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THE EFFICIENCY VIEW OF CORPORATE BOARDS: THEORY AND EVIDENCE

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Abstract

We build a simple model in which corporate governance may allow for institutions acting as commitment devices (e.g., the introduction of independent and minority members in the board). The model predicts that the incentive to adopt an institution – letting the general interest of shareholders prevail over private benefits of control by dominant shareholders – is decreasing in ownership concentration and increasing in free cash flow. We take the predictions of our theoretical model to the data, by providing empirical evidence on the board structure of Italian listed companies over the period 2004-2007. We find that board composition favors independent members in firms where the free cash flow is large, and executive members in firms with high ownership concentration and in family firms, supporting the view of corporate governance as a mechanism to control agency costs. More ambiguous conclusions are reached as for the link between governance and firm value, as the presence of minority lists in the board appears to improve value while that of independent members reduces performance.

Keywords: corporate boards, agency problems, private benefits, firms' performance.

JEL classification: G32, G34, L22

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1 Introduction

A growing literature conveys the basic message that corporate boards should be designed to efficiently cope with the separation between ownership and control. In practice, the nature of the agency problems, as well as the institutional solutions to them, differ across several dimensions. While in the U.S.A. the main issue is managers' opportunistic behavior, in continental Europe – where firms exhibit a high level of ownership concentration – the focus is on the divergence of interests between large and small shareholders. In this respect, independent directors are included in the board with the task of protecting the interests of small shareholders, limiting the extraction of private benefits by the controlling party.

In this paper, we build a simple theoretical model, where a dominant owner – able to extract private benefits of control – may decide to introduce a governance institution in order to avoid the agency costs due to the incentive distortion associated to rent extraction. Such a governance institution (e.g., the independent directors and the representatives of small shareholders in the board) works as a commitment device. By adopting it, the dominant owner implicitly commits to let the general interest of all shareholders prevail over her own private benefits¹. However, the adoption of the institution determines the emergence of interference and coordination costs.

Absent such an institution, the equilibrium level of private benefits is negatively related with the degree of ownership concentration, since the incentives of the dominant owner are more aligned with those of the other shareholders when she retains a large stake in the firm. The extraction of private benefits is instead increasing in the level of free cash flow, since the latter can be considered as a proxy for the funds available for discretionary use. Hence, the incentive to adopt a governance institution as a monitor for agency costs is decreasing in ownership concentration and increasing in the firm free cash flow. Obviously, the governance

¹Our model focuses on the moral hazard created by the possible extraction of private benefits of control. In an adverse selection framework, where entrepreneurs differ in their abilities to extract private benefits, governance institutions could also play an important signalling role (see Baglioni, 2010a).

institution should be adopted only whenever its benefits exceeds its costs.

Although theoretically convincing, it can not be taken for granted that the idea of boards being designed in order to mitigate agency problems holds true in practice, especially for economies where the ownership of corporations is concentrated. It is often heard in the policy debate that when firms are closely held, majority shareholders may be tempted to implement corporate governance structures allowing them to effectively direct firms' actions, without exerting too much efforts to properly account for the concerns of other stakeholders (such as minority shareholders). This may occur even when it is doubtful that their decisions are consistent with the objective of maximizing firm's value. Should this happen, it would obviously be in contrast with the message conveyed by our theoretical model.

The two contrasting views outlined above on the design of corporate governance lead to testable implications that can be taken to the data. Our theoretical model predicts that the degree of board independence is decreasing in ownership concentration and increasing in the level of free cash flow. Although the expected relationship between board independence and ownership concentration would be the same also under the alternative view of governance as a 'facilitator' of rent extraction by dominant owners, the predicted effect of free cash flow on governance is the opposite. In fact, an owner aiming at maximizing rent extraction would limit board independence the larger is the scope for private benefits, i.e. the free cash flow.

In order to confront these contrasting views, we empirically investigate the governance of a large sample of listed firms in the Italian stock exchange, over the time interval 2004-2007. The Italian case is ideal to study the determinants of corporate boards organization. Italian firms are indeed very closely held: on average about 57% of the ownership of all listed firms (the same percentage for those included in our sample) is accounted by the top three shareholders. Furthermore, about 33% of listed firms (36% in our sample) are controlled by a single family, and anecdotal evidence maintains that family firms are characterized by a very tight control by their owners, which may sometimes result in a weak representation of the remaining stakeholders.

Our econometric exercises show that board composition favors independent members in firms where the free cash flow is large. This finding supports the view of corporate governance as a tool to control agency costs, rather than as a way to maximize rent extraction. Consistently with our theoretical model, we also find that executive members are the majority in the boards of firms with high ownership concentration and of family firms, where small shareholders are more protected by an ‘incentive alignment effect’.

The impact of governance on firm performance and value is much less clear-cut. In fact, on the one hand, performance appears being negatively correlated to the share of independent members in the board and positively correlated with that of executive members. This suggests that the adoption of governance institutions to control agency issues occurs even when the costs of doing so exceeds its benefits. A result that is somewhat puzzling, since one would expect that a governance institution is adopted only when improving firm performance and value. On the other hand, the presence of minority lists in the board has a positive impact on firm market value, which suggests that the market appreciates the introduction of an institution aimed at protecting the interests of small shareholders.

The plan of the paper is as follows. Section 2 briefly reviews the corporate finance literature related to our argument. Section 3 develops a simple theoretical model dealing with the design of corporate governance institutions under moral hazard. Section 4 describes our data set and methodology, and presents an empirical analysis of governance institutions for Italian listed firms. Section 5 concludes.

2 Related literature

A number of recent empirical studies support the view that firms design their governance institutions in a way that allows them to minimize the agency costs arising from the separation between ownership and control. Cross-sectional evidence shows that the structure of boards depends on firms’ features affecting their specific contracting environment, such as their size, ownership concentration, sector of activity.

