

Contractual Characteristics and the Returns of Private Equity Investments¹

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This version 2009-10-16

WORK IN PROGRESS

Abstract

Exploiting a unique opportunity offered by the Italian private equity (PE) market, we examine the hitherto largely unexplored internal rate of return (IRR) of PE investments. Our database covers the entire universe of transactions sponsored by Italian PE investors up to 2007 and offers rarely accessible information at the investment level about IRR, covenants and governance. We show that contractual characteristics have a significant effect on the returns of PE investments: stronger covenant protection and monitoring lead to higher returns and increase the probability of exit via IPO. Our findings are robust to the potential endogeneity between contractual characteristics and investment returns.

JEL Classification: G11, G23, G24

Keywords: Private equity, venture capital, internal rate of return, covenants

¹ *Financial support from Carefin – Bocconi Centre for Applied Research in Finance is gratefully acknowledged. All remaining errors are ours. Please do not cite without consent of the authors.*

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1. INTRODUCTION

The literature on private equity (PE) has expanded dramatically in the last two decades. Extensive work exists on the performance of PE at the fund level (Ljungqvist and Richardson (2003a,b), Kaplan and Schoar (2005), Lerner, Schoar and Wong (2007)) . However, the determinants of the internal returns (IRR) at the investment level are still largely unexplored. The reason for this gap in the literature is that data on investment returns are generally unavailable.

Rather differently, by exploiting a unique opportunity offered by the Italian PE market, in this paper we are able to provide a detailed analysis of returns in PE investments. It is common practice among Italian PE funds to share information about completed investments. Thanks to an anonymous currently active Italian fund, we have access to this information for the research purposes of the present paper. Our database consists of 804 PE deals which represent the entire universe of completed transactions performed in Italy by Italian PE investors during the period 1999-2007.

The main aim of the paper is to understand the effect that contractual characteristics have on the returns of PE investments. We show that stronger covenant protection and monitoring lead to higher returns and increase the probability of exit via IPO. To our knowledge, this is the first paper that shows a direct relationship between PE returns and covenants. In this sense, our paper complements the analysis of contractual characteristics provided by Kaplan and Strömberg (2002), and provides empirical support to the theories on security design in entrepreneurial financing.

In the spirit of several contract theory papers that examine the relationship between entrepreneurs and private equity investors (Hellman (1998, 2006), Casamatta (2003)), we envisage that the IRR of an investment is driven by the contractual characteristics of the investment itself. These contractual features have a double effect on firm profits. On the one hand, contractual characteristics affect the distribution of firm profits between different classes of investors. On

the other, they affect the behavior of the entrepreneur with respect to maximization of firm value. As in Jensen (1986) and (in a wider context) Tirole (2006), entrepreneurs may have incentives that are not perfectly aligned with those of other shareholders. Insofar, as this is true, entrepreneurs may pursue the maximization of their private utility, rather than that of firm value. Ultimately, if not corrected, entrepreneurial moral hazard leads to second best equilibria.

Starting from this theoretical background, we identify contractual features that affect entrepreneurial moral hazard and others that relate more to the distribution of returns between PE investors and other investors. The distinction between these two types of contractual characteristics, however, is not always straightforward, because distribution rules often interact with efficiency.

We identify two classes of contractual characteristics that increase firm profitability by reducing managerial moral hazard. On the one hand, there are covenants that increase the incentives of managers to maximize firm value. Among these we include for example exit ratchets, which allow managers to earn extra shares in the firm if they achieve a good performance. Other covenants of this kind, include restrictions on the transfer of shares, as well as lock-ups. On the other hand, PE investors promote efficiency via effective corporate governance. Through various forms of direct and indirect monitoring PE investors ensure that the decisions taken by the board of directors are in line with the principles of value maximization.

We construct an index of moral hazard covenants and use it as an explanatory variable for investment IRR, controlling for a number of firm and investment specific characteristics. We find that these efficiency related covenants are significantly and positively related to IRR. These findings are consistent with previous results of Cumming (2008) and Kaplan and Strömberg (2002, 2004)).

We also construct an index of those covenants that affect how profits are distributed between PE investors and other investors. Following Cumming (2008), we refer to these as control covenants, in the sense that they indicate

strong bargaining power on the side of the PE investor. These index includes covenants such as tag-along and drag-along rights, as well as put options. We also find strong empirical support to the role of these covenants in producing IRR for PE investors.

Our results also illustrate the role played by governance in the creation of IRR. We find that IRR increases when the board of target firm is more influenced by the PE investor. When PE investors elect board members that are more closely linked to their interests, they are able to increase the profitability of their returns.

We identify a potential endogeneity issue in the above analysis. Contractual characteristics can be related to potentially unobservable characteristics of the firm that are known to PE investors at the time of investment. For example, a lock-up clause may be included only when the likelihood of an IPO occurring is high. This endogeneity can affect our previous results: possibly, IRR is high because of firm characteristics (such as high future profit growth), rather than because of covenant control. To examine this issue formally, we construct a set of instrumental variables. These include several market wide factors, such as market returns over the previous months and the ratio of monthly IPOs over newly created firms in Italy. We also include instruments that are industry and year specific for each investment, such as the industry average profitability and leverage. Finally, we control for pre-investment firm characteristics. We show that our results are robust to instrumental variable estimation.

Subsequently, in the spirit of Cumming (2008) we explore the relationship between contractual characteristics and exit, distinguishing between exit via IPO, trade sale and write-off. We find that the presence of covenants significantly affects the type of exit. Covenants relating to moral hazard, as well as control covenants, positively increase the likelihood that exit will occur via IPO with respect to a trade sale. The effect is asymmetric for IPOs and write-offs. Similarly to the case of IRR, we expect covenants to be endogenously

related to exit. We run an ordered logit for our covenant index and show that our results are robust to the endogeneity of contractual choices.

Finally, the paper offers interesting descriptive statistics and provides an overview of the characteristics of PE investments in Italy, which account for roughly 15% of all continental European PE deals. The Italian PE industry is an important reference case, because it shares with the rest of continental Europe the same regulation on closed-end funds (with the notable exception of the UK). Furthermore, the Italian PE industry is similar in size to that of Germany (18%), France (16%) and Spain (12%) (EVCA (2008)).

We find that target firms are typically privately owned by individuals and families. Expansion capital accounts for roughly half of the operations, while buyouts for 25% of operations. Differently from what happens in the US and UK, there are very few deals involving early-stage financing. Furthermore, there are large differences between returns for different types of investments, with buyouts and expansions being generally more profitable than early-stage and turnarounds. Most investments are exited via a trade sale (87%), as opposed to an IPO.

At the fund level, we have 87 funds which run an average of nine investments, with an average fund size of €2 million. The large majority of funds does not specialize in only one type of investment. At the level of management company (i.e. the owner of the fund), there are 58 companies in Italy the majority of which is owned by banks, by other financial institutions and by industrial and service firms. A much smaller percentage is owned by private individuals and public institutions. Management companies run on average only one and a half funds and have a size of approximately €3 million.

The rest of the paper is organized as follows. In Section 2, we review the related literature. In Section 3 we describe the data used and perform the first unconditional analyses. In Section 4 we perform a multivariate analysis to find relationships between investors' returns, as measured by IRR, and the factors identified above. In Section 5 we analyze the potential endogeneity of contractual characteristics and IRR. Section 6 focuses on the relationship between contracts

and exit, distinguishing between exit via IPO, turnaround and write-off. In this section we account for the endogeneity of exit and contractual characteristics. We leave conclusions for Section 6.

