concerned.

Table A.2 – Bank vs. not-bank agreements (Model A2)
OLS regression results

Coefficient	Estimated Value (robust std.err.)*	<i>p</i> -Value
<i>c</i>	1.57 (0.87)	0.07
β_1	0.68 (0.15)	0.00
β_2	30.94 (5.00)	0.00
β_3	-1.59 (0.21)	0.00
β_4	1.23 (1.37)	0.37
β_5	-0.12 (0.37)	0.75
β_6	43.20 (6.64)	0.00
β_7	-1.66 (0.24)	0.00

Dependent variable: *VPC*(%). N.Obs.: 381. R^2 : 0.24.

* Standard errors robust to heteroskedasticity: HC_1 are shown in the table; HC_2 and HC_3 are only slightly different. The same holds for standard errors adjusted for clustering, where each agreement is a cluster.

List of agreements

A list of the agreements analyzed in this work follows. All of them refer to companies listed on the Milan Stock Exchange. The year when each agreement has been signed or renewed is also shown; the information on relevant shareholders (used to compute the voting power indexes) refer to the same year.

A.S. ROMA (2007)	DIGITALBROS (2002)
AEROPORTO DI FIRENZE (2007)	DMAIL (2004)
AIR DOLOMITI (2001)	DUCATI (2006)
ALERION INDUSTRIES (2006)	E-BISCOM (2000)
ARKIMEDICA (2007)	EL.EN (2005)
AUTOSTRADE (2005)	E-PLANET (2001)
BANCA ANTONVENETA (2002)	ESAOTE (2000)
BANCA INTESA (2005)	ESPRINET (2006)
BANCA ITALEASE (2005)	FILATURA DI POLLONE (2004)
BENI STABILI (2007)	GEFRAN (2006)
BIESSE (2001)	GEMINA (2007)
BIOSEARCH ITALIA (2001)	GIM (2004)
BULGARI (2006)	GRANDI NAVI VELOCI (2004)
CALP (2003)	GRUPPO COIN (2006)
CAPITALIA (2007)	IGD (2005)
CASSA DI RISPARMIO DI FIRENZE (2006)	IMMSI (2005)
CSP INTERNATIONAL (2007)	INFERENTIA (2001)
DADA (2005)	ITALFONDIARIO (2001)
DATA SERVICE (2007)	LA DORIA (2006)
DATAMAT (2000)	LA RINASCENTE (1997)
DEA CAPITAL (LOTTOMATICA) (2006)	LINIFICIO – CANAPIFICIO NAZIONALE (2006)

M&C MANAGEMENT E CAPITALI (2006)
 MANULI RUBBER INDUSTRIES (2003)
 MARANGONI (1997)
 MARAZZI (2004)
 MARCOLIN (2004)
 MARIELLA BURANI FASHION GROUP (2006)
 MEDIASET (1996)
 MEDIOBANCA (2007)
 MEDIOLANUM (2004)
 MID INDUSTRY CAPITAL (2007)
 MIRATO (1998)
 MONTANARI (2003)
 OPENGATE (2000)
 PREMUDA (2005)
 PROCOMAC (2005)
 RENO DE MEDICI (2007)
 REPLY (2004)

RETI BANCARIE (2004)
 RGI (2007)
 ROLO BANCA (2000)
 SAVINO DEL BENE (2003)
 SEAT – PAGINE GIALLE (2007)
 SIRTI (2007)
 SNIA (2002)
 TAMBURI INVESTMENTS PARTNERS (2005)
 TAS (2000)
 TELECOM ITALIA (2007)
 VEMER SIBER GROUP (HOPA) (2004)
 ZUCCHI (2006)