Linck, Netter and Yang (2007) find – among others – that board independence is increasing in the availability of managerial private benefits, measured by free cash flow, and board independence is decreasing in insiders’ incentives alignment, proxied by the CEO ownership stake in the firm. Similarly, Lehn, Patro and Zaho (2009) show the existence of a direct relation between board independence and firm size, where the latter is interpreted as a proxy for the extent of agency conflicts between managers and owners. Also Boone, Field, Karpoff and Raheja (2007) find that several measures of firm size and complexity are positively related to board size and independence, pointing to the need of monitoring and advising by specialized directors. Coles, Naveen and Naveen (2008) show that insider representation in the board is increasing in the relevance of firm-specific knowledge, proxied by R&D intensity. Finally, Gillan, Hartzell and Starks (2006) focus on the interplay between the internal mechanisms for controlling agency problems (like board structure and charter provisions) and the external ones (like the market for corporate control and the legal environment), finding that they act as substitutes in the design of corporate governance.

The advisory and monitoring roles of directors are highlighted by the most recent contributions to the theory of corporate boards, claiming that the optimal structure of the board emerges by balancing the costs and benefits of these two tasks. For instance, Adams and Ferreira (2007) stress that, on the one hand, a more independent board monitors more intensively managers’ decisions but, on the other hand, managers are reluctant to reveal firm-specific information to an independent board, as this information may be used both for advising and for interfering. For this reason, since the communication between managers and board is valuable, shareholders might prefer to appoint less independent directors (a ‘friendly board’).

Similar results are reached by Harris and Raviv (2008). In their model, an inside (executive) director is better informed than an outside (independent) director; but the former’s objective function is distorted by private benefits, contrary to the latter. When the information available to insiders is critical, shareholders prefer a board dominated by them, as their advisory role is essential. To the contrary, when the agency costs – generated by the possibility to extract private

benefits – are more relevant, a board dominated by outsiders is preferred, since their monitoring role becomes crucial.

3 Governance institutions as a commitment device: a simple model

We consider a common knowledge setup in which a representative entrepreneur, denoted by E , owns an entirely equity financed firm of value $V = V_{\max} - C(B)$, where V_{\max} indicates the value of the firm in the absence of private benefits extraction, B denotes E 's private benefits of control and $C(B)$ – with $C'(B) > 0$ and $C''(B) > 0$ – is the cost of private benefits extraction. Furthermore, we assume that $0 \leq B \leq \bar{B}$, where $\bar{B} \equiv \gamma F$ with $0 < \gamma \leq 1$, and F denotes the firm's free cash flow.

We consider a situation in which E sells an (exogenous) equity stake $(1 - \alpha)$ to external dispersed investors (small shareholders), receiving a revenue denoted by R . She however retains control over the firm for any relevant values of her stake α . The utility function of the entrepreneur is given by

$$U(B) + \alpha V + R, \tag{1}$$

where $U(B)$ is assumed to be strictly concave, and $U(0) = 0$. Note that the value of B is established *after* issuing equity, as we assume that it can not be contracted ex ante due to the incompleteness of contracts.

The assumption that the entrepreneur raises external funds in the form of *equity* enables us to focus directly on the conflict of interest between controlling and minority shareholders. The entrepreneur is interested in maximizing the value of the firm; but at the same time she is interested in maximizing her own private benefits of control, such as perks, empire building, deals with related parties, and diversion of funds. The extraction of private benefits comes at a cost, which induces a reduction of the firm value. The scope for the extraction of private benefits is larger the higher is the firm free cash flow, which is a measure of the funds available for discretionary use not being committed to any specific purpose (see Jensen, 1986). To capture this effect in the simplest possible way,

we assume that there is an upper bound to the possibility of extracting private benefits, modeled as a fraction of the firm's free cash flow. Note also that the information regarding private benefits is typically not verifiable or too complex to be described in details, so that financial contracts cannot prescribe a specific level of B , which creates a moral hazard issue.

As for external investors, we assume that they are risk neutral and, due to competition among them, they demand an expected return equal to the riskless rate of interest, which we normalize to zero.

After having issued equity, the entrepreneur takes R as given and solves

$$\max_{0 \leq B \leq \bar{B}} U(B) + \alpha [V_{\max} - C(B)], \quad (2)$$

which is a concave problem. Therefore, the unique interior solution of the problem is given by the first order condition

$$U'(B^*) = \alpha C'(B^*), \quad (3)$$

which is necessary and sufficient for a maximum. Hence, the equilibrium level of private benefits is

$$B_E = \begin{cases} B^* & \text{if } B^* < \bar{B} \\ \bar{B} & \text{otherwise.} \end{cases} \quad (4)$$

By applying the implicit function theorem, it is immediate to see that (3) implicitly defines B^* as a decreasing function of α , so that B_E is decreasing in α in the interior solution case, and unaffected by α in the corner solution case. To the contrary, given that \bar{B} is increasing in F by definition, B_E is increasing in F in the corner solution case and unaffected by F in the interior solution case. We can summarize the above discussion by stating the following

Proposition 1 *The equilibrium level of private benefits B_E is a non-increasing function of α and a non-decreasing function of F .*

According to Proposition 1, the separation between ownership (partly transferred to small outside shareholders) and control (fully retained by the entrepreneur) leads to an excessive level of private benefits. The entrepreneur is induced to increase her own private benefits, as she is able to shift part of their marginal

cost to small shareholders, while retaining the full marginal utility – which is the well known result of Jensen and Meckling (1976). Furthermore, the incentive distortion is stronger the higher the values of the free cash flow, as a larger F makes it easier for E to extract private benefits.

To evaluate the agency costs induced by the presence of moral hazard, it is useful to compute the utility level achieved by E in the benchmark case of complete contracts and then compare it with that under contractual incompleteness. If contracts were complete, E would be able to commit to a specific level of B before issuing equity, and she could take into account that such a level affects the selling price of equity: $R = (1 - \alpha) [V_{\max} - C(B)]$. Hence her decision problem would be

$$\max_{0 \leq B \leq \bar{B}} U(B) + \alpha [V_{\max} - C(B)] + R = U(B) + V_{\max} - C(B). \quad (5)$$

It is immediate to see that E would set the level of B as if she retained the whole equity of the firm. The interior solution of Problem (5) is obviously given by

$$U'(\hat{B}) = C'(\hat{B}), \quad (6)$$

and E 's utility level would be

$$U(\hat{B}) + V_{\max} - C(\hat{B}). \quad (7)$$

Note that we focus on the interior solution case only, as it is natural to assume that $\hat{B} < \bar{B}$. Otherwise, the agency problem does not emerge since the first best solution for B coincides with the equilibrium one \bar{B} , since $B^* > \hat{B}$.