2. RELATED LITERATURE

Several papers examine the role of contractual agreements in PE investments. These contracts are characterized both by special securities, such as preferred stock, and by the presence of covenants. The seminal paper in this field is by Kaplan and Strömberg (2002) who study a sample of contracts between PEs and invested firms. They observe that the distinguishing characteristic of these contracts is to allow PEs to separately allocate cash flow rights, board rights, voting rights, liquidation rights and other control rights. These rights are often contingent on observable measures of financial and non-financial performance.⁵

Subsequent papers investigate the role of covenants as proxies for firm quality, and market power, as well as the effect that covenants have on managerial incentives. Kaplan and Strömberg (2004) find that greater internal and external risks are associated with more PE cash-flow rights and PE control rights. Hellman (2006) shows that allocating convertible preferred equity with automatic conversion to PEs is optimal, because it restores their incentives to promote IPOs (see also Casamatta (2003)).

More closely to our analysis is that of Cumming (2008) who uses a sample 223 of European PE investments that includes 187 actual dispositions (32 IPOs, 74 trade sales, 17 buybacks, and 64 write-offs). He relates the characteristics of PE contracts to the means by which a PE fund exits. The data indicate that ex

⁵ *Rather than focusing on investment agreements, Gompers and Lerner (1996) examine covenants in the context of partnership agreements establishing VC funds. They find that covenants are*

ante, stronger PE control rights increase the likelihood that an entrepreneurial firm will exit via a trade sale, rather than through a write-off or an IPO. The key argument of Cumming's paper is that even when an acquisition is financially superior to an IPO, an entrepreneur might prefer the IPO because of the private benefits of being the CEO of a publicly listed firm (Berglof (1994), Black and Gilson (1998), Bascha and Walz (2001) and Hellmann (2006)).

A paper that is closely related to our examination of real growth in Section 6 is Cressy, Malipiero and Munari (2007). The authors examine whether PE-backed buyouts have higher post-buyout operating profitability than comparable companies as a result of superior governance. They also question whether relative investment specialization by industry or stage provides PE funds with a competitive advantage over their peers. They find that over the first three post-buyout years operating profitability of PE-backed companies is greater than those of comparable companies and that industry specialization of PE firms adds to this premium. Finally, they observe that initial profitability of the PE-backed company plays a major role in post-buyout profitability.

The role of governance and monitoring in PE investments has been previously analyzed by Nikoskelainen and Wright (2007). The authors find that value increase and return characteristics of LBOs are to some extent related to the corporate governance mechanisms resulting from a leveraged buyout, especially managerial equity holdings. They show that return characteristics and the probability of a positive return are mainly related to size of the buyout target and other acquisitions carried out during the holding period.

Finally, our study of returns in PE was stimulated by the existing research on performance in PE. As previously discussed, this strand of the literature focuses on the performance of PE funds, rather than on the performance of single

employed only when agency problems are severe and their use reflects supply and demand conditions in the VC industry.

investment. Nevertheless, it represents a useful benchmark. Ljungqvist and Richardson (2003a) find that PE generates excess returns on the order of five to eight percent per annum relative to the aggregate public equity market. Ljungqvist and Richardson (2003b) show that returns depend on the timing of entry/exit decisions, which itself is influenced by the demand for PE capital (see Inderst and Mueller (2004)). Kaplan and Schoar (2005) investigate the performance of PE partnerships and find that fund returns net of fees approximately equal the S&P 500. Returns persist strongly across funds raised by individual PE partnerships. The returns also improve with partnership experience. Better performing funds are more likely to raise follow-on funds and raise larger funds than funds that perform poorly. Groh and Gottschlag (2006) find that in the US buyouts outperformed the public market by 12.6% per annum gross of all fees and that the magnitude of the out-performance exceeds the typical level of fees. As a caveat to the interpretation of these results, Cochrane (2005) shows that selection bias may undermine the evaluation of performance in PE investments. The key argument is that we observe valuations only when a firm goes public, receives new financing, or is acquired. These events are more likely when the firm has experienced a good return. However, to counterbalance this bias, Cumming and Walz (2004) show that PE funds tend to report inflated valuations of companies that are not yet sold.⁶

4. DATA AND DESCRIPTIVE STATISTICS

We use a unique database of PE deals which covers the entire universe of transactions sponsored by Italian PE investors in Italy in 1999-2005 and exited

⁶ *Related to these findings we find Gompers (1996) which shows that young VC firms take companies public earlier than older VC firms in order to establish a reputation and successfully raise capital for new funds. The argument of Gompers rests on the idea that reputation and its effect on attracting capital are important in accessing debt and equity markets (Diamond (1989)) and act as a strong indicator of the ability to attract investors (Sirri and Tufano (1993) and Chevalier and Ellison (1995)).*

no later than March 2008. The database is provided by an anonymous PE fund, currently active in Italy. Data on individual investments are obtained directly from the original contracts. This information is then merged with data provided by the Italian Private Equity and Venture Capital Association (AIFI) and with the public files held at the Bank of Italy and at the Italian Securities and Exchange Commission (Consob). The latter two sources provide information on asset management companies and funds.

For each deal, we have information about the type of investment (early-stage, expansion capital, buy-out or turnover finance), the exit strategy (trade sale, IPO, write-off), the entry and exit dates, the internal rate of return, the size of the investment, the deal covenants, the leverage used, the percentage of shares of the target firm held by the PE fund, the target's sector and organizational form, and governance characteristics of the target firm, as well as of the management company and of the PE fund managing the investments.

The sample contains only deals that have been officially exited. To the extent that fund managers are reluctant to write-off underperforming deals and carry on with "living dead" investments, this restriction potentially causes some degree of sample selection.⁷

The sample includes 804 investments made by 87 PE funds, which are respectively owned by 58 management companies. A large fraction of the targets operates in the consumer goods sector (34%), the general industrial sector (25%), and the services sector (20%). Consistently with the structure of the Italian corporate sector, most target firms in the sample are privately owned by individuals and families (69.28%). Banks, PE investors and managers respectively control 1.87%, 17.04% and 11.82% of the targets before the investment.

Table 1 offers key summary statistics on target firms before investment by the PE fund (pre-money). Data refer to the last financial statement available before investment. The average firm in our sample has sales of €128m, with a minimum of €6.3m, and a maximum of €500m. Average book value of assets is €124.81m and EBITDA is €15.95m, which gives an average profitability – calculated as EBITDA over assets – of 12.78%. The average firm has a leverage (book value debt/equity ratio) of 3.92. Almost the entirety of our firms is incorporated as Spa (Società per Azioni), with only a residual percentage in the form of Sapa (Società in Accomandita per Azioni) and Srl (Società a Responsabilità Limitata).

Table 2 reports the distribution of investments and funds across time, reporting the year of creation for funds and the entry and exit years for investments. All investments were financed between 1999 and 2005, with 2000, 2001 and 2004 being peak years. Notice that due to a delay in the regulation permitting the operation of PE funds (but not their creation), there is a lag since the establishment of the first funds (1995) and the first investments (1999). The distribution of investment exits, on the other hand, centers on the years 2002-2006.

As Table 3 shows, investments in our sample include early-stage, expansions, buyouts and turnarounds. Buyouts include both leveraged and non-leveraged acquisitions. Buyouts and turnarounds can be of both private and public firms. The majority of our deals are expansion financing (51.87%), followed by buyouts (26.24%), early-stage (16.29%) and turnaround (5.60%). Investments have an average size of €6.71m. The table shows that early-stage and expansion deals are much smaller than buyouts and turnarounds; the figures are intuitive as the former usually involve target firms of smaller size. Buyouts

⁷ In a sample of US and non-US PE deals, Phalippou and Gottschlag (2009) show that roughly half of the active investments that have reached maturity correspond to 'living dead'. These

include the largest deals in our sample (the largest one is €30m), which however look small by international standards, particularly if compared to the mega buyouts recently witnessed in the US and UK.

