# WHAT DRIVES INVESTMENT DECISIONS ON EQUITY STAKE IN PRIVATE EQUITY? THE ITALIAN CASE BEFORE AND AFTER THE GREAT FINANCIAL CRISIS

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## Abstract

The paper aims at developing a framework in the context of the Italian market to explain whether the equity stake acquired by private equities (PEs) in a target company changes according to certain firm-specific and deal-specific characteristics. In addition, the study analyzes whether the 2008 global financial crisis has affected investment decisions as well. The study focuses on a sample of 178 deals involving Italian companies in one of two different timeframes: 1) the pre-crisis period, including deals from 2003–2007 and 2) the post-crisis period, including deals from 2013–2017. The sample was extracted from the Private Equity Monitor Report (http://www.privateequitymonitor.it/pubblicazioni.php) and selected from 937 available deals in the period 2002–2018. The analysis has been carried out by using multivariate regressions to understand which factors influence the percentage of equity acquired by private equities. The results of the analysis show that PEs acquire higher stakes whenever the company is not privately owned by a family, the economy is recovering from a crisis and the company has lower margins or has recently recorded lower revenue growth. The paper contributes to the existing research on Italian private equity activity by widening the scope of other similar studies available so far. Thanks to an innovative approach we also initiate a new stream of analyses and studies aiming at fine-tuning, improving, and updating the framework that might predict, ex-ante, the level of PE investments in a certain economy as a "dependent variable" of companies' specific characteristics.

**Keywords:** Private Equity, Crisis, Equity Stake, Italy, Investment Choice, Family-Owned Targets

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## 1. INTRODUCTION

According to a recent report (Bain & Company, 2019) from 2014 private equity industry has achieved unprecedented success in terms of money raised, investments made and returns achieved by investors, compared to any prior period. Over around 40.000 M&A deals done globally each year, private equity has reached already a 10% share and there is a visible long-term trend in capital markets toward much larger private equity opportunities vs. traditional public equity models (Peacock & Cooper, 2000).

PEs use risk capital and financial leverage to buy-out a company or to financially support its expansion or even to turn around a company in economic distress. PEs' investment in the target company consists not only of risky capital but also of human capital, namely, the fund directly enters the board of directors and substantially it becomes the key decision-maker for the future of the company and its operations.

The Italian market is a relatively young market for private equity. From a legal standpoint, the legislator fully certified the legal soundness of leveraged buy-outs (LBOs) only in 2003 (Cumming & Zambelli, 2010).

Despite these limitations, the analysis of the Italian PEs market is though relevant and worthwhile because:

- it's the third largest economy by gross domestic product (GDP) in the European Union (Eurostat, 2021);
- few scholars have focused their attention on Italian private equity (Cumming & Zambelli, 2010; Muzio & Pisano, 2014; Daveri, Lecat, & Parisi, 2013);
- deals executed during the two time periods considered are sufficient to assess whether or not a trend or a pattern is present, although PE firms are very reluctant to disclose information and as such data are not easily available and for certain deals hardly ever comprehensive.

Data were extracted from the Private Equity Monitor Report (PEM Report), an Italian database managed by the Carlo Cattaneo LUIC University, which on a yearly basis reports information regarding the Italian PE and venture capital (VC) deals. It represents one of the most comprehensive databases available for a study like this because it shows all key information regarding target companies in a single "document". From the above-mentioned report, an additional set of data was created to provide a clearer picture of the activity carried out by PE companies in Italy.

Through the present work, the existence of a correlation between the stake acquired by a private equity fund and certain specific financial characteristics (henceforth "the variables") of the target company before the acquisition has been verified. More in detail, the aim of the study is to understand how different features and/or indicators of the target company, such as governance, profitability, growth and size, as well as the investment stage and valuation operated by the private equity in the context of the acquisition, affect the equity stake a private equity is willing to acquire in that company.

The analysis includes many of the transactions recorded in Italy in the two following different periods: from 2003 to 2007, i.e., before the so called global financial crisis, and from 2013 to 2017, i.e., after the crisis. As mentioned above the analysis does not cover the years from 2008 and 2012 namely from the Lehman Brothers bankruptcy to the Euro sovereign debt crisis.

The decision about which time periods to select for the study has been taken considering the following key points:

- Italian PEs activity is rather new and hence we couldn't approach the issue from a historical point of view.
- A 5-year period, within a certain macroeconomic trend, represents a long enough time for getting a meaningful number of deals and identifying possible patterns based on the level of correlation among selected variables.
- The latest publically available and useful data for this study were published in 2018 and were related to the 2017 deals, and therefore the second time series includes the 2013 year as the first year to have the second 5-year time horizon.
- The 2018 financial crisis and the 2011–2012 Euro debt crisis hit Italy very hard. The country suffered in the period 2008–2012 a deep economic crisis which, according to us, significantly disrupted the market and hence made this period not comparable with any other.
- 2013 is defined in the paper as the year that marks the beginning of the post-crisis period since it was the first year recording positive GDP average growth +0.3% vs. -0.4% in 2012 for the 28 EU countries (Bureau Van Dijk, n.d.) and for Italy it marked a sort of tipping point for its recovery in the next years.

The scope of the analysis is twofold: on one hand, to assess whether the percentage of the stake acquired by the PEs is affected by target-firm specific factors or deal-specific factors; and, on the other hand, to evaluate how these factors have affected the investment choice or its amount.

The multivariate regression model is used both to test whether the variables have a significant influence on the acquired stake and to reckon if there are significant differences among the pre-crisis and post-crisis groups. The main variables selected relate to some of the firm-specific characteristics, such as the latest sales level, EBITDA margins and sales growth. Company governance has been added in the model as a dummy variable to check whether the company is family-owned or not. To test the differences between pre-crisis and post-crisis deals, another specific dummy variable is used.

The main findings of the study show the acquired stake is negatively impacted by sales (size factor), recent sales growth levels, profitability, and valuation, whilst it is positively affected by the amount (in million euro) invested. Private equities showed a tendency to acquire 1) more equity in the post-crisis period compared to the pre-crisis period and 2) less when the company is family-owned.

### 1.1. Why focus on Italy

The study is developed in the context of the Italian economy to provide a specific framework that tries to explain which factors drive PEs investment choice. We decided to limit the scope of the analysis from

a geographical standpoint to one country only to limit the impact of macroeconomic changes in the analysis. Moreover, the decision to focus on Italy has been driven by the very peculiar characteristics of its economy.

Firstly, Italy is the third largest economy of the EU area (Eurostat, 2021), the fourth if we consider the UK[1] as well. As such, investors can find several and diversified investment opportunities at any given time. In addition, the Italian economy was the one, among the largest EU economies, most affected by the crisis. As shown in Table 1 (see Appendix), in terms of real GDP growth during the crisis (i.e., 2008–2012), Italy was the worst among the four biggest economies, and it performed even below the EU average. Besides, when looking at unemployment levels in 2012 Italy reached ~ 11% unemployment rate (slightly above the EU average) with France, the UK and Germany at 9.4%, 8.0% and 5.4% respectively (Bureau Van Dijk, n.d.).