However, the first best solution is precluded by the incompleteness of contracts. Since she can not commit *ex ante*, E sets the level of B after selling equity, hence taking the price as given. Investors anticipate the equilibrium level of private benefits B_E , which is incorporated into the selling price of equity $R^* = (1 - \alpha) \{V_{\max} - C(B_E)\}$. Therefore, the equilibrium level of E 's utility is given by

$$U(B_E) + \alpha \{V_{\max} - C(B_E)\} + R^* = U(B_E) + V_{\max} - C(B_E). \quad (8)$$

By taking the difference between the optimal level of utility (Equation 7)) and the equilibrium one (Equation (8)), we can write the agency cost as

$$AC = C(B_E) - C(\hat{B}) - \{U(B_E) - U(\hat{B})\} > 0 \quad (9)$$

that is positive by definition, since \hat{B} is the argmax of the objective function (5). It is therefore apparent that the entrepreneur bears the full cost of the incentive distortion created by the ability to extract private benefits.

The following proposition studies the relationship between the agency cost and the share of equity retained by the entrepreneur, as well as the firm's free cash flow.

Proposition 2 *The agency cost AC , defined in Equation (9), is non-increasing in α and non-decreasing in F .*

Proof. Focus on the interior solution case in which $B_E = B^*$. By differentiating AC with respect to α , we get

$$\left. \frac{dAC}{d\alpha} \right|_{B=B^*} = \left(\frac{dC(B^*)}{dB^*} - \frac{dU(B^*)}{dB^*} \right) \frac{dB^*}{d\alpha},$$

which, recalling that $\frac{dU(B^*)}{dB^*} = \alpha \frac{dC(B^*)}{dB^*}$, can be rewritten as

$$\frac{dAC}{d\alpha} = (1 - \alpha) \frac{dC(B^*)}{dB^*} \frac{dB^*}{d\alpha} < 0,$$

as $(1 - \alpha) \frac{dC(B^*)}{dB^*} > 0$ by assumption and $\frac{dB^*}{d\alpha} < 0$, as shown above. As for the corner solution, in which $B_E = \bar{B}$, it is immediate to see that the agency cost is not affected by α . This proves the first part of the proposition.

To show that AC is non-decreasing in F , first observe that B^* does not depend on F . Turning to the corner solution $B_E = \bar{B}$, one has

$$\left. \frac{dAC}{dF} \right|_{B=\bar{B}} = \left(\frac{dC(\bar{B})}{d\bar{B}} - \frac{dU(\bar{B})}{d\bar{B}} \right) \frac{d\bar{B}}{dF} = \left(\frac{dC(\bar{B})}{d\bar{B}} - \frac{dU(\bar{B})}{d\bar{B}} \right) \gamma.$$

Since $\frac{dC(\hat{B})}{d\hat{B}} = \frac{dU(\hat{B})}{d\hat{B}}$, it must be that $\frac{dC(\bar{B})}{d\bar{B}} > \frac{dU(\bar{B})}{d\bar{B}}$ because $\frac{d^2U(B)}{dB^2} < 0$ and $\frac{d^2C(B)}{dB^2} > 0$. Hence, one has $\frac{dAC}{dF} > 0$, which completes the proof of the proposition.

■

Proposition 2 shows that the agency cost (weakly) increases in the share $(1 - \alpha)$ of equity sold to dispersed shareholders and in the level of the free cash flow. As expected, the agency cost – due to an excessive extraction of private benefits – is increasing in the equilibrium level of private benefits. The latter in turn increases with $(1 - \alpha)$ and F (as it has been shown in Proposition 1). It follows that, in equilibrium, the cost of the incentive distortion is higher the lower is the fraction of equity retained by the entrepreneur, and the larger is the scope for the extraction of private benefits as measured by the free cash flow.

In recent years, an increasing role has been assigned to ‘independent’ directors, who are supposed to act in the interest of *all* shareholders by reducing the possibility that the private benefits of large shareholders prevail over the maximization of the firm value. Independent directors also play a crucial role in (audit, compensation, nomination) committees within the board. In general, the legal system provides a framework within which corporations are free to self-regulate, through charter provisions and other internal rules. For example, in most countries there is only a requirement of a minimum number of independent directors, leaving shareholders free to appoint a larger number of them. By allowing for the presence of a large share of independent directors in the board, an entrepreneur can commit to let the general interest of shareholders – namely the maximization of the firm value – prevail over her own private benefits.

We introduce this issue into the model by assuming that E can adopt a governance institution I such that the decision over B is delegated to a third party who maximizes $U(B) + V$. By adopting the governance institution – e.g., by allowing for a strong independent component within the board – the entrepreneur implicitly commits to leave the decision over the level of private benefits to someone who acts *as if* he were the full owner of the firm. This is equivalent to a commitment for setting $B = \hat{B}$. Note that it seems natural to assume that E has to decide whether to adopt the institution before issuing equity, reflecting the fact that the design of the governance rules is a long run decision, which cannot easily be modified afterwards.

The cost of this commitment is that the third party, entitled to decide over B , can also interfere with the management of the firm and impose constraints

on investment decisions. As a consequence the governance institution may be responsible for causing inefficiencies in the decision making of the board (e.g. by possibly turning down some good investment opportunities). To model this circumstance, we assume that the adoption of the governance institution entails an interference cost K , with K strictly larger than zero. Thus, a governance institution is adopted if and only if

$$AC > K. \tag{10}$$

On the one hand, by adopting the institution the entrepreneur avoids the agency cost, due to her ability to extract private benefits of control. On the other hand, she incurs in the interference cost K . Therefore, we can state the following proposition, the proof of which follows immediately from Proposition 2 and Condition (10).

Proposition 3 *The incentive for the entrepreneur to adopt the governance institution I is non-increasing in α and non-decreasing in F .*

The higher is the equity share retained by the entrepreneur, the lower is the agency cost of private benefits, since her own incentives are more aligned with those of the other shareholders; hence the gain from adopting the governance institution is lower as well. To the contrary, a larger scope for private benefit extraction, as measured by F , makes the agency problem more severe, which increases the incentives to adopt a governance institution avoiding it.

