Are boards of private equity targets more effective in risk reduction?

ABSTRACT

Private equity ownership is a governance device involving leverage, equity stakes and active monitoring. The latter consists in the private equity sponsors' intervention in targets' governance, including taking board seats. Sponsors are skilled and motivated in running the target successfully, but research is needed to understand how boards mechanisms mitigate the risk of distress within leveraged transactions. We find that private equity targets' boards are different compared to non-acquired firms and that sponsors mitigate risk when boards have lower concentration of decision making and execution, and greater industry expertise. These results can be useful for bondholders and policy makers.

Keywords: private equity, corporate governance, board of directors, risk of financial distress

JEL Classification: G23, G34

Introduction

By using a hand-collected sample regarding detailed board composition of highly leveraged companies under private equity ownership and non-acquired companies, we investigate the effect of corporate governance mechanisms to the risk of financial distress of private equity backed and non-acquired companies. Private equity sponsors are active investors that constitutes a source of finance and a governance device as well (Nikoskelainen & Wright, 2007; Cornelli & Karakaş, 2008; Meuleman *et al*, 2014): first, they are the sole (or one of the few) owner thus perceiving a strong incentive to active and deep monitoring (Jensen & Meckling, 1976); also, since they operate in a opaque and competitive market, they need to sustain their reputation by achieving performance deriving from their distinctive and specialized skills including networks (Kaplan & Schoar, 2005; Acharya *et al*, 2013; Braun *et al*, 2015; Buchner *et al*, 2016). Therefore, the unique financial structure, that is oriented towards debt, implies an even more distinctive governance structure (Cumming *et al*, 2007).

Nevertheless, research is needed to better understand the relative contribution of potential incentive devices, i.e. leverage, equity stakes, private equity monitoring – and especially whether and how boards contribute to value creation and risk reduction. Since most of the targets are private (Acharya *et al*, 2013; Cumming *et al*, 2007; Wilson & Wright,

2013), our sample mostly includes privately held companies, whose weak disclosure reduced sample size significantly; however, our focus is on European companies whose disclosure requirements are relatively strict.

The rest of the paper is structured as follows: section II is devoted to the literatures about the risk and governance implications of private equity ownership; section III is devoted to the sample construction and description; section IV briefly describes the methodology; section V describes the empirical results, and the last section concludes.

II. Risk and Governance implications of Private Equity Ownership

The growth of the private equity market has been raising criticism concerning its impact on the target's risk and related stakeholders (e.g. bondholders via increased risk, employees by layoffs and wage reductions, governments by tax advantages), and consequently academic scrutiny and policy discussion. During the first wave in the 80s, leverage and financial engineering were considered as main drivers of targets' risk of financial distress (Andrade & Kaplan, 1998; Wright *et al*, 1996; Wright *et al*, 2009a), despite other proponents i.e. capital market representatives, media, and some academic scholars – were already claiming for the cruciality of corporate governance within the private equity model (Millson & Ward, 2004). Since the second wave that ended with the subprime crisis, additional drivers for value creation have been evidenced, namely operational restructuring and especially active ownership i.e. corporate governance intervention – as a response to the increasing competition in acquiring firms (Cumming *et al*, 2007). In other terms, investment opportunities were no longer associated just on better monitoring and incentive realignment, but on entrepreneurial levers that led sponsors to orient their efforts on targets' boards (Wright *et al*, 2009a), e.g. hiring executives with strategic and product market expertise (Cumming *et al*, 2007; Meuleman *et al*, 2014). These new drivers have been also characterizing sponsors' strategic repositioning after the subprime crisis (Siegel *et al*, 2011; Hoskisson *et al*, 2013).

Sponsors' heterogeneity in terms of type (management *versus* institution -led), or vendor source (primary *versus* secondary buyout, IPO or trade sale), or private *versus* public nature, but especially in terms of skills, reputation, industry or stage specialization profile, and experience has been recognized as determinants of targets' risk of financial distress (Cressy *et al*, 2007; Meuleman *et al*, 2014; Tykvovà & Borell, 2012; Harford & Kolasinski, 2013; Hotchkiss *et al*, 2014); market conditions provides mixed results ranging from a significant effect to no effect (Wilson & Wright, 2013; Tykvovà & Borell, 2012), probably because institutional heterogeneity in determining firms' behavior is not carefully addressed within some multi-country analyses, that still are needed to better understand positive and negative aspects associated with co-investment/syndication, and multi-country acquirors and/or cross-country private equity (Wright *et al*, 2009a; Cumming *et al*, 2007; Cornelly *et al*, 2010). In this respect, there are cases of single country-based samples, especially UK and US that are the most developed private equity markets both in terms of number of deals and volume (Meuleman *et al*, 2014; Wilson & Wright, 2013; Harford & Kolasinski, 2013), but also in continental Europe countries, especially France because of its distinctive features in terms of firms' type and related private equity