The typical holding period is almost three years for the whole sample, being slightly longer for early-stage investments than for other types of investment (see Table 3). Similarly we do not observe much variation in the average holding period when we group investments according to their form of exit. The holding period is 34 months for trade sales and write-offs, and 31 months for IPOs.

When debt is used to finance a deal a Special Purpose Vehicle (SPV) is always employed. SPVs are very rare in early-stage financing (6.10%), but rather common for expansions, buyouts and turnarounds (respectively 36.69%, 36.01% and 31.11%). Leverage is used in 251 cases and averages 3.48, which implies that 22% of the investment is funded with equity and 78% is funded with debt. By comparing our results with Axelson et al. (2008), we find that the equity component in our sample of leveraged deals is smaller than in their international sample of leveraged buyouts. The authors report an average leverage of ca. 30% in Europe and between 30% and 40% in the US.

Table 3 also shows that PE funds normally invest in common stock and take on average a 22.6% stake on their target firms. This stake is likely to be enough to influence the board – and sometimes to exercise effective control – while leaving the majority stake to insiders. In the sample, PE funds never acquire a majority stake in the target, reaching a maximum 50% stake only twice (two buyouts). Informal discussions with practitioners reveal that control is often exercised by PE investors through preferential voting rights. These are not necessarily correlated to the percentage of common shares held by the fund nor to the number of board members designated by the fund. As Panel A of Table 7 shows, funds almost invariably choose only one board member in the target firm

investments have not been written off, despite their poor performance.

(782 cases out of 804), and never have more than three. Similarly, the number of board members is not correlated to the total number of board members (on average 6).

The internal rate of return (IRR) is calculated as the difference between exit and entry value divided by the entry value. IRR is gross of any fund fee required by the PE fund as compensation. Returns across the whole sample are generally positive (average IRR of 33.17%). In a few cases total write-offs of the investment drive IRR to -100% . The least profitable and more risky investments (using the standard deviation as a measure of risk) are early-stage and turnarounds. Buyouts offer the highest average returns, not only in terms of IRR but also if measured by growth in sales, growth in return on assets (ROA) and growth in return on equity (ROE).

These performances are startling compared to the Italian stock market over the same period (S&P MIB stock index). Once we compute the yearly IRR, by annualizing the IRR with yearly compounding, and compare it to the yearly returns of the stock market, we find a difference of 17.95% in favor of PE investments. While the Italian stock index performed poorly during 2001-2002, PE investments provided high returns. The difference between yearly IRRs and the annualized rate of return of Italian government bonds with a duration of 2 years is lower (8%), suggesting that the poor performance of the stock market plays a role in explaining the comparatively high IRRs of the funds.

Panel C of Table 3 shows that investments are mostly exited through a trade sale (87.69% of the sample).⁸ IPOs and write-offs are relatively rarer, respectively 5.85% and 6.46%. As expected, IPOs are more common for buyouts and expansions than for early-stage and turnarounds. The higher risk of

⁸ *In our sample, a trade sale is defined as the sale of the firm to a well identified third party, such as another PE fund or a corporation.*

turnarounds is such that these deals are more likely to end in a write-off (17.78% of the cases).

Table 4 contains statistics at the fund level. The average fund manages €2.05m, with an average of €10.53m for early-stage funds, €7.2m for expansion financing, and €6.9m for buyouts. We define a fund specialized if the value-weighted majority of its investments are in a specific class of deal: early-stage, expansion, buyout, turnaround. We find that most funds (67 out of 87) are specialized in expansion financing. Only one fund specializes in early-stage financing, while nine specialize in buyouts. Seven funds are equally “specialized” (i.e. invest 50% on each type) in expansion and buyout financing, three in early-stage and expansion financing, and not a single fund specializes in turnaround finance. Only one fund is 100% specialized in one form of investment (expansion); the average fund diversifies across types, while investing mostly in expansions (53.29% on average) and to a lesser extent in buyouts (24.85%), early-stage (16.85%), and turnarounds (5%). Funds hold an average portfolio of 9.24 investments: this makes fund IRRs less volatile than the investment IRRs reported in Table 3. Exit channels are also diversified. Several funds succeed in exiting all their investments via a trade sale. However, none of them is able to exit only through IPOs, by far the most profitable form of exit.

Table 5 reports data on the 58 management companies (MCOs) of our sample, each one managing an average of 1.5 funds and total assets of €3.07m. Returns diversification is very clear at the MCO level, since all IRRs are positive. More than half of the MCOs are controlled by a bank or an other financial institution. Corporations control approximately 22% of the MCOs; private individuals or public institutions of 10% each; and the rest of MCOs are majority owned by other subjects (mainly non-profit organizations).

Table 6 provides information on covenants which include: lockup, permitted-transfer restrictions, callability, puttability, tag-along rights, drag-along rights, rights of first refusal, exit ratchets and debt covenants. The

appendix provides a detailed description of each of these covenants. Tag-long rights are the most common covenant (87.81% of the deals), followed by covenants on debt, permitted transfer clauses, puttability of securities and drag-along rights. There is relatively little variation in the use of covenants between early-stage, expansion and buyout financing, although covenants on debt are much more common for expansion and buyouts than for early-stage investments. This is due to the fact that covenants on debt are always employed when there is an SPV and the deal is leveraged, neither of which is likely to occur in early-stage financing.

Panel B reports the correlations between covenants. Lockups, permitted transfers, puttability and first refusal tend to have reciprocal high positive correlation. As shown in Panel A, these covenants are also typically associated with IPOs. We held informal talks with PE practitioners which reveal that covenants are generally agreed upon at the time of investment and rarely changed afterwards. This suggests that at the time of entry PE investors are able to anticipate whether an IPO will occur or not, and choose covenants accordingly. For example, consider the case of lockups which are clauses that apply only to an IPO and are meaningless under different circumstances (being instead replaced by other covenants such as permitted transfer restrictions). Our data show that lockups are generally introduced if an IPO is likely to happen. Indeed, among the relatively few firms that carry a lockup clause 78.7% of them ends up in an IPO, 17% in a trade sale and a mere 1.9% in a write-off. Furthermore, as an IPO is the most profitable form of exit, we conclude that the presence of a lockup clause signals firm quality. We discuss this issue in more detail in the next section.

Table 7 offers descriptive statistics (Panel A) and Pearson pair wise correlations (Panel B) of target firm governance measures. Target firms have a median of six directors in the board. PE funds typically elect only one of these directors, a number that is largely invariant with respect to the percentage of shares held in the firm. This person typically also occupies a seat in the board of

several other firms in which the fund has invested. During the average life of an investment, PE elected directors sit on approximately seven other boards (“Other Boards During”). These directors previously sat on the board of seven other firms invested by the fund (“Other Boards Before”). These data show how parsimonious PE funds are in the use of their (costly) human capital resources.

PE elected directors are not necessarily employees of the fund. In several cases, they are recruited externally. However, this does not mean that they can be regarded as truly independent from the fund. To explore this issue in more detail, in Panel A we report the number of external directors. These are individuals that formally represent the PE fund in the board of the target firm, but that are not employees of the fund. An indicator of their true independence from the fund is the synchronism of mandate between their terms of office and those of the fund. If there is there is synchronism, then a director should be regarded as external but not independent. In Panel B we find that there is a high correlation between synchronism and the presence of external directors. This indicates that external directors are typically engaged in a tight relationship with the fund, even if they are not formally employed.

