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Evidences from Italian Small-Medium
Unlisted Enterprises**

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Abstract

One Tier Board corporate governance system has attracted a significant bulk of researches mainly addressed in understanding the corporate and financial determinants of its choice. However the connection between the adoption of a one tier board system and firms' performances has not been fully analyzed. We focus our analysis on verifying whether companies which turned into one tier board system have improved their performance or not. To implement this analysis we compare accounting and financial outcomes obtained by a sample of Italian small and medium enterprises unlisted joint-stock companies prior and afterwards 2003, i.e. the introduction in Italy of alternative corporate governance systems, using propensity score matching combined with a difference in difference estimator. We find a clear evidence of a significant worsening of performances since 2003 to 2009 for corporations adopting one-tier board governance system. This evidence may contribute to explain the low number of companies which turned into one tier board representing a very small percentage of the whole universe of unlisted Italian joint-stock companies

Keywords: Corporate governance; one-tier board; firm performance;
JEL classification: G34, K22, M42.

1. *Introduction and literature review*

This paper provides an innovative point of view in the corporate governance debates, enquiring whether the adoption of one tier board governance systems is likely to affect firms' performances. Financial literature has mainly devoted its attention to the connection between board composition and firms' performance for listed corporations, documenting the idea that an appropriate board structure is relevant for good corporate governance (Dahya et al., 2002; Hossain et al., 2001; Carline et al., 2002) and that investors are likely to pay for it. The same happens for small and medium privately held enterprises (Uhlener *et al* 2007) or eventually with more widespread ownership structure (Brunninge et al., 2007).

In relation to the United States market, Gompers et al. (2003) analyze the relationship between corporate governance and long-term equity returns, giving evidence that well-governed companies trigger 8.5% yearly abnormal returns in comparison with poorly governed firms. Larcker et al. (2003) develop extensive innovative measures for corporate governance, showing that these factors are related to future operating performance, Tobin's Q, and future excess stock returns. Moreover, Bhagat and Bolton (2008) outline that better corporate governance, stock ownership of board members, and CEO-Chair separation is significantly positively correlated with better contemporaneous and subsequent operating performance. In relation to small and medium enterprises, Shaker *et al* (2007) find that governance systems, and more specifically the presence of independent outside directors in the board, influence knowledge based resources necessary for the development of internationalization. More recently, Erkens et al. (2012) investigate the influence of corporate governance on performance of financial firms located in countries severely hit by the financial crisis of the years 2007-2008, showing that corporations featured by more independent board members and higher institutional ownership experienced worsen stock returns during the crisis period, probably because of the higher level of risk assumed prior to the crisis.

With specific attention to alternative corporate governance systems, financial literature has mainly devoted its efforts in analysing the corporate determinants of the choice among different corporate governance systems for listed companies in terms of efficiency and agency costs with relation to Germany and United Kingdom (Jungmann, 2006) and to France (Millet-Reyes and Zhao, 2010) or devoting its attention to small and medium enterprises unlisted companies with specific regard to Italy (Bellavite Pellegrini et al. 2010).

More in details, Bellavite Pellegrini et al. (2010) examine the determinants, in terms of balance sheet items, financial and ownership structures data, and the nature of shareholders, of the choice of an alternative system of corporate governance instead of the traditional one, using a sample of 548 Italian unlisted joint-stock firms. The authors implemented a binary response model to reveal that corporations with best performances in term of sales and corporate structure are more likely to maintain a traditional system; similarly, corporations that are under control and coordination prefer a traditional system. Conversely, firms with a high proportion of individual shareholders in their ownership structure are more likely to adopt alternative systems. Within companies that turned into an alternative corporate governance model, they found that companies under control and coordination tend to implement a one-tier system, such as firms with a higher proportion of individual shareholders. In addition, they also verified that there are no significant variables that contribute or determine the choice between one-tier and two-tier models of corporate governance.