It is clear the crisis had a significant impact on the Italian economy, and it is worth studying if and how these events have shaped and influenced PEs investment decisions in such a context.

Lastly, the Italian economy presents a very special feature: it relies significantly on small and medium enterprises (SMEs). In fact, even though the number of SMEs in Italy is pretty much in line with the EU average (around 99.9% of total enterprises vs. 99.8%) (EBA, 2016) when looking at the number of people employed by SMEs, Italy is well above the EU average (Figure 1, see Appendix).

Similarly, the added value generated by the Italian SMEs as a percentage of the whole economy, is significantly above the EU average: 67% vs. ~ 57% respectively.

In conclusion, it is interesting to notice that the Italian economic environment, despite being similar to the biggest EU economies from the size standpoint, shows significant differences compared to those countries and as such it provides a unique framework in the context of the study.

## 1.2. The Italian PE market

In Europe, the UK was the first country where the PE industry began to have a relevant role from the second half of the '80s. Immediately after, France and then Germany, Italy and Spain progressively saw the increasing presence of PEs companies in their markets.

The Italian market is a relatively young market for the private equity industry. From a legal standpoint, the legislator fully certified the legal soundness of LBOs only in 2003 (Cumming & Zambelli, 2010). In the first years of the century, many scholars were already expecting increasing institutional investors' activism in the corporate governance of Italian companies. (Bianchi & Enriques, 2005).

Progressively private equities have been playing a more relevant role in the Italian market and ever since, they were able to obtain good economic results, especially when compared to the overall growth of the Italian economy, as shown in Figure 2 (see Appendix).

In general, the global financial crisis hit severely the European PE industry. In Italy, fundraising volumes dropped from 2.3 billion in 2007 to 1.7 billion in 2008 and then to less than 800 million in 2009. Fund-rising activity languished for the following four years at around 1 billion per year, excluding 2010, when 2 billion were collected, and then stepped up again in 2013 by reaching 4 billion euro, which represented a record high amount until 2017 Figure 3 (see Appendix).

It is anyhow worth noticing that PEs activity in Italy was affected less than it should have been when considering both the length and depth of the crisis. Negative effects were partially mitigated by a specific situation, namely, as commented by Daveri et al. (2013), the deregulation of several sectors, such as energy, transport, communication, telecommunication, retail distribution and business services from the end of the '90s and up to 2008, reduced entry barriers, increased productivity and the in-flows and out-flows of companies in the market and hence, created better market conditions for PEs to operate. The new economic landscape and, to a lesser extent, the role of PEs, mitigated partially the financial effects of the crisis on certain industries. It is worth mentioning that a common trait of PEs has been their ability to limit financial losses during a lasting economic crisis. In fact, despite there were expectations of higher negative impacts for PE firms stemming from the crisis (Wilson, Wright, Siegel, & Scholes, 2012), they were able to adapt the strategy and business models of the acquired companies in a timely and effective way, to prevent or hinder those impacts. Because of those actions, PE backed companies have been experiencing, on average, higher growth and profitability than the ones recorded by non-PE backed companies. Nevertheless, PEs have changed their behavior after the crisis because tightened bank conditions have forced deals with more equity and less debt (Achleitner, Braun, & Engel, 2011).

In this context, Italian PE market was very much affected by a new type of predominant fund, a sort of "state way of fund", when the Ministry of the Economy and Finance created a new fund called "Fondo Italiano d'Investimenti" jointly owned by the Government, the major Italian banks and Confindustria (the main Italian business association). The Government wanted, in this way, to provide an answer to the needs of Italian SMEs, which were seeking better support for their future, in a new and more developed business model with PEs.

The paper is organized as follows: Section 1 explains the choice of Italy as a reference country for the analysis and presents a brief overview of the Italian private equity market; Section 2 examines the existing literature; Section 3 presents the hypothesis developed and the sample composition (i.e., the paper methodology); Section 4 presents the results of the different models used; Section 5 comments on the most relevant results of the multivariate regression analysis to reckon the impact of firm-specific and deal-specific factors in the context of the analysis; Section 6 presents the conclusion, main implications, and limitations of the research as well as possible new routes for further research.

[1] In this study we always include the UK among the EU countries, since Brexit occurred after time horizon included in our paper and therefore it hadn't have any effect on it.

## 2. LITERATURE REVIEW

Private equities have attracted the attention of several scholars in the last years (Jensen, 1989; Kaplan & Stromberg, 2009; Chapple, Clarkson, & King, 2010) due to their outstanding growth (7.5x growth in net asset value from 2000 to 2018) (McKinsey & Company, 2019). In Europe, the UK was the first country where the PE industry began to have a relevant role from the second half of the '80s. Immediately after it, France and then Germany, Italy and Spain progressively saw the increasing presence of PEs companies.

### 2.1. Activity of private equities in the Italian market

Few scholars have developed an analysis of the Italian private equity market. Groh, von Liechtenstein, and Lieser (2010) showed that the UK is the most attractive market in the EU for private equities, while Italy ranks low despite the size of its economy is like one of the biggest EU economies, such as Germany, France and Spain.

However, Muzio and Pisano (2014) showed that the Italian market is attractive for private equity for the so-called "Made in Italy" segments (mainly industrial and consumer sectors). In fact, for many family-owned Italian firms, PEs represent the only solution to: 1) promote generational changes; 2) obtain enough capital for leaving the company headquartered in Italy; 3) improve quality of managers.

Cumming and Zambelli (2010) on a different level focused their research on the impact stemming from the new regulation of LBOs in the Italian private equity market. In their research, they argue that in general, tighter regulation on LBOs reduces the frequency of LBO transactions but does not exclude them altogether.

### 2.2. Family-owned firms and their relationship with private equities

The second stream of literature refers to family-owned targets and the amount of equity they sell to private equities. We focused our analysis on family-owned firms given that, as reported by the AIDAF (the Italian family business association), in Italy around 85% of the private business can be defined as a family business. More importantly, 66% of these businesses are fully managed by family members, versus 26% in France or 10% in the UK.

Family-owned firms opened to the possibility to sell an equity stake to PEs due to the difficulties of receiving credit from banks and turbulence in the capital markets (Ivashina & Scharfstein, 2010). However, Henn and Lutz (2016) found that family-owned firms are less willing to give up control and therefore tend to sell a lower stake to private equities. This unwillingness to sell a controlling or a large stake is mitigated if the company is affected by a crisis or has had a prior experience with a private equity either directly or indirectly (the latter refers to the presence of managers with prior experience with private equities funds). The main rationale or explanation behind the amount of equity sold is that family-owned firms change their willingness to sell a different stake depending on the different forms of support they are seeking from private equities.