References

- Baglioni A. (2008), *Corporate governance institutions as signalling and commitment devices*, Midwest Finance Association 57th Annual Meeting (http://www.mfa-2008.com/papers/Baglioni_MFA.pdf).
- Bank of Italy (2007), *Annual Report for 2006. The Governor's Concluding Remarks*.
- Bennedsen M. – Wolfenzon D. (2000), The balance of power in closely held corporations, *Journal of Financial Economics*, 58, pp.113-139.
- Bianchi M. – Bianco M. (2007), *Italian corporate governance in the last 15 years: from pyramids to coalitions?* mimeo.
- Bloch F. – Hege U. (2003), *Multiple shareholders and control contests*, mimeo.
- Burkart M. – Gromb D. – Panunzi F. (1997), Large shareholders, monitoring, and the value of the firm, *Quarterly Journal of Economics*, August, pp.693-728.
- EU (2007), *Report on the proportionality principle in the European Union*, External study commissioned by the European Commission, Final Report.
- Faccio M. – Lang L. – Young L. (2001), Dividends and expropriation, *American Economic Review*, vol.91(1), pp.54-78.
- Faccio M. – Lang L. (2002), The ultimate ownership of Western European corporations, *Journal of Financial Economics*, 65, pp.365-395.
- Gianfrate G. (2007), What do shareholders' coalitions really want? Evidence from Italian voting trusts, *Corporate Governance*, vol.15(2), pp.122-132.
- Gomes A. – Novaes W. (2005), *Sharing of control versus monitoring as corporate governance mechanisms*, University of Pennsylvania, mimeo.
- Jensen M. – Meckling W. (1976), Theory of the firm: managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics*, 3, pp.305 - 360.
- Laeven L. – Levine R. (2008), Complex ownership structures and corporate valuations, *Review of Financial Studies*, vol.21 (2), pp.579-604.
- Leech D. (2001), Shareholder voting power and corporate governance: a study of large British companies, *Nordic Journal of Political Economy*, vol.27(1), pp.33-54.
- Leech D. (2002), *Computation of power indexes*, Warwick Economic Research Paper No.644.
- MacKinnon J. – White H. (1985), Some heteroskedasticity consistent covariance matrix estimators with improved finite sample properties, *Journal of Econometrics*, 21, 53-70.
- Maury B. – Pajuste A. (2005), Multiple large shareholders and firm value, *Journal of Banking and Finance*, 29, pp.1813-1834.
- Milnor J. – Shapley L. (1978), Values of large games II: oceanic games, *Mathematics of Operations Research*, vol.3(4), pp.290-307.
- Nenova T. (2003), The value of corporate voting rights and control: a cross-country analysis, *Journal of Financial Economics*, 68, pp.325-351.
- Nicodano G. (1998), Corporate groups, dual-class shares and the value of voting rights, *Journal of Banking and Finance*, 22, pp.1117-1137.
- Pagano M. – Roell A. (1998), The choice of stock ownership structure: agency costs, monitoring, and the decision to go public, *Quarterly Journal of Economics*, 113, pp.187-225.

- Rogers W. (1993), Regression standard errors in clustered samples, *Stata Technical Bulletin*, 13, pp.19-23.
- Santella P. – Drago C. – Paone G. (2006), *Who cares about Director independence?*, mimeo.
- Shapley L. – Shubik M. (1954), A method for evaluating the distribution of power in a committee system, *American Political Science Review*, vol.48(3), pp.787-792.
- Shleifer A. – Vishny R. (1986), Large shareholders and corporate control, *Journal of Political Economy*, vol.94(3), pp.461-488.
- Volpin P. (2002), Governance with poor investor protection: evidence from top executive turnover in Italy, *Journal of Financial Economics*, 64, pp.61-90.
- Williams R. (2000), A note on robust variance estimation for cluster-correlated data, *Biometrics*, 56, pp.645-646.
- Zingales L. (1994), The value of the voting right: a study of the Milan Stock Exchange experience, *Review of Financial Studies*, vol.7(1), pp.125-148.

Elenco Quaderni già pubblicati

1. L. Giuriato, *Problemi di sostenibilità di programmi di riforma strutturale*, settembre 1993.
2. L. Giuriato, *Mutamenti di regime e riforme: stabilità politica e comportamenti accomodanti*, settembre 1993.
3. U. Galmarini, *Income Tax Enforcement Policy with Risk Averse Agents*, novembre 1993.
4. P. Giarda, *Le competenze regionali nelle recenti proposte di riforma costituzionale*, gennaio 1994.
5. L. Giuriato, *Therapy by Consensus in Systemic Transformations: an Evolutionary Perspective*, maggio 1994.
6. M. Bordignon, *Federalismo, perequazione e competizione fiscale. Spunti di riflessione in merito alle ipotesi di riforma della finanza regionale in Italia*, aprile 1995.
7. M. F. Ambrosanio, *Contenimento del disavanzo pubblico e controllo delle retribuzioni nel pubblico impiego*, maggio 1995.
8. M. Bordignon, *On Measuring Inefficiency in Economies with Public Goods: an Overall Measure of the Deadweight Loss of the Public Sector*, luglio 1995.
9. G. Colangelo, U. Galmarini, *On the Pareto Ranking of Commodity Taxes in Oligopoly*, novembre 1995.
10. U. Galmarini, *Coefficienti presuntivi di reddito e politiche di accertamento fiscale*, dicembre 1995.
11. U. Galmarini, *On the Size of the Regressive Bias in Tax Enforcement*, febbraio 1996.
12. G. Mastromatteo, *Innovazione di Prodotto e Dimensione del Settore Pubblico nel Modello di Baumol*, giugno 1996.
13. G. Turati, *La tassazione delle attività finanziarie in Italia: verifiche empiriche in tema di efficienza e di equità*, settembre 1996.
14. G. Mastromatteo, *Economia monetaria post-keynesiana e rigidità dei tassi bancari*, settembre 1996.
15. L. Rizzo, *Equalization of Public Training Expenditure in a Cross-Border Labour Market*, maggio 1997.
16. C. Bisogno, *Il mercato del credito e la propensione al risparmio delle famiglie: aggiornamento di un lavoro di Jappelli e Pagano*, maggio 1997.
17. F.G. Etro, *Evasione delle imposte indirette in oligopolio. Incidenza e ottima tassazione*, luglio 1997.
18. L. Colombo, *Problemi di adozione tecnologica in un'industria monopolistica*, ottobre 1997.
19. L. Rizzo, *Local Provision of Training in a Common Labour Market*, marzo 1998.
20. M.C. Chiuri, *A Model for the Household Labour Supply: An Empirical Test On A Sample of Italian Household with Pre-School Children*, maggio 1998.
21. U. Galmarini, *Tax Avoidance and Progressivity of the Income Tax in an Occupational Choice Model*, luglio 1998.
22. R. Hamai, M. Ratti, *The National Central Banks' Role under EMU. The Case of the Bank of Italy*, novembre 1998.