deals' outcome (Desbrières & Schatt, 2002; Boucly et al, 2009; 2011), and cases of European (Tykvovà & Borell, 2012) and even worldwide samples (Hotchkiss *et al*, 2014). While single country-based studies allow for a more careful measurement of risk in that national bankruptcy regimes can be operationalized (Wilson & Wright, 2013), multi-country studies require different types of measures for the sake of generalization, despite some of them are sufficiently reliable as in the case of the Moody's corporate default risk service framework[1] (Hotchkiss *et al*, 2014). Even across this significant research designs' heterogeneity, private equity targets do not experience a higher risk of financial distress compared to their non-acquired selected counterparts; also, these studies emphasize sponsors' superior skills and the relevance of governance mechanisms in the private equity model.

There is wide agreement about the theoretical and empirical relationship among ownership and governance. In the case of dispersed ownership, shareholders are no longer the natural candidates for monitoring because they may perceive weak incentives to monitor the management team, or at least be inclined to free ride on monitoring due to a disparity among the (fixed) cost of monitoring and the low potential upside coming from the improved governance. These agency costs can be mitigated by the board, especially outside directors sitting on the board, by monitoring management on behalf of shareholders. According to the agency theory, the alignment among ownership and management can be repristinated by giving up the risk allocation and equity liquidity benefits of diffused ownership, namely by relying on concentrated ownership (i.e. private equity ownership – that in turn implies appropriate incentives to monitoring, often by taking board seats), high leverage and equity stakes to management: while equity stakes incentivize to act in the interest of owners broadly, leverage incentivizes management to reorient cash flows to positive NPV projects to service the debt rather than to empire building and other effects of agency risk (Jensen & Meckling, 1976; Fama & Jensen, 1983; Millson & Ward 2004; Cumming *et al*, 2007; Nikoskelainen & Wright, 2007; Cornelli and Karakaş, 2008; Wright *et al*, 2009a; Gong & Wu, 2011).

The private equity model can be reconciled with this view, and the propensity of sponsors to monitoring is reinforced by the functioning of the market in which they operate: since the private equity market is characterized by opacity and strong competition, sponsors sustain their reputation by achieving persistent performance at the fund level (Kaplan & Sensoy, 2014; Korteweg *et al*, 2015); also, competition induces sponsors to be increasingly specialized, skilled, and motivated to value creation (Cressy *et al*, 2007; Wright *et al*, 2009a; Tykvovà & Borell, 2012; Acharya et al, 2013; Hotchkiss *et al*, 2014; Meuleman *et al*, 2014); finally, the current trend of unused funds i.e. dry powder – available to sponsors increases targets' valuations thus challenging performance goals (Ernst & Young, 2018; Preqin, 2018; Bain & Company, 2018). Another impulse comes from the limited life (up to 10 years) of the sponsor (Cumming *et al*, 2007).

In other terms, despite the management team receives appropriate monitoring by the sponsors, the board of directors still plays a crucial instrumental role within the private equity model due to the strong incentives and

[1] default occurs in the case of a missed interest or principal payment, a filing of a court-led bankruptcy, or the execution of an out-of-court "distressed exchange".

distinctive skills of sponsors in creating value. Therefore, looking at the boards of private equity targets should provide a significant indication of what makes a board effective, and whether these characteristics are associated with better deal outcomes compared with non-acquired firms (Cornelli and Karakaş, 2008; Millson & Ward 2004).

III. The Sample

To investigate whether targets' boards are used by sponsors as a governance device, and which characteristics of the board are associated with a greater risk reduction, a European sample is used: despite the studies reviewed above are balanced in terms of geographical focus (US, UK, Europe, and worldwide), most of the studies in the private equity literature are US or UK based (Cumming *et al*, 2007; Nikoskelainen & Wright, 2007; Wright *et al*, 2009a; Achleitner *et al*, 2010;). Another reason for using this sample is that European private companies have relatively stringent disclosure requirements; also, most of the targets are private in nature (Cumming *et al*, 2007; Cornelli and Karakaş, 2008; Tykvovà & Borell, 2012; Acharya *et al*, 2013; Wilson & Wright, 2013)[2].

