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Board Composition, Political Connections and Performance in State-Owned Enterprises

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Abstract

This paper analyses the effects of board composition on the behaviour and performance of a sample of 114 Italian local public utilities, for which information about 1630 directors during 1994-2004 has been collected. This period is particularly interesting because of the legal changes that forced many firms to alter their juridical form and allowed the entrance of private investors. We investigate whether board size and/or board composition do affect decisions about employment and how they ultimately impact on performance. Our main findings indicate that politically connected directors, representing the state or the local municipality, dominate boards of directors in the Italian public utilities in the period under investigation. Politically connected directors exert a positive and significant effect on employment, while they impact negatively on performance.

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1. Introduction

Boards of directors play a central role in the governance of the enterprise. They represent a corporate governance instrument, that is an economic and legal mechanism for the mitigation of the conflict arising whenever an outside investor wishes to exercise control differently from the manager in charge of the firm. The contrast worsens in case of dispersed ownership, since a conflict of interests may occur among investors thus creating a collective action problem.

Directors are in charge of monitoring the management, a duty that includes selecting top executives, implementing incentives to motivate executives to take actions consistent with the shareholders' wealth maximization, evaluating the executives' performance and determining the size of bonuses or whether executives should be fired. They also vote on important decisions such as merger and acquisitions, changes in the firm's capital structure like stock repurchases or new debt issues. In addition to their monitoring role, directors are required to advise management about a firm's business strategy. A growing body of empirical research suggests that the composition of corporate boards (outsiders vs. insiders, independent vs. non independent) influences shareholders value. "Outside directors" are defined as directors who are not current employees of the firm. All the others are "inside directors". "Grey" or "affiliated" outsiders are not currently employed by the firm, but they were somehow formerly connected to the firm's management or shareholders, i.e. because they were suppliers, customers, consultants, relatives, or former employees or directors.

Although similar in their structure and functioning, boards of directors in State-owned enterprises (*SOEs*) often do not engage in the same activities they undertake in private companies. At best, *SOEs*' boards may act as a kind of parliament that represents the interests of employees, various ministries, and in some cases, non-state shareholders. In *SOEs*, state ownership and government control are governance challenges that might contribute to poor performance. However, efforts to improve corporate governance in *SOEs* have been weaker than in the private sector, where changes have been extensive over the last two decades.

During the nineties, the focus of *SOE* reforms has been on privatization. However, for both political and economic reasons, the state will likely remain a major owner of productive assets in a number of economies for years to come. Extensive experience with privatization has also confirmed the important role that corporate governance can play before, during, and after the state divests its assets. State-owned enterprises remain prominent in air and rail transport, electricity, gas and water supply, broadcasting, natural resource extraction, telecommunications, banking and insurance. Globally, in 2006, *SOEs* accounted for 20% of investment and 5% of employment (World Bank, 2006).

Board composition is a highly studied topic as far as private firms are concerned, but has received little attention in the context of State-owned enterprises (*SOEs*). Differently from a widely held corporation in the private sector, a *SOE* generally cannot have its board changed via a takeover and, most importantly, cannot go bankrupt. The absence of potential takeovers and proxy contests reduces the incentives of board members and managers to maximize the value of the company and the impossibility to go bankrupt implies a soft budget constraint, which reduces the pressure to contain costs. Hence, two of the most important external corporate governance instruments to contrast underperformance are absent. Actually, a *SOE* has very diffused owners, the citizens, but it generally has a higher body or bodies that oversee it: one or more ministries, an ownership entity specifically created to oversee *SOEs*, the Parliament or some combination of them. At worst, these various authorities may use *SOEs* to achieve short-term political goals at the cost of both efficiency and longer-term policy objectives (Shleifer and Vishny, 1994). Even without evident abuse, this complex agency chain across various levels of government may present difficulties that are not normally present in the relationship between a company's board and managers, on the one hand, and its shareholders, on the other. *SOEs* also have the related problem of "common agency": given that each relevant part of the government may have different objectives, each could attempt to influence the *SOE* accordingly. Managing multiple and potentially conflicting objectives is one of the central challenges in the governance of *SOEs*, as recognized by both the World Bank and the OECD[1].

In this paper we address the following research questions: do board size and composition matter in firms with concentrated ownership in the hands of the State? For such firms, what is the impact of board characteristics, and particularly of politicians directors, on profitability and labour demand? What is the role of independent directors? The relationship between board composition and employment, on the one hand, and board composition and performance, on the other, are investigated on a newly hand-created dataset of 114 Italian public utilities, which are observed during the period 1994-2004.

Similarly to what happened in the traditionally state-dominated sectors in many OECD countries, a deep transformation of the institutional and industrial environment took place during this decade in Italy. Public utilities underwent legislative changes implying the progressive separation of public welfare and policy functions from the commercial ones, the introduction of competition elements in the retail segment and the regulation of the access to the market segments requiring significant investments by means of auctions. At the same time, Italian public utilities

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[1] *"Fundamental problems in the governance of SOEs explain much of the poor performance of SOEs"* (World Bank, 2006, page 3). *"The boards of state-owned enterprises should have the necessary authority, competencies and objectivity to carry out their function of strategic guidance and monitoring of management"* (OECD, 2006, page 17).

have been accompanied throughout a transformation in their juridical form toward institutional designs consistent with the participation of private investors and with the functional separation of operations from direction. From the initial status of "*Azienda Municipalizzata*"[2], firms have sometimes evolved into a transitional juridical form called "*Azienda Speciale*" whose management enjoyed a greater control over the firm's strategy. Nowadays a large majority of Italian public utilities are limited companies with a proper board of directors, in which both public and private entities can invest, following a process labelled *corporatization*. Such transformation is expected to improve the productive efficiency of public utilities, by giving them more degrees of freedom in the choice of their input mix, in undertaking strategies of horizontal or vertical aggregation, in enlarging the customer base[3]. However, as will be documented in the paper, many politicians are (still) found to occupy key positions in the boards of directors, and this might slower to a great extent the restructuring process of local public services.

The remainder of the paper is organized as follows. In section 2 we briefly review the relevant literature dealing with board size, board compositions and political connections. Section 3 presents the data set and the definition adopted for identifying board composition. In sections 4 and 5 we test the relevance of board size and composition for firm level employment and performance, respectively. Section 6 concludes.

2. Literature Review

Two strands of closely related literatures analyse the determinants and the effects of board size and composition, on the one hand, and of the presence of politicians in the board of directors, on the other hand.