4 Empirical analysis

We can identify the governance institution limiting the extraction of private benefits with the presence of independent members and of minority representatives in the board. Thus, the theoretical model of the previous section leads to clear testable propositions about the corporate governance of listed firms. In particular, based on Proposition 3, we expect that the degree of board independence is (1) decreasing in ownership concentration, and (2) increasing in the free cash flow.

A third implication of our theoretical model concerns the effect of adopting a governance institution on firms' performance and value. Our model predicts that a governance institution is adopted whenever the agency cost that such an institution would allow to avoid exceeds the interference and coordination costs associated with setting-up the institution. As a consequence, its adoption should improve performance and increase the value of the firm.

The empirical analysis of this section is primarily aimed at testing these statements. In doing so, however, we are able to derive additional evidence on the corporate governance of Italian listed firms and on its links with firms' performance, going beyond the direct implications of the theoretical model.

4.1 Dataset and methodology

We have constructed a comprehensive dataset of all firms listed in the Italian stock exchange over the period 2004-2007, collecting information on board and ownership structure, as well as on firms' characteristics and performance. A list of the variables included in the dataset and used in the paper, with the corresponding data sources and descriptive statistics, is given in the Appendix Table.

In the econometric analysis below, we focus on a balanced panel of 157 firms for which all needed data are available for all the years in the time interval we consider. Although not reported in the paper, the results of the analysis for the unbalanced panel of all listed firms are in line with those obtained here.²

It is important to note that our panel entails very little time-series (i.e. within-subject) information, as there is an extremely limited variability over time among all the board and ownership structure data included in our sample. Therefore, our econometric exercises essentially exploit only the cross-sectional dimension of the panel. For this reason, we resort to pooled cross-section regressions running time fixed effects by means of a set of time dummy variables. We also check for the presence of cluster effects. The resulting cluster-robust standard errors provide essentially the same information on the statistical significance of the estimated

²Estimates are available from the authors upon request.

coefficients as those reported in the tables.

4.2 Ownership concentration and board composition

The first testable implication of our theoretical model concerns the negative expected relationship between board independence and ownership concentration. Tables 1 and 2 provide strong evidence in this direction.

[INSERT TABLES 1 AND 2 ABOUT HERE]

In particular, the first row in Table 1 shows that the share of executive members in a board increases with ownership concentration consistently with the theoretical model. Table 2 (first row) shows that the likelihood of observing the presence of a minority list in the election of the board (giving minority shareholders the opportunity of appointing at least one director) is decreasing in ownership concentration³.

A variable playing a role that is similar to that of ownership concentration is family ownership: the control over a ‘family firm’ is typically shared among a few individuals belonging to the same family. For a given level of ownership concentration, this enhances the concentration of power in the hands of a few large shareholders pursuing the same interest. Therefore, we may expect that the dummy on family ownership affects the dependent variables in quite the same way, and for the same reasons, as the ownership concentration variable. Indeed, family ownership leads to boards with a larger share of executive members and less independent members and minority representatives (see Table 1), as well as to a smaller probability of observing executive and compensation committees (see Table 2).

Although not directly related to the theoretical model of the previous section, the control variables included in our empirical analysis provide additional findings on the corporate governance of Italian firms that are worth mentioning. In

³Year dummies show that the likelihood of minority lists increases through time: this is to be attributed to the effect of regulations implemented in recent years that strengthen the extent of minority representation (see the Consolidated Law on Financial Intermediation).

particular, firms having concentrated ownership and family firms appear having smaller boards, with fewer independent members and minority representatives included in the board. We may interpret this as evidence that controlling owners prefer smaller boards where executives play a key role, in order to improve efficiency and to avoid the coordination problems affecting large boards. Similar considerations apply to committees, which are less likely to be present when ownership concentration is higher: presumably the need to structure the board in committees, where specific tasks are delegated to a subset of directors, is lower in smaller boards that are less subject to coordination problems.

Our evidence also shows that the widely used shareholders' agreements play a significant role in shaping the boards of Italian listed firms. Through a shareholders' agreement, a small number of large shareholders formally commit to coordinate their votes in general shareholders' meetings, in order to exert a joint control over the firm at the expense of other shareholders (exploiting a 'leverage effect')⁴. These agreements have often also the purpose of reaching a specific composition of the board of directors, where each participant is entitled to appoint a given number of directors. Table 1 (third row) shows that boards include a larger fraction of non-executive non-independent members in firms where an agreement is present than in other firms. Indeed, these directors presumably represent the large shareholders participating in the agreement. Furthermore, Table 2 (third row) shows that the existence of a shareholders' agreement increases the probability that an executive committee is present, pointing to the possibility that executive committees act as bodies where the coordination among the participants in the agreement takes place.

It is also interesting to note that in family firms the percentage of female members over total directors is on average about 4% higher than in other firms. This result may be interpreted as an indirect evidence of the difficulties that women find in reaching key positions in Italian corporations. These difficulties appear to be lower in family firms, where family members are more likely to be

⁴Agreements of this type are diffused also in other European countries as a mean to deviate from the one-share-one-vote principle; see EU (2007). For analyses of the effects of shareholders' agreements on the governance of Italian firms, see Gianfrate (2007) and Baglioni (2010b).

appointed as directors regardless of their gender, thus increasing the probability that a woman is included in the board.

Finally, all regressions in Tables 1 and 2 have been run by adding controls for specific sectors – namely high tech industries, financial intermediaries, and utilities. The evidence we obtain shows that the sector of activity plays a significant role in shaping the characteristics of the board⁵. Three observations are of particular interest here. First, the boards of *high tech firms* appear to be smaller and with a larger share of executive members. This result is most likely related to the strategic advising role of directors: in high tech firms the need of specific knowledge, embodied in executives, is presumably larger than in other sectors. Second, *financial firms* appear to have large boards with a significant fraction of independent members, which reduces the weight of executive members. This is probably due to the fact that most large Italian banks and insurance companies are at the core of a wide network of cross-ownerships and cross-directorships, involving also non-financial firms⁶. This feature of Italian financial intermediaries may suggest that the presence of a large number of independent members in the board is explained by the need to adequately represent the interests of several relevant shareholders. The large size of the board may be, in turn, at the origin of the widespread use of executive committees in financial firms, as a way to improve the efficiency of the decision process, and to preserve the role of top managers within the board. It is worth noting that the likelihood of observing a compensation committee is smaller for financial firms than for other firms, pointing to a possible lack of transparency in the managerial compensation policy in this sector. Third, the composition of the boards of *utilities* seems to reflect the prominent role of public ownership in this industry: more than half of the utilities included in our sample have in fact the public sector (either the central government, or municipalities) as their main stockholder. The public nature of utilities may help explaining the inclusion of many independent and minority members in the board (at the expenses of executives), as representatives of the composite

⁵The affiliation of a firm to a specific sector is based on the ICB code of each firm, as reported by Datastream.