Lastly, Table 7 provides information on voluntary ending of a mandate by a board director. These are cases in which a PE sponsored director chooses to terminate his/her mandate as board member in an invested firm, before its natural expiration. We interpret the voluntary ending as a signal of tension between the fund and other shareholders. This interpretation is supported by the existence of a positive correlation between voluntary ending and write-offs.

5. ANALYSIS OF IRR

In this section, we examine the determinants of investment returns. The basic measure of returns that we will employ is IRR of the investment. This is a

gross measure of returns in the sense that PE investors will receive these returns net of the fund's fees.

PE investors generate IRR by increasing firm profitability and by distributing cash flow rights and voting rights (Kaplan and Strömberg (2002)). Accordingly, we distinguish between factors that affect firm profits and those that affect control.

5.1 Factors that affect firm profitability by reducing managerial moral hazard

Following Hart (1995) and Aghion and Bolton (1992)⁹, we hypothesize that there are conflicts of interest between insiders (executive managers) and PE investors. Managers can take unobservable actions to maximize their private benefits rather than the value of the firm. PE investors respond to managers' *moral hazard* by limiting the scope of their actions. They do so by imposing covenants and by taking an active role in the governance of the firm.

We identify the following covenants as relevant for reducing managerial moral hazard: put options, exit ratchets, lockup agreements, permitted transfer agreements and the right of first refusal.

With a puttable security, PE investors have the option to sell their shares to insiders at a fixed price. PE investors are then protected against the reduction in value of their investment, as they can benefit from the insurance effects of the put option. As insiders have a position of short put, their exposure to firm risk increases and so do their incentives to maximize firm value.

An exit ratchet is used to adjust the respective shareholdings of the PE investors and insiders depending on the level of returns of an exit. Normally, the exit ratchet is written in favor of insiders. This means that the equity stake of insiders increases more than proportionally when performance meets certain

⁹ See Laffont and Martimort (2002) and Tirole (2006) for broad reviews of the literature on incomplete contracts.

targets. In the US, this contractual agreement is normally referred to as *vesting*. An exit ratchet aligns the incentives of managers with those of other shareholders.

Lockups and permitted-transfer agreements are alike in that they delay the sale of shares by existing shareholders in the event of an IPO or a trade sale. More precisely, a lockup provision normally prohibits insiders and PE investors from selling for a certain period of time following a public offering (usually 180 days after an IPO). Permitted transfer agreements limit the tradability of shares of insiders in case of a trade sale. It does not generally apply to shares held by PE investors. We hypothesize that both these agreements have the effect of aligning the incentives of managers with those of new shareholders towards value maximization.

The right of first refusal is the right of existing shareholders to have the first opportunity to purchase shares from a departing shareholder (pre-emption on transfer), or to subscribe for new shares issued by the company (pre-emption on issue). This right has the general effect of protecting current shareholders from undesirable changes in the ownership structure of the firm. And in particular, it aligns managerial incentives by preventing the dilution of their stake.

As noted above, covenants are only one of the instruments that help aligning incentives and reducing moral hazard. Another way to achieve these objectives is for PE investors to monitor managers, for example, by requiring direct representation in the board of the firm. The database offers several variables that can help us identify the effect of monitoring. Among these, there are the number of board directors chosen by PE investors; and the cumulative presences that these directors have in other boards belonging to the fund during and before the time of investment (see Table 7 Panel A).

The ownership of the fund has also been identified in the literature as a relevant variable for understanding fund performance. Lerner, Schoar and Wong

(2007) distinguish between different classes of LPs and find that endowments' average annual returns from PE funds are nearly 14% greater than for the average investor. Funds selected by investment advisors and banks lag sharply. This finding is in line with Hellmann, Lindsey and Puri (2004) who suggest that banks as limited partners might diverge from maximizing returns on investments in order to maximize future banking income from the portfolio of firms in which they invested. Following these findings, we then envisage that bank ownership has a direct impact on fund governance and an indirect one on firm governance. We expect bank ownership to be associated with poorer governance and higher moral hazard.

5.2 Factors that affect control

Following Cumming (2008), we identify a set of covenants that reflects the bargaining power of PE investors versus managers and other investors. These control covenants affect wealth distribution between different classes of investors under specific circumstances. Among *control* covenants we include drag-along rights, tag-along rights and put options.

Drag-along rights enable a majority shareholder to force a minority shareholder (generally the PE investor) to join in the sale of a company. The majority owner doing the dragging must give the minority shareholder the same price, terms, and conditions as any other seller. Tag-along rights are instead meant to protect a minority shareholder (generally the PE investor). If a majority shareholder sells his or her stake, then the minority shareholder has the right to join the transaction and sell his or her minority stake in the company. Therefore, drag- and tag-along rights have the overall effect of strengthening the contractual position of PE investors in case of a favorable exit.

Among the control covenants, we also include put options as they provide strength to the contractual position of PE investors, in that they allow exit at pre-specified terms, irrespectively of how poorly the firm is performing.

Finally, the last variable that we employ for control is the percentage of shares acquired by the PE fund. We expect PE funds to exert more intense monitoring activities when they own a higher percentage of shares in the firm.

5.3 Base Regression Model for IRR

We propose the following basic model to analyze the factors related to the IRR of the portfolio firms:

$$IRR_i = \alpha + \beta' \text{ Profitability}_i + \gamma' \text{ PE Control}_i + \delta' \text{ Other controls}_i + \varepsilon_i. \quad (1)$$

In the above equation, *Profitability_i* is a vector containing variables related to the ability of PE investors to increase firm profitability; *PE Control_i* is a vector containing variables related with the ability of PE investors to have a stronger control on the target firm, and *Other controls_i* include firm- and investment-specific characteristics.

As our first variable in vector *Profitability_i*, we include *MH index*, an index containing the sum of the dummy variables indicating the presence of the following covenants that help reduce moral hazard: put options, exit ratchets, lockup agreements, permitted transfer agreements and the right of first refusal. We expect these to be positively correlated with IRR.

We also include variables related to the monitoring activity of the PE fund. The number of board directors of the target chosen by PE funds is almost always one, and the cumulative number of presences of fund directors *before* the investment is collinear with the number of presences *during* the investment. Therefore, of the three variables mentioned in the previous section that affect profitability through monitoring, we only include the cumulative number of presences of the board director chosen by the fund in other boards owned by the same management company *during* the investment. Finally, we include a dummy variable containing a one when the management company of the fund is bank-owned, and zero otherwise.

In vector *PE control*, we include Control index, a variable containing the number of covenants indicating higher control by the PE fund: tag-along rights, drag-along rights, and put options. As a second component of this vector, we include the percentage of shares of the target that were acquired by the PE fund. Finally, we also include two variables that measure the degree of independence of the board director chosen by the fund: Independent director, a dummy variable that takes a one when the director is declared to be “independent of the fund”, and a dummy variable that takes a one whenever there is synchronism of maturity between the board of directors of the fund and those of the firm.

We include ex-post realized growth as a control in our regressions. The database offers three different measures of growth: 1) sales growth, which is the growth in gross sales between the entry and exit of the PE; 2) growth in return on assets (ROA), which is the increase in profitability of the firm; and 3) growth in return on equity (ROE), which captures the profitability of the firm, also reflecting firm leverage.

As other controls, we include firm size, measured as the natural logarithm of assets at investment time; the operation leverage, which is the debt to equity ratio of the Special Purpose Vehicle if employed, and zero otherwise; dummies for the various types of investments, which include early-stage, expansions, buyouts and turnarounds; and dummies for the industry in which the target firm operates.