On the other hand the consequence of the adoption of alternative corporate governance systems and more specifically of one tier board system on firm performances has not been yet analysed. In order to enquiry this issue we devote our attention to the Italian framework. Because of its Corporate Law Reform of 2003¹, which allows listed

¹ These topics have progressively gained the attention of legislators of many countries all over the world, because of the scandals which took place at the beginning of the new century. This is the result of the combination of different factors which have pushed legislators throughout Europe to reconsider the efficiency

and unlisted joint stock companies to choose freely among three different corporate governance systems, Italy represents a very promising case for implementing this research, with specific attention to a very significant sample of small and medium unlisted enterprises fully representing the Italian industrial structure. In this paper, we devote our attention only to compare one tier board system and traditional one, using data deriving from the “Register of Companies” of the Italian system Infocamere.

As above mentioned the Italian Corporate Law Reform, approved in 2003, allowed Italian companies to eventually adopt three different models of corporate governance, juxtaposing one and two tier board to the Italian traditional board system, composed by a Board of Directors and a Board of Auditors. In the traditional system the Reform allowed joint stock companies to freely entrust accounting auditing not mandatory to the Board of Auditors, but eventually to an external auditor as well, whenever they are not listed or belonging to a listed Group or obliged to a consolidated balance sheet. One-tier model, which derives from the Anglo-Saxon tradition, constitutes an innovation in the Italian corporate environment. This model contributes to improve information transparency between the Board of Directors and the Board of Auditors, which is no more a separate body but it is incorporated in the Board of Directors, and composed by directors with specific professional skills in accounting and risk control, allowing in this way a larger flow of information to the controlling body entrusting on the other hand in a mandatory way the external auditor for accounting auditing.

Moreover, if we focus our attention to the costs and to the expenses and to which extent the choice of an alternative corporate governance system may affect the costs of each corporate body, financial literature (Bellavite Pellegrini et al., 2013) compared companies opting for an alternative systems with sample of Italian unlisted joint-stock firms which, conversely, maintained a traditional system. The outcomes highlight that one-tier model, which is more likely to

of the organizational structures of corporations. As observed by Ghezzi and Malberti (2008), a global convergence of corporate law is taking place.

be adopted by small firms, with more fragmented ownership structure and under control and coordination, is less expensive than the traditional one, thanks to its greater simplicity and flexibility, even considering the lesser number of subjects which feature one tier model in comparison with traditional one. However, that study is limited to the remuneration of the board members and leaves out overall firm performances, while the issue of how governance mechanisms affect the firm strategy covers also other broader aspects of business management (Giovannini, 2009), especially with respect to small and medium-sized enterprises (Brunninge et al., 2007 and Al-Najjar, 2015).

In light of the existing literature, this paper aims at expanding the debate around the effect of the adoption of a one tier board system instead of a traditional one, focusing on the overall increase or decrease in firm performances after that choice.

This paper is organized as follows: Section two provides descriptive statistics of the data, meanwhile section three presents the statistical methodology and section four the empirical results. A concluding section will draw some conclusions for addressing future researches.

2. Data and description

We take into analysis a wide sample of the Italian unlisted joint-stock companies enrolled in “Register of Companies” for the years 2003 and 2009. All accounting data have been obtained from Aida BvD, while the list of the companies featured by one tier board belonging to our sample in 2009 have been obtained by Infocamere Archive, a database implemented by the Chamber of Commerce. We rely on two different databases, because Infocamere Archive provides us complete evidence about the universe of all the joint stock companies existing in Italy and of all of those which eventually implemented a one tier board, but does not provide full evidence about corporate and accounting data in 2003 and 2009. For this reason we have to rely on the above mentioned Aida BvD, which however does not cover the whole universe. Since our attention is concentrated on firm performance with the aim to verify whether the

adoption of one tier board did eventually affect their performance, we have to compare results obtained by these firms prior and after the 2003 Italian Reform.

Table 1 compares the whole universe of joint stock companies² with the ones belonging in our sample and the same for joint stock companies adopting one tier board in 2009.