23. A. Boitani, M. Damiani, *Heterogeneous Agents, Indexation and the Non Neutrality of Money*, marzo 1999.
24. A. Baglioni, *Liquidity Risk and Market Power in Banking*, luglio 1999.
25. M. Flavia Ambrosanio, *Armonizzazione e concorrenza fiscale: la politica della Comunità Europea*, luglio 1999.
26. A. Balestrino, U. Galmarini, *Public Expenditure and Tax Avoidance*, ottobre 1999.
27. L. Colombo, G. Weinrich, *The Phillips Curve as a Long-Run Phenomenon in a Macroeconomic Model with Complex Dynamics*, aprile 2000.
28. G.P. Barbetta, G. Turati, *L'analisi dell'efficienza tecnica nel settore della sanità. Un'applicazione al caso della Lombardia*, maggio 2000.
29. L. Colombo, *Struttura finanziaria delle imprese, rinegoziazione del debito Vs. Liquidazione. Una rassegna della letteratura*, maggio 2000.
30. M. Bordignon, *Problems of Soft Budget Constraints in Intergovernmental Relationships: the Case of Italy*, giugno 2000.
31. A. Boitani, M. Damiani, *Strategic complementarity, near-rationality and coordination*, giugno 2000.
32. P. Balduzzi, *Sistemi pensionistici a ripartizione e a capitalizzazione: il caso cileno e le implicazioni per l'Italia*, luglio 2000.
33. A. Baglioni, *Multiple Banking Relationships: competition among "inside" banks*, ottobre 2000.
34. A. Baglioni, R. Hamoui, *The Choice among Alternative Payment Systems: The European Experience*, ottobre 2000.
35. M.F. Ambrosanio, M. Bordignon, *La concorrenza fiscale in Europa: evidenze, dibattito, politiche*, novembre 2000.
36. L. Rizzo, *Equalization and Fiscal Competition: Theory and Evidence*, maggio 2001.
37. L. Rizzo, *Le Inefficienze del Decentramento Fiscale*, maggio 2001.
38. L. Colombo, *On the Role of Spillover Effects in Technology Adoption Problems*, maggio 2001.
39. L. Colombo, G. Coltro, *La misurazione della produttività: evidenza empirica e problemi metodologici*, maggio 2001.
40. L. Cappellari, G. Turati, *Volunteer Labour Supply: The Role of Workers' Motivations*, luglio 2001.
41. G.P. Barbetta, G. Turati, *Efficiency of junior high schools and the role of proprietary structure*, ottobre 2001.
42. A. Boitani, C. Cambini, *Regolazione incentivante per i servizi di trasporto locale*, novembre 2001.
43. P. Giarda, *Fiscal federalism in the Italian Constitution: the aftermath of the October 7th referendum*, novembre 2001.
44. M. Bordignon, F. Cerniglia, F. Revelli, *In Search for Yardstick Competition: Property Tax Rates and Electoral Behavior in Italian Cities*, marzo 2002.
45. F. Etro, *International Policy Coordination with Economic Unions*, marzo 2002.
46. Z. Rotondi, G. Vaciago, *A Puzzle Solved: the Euro is the D.Mark*, settembre 2002.
47. A. Baglioni, *Bank Capital Regulation and Monetary Policy Transmission: an heterogeneous agents approach*, ottobre 2002.
48. A. Baglioni, *The New Basle Accord: Which Implications for Monetary Policy Transmission?*, ottobre 2002.
49. F. Etro, P. Giarda, *Redistribution, Decentralization and Constitutional Rules*, ottobre 2002.
50. L. Colombo, G. Turati, *La Dimensione Territoriale nei Processi di Concentrazione dell'Industria Bancaria Italiana*, novembre 2002.