Data are referred to 2013-2016 period and are drawn from Bureau van Dijk Amadeus and Zephyr: Amadeus contains yearly accounting and governance information of European public and private companies, and identifies those that are involved in several deal types, including private equity; Zephyr contains worldwide deal specifics with respect to a broad range of deal types, including private equity. However, 'leveraged buyout' is not explicitly included among deal types: therefore, highly leveraged targets are selected. According to governance data availability and missing data, the initial sample consists of 133 private equity deals and 174 non-acquired companies. Before reviewing existing evidence about governance mechanisms in the private equity setting and describing the sample (especially corporate governance variables), the proposed solution for endogeneity is presented.

Propensity Score Matching

Sponsors acquire (even distressed) firms to unlock their potential, and firms rely on private equity to implement deep reorganization through ownership change. More generally, sponsors initially adopt a desk approach to select potential targets by stage, size, industry, and country (Cressy *et al*, 2007; Tykvovà & Borell, 2012; Wilson & Wright, 2013; Harford & Kolasinski, 2013; Scellato & Ughetto, 2013). From the resulting sample of firms, sponsors identify their targets based on private information obtained within an extensive due diligence.

Such information is difficult to operationalize, and outside the scope of this study, but a matching method is needed to better investigate causality (Tykvovà & Borell, 2012; Hotchkiss *et al*, 2014; Harford & Kolasinski, 2013). Therefore, since there is not scope for an instrumental variable approach and exogenous shocks are not available, a

[2] Moreover, besides the enormous growth in volume of the Asia-Pacific PE market (+74% in 2016-2017), the European PE market pattern over the same period (+14%) further encourages the prosecution of the analysis because of its increasing relevance (Bain & Co, 2018).

propensity score matching based on size, industry, and country is employed to better investigate causality. Size is a well-established parameter for identifying the counterfactual and it is positively associated with the IRR of the private equity fund (Nikoskelainen & Wright, 2007); moreover, size is positively related with firm age, that is relevant for controlling for sponsors' stage specialization (Tykvovà & Borell, 2012; Davis *et al*, 2011; 2014; Nordström, 2015)[3]; as professional investors, sponsors are highly specialized in terms of skills type (Acharya *et al*, 2013), amount i.e. experience (Nikoskelainen & Wright, 2007; Wright *et al*, 2009a), and industry specialization (Cressy *et al*, 2007); also, sponsors invest in legal settings they are more familiar with (Tykvovà & Borell, 2012; Scellato & Ughetto, 2013) especially when it's the case of firms that could end up in bankruptcy (Wilson & Wright, 2013; Harford & Kolasinski, 2013). These parameters[4] are included in a logistic regression (Table 1) where the response is a dummy that takes one when there is at least one sponsor in the given year, in order to derive the odds to receive private equity i.e. the treatment; the latter are then used in the second stage, namely a nearest neighbor one-to-one matching with replacement (Rosenbaum & Rubin, 1983), as to remove 14 observations out of 416, ending up with 402 observations that drop to 394 after winsorization at the 1st and 99th centiles.

The propensity score matching assumes that the likelihood to receive the treatment can be explained only with observables. Despite sponsors massively rely on soft information to decide which firms to purchase, since their targets are a subset of firms formerly identified with a quantitative approach, this procedure should mitigate some endogeneity: by comparing targets with firms that are likely to receive private equity, the causal effect of governance mechanisms could be associated with private equity ownership.

Table 1 – First stage of the propensity score matching

This table shows the results of the logistic that precedes the derivation of individual propensity scores for the identification of the counterfactual. Total assets are splitted in quartiles to increase the allowance provided by the caliper (.045); NACE 4-digit proxies for industry and provides a granular identification strategy; country is not tabulated. Statistical significance is indicated as described at the bottom of this table.

	Dependent variable:
	PE Year
Total Asset Quartile 2	.6947468***
	(.1969579)
Total Asset Quartile 3	2.577496***
	(.5225586)

[3] Despite firm age is not included in the propensity score matching, the two samples are balanced, with targets being slightly younger until the 50th centile and slightly older thereafter. The 90% of the two samples have firm age above 10 years.

[4] Also, the variable consisting in the percentage of board and management team members holding an equity stake (the amount is unknown) is a significant predictor of the likelihood to receive private equity (Achleitner et al, 2010); however, since governance mechanisms are the focus of this study, this variable is omitted to allow for testing its significance as a predictor of the targets' risk of financial distress. The same can be said for leverage (Hotchkiss *et al*, 2014; Scellato & Ughetto, 2013). It can be observed that since sponsors heavily use equity stakes as an incentive realignment mechanism (Millson &Ward, 2004; Wright *et al*, 2009a), it would be more interesting to consider their impact in the empirical analysis; moreover, the reverse relation could signal that when the sponsor(s) enter the firm, the existing stakes are taken over as well. Finally, cash flows are not a significant predictor of the likelihood to receive private equity (Wright *et al*, 2009a).