The economic theory underlying this reluctance in selling controlling stakes is based on the existence of the so-called socio-economical wealth, which basically consists in the identification of the family's wealth with the firm itself, its employees and the family's long-term commitment (Berrone, Cruz, & Gómez-Mejía, 2012). In general, the higher the family's control over the firm, the stronger the socioeconomic wealth associated with the firm (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007).

Tappeiner, Howorth, Achleitner, and Schraml (2012) argue that minority investments are more attractive for family-owned firms since the family can keep control while exploiting the managerial expertise of private equities.

### 2.3. Target firms acquired by private equities

The third and last stream of literature aims at analyzing private equities investment decisions, namely the selection of targets to acquire. Chapple et al. (2010), find that "private equity targets should have greater financial slack, both in terms of debt capacity and free cash flow, greater business stability and lower growth prospects" (p. 100). In addition, private equities tend to pay for target's acquisition in cash, thanks to the extensive use of leverage and to engage in friendly takeovers deals.

Da Silva Rosa and Brown (1997) and Eddey and Taylor (1999) find that generally target firms acquired by private equities underperform in the period before the acquisition. They both point out that private equity companies can boost the performance of target companies by re-aligning the interest of shareholders and managers. In addition, Jensen (1989) finds that one of the main benefits stemming from a private equity acquisition is the ability to control the level of debt.

Among the most relevant target firm characteristics affecting investment decisions, Nordström and Wiberg (2009) find that usually firms acquired by private equities have lower EBITDA margins compared to the ones reached by companies not sought-after by them. In their research, they reckon that the probability of being acquired when EBITDA is lower increases by 13% for 1% decrease in EBITDA. Moreover, the productivity of targets increases significantly after PEs acquisition and, in fact, in the first three years after the buy-out, it is higher than in any of the eight years before the buy-out (Lichtenberg & Siegel, 1990). This result proves that private equities can improve different phases of the production and/or capture significant growth opportunities, achieving at the same time, better economy of scales, which prior owners were not capable to seize or even to identify.

## 3. RESEARCH METHODOLOGY

The equity stake private equities decide to acquire, changes dramatically from deal to deal. As such, the existence of some firm-specific characteristics that can influence or explain private equities' investment strategy is tested. The paper aims at developing a framework to assess and reckon how much equity PEs are willing to invest in a target company and if the stake acquired changes according to certain firm-specific and deal-specific characteristics.

Thus, the first hypothesis will be:

*H1: When a private equity decides to acquire a certain target, the percentage of equity acquired depends on the targets.*

At this, the key indicators are:

• *Profitability*: represented by the EBITDA margin to check if the findings of Nordström and Wiberg (2009), who showed that the "probability of being bought out by a private equity firm increases as the target company's EBITDA margin decreases" (p. 9), hold in the context of the Italian market.

• *Recent growth*: represented by the sales compound annual growth rate (CAGR) recorded in the three years before the deal. This proxy is used because Chapple et al. (2010) report that PEs' targets have usually lower growth prospects.

• *Size*: measured by the latest level of "end of the year" sales. This indicator is chosen because, as mentioned by Hart and Oulton (1996), sales are one of the most common factors to evaluate the firm size.

• *Valuation*: represented by the EV/EBITDA multiple. As reported by a study conducted on professionals by Pinto, Robinson and Stowe (2019) in almost 87% of the cases, corporate finance specialists use EV/EBITDA multiple to value companies.

• *Governance*: a control variable for family-owned business crucial when analyzing the Italian market. In fact, as reported by the AIDAF in Italy around 85% of the private business can be defined as a family business. More importantly, 66% of these businesses are fully managed by family members, versus 26% in France or 10% in the UK. In addition, as pointed out by Miller, Le Breton-Miller, and Scholnick (2008), "family managers, especially founders, tend to closely identify themselves with the firm that includes other family members as owners and managers" (Miller, Le Breton-Miller, & Scholnick, 2008, p. 53; Arregle, Hitt, Sirmon, & Very, 2007; James, 1999). Therefore, we can expect family owners to be in general reluctant to sell completely their company and to rather prefer the sale of a lower than 50% stake, to retain control. In addition, Gómez-Mejía et al. (2007), Berrone et al. (2012) and Henn and Lutz (2016) showed that "family firms cede less control than non-family firms when entering in a PE transaction" (Henn & Lutz, 2016, p. 1).

• *Sector*: to control how different sectors, which the target company operates, impact PEs investment choices.

• *Invested amount*: to understand if the amount of capital required, in absolute terms (i.e., millions), to execute the transaction has a significant impact on the investment decision.

When testing how the financial situation and governance structure of the target firm impact the PEs' decision to acquire a certain specific stake in the company, one should consider that market conditions changed a lot in the last 15 years. From 2008 Europe and Italy too experienced one of the worst (if not the worst) financial crises in history, which impacted severely the economic activity, the stock market as well as the M&A market. For this reason, it is important to both consider the effects that this crisis has had on companies included in our analysis and assess their impact on our model.

Therefore, the second hypothesis to test is developed:

*H2: Private equity stake acquired in a target would change if the deal is closed in the pre-crisis period vs. post-crisis period.*

The logic underlying the second hypothesis is twofold. On one hand, to check whether the influence of certain firm-specific characteristics (both financial and governance indicators) and deal-specific characteristics (multiple paid as well as deal type) has changed after the crisis. On the other hand, to assess how the severe impact of the financial crisis over the banking sector, which led to a material drop of the banks' risk appetite and thus of their lending activity, has affected private equities strategy and opportunities, given their extensive use of leverage.

The deals, therefore, have been split into two five-year period groups: 1) the pre-crisis group, including deals from 2003 to 2007, i.e., the year before Lehman Brothers bankruptcy and 2) the post-crisis group, including deals from 2013 to 2017, i.e., after the Euro sovereign debt crisis and the famous "Whatever it takes" speech by former ECB president Mario Draghi.

### 3.1. Sample selection and data collection

The paper analyses 178 private equity deals in Italy, namely deals where a private equity has taken control of or has bought a stake in an Italian company, either private or listed, in the following periods: from 2003 to 2007 and from 2013 to 2017, i.e., before the global financial crisis and after Euro crisis.

The initial sample is drawn from the publicly available database PEM Report[2] which shows all the Italian deals in the period 2002–2018, with major details related to deal type, deal structure and target company's characteristics. Based on all data and information available, a sample of meaningful deals meeting the following criteria is established:

1. The bidders are private equities acquiring Italian companies;

2. The deals have been closed in the period from 2003 to 2007, i.e., the pre-crisis group, or from 2013 to 2017, i.e., the post-crisis group;

3. The deals have been fully executed in the year of reference.

The final sample includes deals executed either in the pre-crisis or in the post-crisis period. The first year included in this study is 2003 for two main reasons:

1. New Regulation that made LBOs fully regulated (Haves, Wilke, Meixner, Reich, & Vitols, 2014).

2. Need to have at least 5 years of data before 2008, which is considered the year when the global financial crisis started.