⁶See the evidence provided by Drago, Santella, and Paone (2007).

interests of the public shareholders.

4.3 Free cash flow and board composition

The second testable implication of our theoretical model concerns the positive relationship between the degree of board independence and firms' free cash flow. Our empirical evidence strongly supports this theoretical prediction. In fact, as the free cash flow grows larger, the board composition shifts in favor of independent members (see Table 3).

[INSERT TABLES 3 AND 4 ABOUT HERE]

In order to assess the *ceteris paribus* effect of the free cash flow on corporate governance, in our econometric specification we control for firms' characteristics – namely, market value and growth opportunities – that are likely to exert additional effects on board structure. Table 3 shows the existence of a positive effect of firm size on the number of board members. More precisely, the higher is the *market value* of a firm (a typical proxy for firm size), the larger is the size of its board. However, the impact of firm size is non-linear, as it can be seen from the negative coefficient of the quadratic term: as firm size grows, board size increases as well, but at a decreasing rate. Larger boards are able to include more (controlling and minority) representatives of shareholders: the coefficients of non-executive non-independent members and of minority members are both positive and significant. As a consequence, the share of executive members is decreasing in firm size. Larger boards are also more likely to be organized in committees in order to improve the efficiency of the decision process. Indeed, Table 4 confirms that the probability of observing compensation and audit committees is increasing in firm size.

Turning to growth opportunities, measured by the *market-to-book ratio*, they call for specific knowledge to be fully exploited. Table 3 confirms that where such opportunities are more relevant the composition of boards shifts in favor of executive members, who are typically more endowed with specific skills.

Finally, the inclusion of controls for the specific features of different industries leads to results (see Tables 3-4) that are very much in line with those already shown in Tables 1-2.

4.4 Board composition and firm performance

The third testable implication of our theoretical model is that firms adopt a governance institution whenever the benefits from doing so exceed the associated costs in terms of interference and coordination problems. Hence, one would expect that when a governance institution is adopted, performance and consequently firms' value improve. Interestingly, the econometric exercises shown in Table 5 do not support this conclusion.

[INSERT TABLE 5 ABOUT HERE]

To the contrary, it appears that firms' performance is negatively affected by the share of independent members in the board, while it is positively affected by the share of executive members. This suggests that executives, by bringing specific knowledge, contribute to the efficiency of the decision process. Independent members, on the other hand, play mainly the role of monitoring decisions, so that all shareholders are represented and the extraction of private benefits by dominant owners is limited. This role may sometimes reduce the speed and efficiency of the board decision making process. Independent members may therefore be included in the board even when the cost of keeping under control the agency issue exceeds its benefit. This result is not consistent with our theoretical model, which would instead suggest that governance institutions should not be adopted when it is too costly. However, at least two interpretations of this empirical finding may be proposed. The first is based on the effects of (self-)regulatory mechanisms (such as the Code of Conduct for listed companies) that may constrain the design of governance institutions, 'forcing' listed firms to introduce an inefficiently large independent component in their boards. The second deals with the implications of reputational concerns (most likely stimulated by the policy debate on this matter) that, even in the absence of explicit regulatory constraints,

may induce some corporations to sub-optimally add independent directors for reputational concerns.

Interestingly, the presence of a *minority list* seems to have a positive impact on the market value of firms (as measured by the market-to-book ratio), suggesting that the market appreciates the introduction of an institution aimed at protecting the interests of small shareholders. The same does not hold true for independent members, suggesting that financial markets consider the directors appointed by minority owners as being more effective than independent directors.

Our econometric specifications also provide indications on the use of committees in the organization of the board. In particular, on the one hand, the presence of an *executive committee* seems to improve the efficiency of the decision process, by separating the decision and the monitoring role of directors, leading to a better performance. On the other hand, the presence of a *compensation committee* seems to increase risk, possibly due to the adoption of compensation policies introducing convex wage schedules (e.g. stock options), increasing managerial incentives to take risky strategies⁷.

We also control for the effect of board size on firms' performance. On the one hand, the addition of a new member to the board should have a positive effect regardless of her role: if an executive member, she provides specific skills improving the advisory role of the board; if an independent/minority member, she introduces an additional source of protection for small shareholders improving the monitoring role of the board. On the other hand, however, the inclusion of additional members beyond some threshold level might reduce the efficiency of the decision process by exacerbating coordination problems. Our estimates highlight the existence of such a trade-off: both the performance measures we consider – ROA and EBIT/assets – and the market-to-book ratio are increasing in board size, but the relationship is non-linear, pointing to a negative impact of board size beyond some threshold level.⁸ The same holds true when one considers the

⁷See Baglioni and Colombo (2009) for a discussion of the role of options in managerial compensation and, more specifically, Ross (2004) for the effects of options on managers' risk-taking attitudes.

⁸Analogous results are obtained when one considers the earnings before taxes, interests and depreciation charges (EBITDA).

standard deviation of the share price as a proxy measure for risk: increasing the size of the board seems to improve the ability of the firm to take decisions, leading to higher risk together with higher profits. However, large boards are presumably more conservative (due to the emergence of coordination issues), which leads to less risk taking and to a reduction of expected profitability.⁹

5 Concluding remarks

The empirical evidence we provide in this paper supports the prediction of our theoretical model, confirming the view that corporate boards are designed in order to efficiently cope with the agency issues arising from the separation between ownership and control. Governance institutions aimed at protecting the general interest of shareholders – like independent directors, minority representatives and committees – seem to be used more extensively where agency problems are more severe. In particular, we show that board composition favors independent members in firms where the free cash flow is larger. Conversely, it favors executive members in firms where ownership is more concentrated. Family ownership plays a role similar to that of ownership concentration, leading to boards with a large percentage of executive members.