The theoretical model of Raheja (2005) focuses on the role of outsiders, who exert a monitoring activity, and insiders, who are better informed about the firm's constraints and opportunities. In firms where the incentives of insiders are better aligned with those of shareholders (such as in competitive industries or in presence of a high degree of insiders' ownership), small-sized boards with few outsiders are optimal. On the other hand, if the benefits of monitoring are expected to be large, one should observe a higher proportion of outsiders. In a similar vein, Harris and Raviv (2008) conclude that, under certain conditions, too many outsiders could harm firm value. In particular, the authors, by reinterpreting the board inner conflict in terms of an agency problem between insiders and outsiders, prove that profits and board size are endogenously

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[2] This is an autonomous legal entity emanating *de facto* from the sovereign government, with a board of directors directly nominated by the state owner and called "Commission".
[3] Moreover, since salaries should be set at levels equal to the ones prevailing in collective contracts in the private sector (generally below the ones prevailing in the public sector), one should also expect some savings in the labour costs.

determined variables. In this paper too, board size, the number of outsiders and profits are treated as endogenous variables. Board composition is defined in terms of outsiders as opposed to insiders but the differences among outside directors, concerning their independence and their political background, are taken into consideration too.

While there is a growing body of empirical works dealing with the above issues, at present only a bunch of studies outside the US are available. Moreover, the focus is almost exclusively concentrated on the realm of private firms. Below, we will report only a selection of recent empirical results, while extended surveys of the literature, such as Becht et al. (2003), Hermalin and Weisbach (2003) and Menozzi (2009) are available for the interested reader.[4]

As to the *determinants* of board structure, Linck et al. (2008) found, on a sample of US firms observed during 1990-2004, that the latter was broadly consistent with the costs and benefits of the board's monitoring and advising roles. Boone et al. (2007), concentrating on firms that went public (*IPOs*), found that in the subsequent 10 years the restructuring of the board was shaped by a mix of firm-specific and managerial characteristics, so as to end up with a board structure well tailored to suit the firm's specific competitive environment.

Turning towards the *effects* of board size and composition, Yermack's (1996) seminal paper presented evidence of a negative effect of board size on performance, a result which has been subsequently confirmed by many scholars. However, Coles et al. (2008) found a U-shaped relationship between board size and performance. Following their interpretation, complex firms require a larger number of directors (and of outsiders) as compared to simple firms, while R&D intensive firms should better make intensive use of insiders directors. Also Klein (1998) showed that there is not a clear-cut relationship between performance and board composition. However, by looking at the peculiar role covered by directors in committees (i.e. finance committee, investment committee), a positive relationship between inside directors which were members of the committees and performance emerged.

A topic which has been increasingly investigated in recent times relates to the presence of politicians on board of directors. For example, politically connected directors are explicitly put into relation with firm performance by Agrawal and Knoeber (2001) and Faccio (2006). The former authors justify their empirical finding that outsiders have a negative effect on firm value by suggesting that boards expanded for political reasons and this often resulted in too many outsiders on the board. Politically experienced directors were found to be prevalent in larger firms, where politics was more important, or in companies affected by the political mechanism through

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[4] See also Williamson (2007) for a discussion of the observed disparity between the efficacy of boards as it is predicted by the theoretical literature and the actual practice of boards of directors, that find it difficult to exercise their monitoring and advising roles.

government purchases, trade policy, environmental regulation and where lobbying was normally exerted. Faccio (2006), using a large sample of 20.000 firms in 47 countries, showed that corporate value was increasing after a top officer (*CEO*, director, or a large shareholder) entered politics[5]. In a similar vein, Goldman et al. (2009), working on a sample of major US companies observed in the period 1996-2000, provided support for the view that political connections add value.

As mentioned above, there are few papers that use non-US data. Niessen and Ruenzi (2009) worked on a sample of 605 German public companies observed in 2006, and found that politically connected firms were providing better accounting as well as stock market performance results. Bertrand et al. (2004), by using a unique dataset of corporations listed on the Paris stock exchange over the 1992-2003 period, found that firms run by politically-connected *CEOs* were not over-performing their industries but they were slightly less profitable than firms run by *CEOs* with a pure private sector background. Their interpretation that politically-connected *CEOs* were distorting the labour demand of their firms to favour incumbents in upcoming political elections by creating more jobs or by destroying fewer plants in politically more contested areas, is particularly interesting for the purpose of our work. By hiring more (or firing less) workers, firms had better access to subsidies and were allowed to pay lower local taxes, but the costs of this management style was outweighing its benefits and the net effect on performance turned out to be negative.

Overall, in spite of the fact that the results stemming from the above mentioned papers are not directly comparable[6], the bulk of the evidence points towards a positive effect of political connectedness on firm's value and performance. Our paper contributes to the above two strands of literature by providing fresh evidence on the effects of board size and composition on a sample of Italian local public utilities, where the political role of boards of directors is duly taken into account. In doing so, we aim to fill a gap in the literature, since, to the best of our knowledge, there is no available evidence on the above issues for Italy[7] and for State-owned firms.

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[5] In a subsequent paper (Faccio, 2009), she found that connected firms had higher leverage and were paying lower taxes, but they were exhibiting also a poor accounting performance as compared to their non-connected counterparts. The author suggested that this latter result was probably due to the ex-ante low performance of firms prior to connection, i.e. that political connections increased the value of poorly performing firms.

[6] Some papers use cross country data (Faccio, 2006 and 2009), while other studies are focused on a specific country. Some scholars look at the political connectedness of *CEOs* only (Fan et al., 2007, Bertrand et al., 2004), rather than including all board members, while others consider the political role of all the firm's employees (Cingano and Pinotti, 2009). Sometimes a restrictive definition of the political link (members of the Parliament or of the Government) is used, and directors which have a seat on regional or municipal political bodies are not taken into account. Some authors look at the directors' past position as politicians, while others consider their actual political role. The effects of board composition are evaluated according to different performance measures, such as accounting based (ROA, ROE, ROS) and stock based indexes (stock market prices, market-to-book ratios), and so on.