As we know, in fact, the burst of the USA's housing bubble at the end of 2007 coupled with Lehman Brothers bankruptcy is commonly assumed to mark the beginning of the global financial crisis (De Haas & van Horen, 2010; Smolo & Mirakhor, 2010).

After 2009, economies started performing differently with the US recovering rather quickly whilst many western European countries, including Italy, entered a longer recession period and in

[2] Created by the LUIC University, provides details of Italian PE transaction and target firms financial characteristics on a yearly basis.

the so-called Euro debt crisis, which peaked in the first half of 2012. In July of that year, in fact, the ECB president Mario Draghi pronounced the very famous "Whatever it takes" speech, announcing the beginning of ultra-accommodative monetary policies to prevent the Euro collapse.

### 3.2. Deal and target firms' attributes

After having explained the reasons underlying the composition of the sample under consideration, a further description of the sample composition is presented. It is made of 178 deals involving mainly target firms legally located in the Northern[3] part of Italy (~ 81%, 143 deals).

Table 2 (see Appendix) shows how these deals are distributed, both in the pre-crisis and in the post-crisis period, according to three different criteria: 1) deal origination, 2) investment stage and 3) economic sectors.

As far as distribution in different economic sectors is concerned, the sample includes deals from 10 different categories[4]. The industrial sector represents almost 35% of the deals, in line with the relevance of the "Made in Italy" segments in the Italian economy. The consumer sector represents another 35% of the sample and it can be divided into two sub-segments:

- consumer discretionary (leisure, retail and luxury) that represents almost 20% of the deals;
- consumer staples (food, beverages, and household products) which refers to the remaining 15% of the target companies.

These two main categories are followed by materials (chemicals, mining, and containers), information technology and communication services segments (10.1%, 5.6%, 4.5% of the deals respectively[5]).

When looking at deals origination, family and private represents the lion share in our distribution reaching around 2/3 of all deals, followed by "secondary buy-out" (i.e., when the company is bought by another PE) with ~ 20.9% of the deals, and by local parent (i.e., Italian subsidiary disposal by Italian groups) with 7.9%. Foreign parent (i.e., Italian subsidiary disposal by foreign groups), other and public to private are basically irrelevant with less than 5% in total.

In terms of investment stage, most of the deals involve buy-out (~ 69% of the cases). Expansion deals are the second most common investment stage (~ 26%) while replacement and turnaround are almost non-existent (4.5% and 1.1% of deals respectively).

The sample of 178 deals selected has 80 observations in the pre-crisis period and 98 in the post-crisis period.

When comparing data across the two-sample period, both by deal origination and by investment stage, we can observe the distribution among the different categories is similar, namely, the relevance of each category vs. the others remain the same, with, obviously, a different percentage. For example, as far as deal origination is concerned, family & private deals confirm to be the most relevant type in both periods but, in the post-crisis period, there is a slight increase in their weight over the total number of deals. Secondary buy-out and local parent are the second and the third type of deals in both periods, but their weight over the total number of deals decreases in the post-crisis period.

If we look at the distribution by investment stage, replacement deals have decreased significantly with turnaround deals appearing only in the post-crisis period but with a rather small percentage (2%). Expansion deals are very stable meaning they represent in both cases around 25% of all deals observed. Buy-out is still the main type of investment stage (~ 67% in the pre-crisis group and more than 70% in the post-crisis group).

In as much as the share acquired is concerned, results of the study are presented in Table 3 (see Appendix) showing that on average private equities acquire a ~ 62% equity stake of target firms, which had, before the deal, an EBITDA margin of ~ 18%, sales at around 220 million euros and a recent growth equal to 14%. Private equities invested on average, around 66 million euros in each target company.

Looking at the shape of the distribution, all the target firms' characteristics are positively skewed (right skewed) while the acquired stake (the dependent variable) is negatively skewed (left skewed). Therefore, we can see that the mean of the dependent variable is lower than the median (Table 3). This is because in the sample considered there are 112 majority stake acquisitions (~ 63% of cases) vs. 66 minority stake acquisitions (~ 37%).

## 4. RESEARCH RESULTS

In this section results of the model are presented with the inclusion of the variables mentioned below (Table 4, see Appendix).

The following regression (equation (1)) was run yielding the results of Table 5 (see Appendix).

$$Acquired\ stake_i = \alpha + \sum_{j=1}^{k} \beta_j X_{ji} + \varepsilon_i \qquad (1)$$

with $X_{ji}$ = independent variable specified above.

Table 5 shows an overview of the results obtained with the different models developed in this study. It includes the coefficients of the regressions with their relative standard errors whose interpretation will be commented on in detail in the following pages.

The findings discussed in the next paragraph confirm both hypotheses:

- *H1*: Acquired stake by private equities is influenced negatively by sales, sales CAGR, EBITDA margin, valuation and family ownership type of controls. On the other, it is impacted positively by the invested amount by private equities while the sector of the target company has no significant effect on the dependent variable.
- *H2*: Private equities tend to acquire higher stakes whenever the deal is completed in the post-crisis period (~ 16% difference vs. pre-crisis period).

[3] Regions defined as North are Liguria, Lombardia, Piemonte, Valle d'Aosta, Emilia-Romagna, Friuli-Venezia Giulia, Trentino-Alto Adige, Veneto. The remaining regions are considered as Center-South.
[4] Based on GICS classification.
[5] The financial sector and banking industry is not well represented in the sample because it is heavily regulated and regulation in general limits the room for maneuver for PEs (Chapple et al., 2010).

## 5. DISCUSSION OF RESULTS

The models developed confirm *H1* almost entirely. The acquired stake is influenced by all the variables selected, except for the "sector", in which the target firm operates. In fact, as shown by Table 6 (see Appendix) there is no "sector effect" when evaluating how much has been acquired of a certain company.

Results show that the dependent variable is negatively affected by the sales level of the latest financial year before the deal (p-value of zero), the compounded average growth rate of sales in the last three financial years before the deal (p-value lower than 5%), the latest EBITDA margin (p-value lower than 5%), the valuation of the company measure by the EV/EBITDA (p-value lower than 5%), the ownership structure of the company before the deal (p-value of ~ 0).

The recent growth level (measured by the CAGR of sales) has a significant negative impact on acquired stake when considering that our model reckons that a 1% increase in the sales CAGR of the last 3 years leads to a ~ 0.2% decrease in the stake acquired by PEs. This result is in line with the theory outlined by Chapple et al. (2010), which says that PEs' targets have usually lower growth prospects. In addition, higher and steady growth of the firm reduces shareholders' willingness to sell the control of the company and, at the same time, the room for PEs to unleash hidden potential.