Table 1: Universe of joint stock companies and composition of the sample in 2009

| Description | Number | Description | Number |
|---|--------|---|--------|
| Joint Stock Companies at 31 st December 2009 | 57107 | Joint Stock Companies adopting one tier board at 31 st December 2009 | 180 |
| Joint Stock Companies belonging to the sample At 31 st December 2009 | 29315 | Joint Stock Companies adopting one tier board belonging to the sample at 31 st December 2009 | 153 |
| Percentage | 51.33% | Percentage | 85.00% |

Source: Aida BvD and Infocamere

² Technically the universe is composed by joint stock companies and single shareholders joint stock companies.

Table 1 shows that one tier board joint stock companies represents 0.31% of the population and the ratio between one tier companies in our sample and the total of joint stock companies belonging to our sample is 0.52%. Almost six years after its first introduction one tier board was still quite uncommon among Italian joint stock companies. More specifically, we have only 281 joint stock companies with traditional corporate governance system were listed in 2009 and just four featured by a one tier board. Table 2 provides some evidence about the geographical distribution of Italian unlisted joint-stock companies belonging to the sample in 2009.

Table 2: Geographical distribution of unlisted Italian joint stock companies with traditional and one tier board corporate governance systems belonging to the sample in 2009

| Geographical distribution | Traditional corporate Governance System | Percentage | One tier Board | Percentage | Total |
|---------------------------|---|------------|----------------|------------|-------|
| North-West | 12592 | 43.36% | 75 | 50.33% | 12667 |
| North-East | 7734 | 26.67% | 31 | 20.80% | 7765 |
| Centre | 5373 | 18.50% | 25 | 16.77% | 5398 |
| South | 2343 | 8.06% | 12 | 8.05% | 2355 |
| Islands | 992 | 3.41% | 6 | 4.02% | 998 |
| Total | 29034 | | 149 | | 29183 |

Source: Aida BvD and Infocamere

Table 2 gives evidence that the majority of Italian joint-stock companies is located in North of Italy and more specifically in North West and the same occurs for companies adopting one tier board. Roughly 20% of the sample is located in the central regions of Italy, meanwhile the Southern Italian regions and the islands account for about a little more than 10%.

Focusing our attention to the activities of Italian joint stock companies we find the evidences highlighted in Table 3.

Table 3: Economic activity classification of unlisted Italian joint-stock companies with traditional and one tier board corporate governance system

| Economic activity | Traditional corporate Governance System | Percentage | One tier Board | Percentage | Total |
|--|---|------------|----------------|------------|-------|
| Accommodation and food service activity | 475 | 1.60% | 0 | 0.00% | 475 |
| Agriculture, forestry and fishing | 167 | 0.60% | 1 | 0.70% | 168 |
| Arts, entertainment and recreation | 252 | 0.90% | 5 | 3.40% | 257 |
| Construction | 2230 | 7.70% | 7 | 4.70% | 2237 |
| Electricity, gas and steam | 1002 | 3.50% | 3 | 2.00% | 1005 |
| Financial and insurance activities | 484 | 1.70% | 5 | 3.40% | 489 |
| Human health, social work activities and education | 358 | 1.20% | 1 | 0.70% | 359 |
| Information and communication | 1221 | 4.20% | 7 | 4.70% | 1228 |
| Manufacturing | 11717 | 40.40% | 53 | 35.60% | 11770 |
| Professional, scientific and technical activities | 1563 | 5.40% | 23 | 15.40% | 1586 |

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| | | | | | |
|----------------------------|-------|---------|-----|---------|-------|
| Real estate activities | 1724 | 5.90% | 16 | 10.70% | 1740 |
| Transportation and storage | 1246 | 4.30% | 3 | 2% | 1249 |
| Wholesale and retail trade | 5440 | 18.70% | 21 | 14.10% | 5461 |
| Not available | 109 | 0.40% | 2 | 1.30% | 111 |
| Other | 1046 | 3.60% | 2 | 1.30% | 1048 |
| Total | 29034 | 100.00% | 149 | 100.00% | 29183 |

Source: Aida BvD and Infocamere

Table 4 overviews accounting data of Italian unlisted joint-stock companies, according to their corporate governance systems in 2009, after the choice of adopting a one tier board system or maintaining a traditional one. As we can see from Table 4, results show higher levels for ROE in 2009 for firms that adopted a one tier board between 2003 and 2009. Conversely, ROA performed better for companies that not abandoned a traditional system, even if in both the cases differences were not statistically significant. Leverage seems to be higher in one tier firms, while revenues from sales seem to underline best performances of traditional firms, although even in this case the difference are not significant.