The results of regression (1) are presented in Table 8. In columns 1 to 5 we use the gross IRR, measured as the difference between exit and entry value divided by the entry value, as our dependent variable.¹⁰ Because this measure has a time dimension, we control for the duration of the investment (natural logarithm of the number of months between entry and exit). We repeat our

¹⁰ *This is the relevant measure for IRR in Italy, because second and further rounds of investments are practically inexistent.*

estimations using also the annualized IRR and the results are qualitatively very similar. An example of an estimation done using annualized IRR is contained in the last column of Table 8.

The coefficients in Table 8 show that the ex-post realized growth, measured either as growth in sales (columns 1-3 and 6), as growth in ROA (column 4), or growth in ROE (column 5) is a crucial determinant of IRR. Table 1 also shows that PE investors help to create value both by reducing moral hazard and by exerting stronger control: in fact, both MH index (column 1) and Control index (column 2) are positively correlated with investor returns, as expected. In Columns 3 to 6 we aggregate all the covenants present in MH and Control index into a single index, All Covenants Index, that proxies both ways in which PE may influence fund returns. The effect of this index on performance is also positive and significantly different from zero.

PE investor monitoring is also crucial in determining investment returns. All else equal, having a board director of the target that is independent of the fund it represents is translated into a lower IRR. Similarly, whenever there is synchronism of maturity between the mandate of the board of the fund and the board of the firm – i.e., and indicator of a tighter link between the director and the fund, the returns are higher.

5. ENDOGENEITY

While encouraging, the results of the previous section could be biased due to a potential endogeneity between firm performance and the inclusion of certain covenants in the contract. In fact, the PE investor may envisage a high future firm performance and decide the set of contractual characteristics accordingly. Suppose, for example, that during the due diligence a PE investor finds a potential super-performer. To convince the entrepreneur to enter the deal, she may include “sweeteners” such as exit ratchets. This is because high NPV projects are likely to generate nonnegative returns to investors, even if the

entrepreneur manages to retain strong control rights (Kaplan and Strömberg 2003). Similarly, a firm with high possibilities of ending up in an IPO would most certainly contain a lock-up clause. These clauses are self-imposed commitments of behavior by both parties that in effect reduce the ability to do market timing, and they leave them worse off in case of underperformance, hence are not expected on deals that are expected to generate an average performance.

We control for this potential endogeneity with an instrumental variable approach. As instruments for our covenant indices, we choose three sets of variables: (i) variables measuring the situation of the firm before the PE investment, (ii) variables accounting for investor sentiment at the time of the investment, and (iii) variables containing average industry profitability and leverage levels at the time of the investment. For our first set, we include firm leverage (D/E ratio) and profitability (EBITDA to assets ratio) before the investment. These are likely to be analyzed by the PE investor before the investment, and as such we expect them to be important determinants of the final contract. However, because they measure past events, they should not be directly correlated with investment performance. Within our second set of instruments, we include the (annualized) market returns of the six months preceding the investment, as well as a ratio of IPOs to number of firms created in Italy in the six months before the investment. These variables are likely to capture the degree of optimism at the time of the investment, but are unlikely to be correlated with performance directly. Finally, in our third set we include average industry profitability (ROE) and Debt/Equity ratios at the time of investment, to control for standard industry practices.

Using these three sets of instruments, we perform 2SLS regressions for Equation (1). In the first stage, we regress each of our covenant indices on all the variables identified in the previous section, plus our instruments. In the second stage, we use the fitted outcomes of the first stage to estimate Equation (1). We adjust the standard errors to control for the heteroskedasticity clustered at the fund level. Results of these regressions are summarized in Table 9.

The first column of each of Models 1 to 4 contains the coefficients for the first stage of each model. In Model 1, we instrument the MH index; in Model 2 we instrument the control index, and in Models 3 and 4 we instrument the all covenants index. The difference between models 3 and 4 is the dependent variable: gross IRR in the former, annualized in the latter.

To start with, the regressions in Table 9 confirm that the chosen instruments have a very strong predictive power on the covenant indices. Interestingly, we also observe that the percentage of shares acquired in the firm has a negative effect on the control index and all-covenants index, indicating that having higher voting rights, as proxied by the percentage of shares acquired in the firm, substitutes for covenants in the contract. The same negative relationship is not statistically significant when we instrument the Moral Hazard index.

The second stage regressions confirm our findings of the previous section, that PE funds are effective in creating returns through reduction of moral hazard and through stronger control. Both MH index and control index are positive, and significantly correlated with IRR. Similarly, we observe a positive relationship between the all-covenants index and investment returns.

After controlling for the endogeneity of contracts and returns, we still find that stronger monitoring is related to higher IRR. The existence of an independent director is negatively related to performance, and the synchronism of maturity between the board of the firm and the board of the fund is positively related to performance.

6. EXIT

In this section we follow Cumming (2008) and examine the relationship between contractual characteristics and exit type. The comparison with Cumming is not simple because the sample that he uses includes also

investments that have not yet been exited, while in our case all investment are closed.

There are three possible exits for an investment in our sample: IPO, trade sale and write-off. On average, IPOs tend to be more profitable than the other two types. Table 10 explores the effect that contractual features have on the likelihood of a specific exit type. More precisely, the table contains multinomial logit estimates for the impact of growth, covenants, governance, and other firm characteristics on the exit outcome, with trade sale representing the base outcome.

We run two separate sets of estimations. In the first set (Model 1) we do not control for endogeneity of contracts and exit outcomes. In Model 2, instead, we explicitly examine endogeneity by means of instrumental multinomial logit estimates. The first stage of the multinomial logit is performed via an ordered logit over the covenant index instrumented with the following variables: (i) initial profitability and (ii) initial D/E of the target; (iii) market returns and (iv) IPO-to-firm-creation in the 6 months preceding the investment; and (v) industry ROE and (vi) industry D/E ratio at the time of investment. Then, the predicted values of this analysis are used in the first column of Model 2. All equations contain industry fixed effects, as well as a constant. As in Table 8, we control for investment type: early, buyout, turnaround, expansion. We produce robust standard errors to clustering at the MCO level.

Table 10 shows that the basic intuition of the previous sections carries through to the analysis of exit. Sales growth have a positive effect on the likelihood of an IPO and negative on the likelihood of a write-off. The covenant index is significant for IPOs but not significant for write-offs. This suggests that covenants are better suited at providing incentives, than at reducing down-side losses.

The other factor that emerges very clearly is the role of share ownership. In both the standard and the instrumental analysis, share ownership is significantly negatively related to the likelihood of exiting the investment with a

write-off. Similarly, to what happens for covenants share ownership has an asymmetric effect on exit. It is not significantly related to IPOs, thus suggesting that the presence of a PE investor is not per se sufficient to lead a firm to the IPO. It strongly indicates however a low probability of a write-off.

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Tables and Figures

Table 1

Summary statistics for target firms (pre-money)

Descriptive statistics for all 804 target firms. $Sales_0$, $EBITDA_0$, BV_0 Assets, BV_0 Equity, BV_0 Debt are the accounting values of target firms as reported in the last fiscal year preceding the investment, expressed in millions of euros. Firm leverage₀ is the book leverage of the firm as reported in the last fiscal year preceding the investment. The organizational form of the firm before the investment takes three values: Spa (Società per Azioni), Sapa (Società in Accomandita per Azioni) and Srl (Società a Responsabilità Limitata).¹¹

	Mean	Median	SD	Min	Max
Sales₀	128.01	81.60	131.28	6.31	499.10
EBITDA₀	15.95	9.29	19.09	-4.17	109.41
BV₀ Assets	124.81	70.25	132.57	3.72	984.56
BV₀ Equity	25.36	14.30	26.47	0.68	175.50
BV₀ Debt	99.45	56.15	106.70	3.04	809.06
Firm Leverage₀	79.48	80.04	2.91	68.25	83.60
Organizational Form = Spa	99.37	100.00	7.86	0.00	100.00

Table 2

Distribution of Investments and Funds by Year

This table reports the distribution across time of the funds and investments included in the sample. The first column contains the start year of funds. The second column reports the start year of investments. The last column reports the exit year of investments. Regulation prohibited investment until 1999.