Profitability too has a great impact on the acquired stake. A 1% increase in the EBITDA margin results in a ~ 0.4% decrease in the acquired stake. The economic reason behind this result depends on the different negotiation power of the target company in relation to its profitability level. More profitable companies usually have a higher negotiation power, because owners are more willing to keep a larger stake while PEs amount of investment necessary to buy the target firm is higher. The result is in line with Nordström and Wiberg (2009) who showed that the "probability of being bought out by a private equity firm increases as the target company's EBITDA margin decreases" (p. 9).

Finally, the ownership structure has a large impact on the acquired stake: when the target company is family-owned (ownership = 1) the acquired stake is reduced by ~ 17% compared to a non-family-owned company. This result is in line with our expectations since families are more reluctant to give up control of their business and in fact, they usually decide to sell a minority stake. In addition, results are in line with the theory of socio-emotional wealth (Berrone et al., 2012; Gómez-Mejía et al., 2007) and the results of Henn and Lutz (2016) who showed that "family firms cede less control than non-family firms when entering a PE transaction" (p. 1).

The acquired stake of private equities in the context of acquisition is affected positively by the dummy variable crisis (p-value of zero) and invested amount (p-value lower than 5%).

The above-mentioned results show that *H2* is confirmed too since the crisis effect is higher. There are significant differences among the two sample periods under consideration (2003–2007 or pre-crisis sample vs. 2013–2017 or post-crisis sample). Whenever the deal is completed in a post-crisis period, PEs tend to acquire ~ 16% more equity vs. the pre-crisis period. In fact, when the economy experiences a crisis, companies need more sources of funding and PEs are sometimes the last resource to obtain this funding especially in case of distressed firms and thus PEs have higher negotiation power (Henn & Lutz, 2016). In addition, family members are more affected by a crisis (most targets in our sample are family-owned), for they may blame themselves for the company's problems (Sharma & Manikutty, 2005; Shepherd, Wiklund, & Haynie, 2009; Berrone et al., 2012), and hence they are more willing to give up control if the company is experiencing a crisis (Henn & Lutz, 2016). Furthermore, since a crisis tightens severely credit bank conditions, and in general access to the debt market, PEs deals call for more equity to acquire in the company vs. the same situation in the pre-crisis period (Achleitner et al., 2011).

It is worth mentioning that, when excluding the variable sector from the analysis, all the variables, except EBITDA margin and EV/EBITDA, remain highly significant (Table 7, see Appendix). The significance of these variables is lower because margins and valuation (the EV/EBITDA variable) change a lot across the different sectors. As such it is important to include the variable sector into the analysis to control these differences.

To further develop the model, several interactions are included in the analysis, since Rajan and Zingales's (1998) interactions have become very popular in the applied economic fields.

A regression with interaction term only for the variable crisis and the variable sector is run to understand whether there is a "sector effect" when analyzing the two-sample groups separately (Table 8, see Appendix). However, when running the new regression, there is no sector difference in a pre- vs. post-crisis period. No interaction is significant at the 95% confidence level and hence we can conclude that the sector to which the target firm belongs does not affect the percentage acquired by the PEs and that there is no significant difference among the two sample groups under consideration.

After having run the regression with the interaction between crisis and sector, the analysis is further expanded by including the interaction among the selected variables and the variable crisis (Table 9, see Appendix).

To sum up, there are two following significant interactions in the model:

- *Crisis and Invested amount*: significant at the 95% confidence level. The invested amount has a lower effect on the dependent variable in a pre-crisis situation with respect to a post-crisis period.
- *Crisis and sales*: significant at the 95% confidence level. The level of sales has a higher impact (although small in absolute terms) in a pre-crisis period with respect to a post-crisis period.

When excluding the variable sector and the interactions among different sectors and variable crisis, we see that results remain equal. The interaction between crisis and the invested amount remains significant at 95% confidence level while the interaction among crisis and sales is still significant but only at 90% confidence level (Table 10, see Appendix).

## 6. CONCLUSION

In the last years, private equities have become key players in the global M&A scene. In the Italian market despite they started operating in the '90s, their role became relevant recently and precisely from 2003 when LBOs were deemed as legal. Ever since, their presence in the market has become more and more predominant, notwithstanding the difficulties encountered with the financial crisis of 2008. Given their recent arrival, the literature, albeit extensive in analyzing the market in the US and the functioning of buy-out deals, is poor with respect to the Italian market. In addition, few scholars have focused their attention on the drivers examined by private equities for their acquisitions, with respect to the equity stake (i.e., how much to acquire of targets). In this context, the paper aims at developing an understanding of if the target firm's financial and governance characteristics affect the investment decisions of private equity. In order to further deepen the analysis and to understand the impact of the recent financial crisis, the study has been carried out for two sample groups: pre-crisis group (deals from 2003 to 2007) and post-crisis group (deals from 2013 to 2017).

The multivariate regression model is used to test the influence of target firm-specific characteristics and deal-specific characteristics. The sample utilized for this study is made of 178 deals of which 98 in the post-crisis group (from 2013 to 2017) and 80 in the pre-crisis group (from 2003 to 2007). The main findings of the study highlight how firm-specific characteristics and deal-specific characteristics have an impact on the percentage of equity acquired by private equities. The most important factors are whether the target firm is family-owned or not, its level of profitability, growth, and sales. On the contrary, both the amount of the investment (in million euros) and the multiple paid have a very small influence on the equity stake bought by private equities. No differences emerge when the sector in which the different targets operate is considered.

When looking at the two sample groups, the most relevant difference refers to the amount of equity sold to PEs. In fact, the data related to the after-crisis group show that on average closed deals have recorded 14% more equity than the pre-crisis one. This can be the consequence of the mounting pressure on firms' profitability stemming from the poor economic environment and its gloomy outlook, pushing on one side shareholders not willing to execute the necessary capital injection to sell more equity and, on the other side, PEs to get in control of the company whenever a turnaround was deemed necessary. Another reason for the increase in equity sold/bought during the post-crisis period may be found in the capital market and precisely in the subsequent freeze of European debt market, which reduced the possibility to lever up target companies significantly.

Even though the post-crisis group shows on average higher equity stake sold, the different variables, which affect the percentage of equity sold, do not have different impacts whenever analyzed separately for each sample group, i.e., no significant interaction there exists among most of the variables.

The model developed so far is an ex-post analysis of Italian PE deals. Its main implications would be for managers and shareholders of potential target firms. By analyzing their firm characteristics, they could understand how much equity private equities would be willing to acquire from their company.

Despite having developed a model that explains some variations of the dependent variable, and which is able to identify some key variables in explaining how much equity PEs decide to acquire, there is still room for further research to better understand PEs investment decisions.