As for the relationship between firm value and corporate governance, we find on the one hand that executive members exert a positive effect on performance, which is consistent with the view that executives – by bringing specific knowledge – contribute to the efficiency of the decision process. On the other hand, independent members seem to negatively affect performance, suggesting that their monitoring role may reduce the efficiency of the board decision making process. This is somewhat puzzling, as it suggests that owners are willing to setup governance institutions favoring independent directors even when the cost of doing so exceeds the gains ensuing from their monitoring role, presumably due to the impact of (self-)regulatory constraints and/or reputational concerns.

The econometric analysis of the paper leads also to some additional results

⁹Interestingly, the year dummies show that the share price volatility has been increasing through time.

going beyond the predictions of the theoretical model. In particular, we find that big firms tend to have larger boards than small firms, which are more likely to be organized in committees; a result that is consistent with the view that the delegation of specific tasks to committees improves the efficiency of the board activity. This is confirmed by the finding that the presence of an executive committee has a positive impact on firms' performance. We also show that firms with high growth opportunities (proxied by a large market-to-book ratio), such as high tech firms, favor executives bringing specific knowledge in their boards.

Interestingly, board composition varies in different industries. Besides what we already noted for high tech firms, financial firms appear to have large boards with several independent members, presumably due to the wide network of cross-ownerships and cross-directorships that lies at the core of large banks and insurance companies in Italy. Similarly, the boards of utilities are typically characterized by the presence of several independent and minority members, which seems to respond to the representation needs of the several local public authorities often constituting the major stakeholders of these firms. Furthermore, we find a concave relationship between firm performance (ROA and EBIT) and board size, suggesting that the inclusion of additional members in the board has a positive impact up to a given threshold level and then turns negative, confirming the finding that the decision process of large boards may become increasingly complex.

Our empirical analysis also highlights a remarkable heterogeneity across firms in the adoption of governance institutions, depending on specific characteristics of corporations, such as the degree of ownership concentration and the level of free cash flow. We have shown that the diverse governance mechanisms adopted by different firms are consistent with the objective of minimizing agency costs. In this perspective, the paper has a strong policy implication, namely that the regulators' approach should not be one that imposes a detailed set of rules about the design of governance institutions. It should instead be aimed at providing a sufficiently general regulatory framework within which firms remain free to design their governance as an optimal response to their specific features.

Finally, we find a negative correlation between the number of independent

directors and firm performance (and ultimately value), a result that is somewhat puzzling although not surprising, given that the analysis of the relationship between governance and performance has led to ambiguous results in the literature. It is therefore a goal for future research to better investigate it, to understand in particular whether the need of keeping under control agency issues may lead to the adoption of sub-optimal governance institutions (in terms of firm performance and value) due to the role of reputational concerns, or to the effects of the constraints imposed by the (self-)regulatory framework.

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TABLE 1. Ownership concentration and board composition

Independent Variable	Dependent variables											
	Executive members (%)		Independent members (%)		Non-executive non-indep. members (%)		Minority members (%)		Board size (number of members)		Female members (%)	
Top 3 shareholders ownership share (%)	0.172*** (0.035)	0.175*** (0.040)	-0.207*** (0.052)	-0.210*** (0.055)	0.038 (0.051)	0.040 (0.051)	-0.028 (0.026)	-0.012 (0.024)	-0.048*** (0.008)	-0.055*** (0.009)	0.005 (0.014)	0.008 (0.143)
Family ownership (dummy)	5.473*** (1.382)	7.093*** (1.435)	-2.071 (1.485)	-4.648*** (1.495)	-3.874** (1.853)	-2.775 (1.770)	-1.672** (0.727)	-2.903*** (0.725)	-1.278*** (0.274)	-1.685*** (0.292)	4.138*** (0.687)	3.544*** (0.720)
Shareholders agreements (dummy)	-1.889 (1.962)	-2.274 (2.114)	-3.448* (2.113)	-2.402 (2.181)	4.824** (2.315)	4.014* (2.333)	0.113 (1.100)	0.360 (1.130)	1.099*** (0.353)	1.338*** (0.392)	-1.500** (0.645)	-1.315** (0.649)
Dummy High Tech	13.648*** (3.100)		-2.529 (2.664)		-12.803*** (3.184)		0.594 (1.151)		-2.155*** (0.348)			0.320 (1.133)
Dummy Financials	-9.026*** (1.591)		9.647*** (2.136)		-1.200 (2.179)		1.213 (1.168)		3.089*** (0.390)			-1.527** (0.669)
Dummy Utilities	-10.011*** (2.042)		15.031*** (4.242)		-4.938 (4.249)		12.075*** (2.901)		0.543 (0.454)			-4.519*** (0.582)
Constant	20.669*** (2.523)	18.698*** (2.716)	50.973*** (3.545)	54.664*** (3.709)	28.705*** (3.560)	26.507*** (3.388)	4.397** (1.867)	4.891*** (1.614)	12.890*** (0.564)	13.931*** (0.646)	3.279*** (1.009)	3.854*** (1.041)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nr.Obs.	628	628	628	628	628	628	628	628	628	628	628	628
R-sq.	0.192	0.077	0.113	0.054	0.045	0.016	0.093	0.028	0.294	0.148	0.078	0.097
F	18.09	10.05	6.41	4.45	2.88	1.72	4.94	4.21	23.53	16.28	9.10	22.93
[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]	[0.114]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Robust standard errors in parenthesis.