51. Z. Rotondi, G. Vaciago, *The Reputation of a newborn Central Bank*, marzo 2003.
52. M. Bordignon, L. Colombo, U. Galmarini, *Fiscal Federalism and Endogenous Lobbies' Formation*, ottobre 2003.
53. Z. Rotondi, G. Vaciago, *The Reaction of central banks to Stock Markets*, novembre 2003.
54. A. Boitani, C. Cambini, *Le gare per i servizi di trasporto locale in Europa e in Italia: molto rumore per nulla?*, febbraio 2004.
55. V. Oppedisano, *I buoni scuola: un'analisi teorica e un esperimento empirico sulla realtà lombarda*, aprile 2004.
56. M. F. Ambrosanio, *Il ruolo degli enti locali per lo sviluppo sostenibile: prime valutazioni*, luglio 2004.
57. M. F. Ambrosanio, M. S. Caroppo, *The Response of Tax Havens to Initiatives Against Harmful Tax Competition: Formal Statements and Concrete Policies*, ottobre 2004.
58. A. Monticini, G. Vaciago, *Are Europe's Interest Rates led by FED Announcements?*, dicembre 2004.
59. A. Prandini, P. Ranci, *The Privatisation Process*, dicembre 2004.
60. G. Mastromatteo, L. Ventura, *Fundamentals, beliefs, and the origin of money: a search theoretic perspective*, dicembre 2004.
61. A. Baglioni, L. Colombo, *Managers' Compensation and Misreporting*, dicembre 2004.
62. P. Giarda, *Decentralization and intergovernmental fiscal relations in Italy: a review of past and recent trends*, gennaio 2005.
63. A. Baglioni, A. Monticini, *The Intraday price of money: evidence from the e-MID market*, luglio 2005.
64. A. Terzi, *International Financial Instability in a World of Currencies Hierarchy*, ottobre 2005.
65. M. F. Ambrosanio, A. Fontana, *Ricognizione delle Fonti Informative sulla Finanza Pubblica Italiana*, gennaio 2006.
66. L. Colombo, M. Grillo, *Collusion when the Number of Firms is Large*, marzo 2006.
67. A. Terzi, G. Verga, *Stock-bond correlation and the bond quality ratio: Removing the discount factor to generate a "deflated" stock index*, luglio 2006.
68. M. Grillo, *The Theory and Practice of Antitrust. A perspective in the history of economic ideas*, settembre 2006.
69. A. Baglioni, *Entry into a network industry: consumers' expectations and firms' pricing policies*, novembre 2006.
70. Z. Rotondi, G. Vaciago, *Lessons from the ECB experience: Frankfurt still matters!*, marzo 2007.
71. G. Vaciago, *Gli immobili pubblici.....ovvero, purché restino immobili*, marzo 2007.
72. F. Mattesini, L. Rossi, *Productivity shocks and Optimal Monetary Policy in a Unionized Labor Market Economy*, marzo 2007.
73. L. Colombo, G. Femminis, *The Social Value of Public Information with Costly Information Acquisition*, marzo 2007.
74. L. Colombo, H. Dawid, K. Kabus, *When do Thick Venture Capital Markets Foster Innovation? An Evolutionary Analysis*, marzo 2007.
75. A. Baglioni, *Corporate Governance as a Commitment and Signalling Device*, novembre 2007.
76. L. Colombo, G. Turati, *The Role of the Local Business Environment in Banking Consolidation*, febbraio 2008.

77. F. Mattesini, L. Rossi, *Optimal Monetary Policy in Economies with Dual Labor Markets*, febbraio 2008.
78. M. Abbritti, A. Boitani, M. Damiani, *Labour market imperfections, “divine coincidence” and the volatility of employment and inflation*, marzo 2008.
79. S. Colombo, *Discriminatory prices, endogenous locations and the Prisoner Dilemma problem*, aprile 2008.
80. L. Colombo, H. Dawid, *Complementary Assets, Start-Ups and Incentives to Innovate*, aprile 2008.
81. A. Baglioni, *Shareholders’ Agreements and Voting Power, Evidence from Italian Listed Firms*, maggio 2008.