Total Asset Quartile 4	.6671986
	(.3544449)
NACE 4-digit	.0000122
	(.0000251)
Constant	.9402309***
	(.2273526)
Obs	1'952
	* p<0.05, ** p<0.01, *** p<0.001

The logit is performed on observations that precede the 2013 fiscal year in order to obtain a more robust picture of the odds to receive private equity; years preceding 2013 are then automatically excluded from the sample due to governance data availability constraints[5]. The logit shows that sponsors prefer small and middle-sized firms, thus mostly private firms, while for the 25% top sized firms the trend is less clear, despite the p-value is not dramatically high (.60). The industry sector seems to be not relevant, maybe because sponsors select their companies based on the agency issues they seek to mitigate to create value. This interpretation is confirmed by the significance of the percentage of board and management team members holding an equity stake (suboptimal equity stakes contribute to not align the interests of management and owners). However, since the sample's depth could still be improved, this result should be taken with caution. From the test of balance of Table 2, it emerges that size is not perfectly balanced.

Table 2 – Propensity Scores' test of balance

This table contains the t-tests of the covariates after removing the 14 observations that are not on support. In the case of a p-value above .05, we consider the variable as strongly unbalanced, despite a 3-digit p-value would be preferable.

Variable	Mean			T-test	
	Targets	Controls	% bias	T-test	p > | t |
Total Assets Q2	0.9968	.1672	-21.4	-2.48	0.013
Total Assets Q3	.07395	.03215	18.0	2.33	0.020
Total Assets Q4	.08039	.10932	-9.7	-1.23	0.219
NACE 4-digit	5278	5005.8	11.9	1.63	0.103

To consider the extent to which size is unbalanced among the two samples, a more granular comparison among the two distributions is performed. As can be observed, size is balanced until p75, whereas the 4th quartile exibits a weaker alignment in which the most serious concerns are due to the 99th centile[6].

[5] Bureau Van Dijk started to collect governance data since 2013 indeed.

[6] A similar pattern is observed for leverage as measured by *[Current Liabilities + Non-Current Liabilities] / Equity*, in which the major divergences starts at the 75th centile; whereas debt coverage defined as *[Current Liabilities + Non-Current Liabilities] / Cash* (Nikoskelainen & Wright, 2007) is optimally balanced among the two groups. These two variables can be taken as measures of agency costs: leverage captures the incentivizing power of debt, whereas cash flows, that herein are also measured in terms of years needed to repay the debt at the current cash flow production, captures the potential of opportunistic behavior of management e.g. empire building (Gong & Wu, 2011).

Table 3 – Total Assets descriptive statistics

This table contains detailed descriptive statistics of size i.e. standardized total assets – namely, mean, standard error of the measurement of the mean, standard deviation of the mean within its distribution, variance, range among min (U: -.1644583; T: -.1644671) and max (U: -.05038; T: .0371576), skewness and kurtosis besides several points (1, 5, 10, 25, 50, 75, 90, 99) of the distribution for treated i.e. targets – and untreated i.e. controls. Panel B contains these last values multiplied by -1 and 100 to obtain more intuitive comparable values. Panel C contains the difference by centile among targets and controls.

Groups	N*	mean	se(mean)	sd	variance	range	skewness	kurtosis
Untreated	91	-.1499469	.0032564	.0310638	.000965	.1140783	2.36581	6.9133
Treated	311	-.1508511	.0017384	.0306564	.0009398	.2016247	3.411835	15.90032
	p1	p5	p10	p25	p50	p75	p90	p99
Untreated	-16,4458	-16,4304	-16,3955	-16,3561	-16,2201	-15,7118	-8,7023	-5,0380
Treated	-16,4464	-16,4380	-16,4097	-16,3752	-16,2469	-15,7035	-11,6407	-1,4051
Panel B: Points of the distributions multiplied by (-100) to resemble the relative difference among targets and controls								
	p1	p5	p10	p25	p50	p75	p90	p99
Untreated	16,4458	16,4304	16,3955	16,3561	16,2201	15,7118	8,7023	5,0380
Treated	16,4464	16,4380	16,4097	16,3752	16,2469	15,7035	11,6407	1,4051
Panel C: Difference among the two distributions								
	p1	p5	p10	p25	p50	p75	p90	p99
U-T	0,0005	0,0076	0,0142	0,0191	0,0268	-0,0083	2,9384	-3,6329

*N=402 instead of 394 (obs of the empirical analysis) because data are not winsorized yet i.e. before entering the OLS

After having described the matching method underlying the empirical analysis, the following section is devoted to a more detailed analysis concerning the focus variables of this study, namely board of directors and management related variables capturing the corporate governance mechanisms associated with private equity ownership.