[7] Cingano and Pinotti (2009) investigated the impact of political connections on performance for a sample of 1200 Italian private firms observed over the period 1985-1997. Political connection (measured by matching information on individuals appointed in local governments as mayors, member of the local councils and of the executive cabinets with data on firms' employees) was found to be associated with a revenue premium, especially for upstream producers

Given that our sample refers to firms which are "not yet privatised", we believe it is worth mentioning some recent evidence on newly privatized firms. Boubakri et al. (2008) worked on a sample of 245 privatized firms observed in 41 countries over the period 1980-2002, and found a negative relationship between accounting performance and political connectedness. In a similar vein, Fan et al. (2007) analysed 790 new partially privatised firms in China, showing that those with politically connected *CEOs* were under-performing their unconnected peers. The above results are relevant for our analysis, since they suggest that attempts to privatize, liberalize and introduce more competition, such as the introduction of reforms of the local public services in Italy, may result ineffective, delayed, or partially neutralized by the choice of not removing (or of appointing new) politicians in the board of directors.

3. Definitions and data description

Board composition is defined according to the political affiliation, the independence, the status of insider or outsider of the director. *Politically connected directors* may be identified by their present or past activity in the political arena, as represented by a political charge, the membership to a political party, the candidacy for election[8]. As highlighted in the previous section, several definitions of connectedness have been considered in the literature. Faccio (2006), for example, defines directors as politically connected when they are members of parliament, heads of state, associated or close to a political party or when their relatives or close friends are. We consider as politically connected directors holding a seat in the parliament or in the Municipal, Provincial or Regional government at the same time as a seat in the board or before, or, more generally, directors affiliated to a political party and whose relationship with political parties is well known. The reason for considering political connections at a lower level than in Faccio (2006) is twofold: first, stakeholders of public utilities are generally located in a restricted geographic area, so that connections are important at a very local level; second, our focus is on board components and their objective function so that we want to capture all possible sources of influence and motivations[9].

We define as *outside directors* board members who are not current employees of the firm, so that they might also cover one of the top positions, typically the President, if they have no executive

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working for the public administration, but had no impact on firm productivity. The results suggest the presence of a welfare decreasing public demand shift towards politically connected firms.

[8] A director could be involved in the political arena even when none of the previous conditions is met (through relatives, for example). We do not include in the political connection the director's family or friends' connection, because the limited territorial operational range of the sample firms and their directors makes the information difficult to find and to prove.

[9] Other types of political affiliation might exist, for example through the director's primary occupation or the director's academic background. For example, Agrawal and Knoeber (2001) considered as connected directors holding a degree in Law, for their utility in case the firm is sued by shareholders. We have decided to exclude the director's degree, because it does not seem an important variable in the Italian context.

powers. In public utilities the President is generally a person of known experience and authority or otherwise an honorary charge given to a civil servant as a recognition of his past service.

Independent directors are detected by relying on the "*Codice di autodisciplina*" issued by the Committee for corporate governance of listed firms of the Italian Stock Exchange[10]. Listed companies in the sample must say if their directors are independent or not according to the "*Codice di autodisciplina*" and sometimes non-listed companies do the same in their balance sheet or chart. We fill the missing information for non-listed companies by applying the same criterion to their directors[11].

3.1. Data set and summary statistics

The data set includes economic, technical and governance variables of 114 Italian public utilities surveyed annually in 1994-2004. The sample firms operate at local and national level in the gas, electricity and water production, distribution and sale and they are representatives of the sector for number, geographical distribution and size[12]. Some of them are active in more than one industry, i.e. they are "*multi-utilities*", and 9 out of 114 are listed at the Italian Stock Exchange. The data set is unbalanced, for a total of 838 firm-year observations and 1630 board directors. The unbalanced nature of the dataset is due to mergers or alienations, as a result of which some firms disappeared and others entered at some specific point in time, as well as to the lack of the primary source of information, i.e. the balance sheets[13].

Information on governance was not included in the original datasets and its collection makes this dataset unique. It includes: the juridical form, the biggest three shareholders' identity, the percentage of equity they own, the name of directors, their position in the board, their political connection, if any, their position as insider, outsider or independent directors as declared in the firm chart or deducted from their role and curriculum. Companies with the "*Azienda Municipalizzata*" juridical form do not have a proper board of directors but an "administrative commission" nominated by the local government who controls it, and the board components were not always

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[10] The Code states: "*A convenient proportion of non-executive directors is represented by independent directors, who must not be involved in any economic relationship with the firm, its executive directors and its shareholders, cannot execute control or relevant influence over the firm and are not relatives of anyone in such a position*" (page 21).

[11] Some directors are said to be independent even if they act as officers in the public entity controlling the firm. In these cases we preserve the firm's indication and classify the director as (politically connected and) independent.

[12] The completion of the data set has spread over several years. The research centers Ceris-CNR and HERMES in Moncalieri (Italy) provided the initial data set, including technical and economic data retrieved from the paper balance sheets and from questionnaires sent to the firms. When missing, the economic information has been gathered from the electronic databases AIDA and Osiris or from the original balance sheets requested to the Court where they were supposedly deposited for legal and fiscal requirements.

[13] Unfortunately, the data collection process has permitted to fill a large part but not 100% of the missing values. Nevertheless, the data set is not strongly unbalanced, and, most importantly for the validity of results, the missing values are randomly distributed.

reported in the balance sheets. Despite these difficulties, only 17 out of 838 board-year data, corresponding to the boards of six different firms, are missing.

In order to identify political connected directors, we proceeded by steps, by addressing the sources of information from the least to the most sensitive. In principle, in Italy the membership to a political party and the extra-parliament political charges are public information. We contacted some Italian political parties and asked for the list of their affiliates but received no help, for the declared reason that there is no available database with those records. We run the biographical research on the electronic databases FACTIVA, LEXIS-NEXIS, ABI Inform (press release) and the Who's Who in Italy. Even if directors in the list showed up in those databases, there was almost no useful information about their political affiliation. We kept in touch with ANSA, the most important press agency in Italy, who did not have the information either[14]. The last resort was Internet, where we found most of the information. By putting the information together, we can unravel the political connection of all the 1630 directors with a high degree of confidence.

Table 1 summarizes some descriptive statistics for the profit ratios, the dimensional variables and board composition. ROA is computed as EBIT, earning before interest and tax expenses, equivalent to the operating profit, over total assets, ROI as EBIT over capital invested as the sum of equity and financial debt, and ROE is the proportion of Net Income over equity. We differentiate among blockholders, that is the shareholder, normally one, owning the largest proportion of equity: *Prblock* is a dummy variable which identifies private blockholders, while public entities are divided between *Lblock* (equal to one for local government) and *Publock* (equal to one for higher levels of government, like a Province, a Region, a Ministry or the Central Bank).