Year	# Funds	# Invest.	#Invest. Exit
1995	8	–	–
1996	19	–	–
1997	23	–	–
1998	21	–	–
1999	16	65	1
2000	–	252	10
2001	–	214	33
2002	–	54	107
2003	–	59	158
2004	–	114	169
2005	–	46	93
2006	–	–	143
2007	–	–	82
2008	–	–	8
Total	87	804	804

¹¹ We observe the following industries: resource, basic, general, consumer goods cyclical, consumer goods non-cyclical, service cyclical, services non-cyclical, utility, finance, IT.

Table 3**Summary Statistics for Investments**

This table reports statistics on investments and firm performance. Panel A contains general statistics on investments. We report mean and medians. Investment size is expressed in million of euros. Shares owned in the firm represent the percentage equity share that the PE fund holds in the target after the investment. Holding period is the number of months between entry and exit. Operation leverage is the leverage of the SPV through which the investment is made. Panel B contains statistics on firm performance after the investment (post-money). Sales growth, ROA growth and ROE growth respectively identify the percentage growth in target sales, return on assets and return on equity. Panel C reports statistics on returns. IRR is the rate of return over the investment period. IRR is calculated as value of investment at exit minus value of investment at entry divided by value of investment at entry.

Panel A – General

	All	Early	Exp.	Buyout	Turn.
Investment Size (€mln)	6.71	1.03	3.88	15.52	8.10
	4.10	1.00	3.75	15.50	8.25
Shares owned in firm (%)	22.63	24.16	22.48	23.16	17.00
	25.00	25.00	25.00	25.00	15.00
Holding period (months)	34.20	41.92	33.83	30.42	32.80
	33.00	43.00	34.00	29.00	31.00
Operation Leverage	1.09	0.20	1.28	1.24	1.11
	0.00	0.00	0.00	0.00	0.00

Panel B – Firm Performance (post-money)

	#Firms	Mean	Median	SD	Min	Max
Sales growth (%)	804	14.07	12.79	12.16	-33.35	112.28
ROA growth (%)	804	12.74	10.02	12.67	-21.46	129.12
ROE growth (%)	804	38.88	25.03	50.50	-72.98	697.26

Panel C – IRR (%)

	#Firms	Mean	Median	SD	Min	Max
Whole Sample	804	33.17	36.50	34.45	-100.00	203.00
By Type						
Early	131	26.16	36.00	42.54	-100.00	124.00
Expansion	417	34.30	35.00	29.55	-100.00	153.00
Buyout	211	37.19	38.00	32.91	-100.00	203.00
Turnaround	45	24.22	40.00	50.76	-100.00	115.00
By Exit:						
Trade	705	36.6	37.00	15.40	-48.00	150.0
IPO	47	89.2	88.00	32.59	52.00	203.0
Write-off	52	-64.0	-85.00	42.18	-100.0	12.00

Table 4**Summary Statistics for PE Funds**

This table contains descriptive statistics for the 87 PE funds in our sample. Fund size is calculated as the sum of the investments made by a fund. Number of investments refers to the investments made by each fund. Fund investment by type reports the percentage of investments made by funds for each type of investment. Weighted average IRR is the internal rate of return of the fund calculated as the weighted average IRR of the single investments, using investment size as weight. IRR is calculated as value of investment at exit minus value of investment at entry divided by value of investment at entry. Exit reports the statistics of exits respectively via IPO, trade and write-off grouped by fund, calculated as percentages of the total number of investments made by a specific fund.

	Mean	Median	SD	Min	Max
Fund Size (Million €)	62.05	56.80	35.07	8.4	182.2
Number of Investments	9.24	9.00	3.20	3.00	19.00
Fund Investment by Type (%)					
Early	16.85	16.66	12.64	0.00	60.00
Expansion	53.29	54.54	16.09	11.76	100.00
Buyout	24.85	25.00	15.21	0.00	63.63
Turnaround	5.00	0.00	6.79	0.00	22.22
Weighted Av. IRR (%)	33.20	34.86	18.31	-65.22	90.71
Exit (%)					
IPO	6.32	0.00	8.27	0.00	40.00
Trade	87.28	88.88	11.00	60.00	100.00
Write-off	6.38	0.00	7.76	0.00	33.33

Table 5**Summary Statistics for Management Companies**

This table contains descriptive statistics for the 58 management companies (MCO) in our sample. MCO size is calculated as the sum of the investments made by each of the funds that belong to a specific MCO and is expressed in million of euros. The number of funds refers to the funds owned by each MCO. Weighted average IRR is the internal rate of return of the MCO, calculated as the weighted average IRR of the single investments across all owned funds, using investment size as weight. IRR is calculated as value of investment at exit minus value of investment at entry divided by value of investment at entry. Majority ownership of MCO refers to the individual or institution owning the majority of the shares of the MCO.

	Mean	Med	SD	Min	Max
MCO Size (Million €)	93.07	62.10	79.60	10.5	445.05
Number of Funds	1.50	1.00	0.88	1.00	5.00
Weig. Av. IRR per MCO (%)	36.81	34.04	12.31	17.08	90.71
Majority ownership of MCO (%)					
Banks and Financial Institution	51.38	55.00	40.37	0.00	100.00
Private Investors	10.34	0.00	21.96	0.00	100.00
Industrial and Service Company	21.63	0.00	31.55	0.00	100.00
Public institutions	9.82	0.00	21.06	0.00	80.00
Other subjects	6.72	0.00	12.16	0.00	50.00

Table 6**Distribution of Covenants by Type of Investment**

Panel A of this table provides descriptive statistics on covenants. Each column gives the % of firms that carries a specific covenant within a group, defined according to exit (Trade, IPO, Write-off) and type of deal (Early, Expansion, Buyout, Turnaround). For example, the % of firms with a tag-along right that exited with an IPO is 93.61. Panel B reports the Pearson pair wise correlations between covenants. Investments may simultaneously have several covenants. See the Appendix for definitions.