Board Descriptive Statistics

Academic evidence concerning the effect of sponsors on corporate governance conclude that despite sponsors are heterogeneous in their characteristics and strategies, they introduce corporate governance mechanisms, including turnover, that reduce agency costs and issues arising from free cash flows, enhancing firm value thereby e.g. board monitoring substitutes for incentives coming from leverage (Cumming *et al*, 2007; Wright *et al*, 2009).

Below, Table 4 provides a first sight to some variables belonging to this study. Whit the exception being the number of CFOs and of members serving the audit committee, these variables do not exhibit a dramatic variability.

Table 4 – Boards of the whole sample descripted by year

	2016		2015		2014		2013	
Board Size	2246		2368		2309		2336	
	T	U	T	U	T	U	T	U
	993	1253	1086	1282	1040	1269	1029	1307
N of board indep	84		70		72		46	
	T	U	T	U	T	U	T	U
	49	35	43	27	33	39	19	27
Duality	137		134		127		151	
	T	U	T	U	T	U	T	U
	59	78	58	76	61	66	71	80
N Audit	36		114		106		99	
	T	U	T	U	T	U	T	U
	23	13	77	37	63	43	64	35
N executive directors	287		347		398		415	
	T	U	T	U	T	U	T	U
	123	164	140	207	180	218	172	243
N busy directors	313		574		503		473	
	T	U	T	U	T	U	T	U
	151	162	290	284	245	258	233	240
N CEO	56		54		57		53	
	T	U	T	U	T	U	T	U
	22	34	23	31	23	34	25	28
N CFO	15		139		131		132	
	T	U	T	U	T	U	T	U
	5	10	61	78	50	81	51	81
N General Manager	78		79		81		105	
	T	U	T	U	T	U	T	U
	38	40	35	44	39	42	45	60

Below, board is subject to univariate analysis in terms of its size to have a preliminary evidence concerning the effect of private equity ownership on corporate governance whereas the next section will be devoted to investigating the effect of related governance mechanisms on targets' risk of financial distress compared to non-acquired companies.

In Tables 5 and 6 below there are two t-tests, the first comparing the average board size in the years in which there is at least one sponsor in the ownership structure and in the years in which the firm is no longer (or not yet) private equity backed, the second comparing the two groups. Table 5 indicates that sponsors tend to reduce board size by 0.5 heads during their ownership; Table 6 indicates that targets have smaller by 0.6 heads on average. Finally, frequency distributions show that during private equity ownership 50% (80%) of boards are of 3-5 (2-8) members, whereas outside private equity ownership 53% (80%) of boards are of 3-6 (2-10) members; moreover, management

buyout exhibit smaller boards during private equity ownership (4.9 heads against 6.6) and larger reductions (from 6.9 to 4.9) in board size after private equity ownership (Cornelli & Karakaş, 2008). This seems to confirm that private equity ownership uses board size as a governance mechanism, while outside private equity ownership, firms tend to be more heterogeneous. These results are in line with the literature, that evidences negative performance associated with too large boards, and thus reductions in board size during private equity ownership (Millson & Ward, 2004; Cumming *et al*, 2007; Cornelli & Karakaş, 2008; Gong & Wu, 2011). As an additional test, we check whether board size is larger in the case of club deals i.e. private equity deals in which the acquiror is a syndicate of at least two private equity sponsors; note that syndication differs from co-investment, in which two or more sponsors having bought a stake in the firm co-exist in the given year – due to the fact that more than one sponsor seeks for a board seat as a form of monitoring of the firm and of the syndicate as well. The univariate evidence supports this conjecture, indicating that targets of club deals have larger boards (8.3 heads) compared to all private equity deals that also include club deals (6.6). Also, untabulated OLS of private equity ownership and number of sponsors against board size indicates that (syndicated) private equity ownership reduces (increases) board size[7]

Table 5 – Board size by pe year

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	86	7.0814	.6941647	6.437418	5.70121	8.461581
1	308	6.5649	.3603999	6.324993	5.855768	7.274102
combined	394	6.677665	.3196592	6.345053	6.049209	7.306121
diff		.5164603	.7744008		-1.006038	2.038959
diff = mean(0) - mean(1)						t = 0.6669
H0: diff = 0						degrees of freedom = 392

Table 6 – Board size by treated

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	86	7.0814	.6941647	6.437418	5.70121	8.461581
1	304	6.4967	.3606069	6.287396	5.7871	7.206321
combined	390	6.625641	.3198789	6.317101	5.996733	7.254549
diff		.5846848	.7719733		-.9330894	2.102459
diff = mean(0) - mean(1)						t = 0.7574
H0: diff = 0						degrees of freedom = 388