On average, boards are composed by less than seven persons, and sometimes all of them are politicians. Outside directors are as common as politicians, but most of them are not independent. The average number of directors per year is quite stable over the sample period and shows a slightly increasing trend at the end of it. The inflation in the number of directors could reflect the firm dimensional increase. The latter is linked to the transformation into limited companies (*Corp*) and to the augmented operational capacity of these firms. In 2004 there were no municipal firms (*AzMun*) left, while in 1994, at the beginning of the sample period, they represented the majority of juridical forms. The local government (*Publock*) is the most popular type of blockholder, followed in turn by private owners and by Regional, Provincial, and State organisms. Finally, the sample

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[14] Then, we considered interviewing the board members and sent a meeting request to a small sample of 12 firms, selected from the biggest ones. Four of them answered. This made us lay down the idea to send questionnaires to the firms asking for their directors' political connection.

includes many multiutilities, while, among the specialized firms, electric utilities are the less represented category.

While Table 1 highlights the dominance of politicians in the board, Table 2 shows that their incidence decreases as the number of independent directors goes up. A positive correlation between board size and firm dimension is also found. The incidence of politicians in the board is negatively correlated to the profit ratios and to the size variables *assets* and *N* (total employment). On the contrary, the percentage and the level of independent and outside directors are positively correlated with size, which is somehow puzzling. We will test these relations in a multivariate analysis in the following sections.

4. Firm-level employment and board of directors in the Italian public utilities

The political view of *SOEs* (Shleifer and Vishny, 1994) has legitimated the idea that *SOEs* are over-staffed and that bureaucrats do not pursue any social objectives but consensus solely. We test this hypothesis by investigating the relationship between board dimension and composition, on the one hand, and the number of firm's employees, on the other. In firms controlled by a political body holding effective control, as in the case of Italian public utilities, employment might expand for political reasons. The trend might be stronger if the board is dominated by politicians representing various stakeholders and interests. In a profit-maximizing firm, independent directors would be expected to contrast those expansions of employment that are pursued at the expense of profitability.

4.1. Board dimension

The first hypothesis we want to test concerns the nature of the relationship between board size and labour demand. The direct correlation between the two variables might suggest a positive effect of board size on employment, which might nevertheless include an indirect effect working through firm dimension. We therefore apply the "bounding procedure" (Bond, 2002) to the following model:

$$n_{it} = \alpha_1 \, n_{it-1} + \beta_1 \, w_{it} + \beta_2 \, w_{it-1} + \beta_3 \, k_{it} + \beta_4 \, k_{it-1} + \beta_5 \, board_{it} + \lambda_t + \eta_i + \upsilon_{it} \tag{1}$$

where n_{it} is the logarithm of employment in firm i at the end of corresponding year, w_{it} is the logarithm of average wage, k_{it} is the logarithm of firm gross capital (as the sum of total financial debt and equity), $board_{it}$ is the number of directors sitting in the board at time t, λ_t is a time effect common to all firms, η_i is a permanent but non-observable firm specific effect, and υ_{it} is the error

term. A theoretical interpretation for (1), without the governance variable, is in Arellano, Bond (1991). We apply different techniques to estimate the general expression in (1) and compare the results in Table 3. The first specification is an OLS estimate in which both the dependent variable n_{it} and the explanatory variables are in levels (column (1)). Year 1994 is lost due to the use of a lag. The dummy for year 2004 is dropped because the constant is included in the model. The problem in applying OLS is that the lagged employment, n_{it-1} is endogenous to the fixed effects in the error term, thus violating the assumption necessary for the consistency of OLS and generating the "dynamic panel bias". As a consequence, the lagged employment's coefficient (equal to 0.954) is overestimated because it appropriates predictive power that actually belongs to the firm fixed effect accounted for in the error term.

The first method to overcome the endogeneity problem is to transform each variable in the corresponding deviation from the firm mean: OLS performed on the transformed data is the Within Group estimator and the regression generates Fixed Effect estimates, as shown in column (2) of Table 3. The lagged employment coefficient falls from 0.954 to 0.763: this is the interval where the estimate of the true parameter should fall. Unfortunately, the Within Group transformation does not remove the dynamic panel bias (Bond, 2002). An alternative method for addressing both the endogeneity of regressors and the dynamic bias in a panel data is the first-difference (FD) transformation, which eliminates the fixed effects and avoid the propensity of the Within Groups transformation to make every observation of the in-deviation dependent variable endogenous to every other for a given individual. In such a model the dependent variable, the lagged dependent variable as a regressor and the other regressors are all transformed in first-difference. While fixed effects are removed (they are in fact differenced out), the lagged dependent variable is still endogenous because it is correlated to the error term. At this point, being the lagged dependent variable in the first-difference model endogenous, instrumental variables might help. Longer than one-lags of the dependent variable remain orthogonal to the error and are available as instruments. The same applies to all the regressors that are not strictly endogenous. Instrumenting the dependent variable in first difference with its level at time t-2 leaves the model exactly identified. This is the intuition of Anderson and Hsiao (1981)[15].

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[15] We followed both the first difference (FD) and the Anderson-Hsiao (1981) (AH) approaches, but we do not report the estimates for reason of space. While the estimate of the AH employment model is consistent, it is inefficient because it does not take into account all the possible orthogonality conditions between deeper lags of the regressors and the error, nor the distribution of the error (in difference). The coefficient of the lagged employment is 1.322 and falls outside the interval [0.763;0.954] offered by the OLS and the Within Group estimates, thus signalling a poor performance of the model. As a further check, by considering all valid lags of the untransformed variables as instruments, where available, one gets the classical "GMM-diff" model (Arellano and Bond, 1991), for which the coefficient of the lagged dependent variable (0.182) does not fall in the valid range yet.

While retaining the original Arellano-Bond moment conditions for the in-difference equation, that is instrumenting variables in differences with variables in levels, Blundell and Bond (1998) suggest to "add" new conditions and to instrument variables in levels with variables in differences: this creates the so-called "GMM-system" estimate ("GMM-sys"). In practice, the model is treated as a system of equations, one for each time period, where the predetermined and endogenous variables in first-differences are instrumented with suitable lags of their own levels; the predetermined and endogenous variables in levels are instrumented with suitable lags of their own first differences. Column (3) of Table 3 shows the result of the one-step GMM-sys estimate. The coefficient of the lagged employment equals 0.821 and falls between the OLS and the Within-Group estimates; unluckily, the Arellano-Bond test for autocorrelation does not fails to reject the null hypothesis that the error terms in the first difference regression exhibit no second order serial correlation at 10% significance level while the Sargan-Hansen tests fails to reject the null hypothesis that all instruments are exogenous at the 5% level. Following Blundell and Bond (1998), we treat k_{it} and w_{it} as endogenous and instrument them too when applying the two-step GMM-sys estimator with correction for heteroskedasticity in column (4). The coefficient on lagged employment moves into the credible range delimited by the pooled OLS and the Within Group estimates and the model performs well.