Panel A – Covenants by Exit and Type

Covenant	Firms #	Exit				Type			
		All (%)	Trade (%)	IPO (%)	Write (%)	Early (%)	Exp. (%)	Buy. (%)	Turn. (%)
Lockup	50	6.22	17.02	78.72	1.92	6.11	5.52	8.06	4.44
Permitted transfer	145	18.03	14.04	78.72	17.30	13.74	18.94	18.96	17.78
Callable security	67	8.33	7.51	17.02	11.53	4.58	7.67	9.95	17.78
Puttable security	139	17.28	13.47	74.46	17.30	12.21	16.31	22.27	17.78
Tag-along right	706	87.81	87.37	93.61	88.46	86.26	88.49	86.63	91.11
Drag-along right	147	18.28	18.58	17.02	15.38	15.27	20.38	15.64	20.00
First refusal	58	7.21	3.68	63.82	3.84	6.11	6.95	9.48	2.22
Exit ratchet	64	7.96	6.80	25.53	7.69	4.58	6.95	11.85	8.89
Debt Covenants	341	42.41	41.27	51.06	50.00	20.61	46.52	48.34	40.00

Panel B – Pearson Pair wise Correlations between Covenants

	Lock	P.Tr	Call	Put	Tag	Drag-	First	Exit	Debt
Lockup	1								
Per. transfer	0.348*	1							
Callable	0.090*	-0.001	1						
Puttable	0.250*	0.179*	0.041	1					
Tag-along	0.001	0.046	-0.039	0.059*	1				
Drag-along	0.011	0.054	-0.050	0.039	0.009	1			
First refusal	0.406*	0.194*	0.020	0.267*	0.030	0.005	1		
Exit ratchet	0.076*	0.113*	0.061*	0.047	-0.003	0.027	0.149*	1	
Debt Cov.	0.081*	0.056	0.059*	0.026	-0.073*	0.004	0.043	0.064*	1

Table 7**Summary Statistics for Target Firm Governance**

This table contains descriptive statistics (Panel A) and Pearson pair wise correlations (Panel B) of target firm governance measures. “PE directors” are those chosen by PE investors to sit in the board of the target firm. “Other boards during” refers to the cumulative presences of these directors in other boards during the time of the investment. “Other boards before” refers to the cumulative presences of these directors in other boards before the time of the investment. “Synchronism of mandate” refers to the existence of synchronism between the terms of office of the board of the MCO and those of the board of the target firm. The variable takes a value of one if there is synchronism and zero otherwise. “Voluntary ending” indicates whether the PE directors have voluntarily terminated their mandate in the board of the target firm before the expiration of their terms of office. The variable takes a value of one if there is voluntary ending and zero otherwise. “Total Firm directors” is the number of directors sitting in the board of the target firm at the time of the investment. “External directors” indicate whether the directors chosen by the fund are formally employed by the fund or not. The variable takes a value of one if the director is not an employee and zero otherwise.

Panel A – General Statistics

	#Firms	Mean	Med	SD	Min	Max
Total Firm directors	804	6.09	6	1.50	4	13
PE directors	804	1.03	1	0.20	1	3
Other Boards during	782	6.92	8	2.77	0	15
Other Boards before	782	6.90	7	3.31	0	16
External Directors	782	0.46	0	0.50	0	1
Synchronism of Mandate	804	0.37	0	0.48	0	1
Voluntary Ending	804	0.03	0	0.16	0	1

Panel B – Pearson Pair wise Correlations between Governance Indicators

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Total Firm directors	1					
(2) Other Boards during	0.030	1				
(3) Other Boards before	0.050	0.799*	1			
(4) External Directors	-0.039	-0.393*	-0.317*	1		
(5) Synchronism of Mandate	-0.021	-0.281*	-0.201*	0.811*	1	
(6) Voluntary Ending	-0.005	-0.145*	-0.153*	0.152*	0.075*	1

Table 8 Analysis of IRR

The dependent variable is the investment IRR, measured in gross terms in Models 1-5 and in annualized terms in Model 6. Sales, ROA and ROE growth are calculated over the period of investment. MH index contains the sum of the following dummies: exit ratchet, lockup, permitted transfer, puttable security, and right of first refusal (see Appendix for definitions). Control index is the sum of the following dummies: drag along rights, puttable security, tag-along right. Covenant index is the sum of the following dummies: drag-along rights, exit ratchet, lockup, permitted, puttable, right of first refusal, and tag-along rights. Base case for type of investment is buy-out. See the main text for a definition of the rest of the variables. All regressions contain industry fixed effects, as well as a constant, apart from the reported variables. Robust standard errors, clustered at fund level, are in parenthesis. ***, **, and * indicate respectively significance at the 1, 5, and 10% levels. All regressions have 782 observations.

	(1)	(2)	(3)	(4)	(5)	(6)
Sales growth	1.997*** (0.238)	2.095*** (0.240)	2.009*** (0.237)			
MH index	0.065*** (0.015)					
Control index		0.056*** (0.016)				
All Covenant index			0.053*** (0.012)	0.064*** (0.012)	0.082*** (0.012)	0.026*** (0.005)
ROA growth				1.572*** (0.226)		
ROE growth					0.243*** (0.056)	
Annualized sales growth						1.257*** (0.115)
Firm size	-0.034 (0.028)	-0.032 (0.028)	-0.029 (0.028)	-0.021 (0.029)	-0.018 (0.033)	-0.009 (0.020)
Operation leverage (D/E)	-0.008 (0.006)	-0.007 (0.006)	-0.007 (0.006)	-0.006 (0.007)	-0.003 (0.008)	-0.003 (0.005)
Ln holding period	0.263*** (0.033)	0.256*** (0.034)	0.258*** (0.034)	0.181*** (0.032)	0.100*** (0.034)	
Type = Expansion	-0.049 (0.047)	-0.054 (0.047)	-0.046 (0.047)	-0.038 (0.049)	-0.039 (0.057)	-0.007 (0.031)
Type = Turnaround	-0.100* (0.055)	-0.104* (0.057)	-0.099* (0.055)	-0.097 (0.058)	-0.115* (0.063)	-0.099** (0.045)
Type = Early	-0.132 (0.090)	-0.131 (0.089)	-0.119 (0.090)	-0.109 (0.095)	-0.115 (0.110)	-0.064 (0.063)
Bank ownership	0.001 (0.018)	0.006 (0.018)	0.003 (0.017)	0.004 (0.018)	-0.007 (0.020)	-0.003 (0.012)
% Shares acquired	-0.317 (0.197)	-0.222 (0.200)	-0.230 (0.198)	-0.104 (0.212)	-0.053 (0.225)	-0.173 (0.151)
Independent director	-0.100** (0.047)	-0.091* (0.047)	-0.096** (0.047)	-0.074 (0.051)	-0.059 (0.056)	-0.063* (0.034)
Board synchronism	0.089* (0.046)	0.084* (0.047)	0.087* (0.046)	0.060 (0.050)	0.067 (0.056)	0.050 (0.033)
Presences in other boards	0.006 (0.004)	0.006 (0.004)	0.005 (0.004)	0.007 (0.005)	-0.002 (0.005)	-0.000 (0.003)
Adj. R-squared	0.435	0.418	0.434	0.331	0.191	0.361

Table 9 Instrumental Variables Regressions for IRR

This table contains 2SLS coefficients for IRR, measured in gross terms in Models 1-3 and annualized Model 4. The first column of each model shows coefficients for the first stage regression; the second column shows the second stage estimated coefficients. Instrumented variables are the following indices: Allocation Model 1, Control in Model 2, and Covenant in Models 3 and 4. MH index contains the sum of exit ratchet, lockup, permitted transfer, puttable security, and right of first refusal. Control index is the sum of drag along rights, puttable security, tag-along right. Covenant index is the sum of: drag-along rights, exit ratchet, lockup, permitted, puttable, right of first refusal, tag-along rights. Instruments are: (i) initial profitability and (ii) initial D/E of the target; (iii) market returns and (iv) IPO-to-firm-creation in the 6 months preceding the investment; and (v) industry ROE and (vi) industry D/E ratio at the time of investment. See the main text for a definition of the rest of the variables. All regressions contain industry fixed-effects, as well as a constant. As in Table 8, we control for investment type: early, buyout, turnaround, expansion. All regressions have 782 observations.