[7] Those results are significant at the 1% level

IV. Methodology

Due to sample size limitations due to scarce governance data availability of private companies, a fixed effects model is not appropriate; moreover, since most of the variables exhibit a not dramatic variability, an OLS with robust standard errors is used, where Altman's Z"-Score (Altman, 1983; 2014) is the response variable to proxy the risk of financial distress (Tykvovà & Borell, 2012) in a more granular way than other studies on the topic (Harford & Kolasinski, 2013; Meuleman et al, 2014). Moreover, this study focuses on the risk implications of private equity ownership by looking at the post subprime period, while other studies focus on the pre subprime period in which the private equity market was in a boom period (Tykvovà & Borell, 2012; Nikoskelainen & Wright, 2007); finally, herein governance mechanisms are tested as risk reduction devices while other studies view these mechanisms as motives to engage in private equity deals (Achleitner *et al*, 2010; 2013).

V. Results

Table 7 – The impact of corporate governance mechanisms on the risk of financial distress

This Table shows the results of the OLS regression against the Altman's Z"-Score that proxies for the risk of financial distress (the greater the Z'' the lower the risk) and is defined as Z"-Score = 3.25 + 6.56*X1 + 3.26*X2 + 6.72*X3 + 1.05*X4 where: X1 = (Current Assets - Current Liabilities) / Total Assets; X2 = Cash / Total Assets; X3 = EBITDA / Total Assets; X4 = Equity / (Current Liabilities + Non-Current Liabilities); BOARD_ COMP_IND captures the percentage of directors & managers that are company representatives rather than private individuals; D&M_ ALSO captures the percentage of directors & managers that also hold an equity stake in the company, but since the amount of the stake is unknown, this variable captures the degree of concentration of those stakes; BOARD_ BUSY captures the headcount of directors that have more than one role (e.g. member of the audit or remuneration or executive committee, including cases of duality); BOARD_ DUALITY captures cases of members that are chairman of the board and "executive" i.e. chief executive officer or managing director or executive director or president of the firm – but also cases of boards in which there is one single "executive", because in absence of chair we assume that the one single "executive" also leads the board, but in the case of a board with only the chair the dummy takes zero, and in the case of multiple "executives" of the same type the dummy takes zero as well; BOARD_ AUDIT captures the headcount of members serving the audit committee as an additional proxy for internal monitoring; BOARD_ REMUNERATION captures the members that work in the appointment/remuneration committee to proxy the internal monitoring over compensation of directors and managers that is a crucial incentive mechanism; GENERAL MANAGER is a dummy that captures the presence of a manager with comprehensive duties (more similar to an "executive") rather than selected roles (e.g. purchasing or communication or marketing manager) to proxy for cases of more centralized decision making and execution; CASH/OR is a control variable that captures the liquidity of operating revenue to proxy for agency costs (it is not scaled by total assets because the latter changes due to asset stripping or flipping also rather than only to value creation) and is defined as Cash / Operating Revenue; ROE is another control variable that captures the performance of equity invested as a determinant of risk.

	Altman's Z"-Score
	Coef.
BOARD_COMP_IND	-.3263768
	(.1929272)
PE_ BOARD_COMP_IND	4.317662*
	(1.714588)

D&M_ALSO	.0339738
	(.1032957)
PE_D&M_ALSO	.8712965
	(.7260432)
BOARD_BUSY	-1.395882***
	(.3755184)
PE_BOARD_BUSY	1.472562***
	(.4109726)
BOARD_DUALITY	1.517691***
	(.2828339)
PE_BOARD_DUALITY	-.8847954**
	(.2798405)
BOARD_AUDIT	.7790717**
	(.289997)
PE_BOARD_AUDIT	-1.298103***
	(.3105725)
BOARD_REMUNERATION	.7682056**
	(.2426975)
PE_BOARD_REMUNERATION	-.7210365*
	(.2862327)
GENERAL MANAGER	.4574434*
	(.2048811)
PE_GENERAL MANAGER	-.5402624**
	(.1886467)
CASH/OR	2.679717***
	(.7583888)
PE_CASH/OR	-1.359605
	(.8186475)
ROE	1.147449***
	(.2292196)
PE_ROE	-.7077533**
	(.2565052)
Constant	1.691732***
	(.4193837)
F	8.85
R2	.4142
R2_a	.3657
Obs	394
Country Dummy	Yes
Year Dummy	Yes

* p<0.05, ** p<0.01, *** p<0.001

BOARD_COMP_IND – the presence of company representatives rather than private individuals may provide benefits in terms of, product market relationships, alleviation of financial constraints, board monitoring (Allen & Phillips, 2000) and industry expertise (Cressy *et al*, 2007; Cumming *et al*, 2007; Meuleman *et al*, 2014; Aldatmaz & Brown, 2016), as to increase the Z"-Score; however, also conflicts of interests in revealing information, bargaining and/or personal conflicts, the willingness to just receive information from a competitor rather than contributing to value creation, and other frictions may emerge as to contribute to reduce the Z"-Score. In this study, company representatives strongly contribute to mitigate the risk of targets, thus evidencing prevailing positive over negative aspects, while in the case of controls the sign is negative but the relation is not statistically significant, thus evidencing the presence of virtuous and less virtuous cases.