TABLE 2. Ownership concentration and board committees

Independent Variable	Dependent variables							
	Executive Committee		Compensation Committee		Audit Committee		Minority list	
Top 3 shareholders (%) ownership share (%)	-0.002*** (0.001)	-0.003*** (0.001)	-0.007*** (0.001)	-0.006*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.003*** (0.001)
Family ownership (dummy)	-0.178*** (0.031)	-0.201*** (0.028)	-0.124*** (0.037)	-0.115*** (0.036)	-0.040 (0.029)	-0.041 (0.029)	-0.001 (0.047)	-0.049 (0.045)
Shareholders agreements (dummy)	0.073* (0.042)	0.097** (0.043)	-0.055 (0.045)	-0.065 (0.045)	0.007 (0.033)	0.006 (0.034)	0.015 (0.059)	0.030 (0.565)
Dummy High Tech	-0.065 (0.045)		0.018 (0.059)		-0.019 (0.049)		0.132* (0.079)	
Dummy Financials	0.313*** (0.044)		-0.138*** (0.048)		-0.013 (0.034)		0.014 (0.056)	
Dummy Utilities	--		0.105 (0.052)		0.038 (0.047)		0.435*** (0.074)	
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes^
Nr.Obs.	596	628	628	628	628	628	628	628
Pseudo R-sq.	0.216	0.111	0.107	0.085	0.056	0.055	0.207	0.179
Wald Chi-sq.	106.64	54.79	70.92	52.17	23.04	20.11	148.97	140.53
[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.006]	[0.003]	[0.000]	[0.000]
Log Pseudo-L.	-245.997	-285.774	-297.581	-304.892	-241.773	-242.171	-342.555	-354.644

Probit models (marginal effects). Robust standard errors in parenthesis.

First column model: no utilities have an executive committee.

^ Year dummies 2006 and 2007 positive and statistically significant at the 1% level

TABLE 3. Free cash flow and board composition

Independent variables	Dependent variable										
	Executive members (%)		Independent members (%)		Non-executive non-independent members (%)		Minority members (%)		Board size (number of members)		
ln(free cash flow)	-1.082*	-1.627**	2.305***	2.626***	-0.977	-0.821	0.458*	0.395	0.283**	0.326**	0.462***
	(0.643)	(0.780)	(0.600)	(0.618)	(0.800)	(0.810)	(0.273)	(0.289)	(0.114)	(0.133)	(0.148)
ln(market value)	-2.443***	-2.832***	-0.311	-0.029	2.572**	2.674**	0.955**	1.222***	4.020***	0.776***	0.706***
	(0.867)	(0.940)	(0.827)	(0.824)	(1.030)	(1.064)	(0.480)	(0.473)	(1.088)	(0.187)	(0.200)
ln(market value) ²									-0.028***		
									(0.042)		
ln(assets)									0.208*		
									(0.108)		
ln(sales)									0.146		
									(0.159)		
ln(mtb)	2.539*	4.036***	0.535	0.074	-3.315*	-4.219**	-0.441	-0.388	-0.327	-0.359	-0.470*
	(1.511)	(1.395)	(1.615)	(1.522)	(1.757)	(1.678)	(0.664)	(0.642)	(0.296)	(0.256)	(0.242)
Dummy High Tech	5.679*		2.774		-7.867**		3.213**		0.027	-0.240	
	(3.368)		(2.801)		(3.314)		(1.255)		(0.361)	(0.348)	
Dummy Financials	-7.864***		7.033***		-1.122		0.514		1.708***	2.165***	
	(1.962)		(2.504)		(2.598)		(1.326)		(0.447)	(0.423)	
Dummy Utilities	-6.400***		11.993***		-5.407		10.077***		-1.120**	-1.331**	
	(1.940)		(4.606)		(4.365)		(2.922)		(0.531)	(0.569)	
Constant	76.235***	85.229***	13.832*	9.285	9.851	6.048	-14.687***	-16.286***	-28.004***	-3.563**	-3.858***
	(6.549)	(6.789)	(7.406)	(6.782)	(8.220)	(8.049)	(4.917)	(4.494)	(7.285)	(1.455)	(1.430)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nr.Obs.	499	499	499	499	499	499	499	499	486	499	499
R-sq.	0.218	0.182	0.125	0.092	0.037	0.024	0.142	0.083	0.422	0.398	0.332
F	18.00	20.49	6.13	8.03	2.53	2.27	4.86	4.61	27.36	26.50	24.72
[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.008]	[0.036]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Robust standard errors in parenthesis.

TABLE 4. Free cash flow and board committees

Independent variables	Dependent variable							
	Executive Committee		Compensation Committee		Audit Committee		Minority list	
ln(free cash flow)	0.028* (0.015)	0.051*** (0.017)	0.015 (0.013)	0.002 (0.015)	-0.006 (0.010)	-0.012 (0.010)	-0.015 (0.018)	-0.021 (0.018)
ln(market value)	0.023 (0.020)	-0.005 (0.022)	0.054*** (0.018)	0.046** (0.020)	0.047*** (0.014)	0.046*** (0.015)	0.073*** (0.027)	0.020*** (0.027)
ln(mtb)	0.023 (0.037)	0.014 (0.037)	0.063 (0.041)	0.091** (0.041)	0.063* (0.034)	0.069* (0.035)	0.015 (0.051)	0.020 (0.047)
Dummy High Tech	0.068 (0.079)		0.093* (0.046)		0.005 (0.044)		0.138 (0.090)	
Dummy Financials	0.342*** (0.057)		-0.229*** (0.059)		-0.100** (0.046)		-0.028 (0.066)	
Dummy Utilities	--		-0.007 (0.079)		-0.075 (0.075)		0.335*** (0.095)	
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nr.Obs.	467	499	499	499	499	499	499	499
Pseudo R-sq.	0.176	0.070	0.115	0.070	0.106	0.091	0.225	0.204
Wald Chi-sq.	86.16	31.06	47.37	32.99	31.13	27.00	124.36	119.15
[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Log Pseudo-L.	-208.099	-242.471	-228.342	-240.123	-170.811	-173.853	-267.632	-274.976

Probit models (marginal effects). Robust standard errors in parenthesis.

First column model: no utilities have an executive committee.

Last column models: 2006 and 2007 year dummies positive and statistically significant at the 1% level.