	(1)		(2)		(3)		(4)	
	MH Ind	IRR	ContIndex	IRR	Cov.Index	IRR	Cov.Index	Ann. IRR
Sales growth	1.924*** (0.301)	1.889*** (0.238)	0.466** (0.215)	2.056*** (0.233)	2.145*** (0.353)	1.932*** (0.231)		
Annu. sales growth							1.781*** (0.358)	1.248*** (0.115)
MH index		0.122*** (0.044)						
Control index				0.149*** (0.054)				
All Covenant ind.						0.091*** (0.030)		0.032* (0.018)
Firm size	-0.034 (0.090)	-0.027 (0.028)	-0.109* (0.061)	-0.017 (0.029)	-0.108 (0.110)	-0.020 (0.028)	-0.109 (0.111)	-0.008 (0.021)
Operation D/E	0.005 (0.020)	-0.009 (0.006)	-0.021 (0.014)	-0.004 (0.006)	-0.007 (0.024)	-0.007 (0.006)	-0.006 (0.024)	-0.003 (0.005)
Holding period	-0.024 (0.083)	0.260*** (0.032)	0.140** (0.060)	0.239*** (0.036)	0.064 (0.098)	0.251*** (0.033)		
Bank ownership	0.059 (0.065)	-0.004 (0.018)	-0.010 (0.046)	0.005 (0.018)	0.025 (0.076)	0.001 (0.017)	0.012 (0.076)	-0.003 (0.012)
% Shares acquired	-0.262 (0.632)	-0.295 (0.198)	-2.018*** (0.457)	-0.022 (0.233)	-1.815** (0.754)	-0.151 (0.201)	-1.766** (0.761)	-0.161 (0.152)
Indep. director	0.036 (0.113)	-0.102** (0.047)	-0.131 (0.081)	-0.079 (0.049)	-0.041 (0.132)	-0.094** (0.047)	-0.030 (0.134)	-0.063* (0.034)
Board synchronism	0.025 (0.111)	0.090** (0.046)	0.119 (0.079)	0.077 (0.049)	0.104 (0.130)	0.085* (0.046)	0.100 (0.131)	0.050 (0.032)
Other boards	0.022* (0.012)	0.004 (0.004)	0.019** (0.009)	0.004 (0.004)	0.035** (0.015)	0.004 (0.004)	0.023 (0.015)	-0.000 (0.003)
Initial profitability	0.352 (0.216)				0.273 (0.253)		0.333 (0.256)	
Initial leverage			-1.909** (0.809)		-2.282* (1.327)		-2.249* (1.340)	
Mkt ret. 6 months	0.407*** (0.098)		0.380*** (0.070)		0.653*** (0.115)		0.659*** (0.116)	
IPO/New Firms	0.934*** (0.259)		0.834*** (0.186)		1.571*** (0.306)		1.546*** (0.305)	
Industry ROE	0.057*** (0.016)		0.040*** (0.012)		0.073*** (0.019)		0.069*** (0.019)	
Industry D/E			-0.024** (0.011)		-0.012 (0.019)		-0.013 (0.019)	
C. Adjusted R-sq.	0.108	0.413	0.113	0.389	0.121	0.421	0.102	0.360

Table 10 Multinomial logit for exit outcomes

This table contains multinomial logit estimates for the impact of growth, covenants, governance, and other firm characteristics on the exit outcome: IPO, write-off, trade sale (base outcome). Model 1 does not control for endogeneity of contracts and exit outcomes. Model 2 contains for this endogeneity using instrumental multinomial logit estimates. Therefore, the first column of Model 2 contains first-stage estimated ordered logit coefficients for the covenant index instrumented with the following variables: (i) initial profitability and (ii) initial D/E of the target; (iii) market returns and (iv) IPO-to-firm-creation in the 6 months preceding the investment; and (v) industry ROE and (vi) industry D/E ratio at the time of investment. The following two columns contain the second-stage multinomial logit regression coefficients, where the covenant index has been substituted by its predicted value from the first stage. All equations contain industry fixed effects, as well as a constant. Robust standard errors are in parenthesis. ***, **, and * indicate respectively significance at the 1, 5, and 10% levels. As in Table 8, we control for investment type: early, buyout, turnaround, expansion. All regressions have 782 observations.

	(1)		(2)		
	IPO	Write-off	Ordered logit: Cov. Index	IPO	Write-off
Sales growth	21.337*** (3.891)	-213.496*** (45.519)	3.450*** (0.712)	9.486*** (3.494)	-206.950*** (50.824)
Covenant index	4.587*** (0.686)	-0.581 (0.786)		0.618* (0.318)	-0.306 (0.866)
Firm size	-3.021*** (1.167)	-4.697** (2.103)	-0.102 (0.214)	-0.976* (0.537)	-4.471** (1.982)
Operation leverage (D/E)	-0.129 (0.233)	0.455 (0.556)	-0.026 (0.046)	0.132 (0.121)	0.422 (0.531)
Ln holding period	6.702*** (1.305)	-5.856*** (1.886)	0.154 (0.187)	1.726* (0.917)	-5.469*** (1.723)
Bank ownership	1.298* (0.671)	-1.251 (1.533)	0.016 (0.145)	0.194 (0.342)	-1.158 (1.310)
% Shares acquired	13.469** (6.506)	-50.895*** (18.265)	-3.319** (1.466)	2.370 (3.344)	-49.671*** (17.282)
Independent director	3.277*** (1.212)	0.472 (1.162)	-0.194 (0.252)	0.843 (0.516)	0.520 (1.234)
Board synchronism	-2.243*** (0.744)	-3.059 (2.360)	0.223 (0.248)	-0.382 (0.489)	-2.956 (2.460)
Presences in other boards	0.065 (0.159)	-0.143 (0.264)	0.063** (0.028)	0.078 (0.066)	-0.097 (0.282)
Initial profitability			0.384 (0.432)		
Initial leverage			-4.151 (2.548)		
Mkt returns 6 mo. before inv.			1.439*** (0.221)		
IPO/Firm-creation before inv.			3.332*** (0.597)		
Industry ROE at inv. time			0.154*** (0.038)		
Industry D/E at inv. time			-0.036 (0.036)		

Appendix: Definitions

Covenant	Description ¹²
Drag-along Rights	If the venture capitalist sells his shareholding, he can require other shareholders to sell their shares to the same purchaser.
Exit Ratchet	An exit ratchet is used to adjust the respective shareholdings of the PE investors and insiders depending on either the level of returns or on an exit. This technique is principally used to find a bridge between widely differing views of a company's value, or to provide additional incentives/rewards to the founders for delivering excellent returns to the investors.
Lockup	A provision in the underwriting agreement between an investment bank and existing shareholders that prohibits corporate insiders and PE investors from selling for a certain period of time following a public offering (usually 180 days after an IPO).
Permitted Transfer	As in a lockup, the tradability of shares of insiders is limited. This limitation applies also to the sale of minority stakes outside an IPO, and do not generally applies to shares held by PE investors.
Puttable Security	A puttable security gives PE investors the option to sell their shares to insiders at a fixed price.
Right of First Refusal	(Also called pre-emption right) Rights of existing shareholders to have the first opportunity to purchase shares from a departing shareholder (pre-emption on transfer), or to subscribe for new shares issued by the company (pre-emption on issue).
Tag-along Rights	If another shareholder sells his shareholding, the venture capitalist can insist that his shares are sold on the same terms to the same purchaser.
Callable Security	With a callable security, insiders have the option of buying back their shares at a given price from the PE investors.
Debt Covenants	Debt covenants are imposed on the debt of an SPV. These covenants include restrictions on the quantity, seniority and collateral of newly issued debt, upper limits to the ratio of debt to profitability indicators (EBIT, EBITDA), restrictions on dividends, repayment schedules, restrictions on the sale of assets, as well as a number of other specific impositions.

¹² We borrow some of the definitions from *BVCA (2007)* and from the *EVCA website*.