D&M_ALSO – management equity stakes should contribute to align the utility function of management to that of shareholders as to reduce agency costs, together with the close monitoring by the sponsor, especially in the case of private companies in which the stakes are more illiquid despite managers are usually contractually obliged to sell their stake after a given period of time to avoid short-termism (Millson & Ward, 2004; Nikoskelainen & Wright, 2007; Cornelli & Karakaş, 2008; Meuleman *et al*, 2008; Wright *et al*, 2009a; Kaplan & Strömberg, 2009; Achleitner *et al*, 2010); however, excess equity stakes could render the person more risk averse than motivated to growth (Nikoskelainen & Wright, 2007; Achleitner *et al*, 2010; 2013). Since private equity professionals are typically incentivized with a performance-based remuneration, we hypothesize that sponsors are inclined to use equity stakes and that are skilled enough to exploit this mechanism (Jensen & Meckling, 1976; Tykvovà & Borell, 2012; Wilson & Wright, 2013; Acharya *et al*, 2013). In this analysis there is no information about the amount of the stake; rather, there is only indication of the percentage of members having a stake in the company. There is some consistency in the literature about its amount: 25-35% on average, while the CEO holds 3-8% (Millson & Ward, 2005; Nikoskelainen & Wright, 2007; Wright *et al*, 2009a; Kaplan & Strömberg, 2009; Achleitner *et al*, 2010; 2013; Gong & Wu, 2011); moreover, the less equity is invested sponsors the greater the stake (Nikoskelainen & Wright, 2007); second, the less the purchase price, the greater the stake (Wright *et al*, 2009a). This data availability issue could be the reason why none of the group have a statistically significant coefficient, despite targets seem to be more likely to be benefited by this mechanism due to the contribution of the sponsors, as expected.

BOARD_BUSY – directors may have one or more formal roles, especially in large companies (the correlation among board member business and size measured by total assets is .39). Despite costs of coordination and other agency costs could be lower and economies of scope better exploited in the case of fewer heads, busy directors could be less effective and efficient in achieving their tasks and the concentration of power could be detrimental for the organization which they serve, including the private equity firm (Millson & Ward, 2004; Cornelli & Karakaş, 2008; Wright *et al*, 2009b). This issue is statistically significant for both groups, where sponsors seem to be more effective in allocating

multiple roles across directors whereas non-acquired firms tend to yield a greater risk from busy directors. This evidence is coherent with the univariate analysis, in which board size shrinks during private equity ownership, and with the view that sponsors are skilled and experienced active investors. However, since sponsors tend to concentrate decision making and execution towards their representatives or one single CEO they appoint (or at least monitor), then busy directors could be charged of tasks that are less crucial to firm value whereas in non-acquired firms they have to take more relevant decisions that exacerbate negative aspects of being busy. These two views seem not exclusive with one other.

BOARD_DUALITY – duality occurs when the CEO is also the chair of the board of directors. In this study, duality is interpreted extensively as cases in which a manager is more important than the others (if any) and eventually takes the role of chair. Notably, members with dual role are also classified as busy directors (but there is not collinearity in targets nor peers). According to agency theory, duality is associated with greater agency costs due to a greater potential of opportunistic behavior coming from a more concentrated power, and empirical evidence is mixed. In this study, results are against the view that sponsors are more effective in using corporate governance mechanisms: while the coefficient for targets is negative, that of peers is positive and with greater magnitude. Therefore, while on average peers are less effective when their directors are busy, when one of the busy directors belongs to duality, then the risk is reduced. Since the correlation among the presence of duality and the number of busy directors is low and not negative for both groups (.14 for peers and .02 for targets), then duality is associated with a lower concentration of decision making as a whole. Therefore, and in contrast with the typical view on private equity, targets receive more benefits from a less concentrated power in terms of decision making and execution, while peers are better off in the case of a greater concentration. This could be due to the relevant number of club deals along the period under consideration (113 in 2013; 128 in 2014; 157 in 2015; 177 in 2016): two or more sponsors could view duality as a solution that does not optimally resemble the institutional ownership structure. Notably, the magnitude of the two coefficients (of busy and duality) offset each other within the two groups.