Hence, results in Table 4 are not able to give a response to a crucial question: “What system does perform better?”. Many reasons can be cited for this fact. The most obvious is that the results of 2009 do not consider the starting levels of the variables considered in 2003, when all the companies of the sample still had a traditional system.

Best or worst performances of one tier and traditional companies may be affected by differences in the starting point of 2003.

Table 4: Balance sheet items of unlisted Italian joint-stock companies with traditional or one tier board corporate governance systems for the year 2009 (Elaborations with Stata)

| Income balance sheet items 2009 | One Tier Board system [A] | Traditional corporate governance system [B] | Difference [A] – [B] |
|---------------------------------|---------------------------|---|----------------------|
| ROE | 1.331 | 0.133 | 1.198 |
| ROA | 0.352 | 1.473 | -1.121 |
| Leverage | 6.850 | 4.426 | 2.424 |
| Revenues from sales | $2.81 \cdot 10^7$ | $5.41 \cdot 10^7$ | $-2.60 \cdot 10^7$ |

Source: Aida BvD and Infocamere.

Notes: * $0.1 < p\text{-value} < 0.05$; ** $0.05 < p\text{-value} < 0.01$; *** $p\text{-value} < 0.01$.

Table 5 overcame the problem, by showing the variation occurred since 2003 to 2009 of the balance sheet items of the joint stock companies belonging to our sample illustrated in Table 4. Taking into consideration the mean, we notice that traditional and one tier board register an increase of revenues between 2003 and 2009. More in details, one tier board companies register a weaker increase in total revenues between 2003 and 2009 in comparison with companies featured by a traditional corporate governance system.

The same evidence does not occur for ROE and ROA, because the two systems suffered a decrease in those fundamentals, especially in the case of one-tier board companies, even if the provisional results confirm best performances for firms that maintained a traditional corporate governance system.

Regarding the leverage, companies with traditional corporate governance systems register an increase in the mean, while one-tier firms reduced their leverage. It is likely that the increase in revenues from sales does not counterbalance the increase of costs, which results also in a decline of ROE and ROA.

Table 5: Variation of balance sheet items and accounting indices since 2003 to 2009 of unlisted Italian joint-stock companies with traditional or one tier corporate governance

| Δ Income balance sheet items (2009-2003) | One Tier Board system [A] | Traditional corporate governance system [B] | Difference [A] – [B] |
|---|---------------------------|---|----------------------|
| Δ ROE | -6.914 | -1.746 | -5.168** |
| Δ ROA | -3.437 | -.283 | -3.154*** |
| Δ Leverage | -.228 | 4.150 | -4.378 |
| Δ Revenues from sales | $1.04 \cdot 10^7$ | $3.62 \cdot 10^7$ | $-2.58 \cdot 10^7$ |

Notes: * $0.1 < p\text{-value} < 0.05$; ** $0.05 < p\text{-value} < 0.01$; *** $p\text{-value} < 0.01$.

Source: Aida BvD and Infocamere

Definitely, we observe on average a better performance of companies with a traditional corporate governance system, if we compare values of 2003 and 2009, even if we remark a general decline of some indices in 2009 with respect to 2003, probably because of the onset of the financial crisis. In relation with return on assets and return on equity one-tier companies worsen their performance since 2003 to 2009, meanwhile they do register a positive return on equity differently from the traditional. On the contrary one-tier model board companies present a higher decrease in leverage ratio than traditional ones between 2003 and 2009, but worst performance in terms of revenues from sales.

However, considering the average change of main balance sheet items and accounting indices is not enough for saying the last word on which system is the most efficient. Indeed, many other dimensions such as the ownership structure, the geographical localization and other balance items different from those that have been analysed may affect performance outcomes.