The two-step GMM-sys estimates with correction for heteroskedasticity basically confirm the first-step findings that the lagged employment and the contemporaneous and lagged wage are the main determinants of the present employment[16]. Given the absence of second order correlation in the first difference of the error term, the two-step GMM-sys estimator may be relied on. The difference-in-Hansen test still fails to reject the hypothesis that the additional moment conditions are valid.

Turning to our governance variable, the coefficient of $board_{it}$ is positive and significant at a 5% level, assigning a positive effect of board dimension on the level of employment. Since, following Hermalin and Weisbach (1998), we have treated board dimension as potentially endogenous, we can be confident about the direction of causality. In fact, it could well be the case that firms with large headcount require dedicated policies and expertises to be represented in the board, so that board size could depend on employment. Quite surprisingly, the GMM methodology has rarely been used to handle endogeneity, while the solutions proposed in the literature are the use

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[16] All estimates are performed using the xtabond2 procedure in Stata developed by Roodman (2006). In all cases the two step estimates are reported with the finite sample correction of the variance covariance matrix suggested by Windmeijer (2005). We tried also two lags for employment bond and the capital stock, an we included also aggregate output per sector among the regressors. Results are available upon request.

of simultaneous equations models, of instrumental variables and fixed effect regressions, or the inclusion of lagged dependent variables among the regressors.

4.2. Board composition

Supposing that politically connected directors have a word in deciding a public utility's employment, we want to test the effects of their decisions on the firm strategy. The number of politicians sitting on the board may depend on firm size, its juridical form, ownership structure and industry. We are open to the possibility that the variable $polit_{it}$ is endogenous to the mechanism governing employment and we apply the bounding procedure in analogy to what we did while dealing with board size. We estimate the model:

$$n_{it} = \alpha_1\, n_{it-1} + \beta_1\, w_{it} + \beta_2\, w_{it-1} + \beta_3\, k_{it} + \beta_4\, k_{it-1} + \beta_6\, polit_{it} + \lambda_t + \eta_i + \upsilon_{it} \qquad (2)$$

where n_{it}, w_{it}, k_{it}, n_{it-1}, w_{it-1}, k_{it-1}, λ_t, η_i, υ_{it} are defined as in (1) and $polit_{it}$ is the number of politicians sitting on the board of firm i at time t.

Table 4 shows that politically connected directors have a positive and significant impact on the level of employment (column (2)), after controlling for lagged employment, wage, capital and their first lags[17]. The results are in line with our hypothesis on the influence of politicians over employment levels, and are also an important confirmation of a stylized fact about the behaviour of state firms, traditionally over-employed, as argued by Boycko et al. (1996). However, in order to compare the relative effects of board size and composition, we should include also the other characteristics of directors as well as board dimension among the regressors.

In fact, in firms with dispersed, private ownership, the presence of independent and outside directors are expected to signal strong governance, for the monitoring role exerted by those directors on the management. NYSE (since 1978) and the NASDAQ (since 1989) require companies whose stocks are traded on their exchanges to have at least two outside directors on their corporate boards. This requirement suggests that some unaffiliated monitoring is considered necessary to safeguard or advance shareholders' interests. According to the Italian *"Codice di Autodisciplina"* for listed companies, outside directors should be relevant for the board decisions by virtue of their number and authority. Their opinion is particularly important when the executives' interests are not aligned with the shareholder's, for they are external to the firm daily management.

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[17] Table 4 reports the coefficients on the corporate governance variables. $Board_{it}$, $polit_{it}$, $\%polit_{it}$, $\%indep_{it}$ and $\%out_{it}$ are treated as endogenous variables for the reasons explained above. The complete set of estimates is available upon request.

In firms with concentrated ownership, some directors should be independent from the blockholder, in order to guarantee the autonomy of the board from the controlling shareholders. The transformation of Italian public utilities from municipal firms (*AzMun*) into special firms (*AzSpec*) before and into limited companies (*Corp*) afterwards has given the boards an increasing power, at least nominally. Column (3) of Table 4 shows that the percentage of politicians (*%polit$_{it}$*) has a positive impact on employment, while a negative sign is found for the percentages of outside (*%out$_{it}$*) and independent directors (*%indep$_{it}$*). While this is in accordance with a priori expectations, the coefficients of the three variables fail to reach an acceptable level of significance. Furthermore, by looking at the results in column (4) we can observe that the coefficient on board size is robust to the inclusion of variables accounting for board composition. We can therefore conclude from this first set of regressions that board size shows to be more important than board composition in explaining the labour demand of Italian public utilities[18].

5. Board size and composition and firm performance

We turn now to the main focus of the paper, by asking the following question: do board dimension and composition affect firm value in local public utilities? The question is relevant in itself, but it is particularly pregnant if applied to the Italian institutional context. The progressive corporatization of public utilities, i.e. the transformation from the "*Azienda Municipalizzata*" into the "*Società per azioni*" juridical form, has put the bases for their strategic independence and signalled the legislator's intention to make firms autonomous in their expenses plans and financing capacity. Moreover, the expected profitability of state-controlled firms is essential in order to stimulate private investors to be part of the ownership structure.

The corporate finance literature usually explains the relationship between governance and profitability by means of a dynamic linear model in which one or more lags of the dependent variable (stock return or accounting index) are used as regressor, as in the seminal work by Yermack (1996). Differently from employment level, which is a stock variable accumulated over time, profitability is usually measured by flows, such as stock price or return on assets. We therefore study the effect of board dimension and composition on the operating performance of Italian public utilities by estimating the following static linear model:

$$y_{it} = \beta_G\,G_{it} + \beta_X X_{it} + \lambda_t + \eta_i + v_{it} \tag{3}$$

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[18] Since board composition and function varies across juridical forms, it is worth testing whether $\%polit_{it}$, $\%out_{it}$ and $\%indep_{it}$ are significantly related to n_{it} when the juridical form is taken into consideration. By adding dummy variables identifying municipal firms (*AzMun$_{it}$*), special firms (*AzSpec$_{it}$*) and limited companies (*Corp$_{it}$*) among the regressors, we basically confirm the results presented in Table 4. Moreover, the coefficients on the juridical form variables were never found to be significantly different from zero.

where y_{it} is a performance indicator, G_{it} is a vector of governance variables, like the juridical form, board dimension or composition, X_{it} is a vector of control variables, like sector or firm dimension, λ_t is a time dummy, η_i an individual, time invariant variable and v_{it} the error term. Only 10 out of 114 firms in our sample are listed, so that the firm performance will be assessed by accounting measures, namely ROI and ROE[19].