TABLE 5. Board composition and firm's performance

Independent variables	Dependent variable							
	ROA (*)		EBIT/Assets (%) (*)		MTB (*)		Stand. dev. of share price	
Executive members (%)	0.041*	0.044**	0.071**	0.071***	0.008	0.014	0.008**	0.011***
	(0.024)	(0.022)	(0.028)	(0.027)	(0.007)	(0.009)	(0.003)	(0.003)
Independent members (%)	-0.022	-0.024*	-0.029*	-0.036**	-0.006	-0.007	0.004	0.003
	(0.014)	(0.013)	(0.016)	(0.015)	(0.005)	(0.006)	(0.002)	(0.002)
Executive Committee (dummy)	0.341*	0.214	0.783***	0.527**	0.091	0.090	0.063	0.053
	(0.201)	(0.231)	(0.275)	(0.252)	(0.200)	(0.202)	(0.085)	(0.084)
Compensation Committee (dummy)	-0.450	-0.178	-0.281	0.133	-0.165	-0.049	0.157*	0.227**
	(0.722)	(0.734)	(0.817)	(0.811)	(0.266)	(0.224)	(0.093)	(0.101)
Audit Committee (dummy)	0.502	0.424	0.412	0.328	0.225	0.210	0.092	0.087
	(0.678)	(0.687)	(0.887)	(0.903)	(0.276)	(0.291)	(0.099)	(0.106)
Minority list (dummy)	-0.762	-0.461	0.905	1.143	0.491*	0.594*	-0.076	-0.047
	(0.832)	(0.716)	(0.769)	(0.745)	(0.291)	(0.353)	(0.136)	(0.140)
Board size	0.946**	0.948**	0.929**	0.956**	0.219***	0.171**	0.161***	0.130**
	(0.419)	(0.379)	(0.383)	(0.376)	(0.066)	(0.072)	(0.053)	(0.059)
Board size ²	-0.030**	-0.032**	-0.027**	-0.032**	-0.008***	-0.006**	-0.005***	-0.004**
	(0.014)	(0.013)	(0.013)	(0.013)	(0.002)	(0.003)	(0.002)	(0.002)
Dummy Financials	-0.849		-2.245***		0.011		-0.129	
	(0.768)		(0.794)		(0.169)		(0.139)	
Dummy High Tech	0.864		-0.886		1.573**		0.644*	
	(2.349)		(1.561)		(0.789)		(0.345)	
Dummy Utilities	1.861**		1.576		-0.220		-0.302**	
	(0.787)		(1.015)		(0.218)		(0.127)	
Constant	-2.361	-2.376	-2.052	-2.315	0.504	0.722	-1.100***	-0.977**
	(2.807)	(2.705)	(2.918)	(2.915)	(0.513)	(0.571)	(0.395)	(0.416)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nr.Obs.	465	465	457	457	470	470	628	628
R-sq.	0.047	0.041	0.073	0.057	0.077	0.036	0.081	0.063
F	3.13	2.79	4.79	3.29	4.88	4.97	3.25	3.42
[p-value]	[0.000]	[0.002]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

(*) All independent variables lagged one period.

Robust standard errors in parenthesis.

Last column models: all year dummies positive and statistically significant at the 1% level.

Appendix Table
Variables definition and descriptive statistics

<i>Vbs.</i>	<i>Data source</i>	<i>Definition</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Min</i>	<i>Max</i>
Ownership structure						
Ownership share of all relevant shareholders (%)	Consob	Total ownership share of all shareholders owning at least 2% of the firm's equity	61.86	16.82	0	100
Top 3 relevant shareholders ownership share (%)	Consob	Total ownership share of the three largest shareholders	56.95	18.13	0	100
Number of relevant shareholders	Consob	Number of shareholders owning at least 2% of the firm's equity	4	2.51	0	14
Family ownership (dummy)	Consob	Dummy equal to 1 if the firm is controlled by a family	0.36	0.48	0	1
Shareholders agreements (dummy)	Consob	Dummy equal to 1 if there is a shareholders' agreement	0.22	0.41	0	1
Board structure						
Board size	Reports on corporate governance	Number of board members	10.5	3.96	3	25
Executive members (%)	Reports on corporate governance	Percentage of executive members in the board	30.69	18.51	0	100
Independent members (%)	Reports on corporate governance	Percentage of non-executive independent members in the board	39.48	20.3	0	100
Non-executive non-independent members (%)	Reports on corporate governance	Percentage of non-executive non-independent members in the board	29.27	21.87	0	86.67
Minority representatives (%)	Reports on corporate governance	Percentage of minority members in the board	4.23	10	0	52.9
Female members (%)	Reports on corporate governance	Percentage of female members in the board	5.47	7.84	0	40
Executive committee (dummy)	Reports on corporate governance	Dummy equal to 1 if there is an executive committee	0.21	0.41	0	1
Size of the executive committee	Reports on corporate governance	Number of members in the executive committee	1.18	2.42	0	10
Compensation committee (dummy)	Reports on corporate governance	Dummy equal to 1 if there is a compensation committee	0.78	0.42	0	1
Size of the compensation committee	Reports on corporate governance	Number of members in the compensation committee	2.5	1.5	0	8
Audit committee (dummy)	Reports on corporate governance	Dummy equal to 1 if there is an audit committee	0.86	0.35	0	1
Size of the audit committee	Reports on corporate governance	Number of members in the audit committee	2.7	1.29	0	7
Minority list	Reports on corporate governance	Dummy equal to 1 if there is a minority list	0.45	0.5	0	1
Firms' characteristics						
Assets (thousands of Euro)	Datastream (WC02999)	sum of all assets	1.55E+07	7.53E+07	14468	1.01E+09
Sales (thousands of Euro)	Datastream DWSL	sum of all sales	3300401	1.04E+07	3311	8.43E+07
Market value (thousands of Euro)	Datastream MV	Year-end stock price times number of shares	2471839	9252211	5860	1.02E+08
Free cash flow (thousands of Euro)	Datastream (DWFC)	Operating cash flows less fixed capital investments	568328.6	2427911	-7272183	2.30E+07
Market to book	Datastream (MTBV)	Market value over book value of equity capital	2.17	2.1	-3.52	40.7
Firms' performance						
ROA	Datastream WC08326	Net revenue over total assets	3	7	-37.27	76.28
Ebit	Datastream DEWB	Earnings before taxes and interests	519364.1	2192813	-739690	2.47E+07
EBITDA	Datastream DEWD	Earnings before taxes, interests and depreciation charges	683415.1	2794354	-6735950	3.17E+07
SD of share price	Datastream	Standard deviation of stock prices	0.85	1.48	0.003	21.08

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