The purpose of the following sections is to deepen the interplay between the choice of a one tier board system and the change in performances.

3. *Research questions and methodology*

As above mentioned, our analysis is focused in enquiring whether there exists an effect of the choice of a specific corporate governance system on firm economic performances. For this reason we implement a statistical analysis with the aim to discover whether the adoption of one tier board did affect companies' economic outcomes with respect to the performances of firms that decided to maintain a traditional system between 2003 and 2009³.

More in detail, we aim at answering to the following test of hypothesis:

$H_0 =$ *Firms that turned into one tier corporate governance system have not improved their performance.*

$H_1 =$ *Firms that turned into one tier corporate governance system have improved their performance.*

The null hypothesis (H_0) suggests that there is no evidence of an improvement of firm performance, meaning that corporate governance systems do not contribute to get better economic results, which might be unchanged or even worsen. Conversely, the alternative hypothesis (H_1) allows for a sort of positive relationship between a one tier board system of corporate governance and firm performances, implying that the former have a positive impact on the latter. Performance indices considered as outcome variables for testing the improvement in performances of corporation that turned into one tier board system are those that are presented in Tables 4 and 5, i.e. ROE, ROA, the Leverage ratio and the level of revenues from sales.

³ The choice of that interval relies to the effect of the Reform that allows for leaving out the traditional system and for adopting an alternative one since the 1st January 2004. Therefore, 2003 was the last year with a unique corporate governance system in Italy and it is the most recent baseline for a comparison, *ceteris paribus*, of the increase or decrease of performance indices for the sampled firms.

To measure the effect of the adoption of a one tier board system, we assume a potential outcome approach; each firm is supposed to have two potential outcomes in 2009, i.e after the adoption of a one tier model: Y_{1i}^{2009} and Y_{0i}^{2009} ; Y_{1i}^{2009} in the case the firm have adopted a one tier board between 2003 and 2009 and Y_{0i}^{2009} if it has maintained a traditional corporate governance system in the time considered. The causal impact of the adoption of this alternative system for a firm included in the analysis is $Y_{1i}^{2009} - Y_{0i}^{2009}$. Since this is a firm specific variable, Rosenbaum and Rubin (1983) suggested focusing on the quantity $E[Y_{1i}^{2009} - Y_{0i}^{2009}]$ that in econometric literature is defined as the *Average Treatment Effect (ATE)*; i.e. in our case the average effect of the adoption of the alternative system on the outcome of interest. Let T_i be a dichotomous variable, denoted in potential outcome literature as *treatment*, which takes value 1 if a firm adopted a one-tier board system between 2003 and 2009 and 0 otherwise, Heckman, (1997) proposed to restrict the analysis only to those firms that are actually eligible for the treatment (in our case the choice of an alternative system). Hence, leaving out the subscript i the main quantity of interest is:

$$ATT = E[Y_1^{2009} - Y_0^{2009} | T = 1] = E[Y_1^{2009} | T = 1] - E[Y_0^{2009} | T = 1] \quad (1)$$

That is defined *Average Treatment Effect on the Treated (ATT)*, where $E[Y_0^{2009} | T = 1]$ is unobservable, because only one among the potential outcomes can be observed for each individual. A possible solution to overcome this problem is to consider the difference between treated and untreated groups:

$$ATT = E[Y_1^{2009} - Y_0^{2009} | T = 1] = E[Y_1^{2009} | T = 1] - E[Y_0^{2009} | T = 0] \quad (2)$$

This assumes that there is no selection bias, which means that the firms which adopted a one tier board system is randomly selected

from the population so that the two groups may be considered as comparable in all other relevant characteristics.