5.1. Board dimension

We estimate the model:

$$y_{it} = \beta_1\, board_{it} + \beta_X X_{it} + \lambda_t + \eta_i + v_{it} \qquad\qquad (3.1)$$

with two-step GMM-sys estimators, where y_{it} is ROI or ROE, $board_{it}$ is the number of directors at time t and X_{it} represents a set of control variables (such as firm dimension and the industrial sector) that we alternatively use in order to check the robustness of our results. Employment and total assets, in levels or logarithm, are popular measures for firm size, and we try them all. We also separate the firms into three groups, small, medium and big, including companies whose total assets are below the 33th percentile, between the 33th and the 66th percentile and above the 66th percentile, respectively. We consider the governance variable $board_{it}$ as endogenous, consistently with the previous analysis on employment. Table 5 presents the results, with ROI and ROE as dependent variables, and dummies for small and medium sized firms included as regressors[20].

We confirm for Italian public utilities the results that Yermack (1996) finds for US, listed, private firms with dispersed ownership: board dimension is negatively correlated with profitability. In short, bigger boards seem to pursue higher headcount at the expense of economic value. The result is evident across industries and is purged of any possible size effect. Firms in the gas (water) industry show a tendency to a higher (lower) ROI (ROE). Since the omitted category identifies multi-utility firms, we do not find a clear indication that utilities which operate in more than one sector are performing differently from operators specialized in water, gas and electricity, respectively[21].

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[19] ROA has been excluded as a dependent variable for two reasons: first, ROA is quite stable during the sample period and across firms, so it gives little information about differences among the sample units; second, most Italian firms finance their total assets more through accounting payables than with financial debt, so that ROA does not properly reflect the capital profitability, which is our main concern.

[20] The results of regressions in which total assets and number of employees are used as size variables are virtually unchanged.

[21] See Piacenza and Vannoni (2004), for a detailed analysis of the cost function of Italian multi-utilities, in which some evidence of the presence of scope economies is provided.

Table 6 shows the results of regressions in which model 3.1 has been enriched by including variables accounting for the company's juridical form, i.e. $AzMun_{it}$ which identifies municipal firms, $AzSpec_{it}$ which identifies special firms, the omitted category being the limited corporation form $Corp_{it}$, as well as for the presence of a blockholder. The negative signs for both $AzMun_{it}$ and $AzSpec_{it}$ highlight that corporatization is associated to a higher performance, a result in line with the evidence provided by Cambini et al. (2010), who investigated the effects of corporatization on the costs of a sample of Italian local public transport companies. In a similar vein, the negative signs for $Publock_{it}$ and $Lblock_{it}$ suggest that the presence of private blockholders (the omitted category) is effective in spurring efficiency in Italian $SOEs$[22]. "Mixed firms", i.e. companies participated by both state and private investors, are one example of public-private partnership, typically used in the reorganization of local public services, mostly when the creation and the management of integrated public services are concerned. Public-private partnerships may help the public sector to make resources available for alternative investments but it is not clear whether the most productive investments would be financed through these agreements (Hart, Shleifer and Vishny, 1997; Hart, 2003). Nevertheless, the result in Table 6 seems to indicate that in Italian public utilities the presence of a private investor may counterbalance any possible negative effect on profitability produced by the inflation of board size or the persistence of traditional juridical forms.

5.2. Board composition

We follow the same approach as for employment and study the relationship between the number and the percentage of politicians, the proportion of independent and outside directors sitting on the board and firm profitability, by including $polit_{it}$, $\%polit_{it}$ $\%indep_{it}$ and $\%out_{it}$ as right hand side variables. We report in Table 7 the estimates for ROI, but the results are confirmed also by looking at ROE[23]. Differently from what happens when employment is taken as the dependent variable, the number of politicians sitting on the board are found to negatively impact on profitability. Politically-connected directors seem to concentrate on increasing the headcount more than paying attention to the economic performance. By including board size and board composition variables simultaneously, we confirm the negative effect of politicians directors on performance ($\%polit_{it}$) while the coefficient on $board_{it}$ looses it significance, thus suggesting that board composition is more important than board size in influencing firm performance. The proportions of outside directors and of independent directors are never significant. However, the negative sign of

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[22] It is not surprising that the inclusion of the dummies for blockholders reduces the significance of the coefficient on board size, given that the presence of a well-identified blockholder can be effective in reducing the agency problems discussed in the introductory session.

[23] We have also performed regressions including the variables accounting for the juridical form and for the presence of blockholders. Results are robust and available upon request.

the coefficient on *%indep$_{it}$* seems to reinforce the idea that the objective of independent directors is not quite what one would expect from their profile: they seem to mimic the politicians in favouring more employment at the expense of profitability. This might be due to the fact that directors' independence, as declared by the firm chart, is perhaps disconnected from what emerges from their biography: some directors, whom we have recognised as politically connected to the blockholder without being public officers (thus not politicians in a strict sense), are said to be independent, but they may actually pursue the same objectives as politicians. If this is the case, the status of independent is not very informative and the interpretation of the econometric results becomes quite difficult.

6. Conclusions

Despite the evolution of the legal and industrial framework, Italian public utilities are still controlled by state entities and their boards are dominated by politicians to a large extent. Shleifer and Vishny (1994) explain that political control of firms (as brought by a politically-dominated board) leads to a less efficient resource allocation than managerial control. Government-owned firms are thought to forgo maximum profit in the search for social and political objectives such as wealth distribution and employment.

This paper addresses this open question by means of a newly hand-collected sample of 114 Italian public utilities observed during the period 1994-2004. The analysis on profitability and employment suggests that board size and composition matter even in State-owned firms with concentrated ownership and public blockholders. The inflationary effects that board size and the presence of politically connected directors have on the number of employees confirms the general opinion that State-owned firms are over-employed and employment-maximizing. Big boards might suffer from coordination problems just like privately held firms as confirmed by Yermack (1996).