The model captures the effect that the crisis has had on the acquired stake of target firms and highlights that in the post-crisis period, PEs have on average acquired more than 14% of equities in their targets. We have also proved that the interactions with other variables are not significant, so there are no major differences among the pre-crisis and post-crisis groups. However, we are considering only the crisis as the main change in the economic environment. For example, one could argue that regulation could have affected severely the private equity market in Italy and could test what was its impact on the equity stake acquired by PEs. However, this analysis is beyond the scope of this paper because regulation on private equities has changed in the last few years and the market is not heavily regulated as many scholars have deemed excessive legislation as detrimental for private equities and target firms as well (Cumming & Zambelli, 2013).

Another limitation of the model refers to the fact that some private equity funds develop their investment strategy ex-ante. These strategies sometimes imply minimum and maximum cap on the equity stake to acquire. This information is contained in the prospectus private equity distributes to their investors. However, the prospectus is a confidential document, relevant for managers and the investors of the fund and is usually not publicly available. Therefore, it would be impossible to understand which precise strategy each fund has planned to follow. Lack of information in the private equity market prevents a deeper analysis of capital restrictions imposed by the fund itself. Furthermore, there is another interesting aspect to consider when dealing with this limitation. Most private equity funds raise capital in different periods and/or operate with different funds at the same time. For example, there is a growth fund that usually acquires minorities and a buy-out fund that specializes in majority stake acquisitions. Therefore, most of the time, private equities can decide which fund to use for a specific acquisition. As such, it does not really matter whether the PE fund has some capital restrictions in one of its funds if it has the possibility to pursue its acquisition strategy through other different funds. It is also worth mentioning that practitioners have confirmed PEs don't usually specify precise thresholds in their prospectus but rather more general investment guidelines. As such even though the prospectus is available, it cannot be enough for understanding the impact of capital restrictions.

One of the main variables not included in the model is the Leverage ratio that most practitioners define as net debt/EBITDA (Asquith,

Beatty, & Weber, 2005). It would have been interesting to understand how much additional debt capacity the company could afford and how this capacity affects the private equities decision to enter. However, given that net debt is not always reported nor calculated consistently across different targets, leverage is not always comparable. Moreover, private equity decides how much debt to raise according to its view on the company's potential and on its ability to access financial resources from the debt market. Hence existing leverage is not the only variable affecting the additional debt capacity of the target firm. In addition, according to different types of deals, private equities do not always increase leverage but sometimes use alternative ways of creating value. As such, leverage would be a meaningless indicator when comparing, for example, buy-outs and expansion deals.

Further analysis to develop in order to provide a more comprehensive study on the subject could be the development of ex-post deal research on which companies provided the highest returns for PEs. However, this analysis is beyond the scope of this paper for several reasons:

- Ex-post returns would require an analysis of all the targets that have been disposed of by private equities. Unfortunately, this would significantly restrict the sample, since many investments in the post-crisis group have not been disposed of yet.
- Ex-post private equity returns are difficult to assess given the lack of information. A deal-by-deal basis analysis is necessary to calculate each return. Moreover, the returns are not always realized at the exit but sometimes in the form of dividends thus complicating the analysis even more.
- It would be hard to understand and disentangle the effect of potential future returns on the acquired stake. It is very hard to assume that past returns generated by target firms, would influence future investment choice in terms of equity stake. In fact, this would imply assuming that future returns are correlated with past returns on a different target. In addition, PEs usually do not apply such an analysis when evaluating investment opportunities but rather look at market conditions and at comparable companies of potential targets.

Overall, we can state that there is the possibility to widen the scope of the analysis by including further elements that could provide a more comprehensive framework for PEs' investment strategies and decisions.

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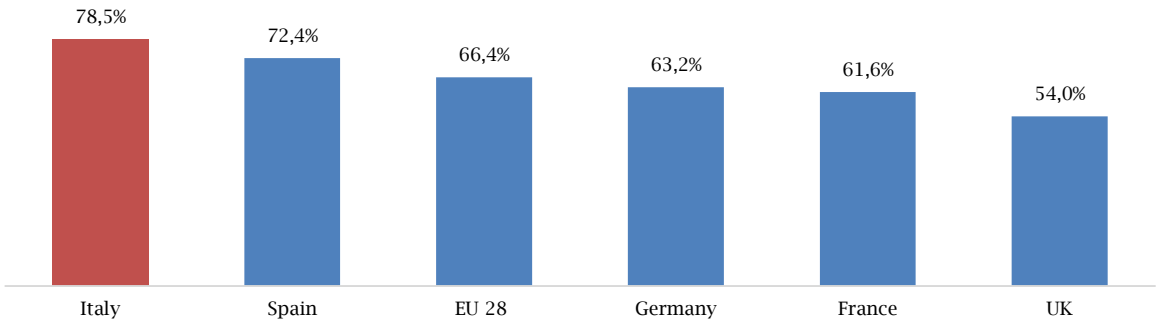
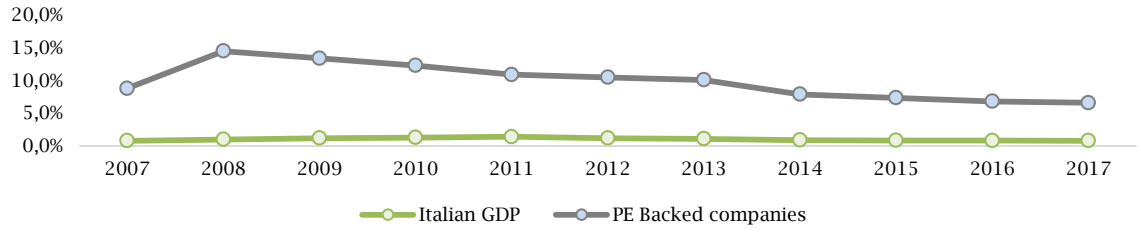
## APPENDIX