However, this assumption is not realistic because the two groups may be different in terms of both observable and unobservable characteristics. Hence, identification of the *ATT* in (3) is feasible if we condition the expected values on a vector of covariates that summarises all differences between the treated and control groups; this requires imposition of *mean* independence (Smith and Todd, 2005), i.e.

$$E[Y_0^{2009} | \mathbf{X}^{2003}, T = 1] = E[Y_{0i}^{2009} | \mathbf{X}^{2003}, T = 0] \quad (3)$$

A second problem dealing with *ATT* estimates concerns the difficulty in finding individuals with identical values of vector \mathbf{X}^{2003} when the covariates are many or include continuous indices, as in the case of balance sheet. Rosenbaum and Rubin (1983) proposed matching based on univariate quantity called a *propensity score*, which is defined as *the conditional probability of receiving the treatment given \mathbf{X}^{2003}* :

$$p(\mathbf{X}^{2003}) = P[T = 1 | \mathbf{X}^{2003}] \quad (4)$$

Matching individuals with the same propensity score is equivalent to comparing them on the components of \mathbf{X}^{2003} ⁴, together with the advantage that an estimate of the propensity score is easily obtained through a simple logistic regression. Therefore, the *ATT* with the propensity score approach (*ATT*_{PSM}) can be formalised as:

⁴ The variables used for the specification of propensity score are measured in 2003 when all the sampled companies implemented a traditional system, in order to avoid reverse causality, i.e that the choice of a corporate governance system endogenously affects the components of vector \mathbf{X} .

$$ATT_{PSM} = E_{p(\mathbf{X}^{2003})} \left\{ E[Y_1^{2009} | p(\mathbf{X}^{2003}), T=1] - E[Y_0^{2009} | p(\mathbf{X}^{2003}), T=0] \right\} \quad (5)$$

Another problematic aspect in determining the ATT_{PSM} consists in the reliability of estimates only in presence of selection bias from observable characteristics. In the presence of unobservable covariates affecting assignment into both the *treatment* and outcome variable simultaneously, a hidden bias might arise. In this paper, we try to preserve estimates from irregular assignment to *treatment* due to hidden bias, combining the propensity score matching estimators with the difference in difference estimator⁵. Its implementation consists in using as dependent variables the difference of performance indices from time 2003 and to 2009. The obtained estimator is defined as the propensity score combined with difference in difference estimator for the Average treatment effect on treated (ATT_{PSM-DD}) and is used to estimate the differences of the mean of outcomes between 2003 and 2009:

$$\begin{aligned} ATT_{PSM-DD} &= E_{p(\mathbf{X}^{2003})} \left[(Y_1^{2009} - Y_1^{2003}) - (Y_0^{2009} - Y_0^{2003}) | p(\mathbf{X}^{2003}), T=1 \right] = \\ &= E_{p(\mathbf{X}^{2003})} \left[(\Delta_1 - \Delta_0) | p(\mathbf{X}^{2003}), T=1 \right] \end{aligned} \quad (6)$$

The method illustrated above is developed for all respondents. As we have to obtain sample estimates of ATT_{PSM-DD} , we cannot find firms with exactly equal values of propensity score. Indeed in presence of a continuous it is unlikely in presence of finite samples to find one treated and one control with the exact value of propensity score. A comparison, in practise, is feasible only if we match similar units drawn from treated and controls. The more similar the estimates propensity score of treated units with the selected controls, the higher the reduction of selection bias will be. Therefore, we have to implement matching algorithms (Sianesi and Leuven, 2003) in order

⁵ *Difference in difference estimator* is particularly efficient in protecting estimates from time-invariant sources of hidden bias or in protecting estimates from economic shocks that affect both treated and controls in a similar way.

to overcome the problem and to find a procedure for selection and then comparing firms that are as close as possible in terms of estimated propensity score. In this framework, we implement different matching methods and in particular radius and kernel matching methods. Radius matching consists in comparing each treated unit, i.e. firms with a one tier board model, with all the control units within a small-predefined distance around the propensity score (we set a distance, called “caliper”, of 0.01 in our analysis); this procedure allows us for comparing each treated unit only with the units that are closest in term of propensity score within a very small threshold, with the effect of obtaining a reduction of bias in estimates, but with the disadvantage of discarding many observations among the controls⁶ (Caliendo and Kopeinig, 2008). Kernel matching consists in a comparison of each treated unit with a weighted average of all firms in the control group instead. Control units that present a value of estimated propensity score closer to the treated one receive higher weights; units that are more distant in terms of propensity score receive a lower weight. The weights are chosen using the kernel of a density function. In this framework we adopt a Gaussian kernel, but robustness checks show as results are substantially invariant with respect of the selected density function. One major advantage of the last approach is the lower variance which is achieved because more information is used, since not any control unit has been discarded. By contrast, kernel matching is more likely to lead to bias estimates of *ATT*, because it takes into account also units that are very different from treated ones. The trade off between bias and efficiency (low variance) is overcome in the following section presenting the consistency of the results obtained with both the illustrated approaches.