While board size is found to be more important than board composition in increasing the number of employees, board composition – namely, the number and proportion of politicians directors in the board – turns out to be more important than board size in reducing accounting performance of Italian *SOEs*.

We find also that the position of independent directors is ambiguous, in that they seem to imitate politicians by negatively affecting firm value. According to the existing theoretical literature, outside directors are often treated as an undifferentiated group opposed to insiders. By distinguishing outsiders who are politically connected and outsiders who declared themselves as independent, we introduce a further differentiation and investigate the objectives pursued by directors within the board. The behaviour emerging from this paper suggests that, beyond their

status, independent directors might hide an indirect affiliation to politicians or even aim to the same objectives without necessarily enjoying any political connection.

The results of the paper are in line with the ones obtained by Bertrand et al. (2004) for private firms active in politically contested areas and by Boubakri et al. (2008) and Fan et al. (2008) for newly privatised firms. In both cases, in fact, political connection is found to harm firm performance. If privatising by letting politicians to still sit on board of directors can seriously undermine the goals of privatisation, favouring strong political connections in local public utilities can well annihilate the positive effects that the reforms of the sector (i.e. *corporatization* processes or any attempts to introduce competition) are expected to bring. This is in line with the regulation which has been recently imposed to most Italian local public utilities by *Law 6/8/2008, n. 133* and which is going to be implemented by means of accomplishing *decrees*. Together with the promotion of more competition through privatisation and the introduction of tendering procedures, attempts are made to separate the regulator from the management of the regulated firm, by foreseeing bans for the mayors, the members of the municipal councils and of the executive cabinets, and any other civil servant working at present or in the past three years at the municipality, to sit on the boards of directors of the corresponding local public utilities.

Leaving political connectedness aside, the paper suggests also that a larger number of directors might indicate the presence of several stakeholders, such as citizens or creditors, each represented in the board and with a potential interest to increase the level of employment and to pursue strategies which could be detrimental for profitability. The limits recently imposed by the Italian Budget Law (*Law 27/12/2006, n. 296*) to the total number of directors, in case of full public ownership (3 or 5, depending on firm size) or to the number of directors that can be nominated by the local municipality, in case of mixed ownership (no more than 5) might be consistent with this view and are therefore particularly welcome.

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Table 1. Descriptive statistics

Variable	Number Observ.	25%	Median	75%	Mean	St.Dev
ROA	838	0.013	0.033	0.056	0.037	0.037
ROE	838	0.007	0.037	0.091	0.065	0.120
ROI	838	0.021	0.050	0.090	0.069	0.098
Assets ('000 euro)	838	23,024	63,228	179,306	212,623	476,818
sales ('000 euro)	838	11,625	27,571	85,907	96,910	221,688
N	838	54	168	413	505.7	1294.3
Board	821	5	7	7	6.14	2.48
Polit	821	4	5	7	5.58	2.49
Indep	821	0	0	2	1.42	2.10
Out	821	4	6	6	5.13	2.64
			Mean			
Publock	19	0.023				
Lblock	662	0.790				
Prblock	157	0.187				
Azmun	178	0.212				
Azspec	221	0.264				
Corp	439	0.524				
Gas	139	0.166				
Water	183	0.218				
Electricity	58	0.069				
Multiutilities	458	0.547				

ROA is the return on assets, *ROI* is the return on invested capital, *ROE* is the return on equity, *assets* represents the firm total assets, *N* the number of employees, *sales* the revenues, *board* is the board size, *indep* is the number of independent directors, *polit* is the number of politically connected directors, *out* is the number of outside directors. *Publock* is a dummy variable for firms whose blockholder is a State entity at the highest level (Ministry, Region, Province, Central Bank, etc.), while *Lblock* identifies firms with local governments as blockholders. *Prblock* is a dummy variable for firms whose blockholder is a private entity. *Azmun, Azspec, Corp* are dummies accounting for the juridical form (Azienda Municipalizzata, Azienda Speciale, and limited company, respectively). *Gas*, *Water*, *Electricity* are dummies for firms focused mostly on one activity, while *Multiutilities* identifies diversified utilities who run several businesses.

Table 2. Correlation matrix for board composition

	board	polit	indep	out	%polit	%indep	%out	ROA	ROE	ROI	assets	N
board	1							0.008	-0.026	-0.079**	0.134***	0.115***
polit	0.915***	1						-0.065*	-0.057	-0.155***	0.068*	0.051
indep	0.396***	0.270***	1					0.039	-0.062*	-0.022	0.305***	0.259***
out	0.970***	0.913***	0.364***	1				-0.042	-0.035	-0.116***	0.154***	0.134***
%polit	-0.048	0.338***	-0.203***	-0.002	1			-0.214***	-0.149***	-0.292***	-0.115***	-0.126***
%indep	0.198***	0.088**	0.917***	0.189***	-0.215***	1		0.018	-0.055	-0.035	0.275***	0.241***
%out	0.623***	0.591***	0.208***	0.716***	-0.048	0.213***	1	-0.025	0.027	-0.078**	0.113***	0.104***

Pearson correlations between board characteristics, profit ratios and measures of firm dimension: *board* is the board size, *polit* is the number of politically connected directors, *indep* is the number of independent directors, *out* is the number of outside directors, *%polit* is the fraction of politically connected directors, *%indep* is the fraction of independent directors, *%out* is the fraction of outside directors, *ROA* is the return on assets, *ROI* is the return on invested capital, *ROE* is the return on equity, *assets* represents the firm total assets, *N* the number of employees. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table 3. Employment and board dimension

Independent variables	Dependent variable: n_{it}.			
	(1) OLS	(2) Within Group	(3) GMM-sys	(4) GMM-sys2
n_{it-1}	0.954*** (0.013)	0.763*** (0.015)	0.821*** (0.061)	0.826*** (0.066)
w_{it}	-0.621*** (0.136)	-0.645*** (0.136)	-0.798*** (0.167)	-0.876*** (0.141)
w_{it-1}	0.576*** (0.089)	0.459*** (0.063)	0.611*** (0.093)	0.626*** (0.135)
k_{it}	0.145*** (0.418)	0.126*** (0.038)	0.206*** (0.075)	0.201** (0.091)
k_{it-1}	-0.105*** (0.035)	-0.086** (0.040)	-0.076 (0.053)	-0.080 (0.058)
$board_{it}$	-0.000 (0.003)	0.018*** (0.007)	0.033*** (0.012)	0.030** (0.014)
AR(2) AR(2) *p-value*	–	–	-1.70 *0.088*	-1.64 *0.101*
Hansen $Pr > \chi^2$ Hansen *df*	–	–	1.000 *139*	0.997 *110*
Difference Hansen $Pr > \chi^2$	–	–	0.815	0.796
Number of observations	699	699	699	699
Time dummies	yes			
Sample period	1994-2004			
Number of firms	111			