**Figure 1.** Percentage of people employed by SMEs



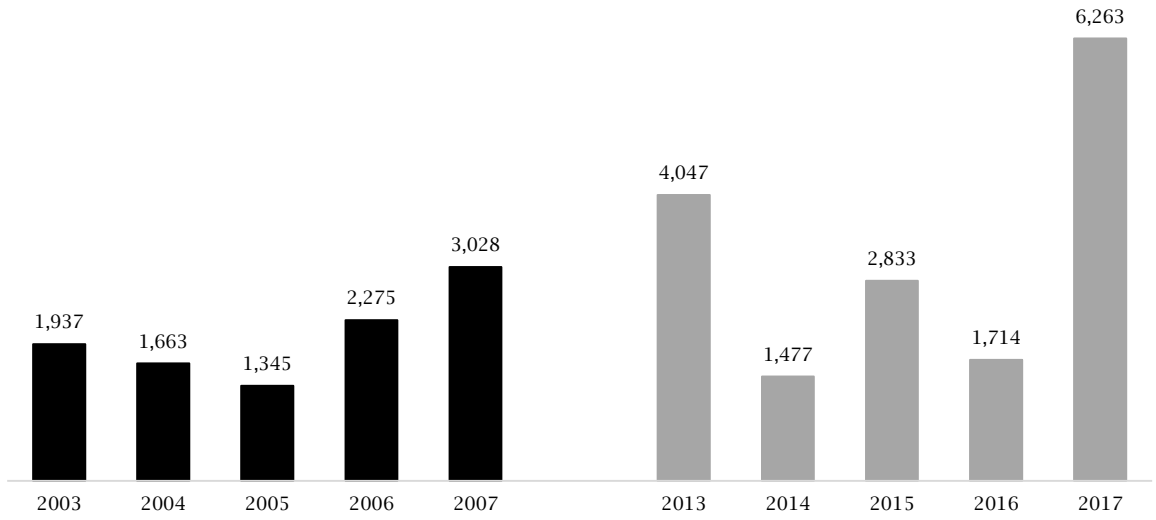

*Source: EBA (2016).*

**Figure 2.** Italian GDP vs. PE backed companies CAGR (%)




*Source: PWC (2016).*

**Figure 3.** Fundraising volumes (€m)




*Source: Sottrici (2013).*

**Table 1.** Real GDP growth

| | *2008* | *2009* | *2010* | *2011* | *2012* | *2013* |
|---|---|---|---|---|---|---|
| Italy | (1.0%) | (5.3%) | 1.7% | 0.8% | (3.0%) | (1.9%) |
| Germany | 0.7% | (5.6%) | 4.0% | 4.0% | 0.6% | 0.6% |
| France | 0.1% | (2.8%) | 1.8% | 2.2% | 0.4% | 0.6% |
| UK | (0.3%) | (4.2%) | 2.0% | 1.5% | 1.5% | 2.1% |
| EU 28 | 0.4% | (4.3%) | 2.1% | 1.8% | (0.4%) | 0.3% |

**Table 2.** Deal-specific statistics

| | *Total sample deals* | *%* | *Pre-crisis* | *%* | *Post-crisis* | *%* |
|---|---|---|---|---|---|---|
| ***Investment stage*** | | | | | | |
| Buy-out | 122 | 68.5% | 53 | 66.3% | 69 | 70.4% |
| Expansion | 46 | 25.8% | 21 | 26.3% | 25 | 25.5% |
| Replacement | 8 | 4.5% | 6 | 7.5% | 2 | 2.0% |
| Turnaround | 2 | 1.1% | 0 | 0.0% | 2 | 2.0% |
| ***Deal origination*** | | | | | | |
| Family & Private | 118 | 66.3% | 51 | 63.8% | 67 | 68.4% |
| Local parent | 14 | 7.9% | 9 | 11.3% | 5 | 5.1% |
| Secondary buy-out | 37 | 20.8% | 14 | 17.5% | 23 | 23.5% |
| Other | 5 | 2.8% | 3 | 3.8% | 2 | 2.0% |
| Foreign parent | 3 | 1.7% | 2 | 2.5% | 1 | 1.0% |
| Public to private | 1 | 0.6% | 1 | 1.3% | 0 | 0.0% |
| ***Sector*** | | | | | | |
| Energy | 6 | 3.4% | 3 | 3.8% | 3 | 3.1% |
| Materials | 18 | 10.1% | 12 | 15.0% | 6 | 6.1% |
| Industrials | 62 | 34.8% | 28 | 35.0% | 34 | 34.7% |
| Consumer discretionary | 35 | 19.7% | 14 | 17.5% | 21 | 21.4% |
| Consumer staples | 24 | 13.5% | 7 | 8.8% | 17 | 17.3% |
| Healthcare | 7 | 3.9% | 3 | 3.8% | 4 | 4.1% |
| Financials | 2 | 1.1% | 1 | 1.3% | 1 | 1.0% |
| Information technology | 10 | 5.6% | 4 | 5.0% | 6 | 6.1% |
| Communication services | 8 | 4.5% | 6 | 7.5% | 2 | 2.0% |
| Utilities | 6 | 3.4% | 2 | 2.5% | 4 | 4.1% |

*Notes: Total sample deals include deals from both the pre-crisis and post-crisis sample.*
*Source: Private Equity Monitor Reports (2003-2017) (http://www.privateequitymonitor.it/pubblicazioni.php).*

**Table 3.** Target firm descriptive statistics

| | *Acquired stake (%)* | *Sales (€m)* | *Sales CAGR (%)* | *EBITDA margin (%)* | *Invested amount (€m)* |
|---|---|---|---|---|---|
| *mean* | 61.9% | 218 | 14.5% | 18.1% | 66 |
| *max* | 100% | 12,920 | 123.9% | 61.0% | 1,075 |
| *min* | 3% | 3.5 | (29.7%) | 2.16% | 1 |
| *p50* | 65.5% | 44 | 79.9% | 15.3% | 19 |
| *sd* | 27.5% | 997 | 24.2% | 11.3% | 147 |
| *p25* | 37.1% | 18 | 19.9% | 10.7% | 7 |
| *p75* | 85.3% | 118 | 18.5% | 23.1% | 50 |

*Source: Authors' calculation.*

**Table 4.** Variables affecting target's acquired stake

| *Variable* | *Factor* | *Description* | *Source* | *Expected sign* |
|---|---|---|---|---|
| Sales | Size | Level of sales at the latest financial year before the transaction is completed (year *t*) | Hart and Oulton (1996) | Negative |
| CAGR | Growth | Growth factor in the CAGR of sales in the last three financial years before the deal | Chapple et al. (2010) | Negative |
| EBITDA margin | Profitability | Proxy for assessing operational profitability | Nordström and Wiberg (2009) | Negative |
| Invested amount | Capital availability | Millions euro invested by PEs in the deal | nm | Negative |
| EV/EBITDA | Valuation | Proxy of the multiple paid at the acquisition | Pinto et al. (2019) | Negative |
| Ownership | Governance | Dummy variable to indicate whether target firm is family-owned | Berrone et al. (2012) | Negative |
| Crisis | Crisis | It reflects the effect of the financial crisis on investment decisions taken by PEs | Achleitner et al. (2011) | Positive |
| Sector | Industry | A categorical variable representing the specific sector in which the target firm operates according to GICS classification | nm | nm |