⁶ The algorithm excludes all the observations among controls that are far more than 0.01 from the treated in terms of estimated propensity score

4. Empirical Results

Table 6 displays the results of estimated *ATT* after having combined propensity score and difference in difference estimators.

The vector \mathbf{X}^{2003} used in order to reduce the bias of estimates includes all qualitative and quantitative variables that significantly affect the probability of abandoning a traditional system in favor of a one tier one documented by the existing literature (see Bellavite Pellegrini et al., 2010). The set of qualitative variables includes: the legal form⁷, the economic activity⁸ (excluded in the last stage of the analysis because not significant) and the geographical location⁹. Vector \mathbf{X}^{2003} includes also quantitative variables that are all measured in 2003: total assets, net worth, net assets and the starting level of the outcome variables before the change of the corporate governance system, i.e. ROE, ROA, Leverage and the Revenues from sales.

The first column of Table 6 lists the outcome interests. The second column displays the estimates of simple difference in means between treated and controls obtained in Table 5 that are obtained without propensity score; last columns present estimated *ATT* obtained through radius and kernel matching respectively.

⁷ We distinguish unlisted joint stock companies with only one shareholder from those that have more than one, in order to take into account for the ownership structure of each sampled firm.

⁸ We use economic sector classification according to the ATECO 2007, used in Table 3, even if propensity score algorithm considers main sectors as not significant in predicting the choice of a one tier board system. In addition, the scarce frequency of some categories and the large number of them in comparison to the treated units does not allow us for using all the information. Hence, the use of some sectors in propensity score specification has to be considered as a robustness check.

⁹ We adopt the classification illustrated in Table 2.

Table 6: Estimated Average Treatment Effect on Treated (ATT) of variations (between 2003 and 2009) of balance sheet items and accounting indices of unlisted Italian joint-stock companies with traditional or one tier corporate governance

| Δ Income balance sheet items $\Delta = [2009] - [2003]$ | Simple difference in means [One tier] – [Traditional] | Estimated <i>ATT</i> (<i>Radius matching</i>) [One tier] – [Traditional] | Estimated <i>ATT</i> (<i>Kernel matching</i>) [One tier] – [Traditional] |
|---|--|---|---|
| Δ ROE | -5.168** | -3.751* | -5.191*** |
| Δ ROA | -3.154*** | -3.114** | -3.159*** |
| Δ Leverage | -4.378 | -4.411*** | -3.892*** |
| Δ Revenues from sales | $-2.58 \cdot 10^7$ | $-2.49 \cdot 10^7$ *** | $-2.55 \cdot 10^7$ *** |

Notes: * $0.1 < p\text{-value} < 0.05$; ** $0.05 < p\text{-value} < 0.01$; *** $p\text{-value} < 0.01$.

Source: Aida BvD and Infocamere.

As we can see from the table above, point estimates do not vary across the columns, even if significance results are very different. Indeed, while the simple difference in means takes into consideration equally firms drawn from the treated and the control groups, estimated *ATT* with radius matching compute the differences only between treated and the subsample of controls that are closest in terms of propensity score. More in details, it matches each firm adopting a one tier board system with the traditional companies that are different for no more than 0.01 of estimated value of propensity score. This procedure allows us for comparing only similar companies, estimating the net effect of the adoption of an alternative system and reducing the bias in estimates that derives from considering companies that are too different. Table 6 shows that Δ ROE is negative, indicating that firms that adopted a one tier board system significantly worsened their return on equity with respect to similar companies that decided to maintain the traditional one. Consistent results interest Δ ROA that also performs worse in the firms that adopted a one tier board system. The results from Table 5 affirm that ROE and ROA decreased both between 2003 and 2009 for one tier board system and for traditional one, while Table 6 allows us for discovering that the decrease was stronger for a one tier

board system than for traditional a traditional one, net of the effect of the possible confounders listed in X^{2003} .