BOARD_AUDIT and BOARD_REMUNERATION – internal audit and remuneration are typical sub-boards in which sponsors actively intervene to have a comprehensive overview of the target as a requisite for appropriate monitoring and to calibrate compensation as an incentive device, together with equity stakes, an optimal balance among executives and non-executives (the variable consisting in the number of executive members of the board is actually not significant) and other governance mechanisms (Millson & Ward, 2004; Cumming *et al*, 2007; Wright *et al*, 2009a). Again, coefficients associated with private equity ownership are negative while those of peers are positive: this result could be reconciled with the potential of private equity syndicates experiencing some frictions wherever they appoint more than one person in those sub-boards, or frictions in the case of a sponsor's professional working along an incumbent auditor or remuneration manager. In other terms, while having more than one internal surveyor is generally a positive feature of a firm with more dispersed ownership and outside private equity ownership, in the case of the latter there could be frictions among sponsors or among incumbent and new members of the audit and remuneration

committee. Another potential explanation is that members of these two subgroups are associated with firms that had more agency costs *ex-ante* that are going to be mitigated in a longer term compared to the available sample (in any case, data about internal remuneration are not available).

GENERAL MANAGER – not in contrast to conclusions drawn about busy directors and duality, the presence of a manager having a large executive mandate is positively exploited by peers, whose preference for more concentrated decision making and execution emerged from previous evidence as already mentioned. Notably, the correlation among the presence of a general manager and that of duality is negative but not serious (less than .2 for both groups). The magnitude of the coefficient is similar, but that of peers is less significant and includes cases of nearly no effect.

CASH/OR and ROE – control variables capture the use of liquid funds scaled by operating revenue and the amount of equity invested, and can be also interpreted as measures of agency costs: a greater amount of free cash flows increase the potential of an opportunistic use of these funds i.e. towards negative NPV projects or empire building (Cumming *et al*, 2007; Wright *et al*, 2009a; Gong & Wu, 2011). Consistent with this view, and with the potential of targets being in trouble *ex-ante* (untabulated t-tests do not reveal serious differences among the two groups in terms of *ex-ante* risk of financial distress), coefficients associated with private equity ownership have a negative sign, but only the one of ROE is significant, whereas those of peers have a positive sign. This could signal that in the case of targets, the lower the amount of liquid funds i.e. agency costs – the lowest the potential of risk increases; whereas in the case of peers, more shared decision making and execution are associated with a better use of free cash flows, despite a more concentrated structure could be more appropriate for sponsors' limited time horizon. A potential explanation is that the more concentrated governance structure of targets exacerbates agency risks associated with liquid funds, whereas peers' less concentrated structure mitigates those risks and also peers receive the scrutiny of banking-type lenders that are strongly interested in their survival. Also, the limited time horizon of sponsors could force them to use their discretion for protecting their reputation for successful exits that not necessarily couple with target's value creation and risk reduction; in this regard, the fact that the coefficient for CASH/OR is not significant could be due to the fact that some sponsors are more virtuous than others in the use of assets.

Conclusion

Corporate governance mechanisms are meaningful within the private equity model. The positive effect of private equity ownership is associated with a less concentrated (and, presumably, better defined) governance structure within smaller boards, in which industry experts provides a valuable contribution. However, the size of sub-boards i.e. audit and remuneration committees – need to be addressed carefully and seemingly downwards in order to improve their contribution to risk reduction given their important role as governance mechanisms. These two mechanisms are indeed positively exploited by peers, whose dispersed ownership structure mitigates the risk of oversized sub-board since there are not the potential frictions that are typical in private equity club deals i.e. appointing one member per each

sponsor regardless of the optimal size. Probably, targets are selected by sponsor along criteria that involve a greater *ex-ante* risk to have more improvement potential and lower valuations, but these are not captured by this sample. In this regard, evidence from free cash flows are in favor of targets having greater agency costs to manage. This is not in contrast with the private equity model and with the problems that private equity ownership can solve, but could pose some threats to the reliability of the statistical inference. Potential bondholders during and after the private equity ownership can view at the evidence of this study to have a better picture of the expected risk of their investments, whenever investee companies have disclosure about internal roles. Private equity ownership is a unique governance mechanism that is based on few owners, active monitoring and a strong incentive structure within the firm, and a performance-based reputation to be sustained in a competitive market, outside the firm, together with a limited life of the funds they manage. For this reason, these results should not be generalized unless by considering the incentives that sponsors face as a unique type of owners, for example through the lenses of a multiple agency perspective.

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