*** Significant at 1%; ** Significant at 5%; * Significant at 10%. Standard errors in parentheses.

Table 4. Employment, board size and composition: politicians, independent and outside directors

Independent variables	Dependent variable: n_{it}.			
$board_{it}$	0.030** (0.014)			0.030** (0.014)
$polit_{it}$		0.027** (0.011)		
$\%polit_{it}$			0.211 (0.241)	0.146 (0.253)
$\%indep_{it}$			-0.133 (0.171)	-0.162 (0.154)
$\%out_{it}$			-0.019 (0.221)	-0.260 (0.252)
AR(2) AR(2) *p-value*	-1.64 *0.101*	-1.65 *0.100*	-1.59 *0.112*	-1.61 *0.107*
Hansen $Pr > \chi^2$ Hansen *df*	0.997 *110*	0.998 *110*	1.000 *244*	1.000 *299*
Difference Hansen $Pr > \chi^2$	0.796	0.673	1.000	1.000
Number of observations	699	699	699	699
Time dummies	yes			
Sample period	1994-2004			
Number of firms	111			

Estimated models: GMM-sys2. Coefficients on $n_{it-1}, w_{it}, w_{it-1}, k_{it}, k_{it-1}$ not reported. *** Significant at 1%; ** Significant at 5%; * Significant at 10%. Standard errors in parentheses.

Table 5. Governance and economic performance: ROI and ROE

Independent variables	Dependent variables			
	ROI		ROE	
$board_{it}$	-0.006**	-0.004*	-0.006**	-0.007**
	(0.003)	(0.002)	(0.003)	(0.003)
$small_{it}$		0.035**		0.026
		(0.016)		(0.017)
$medium_{it}$		-0.002		-0.015
		(0.008)		(0.011)
$water_{it}$	-0.028	-0.024	-0.044***	-0.045***
	(0.017)	(0.016)	(0.012)	(0.014)
gas_{it}	0.054*	0.049*	0.038	0.029
	(0.029)	(0.029)	(0.035)	(0.031)
$electr_{it}$	-0.007	-0.013	0.004	-0.001
	(0.016)	(0.016)	(0.021)	(0.023)
$constant$	0.115***	0.100***	0.116***	0.114***
	(0.024)	(0.021)	(0.025)	(0.027)
AR(2)	0.13	-0.09	-1.30	-1.15
AR(2) *p-value*	0.894	0.927	0.195	0.250
Hansen $Pr > \chi^2$	0.301	0.507	0.936	0.908
Hansen *df*	64	64	53	53
Difference Hansen $Pr > \chi^2$	0.517	0.339	0.902	0.820
Number of observations	821	821	821	821
Time dummies	Yes			
Sample period	1994-2004			
Number of firms	113			

Estimated models: GMM-sys2. *** Significant at 1%; ** Significant at 5%; * Significant at 10%. Standard errors in parentheses.

Table 6. Performance, juridical form and blockholders

Independent variables	Dependent Variable: ROI		
$board_{it}$	-0.006* *(0.004)*	-0.003 *(0.002)*	-0.003 *(0.003)*
$small_{it}$	0.026 *(0.020)*	0.029* *(0.016)*	0.039** *(0.016)*
$medium_{it}$	-0.001 *(0.009)*	0.002 *(0.008)*	0.006 *(0.008)*
$AzMun_{it}$	-0.037* *(0.020)*		-0.014 *(0.012)*
$AzSpec_{it}$	-0.045*** *(0.015)*		-0.021*** *(0.008)*
$Publock_{it}$		-0.069* *(0.041)*	-0.068* *(0.039)*
$Lblock_{it}$		-0.067*** *(0.017)*	-0.059*** *(0.017)*
$water_{it}$	-0.027** *(0.012)*	-0.030** *(0.013)*	-0.032** *(0.014)*
gas_{it}	0.033 *(0.027)*	0.019 *(0.019)*	0.015 *(0.022)*
$electr_{it}$	0.008 *(0.013)*	0.005 *(0.017)*	0.005 *(0.017)*
constant	0.108*** *(0.028)*	0.152*** *(0.025)*	0.142*** *(0.025)*
AR(2) AR(2) *p-value*	-0.30 *0.761*	-0.05 *0.964*	-0.14 *0.892*
Hansen $Pr > \chi^2$ Hansen *df*	0.761 *53*	0.783 *54*	0.767 *64*
Difference Hansen $Pr > \chi^2$	0.854	0.667	0.643
Number of observations	821	821	821
Time dummies	Yes		
Sample period	1994-2004		
Number of firms	113		

Estimated models: GMM-sys2. *** Significant at 1%; ** Significant at 5%; * Significant at 10%. Standard errors in parentheses.

Table 7. Performance, board size and composition: politicians, independent and outside directors

Independent variables	Dependent variable: ROI			
$board_{it}$	-0.004* (0.002)			0.000 (0.002)
$polit_{it}$		-0.008* (0.004)		
$\%polit_{it}$			-0.067* (0.038)	-0.094** (0.046)
$\%indep_{it}$			-0.050 (0.031)	-0.043 (0.028)
$\%out_{it}$			-0.006 (0.035)	-0.074 (0.064)
AR(2) AR(2) p-value	-0.09 0.927	-0.02 0.985	-0.01 0.992	-0.03 0.976
Hansen $Pr > \chi^2$ Hansen df	0.507 64	0.393 43	1.000 151	1.000 189
Difference Hansen $Pr > \chi^2$	0.339	0.118	0.176	0.876
Number of observations	821	821	821	821
Time dummies	yes			
Sample period	1994-2004			
Number of firms	113			

Estimated models: GMM-sys2. Coefficients on $small_{it}$, $medium_{it}$, $water_{it}$ gas_{it} $electr_{it}$ not reported.
*** Significant at 1%; ** Significant at 5%; * Significant at 10%. Standard errors in parentheses.