The results of revenues from sales are coherent with those deriving from ΔROE and ΔROA . Although the results of Table 5 underlines an increase in that item between 2003 and 2009 for both one tier and traditional board system, the increase is stronger form firms that did not leave out a traditional system (in order to check the robustness of the results, we implemented an additional estimation considering as outcome the percentage variations of Revenues from sales¹⁰ instead of Δ Revenues from sales and the results confirms the same).

Conversely, Δ Leverage presents an opposite results pattern, indicating a reduction of leverage after the introduction of a one tier board system. However, that result does not surprise. It is likely that many one tier companies, being progressively under control and coordination by other legal entities, may register some benefits in terms of level leverage, being the debt transferred elsewhere inside the group.

Results from kernel matching estimates (obtained using a Gaussian kernel), are perfectly coherent with those displayed using radius matching both in terms of significance that in terms of *ATT* size. This result comforts us on the robustness of the findings, given that kernel matching uses all the information included in the sample, without ruling out any observation belonging to the control group.

5. *Concluding remarks*

One of the main questions about corporate governance is whether firm performance depends in some ways on it. If better corporate governance is connected to better firm performance, better-governed companies should perform better than worse-governed firms. This study is based on an analysis of the medium run effects of 2003 Italian Reform of corporate governance which introduces two alternative corporate governance systems, giving both listed and

¹⁰ Indeed, revenues from sales are the only indicator that is not expressed in the form of ratio.

unlisted companies the possibility to choose among the traditional or one tier or two tier system. Focusing specifically our attention only on one tier board, the aim of this paper is to investigate in which way companies which switched into one tier board corporate governance system have modified their performance. We analyse the outcomes obtained by Italian unlisted joint-stock companies prior and after the introduction of 2003 Italian Corporate Law Reform. The survey supplies descriptive statistics of a significant sample of unlisted joint-stock companies, according to their corporate governance system. In particular, we provide a general overview of the main features in terms of geographical distribution, economic activities, balance sheet and corporate items and variables and accounting indices. The statistical analysis, combining difference in difference with propensity score estimation strategy is able to reduce the effect of selection bias. Selection bias might arise when firms that decided to change the corporate governance system into a one tier one systematically differ from the sample of traditional firms for a set of observable indicators affecting the choice of the system. The variables that may affect both the probability of choosing the alternative system and performance outcomes may pollute the estimation of the interplay between corporate governance system and performance. Controlling for these variables and comparing firm adopting a one tier board only with the traditional ones that show similar features in terms of 2003 balance sheet indices is the best way for reducing the effect of confounders and is successfully realized through the application of propensity score matching. The set of confounders includes both qualitative (legal form, economic activity and geographical location) and quantitative variables (total assets, net worth, net assets and the starting level of the outcome variables before the change of the corporate governance system) according the 2003 values of balance sheet items and accounting indices. The additional implementation of a difference in difference estimator helps us also for taking into account the effect of unobservables.

The set of dependent variables of the model considers the variation since 2003 to 2009 of: 1) return on equity, 2) return on assets, 3)

leverage ratio and 4) revenues from sales. Our analysis shows that the adoption of a one-tier model of corporate governance between 2003 and 2009 has negatively affected firm performance for three dimensions out of four (only leverage shows a significant improvement within the time considered, which is however consistent with the corporate feature of companies adopting one tier system, since we obtain that companies adopting this system have weakened their economic results. As a consequence, we cannot reject the null hypothesis affirming that companies that turned into one-tier board system do not improve of their performance. This evidence may partially explain the low number of companies adopting this model, which represent a very small percentage of the whole universe of unlisted Italian joint-stock companies, notwithstanding financial literature highlights lower costs of corporate bodies in one tier board system than in the traditional one.

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