**Table 5.** Regression results showing coefficients, standard errors and R-squared for each model

| *Variable* | *Model 1* | *Model 1 bis* | *Model 2* | *Model 3* | *Model 3 bis* |
|---|---|---|---|---|---|
| Sales *t* | -7.93e-05*** | -7.80e-05*** | -7.78e-05*** | -0.000430** | -0.000357** |
| | -2.07E-05 | -1.98E-05 | -2.19E-05 | -0.000172 | -0.000159 |
| CAGR | -0.196** | -0.174** | -0.191** | -0.218** | -0.207*** |
| | -0.0769 | -0.0765 | -0.0831 | -0.0852 | -0.0784 |
| EBITDA margin | -0.371** | -0.254 | -0.342* | -0.427 | -0.177 |
| | -0.178 | -0.169 | -0.185 | -0.275 | -0.223 |
| Invested amount | 0.000451*** | 0.000406*** | 0.000449*** | 0.00137*** | 0.00122*** |
| | -0.000142 | -0.000141 | -0.000149 | -0.00044 | -0.000424 |
| EVEBITDA | -0.00698** | -0.00552* | -0.00686** | -0.00403 | 0.00172 |
| | -0.00294 | -0.00285 | -0.00307 | -0.00696 | -0.00579 |
| Ownership | -0.168*** | -0.178*** | -0.155*** | -0.140** | -0.146** |
| | -0.0426 | -0.0408 | -0.0451 | -0.067 | -0.059 |
| Crisis | 0.158*** | 0.150*** | 0.11 | 0.153 | 0.298** |
| | -0.0385 | -0.0379 | -0.211 | -0.237 | -0.126 |
| Materials | -0.0302 | | -0.223 | -0.239 | |
| | -0.112 | | -0.156 | -0.157 | |
| Industrials | -0.0477 | | -0.265* | -0.274* | |
| | -0.102 | | -0.147 | -0.148 | |
| Consumer discretionary | -0.0766 | | -0.246 | -0.260* | |
| | -0.105 | | -0.155 | -0.156 | |
| Consumer staples | -0.0293 | | -0.214 | -0.211 | |
| | -0.109 | | -0.166 | -0.167 | |
| Healthcare | 0.18 | | -0.0121 | -0.0695 | |
| | -0.134 | | -0.205 | -0.217 | |
| Financials | 0.106 | | -0.0333 | -0.0846 | |
| | -0.197 | | -0.283 | -0.287 | |
| Information technology | -0.0553 | | -0.239 | -0.261 | |
| | -0.125 | | -0.186 | -0.188 | |
| Communication services | 0.0961 | | -0.117 | -0.0685 | |
| | -0.132 | | -0.176 | -0.182 | |
| Utilities | -0.168 | | -0.321 | -0.336 | |
| | -0.138 | | -0.22 | -0.222 | |
| Post-crisis # Energy | | | -0.327 | -0.35 | |
| | | | -0.288 | -0.291 | |
| Post-crisis # Materials | | | 0.0611 | 0.0669 | |
| | | | -0.243 | -0.245 | |
| Post-crisis # Industrials | | | 0.101 | 0.0803 | |
| | | | -0.219 | -0.222 | |
| Post-crisis # Consumer discretionary | | | 0.0131 | 0.00522 | |
| | | | -0.228 | -0.234 | |
| Post-crisis # Consumer staples | | | 0.047 | 0.0202 | |
| | | | -0.235 | -0.239 | |
| Post-crisis # Healthcare | | | 0.0473 | 0.0747 | |
| | | | -0.284 | -0.305 | |
| Post-crisis # Financials | | | -0.0338 | -0.0122 | |
| | | | -0.405 | -0.415 | |
| Post-crisis # Information technology | | | 0.0372 | 0.0329 | |
| | | | -0.264 | -0.265 | |
| Post-crisis # Communication services | | | 0.143 | 0.037 | |
| | | | -0.294 | -0.308 | |
| Crisis sales *t* | | | | 0.000357** | 0.000281* |
| | | | | -0.000173 | -0.00016 |
| Crisis EBITDA margin | | | | 0.0963 | -0.139 |
| | | | | -0.401 | -0.357 |
| Crisis Invested amount | | | | -0.00103** | -0.000943** |
| | | | | -0.000479 | -0.000459 |
| Crisis EV/EBITDA | | | | -0.00358 | -0.00939 |
| | | | | -0.00773 | -0.00655 |
| Crisis ownership | | | | -0.0454 | -0.0769 |
| | | | | -0.0913 | -0.0818 |
| Constant | 0.824*** | 0.765*** | 0.996*** | 1.017*** | 0.694*** |
| | -0.113 | -0.0621 | -0.149 | -0.178 | -0.0938 |
| Observations | 178 | 178 | 178 | 178 | 178 |
| R-squared | 0.327 | 0.28 | 0.347 | 0.372 | 0.311 |

*Notes: Standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1.*
*Source: Authors' calculation.*

**Table 6.** Model 1 output results

| *Source* | *SS* | *df* | *MS* |
|---|---|---|---|
| Model | 4.38576521 | 16 | 0.274110325 |
| Residual | 9.03921008 | 161 | 0.056144162 |
| Total | 13.4249753 | 177 | 0.075847318 |

| | | | |
|---|---|---|---|
| Number of obs. | 178 | R-squared | 0.3267 |
| F (16, 161) | 4.88 | Adj R-squared | 0.2598 |
| Prob > F | 0.0000 | Root MSE | 0.23695 |

| *Acquired stake* | *Coef.* | *Std. Err.* | *t* | *P > \|t\|* | *[95% conf. interval]* | |
|---|---|---|---|---|---|---|
| Sales | -0.0000793 | 0.0000207 | -3.83 | 0.000 | -0.0001202 | -0.0000384 |
| CAGR | -0.1960711 | 0.0768781 | -2.55 | 0.012 | -0.3478907 | -0.0442515 |
| EBITDA margin | -0.3713297 | 0.1775668 | -2.09 | 0.038 | -0.7219901 | -0.0206693 |
| Invested amount | 0.000451 | 0.0001419 | 3.18 | 0.002 | 0.0001708 | 0.0007312 |
| EV EBITDA | -0.00698 | 0.0029415 | -2.37 | 0.019 | -0.012789 | -0.001171 |
| Ownership | -0.1682856 | 0.042594 | -3.95 | 0.000 | -0.2524005 | -0.0841707 |
| Crisis | 0.1582791 | 0.0385481 | 4.11 | 0.000 | 0.0821539 | 0.2344042 |
| ***Sector*** | | | | | | |
| Materials | -0.0302024 | 0.1121248 | -0.27 | 0.788 | -0.2516274 | 0.1912226 |
| Industrials | -0.0477096 | 0.1017948 | -0.47 | 0.640 | -0.2487347 | 0.1533156 |
| Consumer discretionary | -0.0766088 | 0.1054146 | -0.73 | 0.468 | -0.2847824 | 0.1315647 |
| Consumer staples | -0.0293095 | 0.109383 | -0.27 | 0.789 | -0.24532 | 0.1867009 |
| Healthcare | 0.179531 | 0.1341537 | 1.34 | 0.183 | -0.0853969 | 0.4444589 |
| Financials | 0.1059804 | 0.1969251 | 0.54 | 0.591 | -0.2829089 | 0.4948696 |
| Information technology | -0.055137 | 0.125347 | -0.44 | 0.660 | -0.30285 | 0.1922225 |
| Communication services | 0.0960872 | 0.1320962 | 0.73 | 0.468 | -0.1647774 | 0.3569519 |
| Utilities | -0.1677399 | 0.1382677 | -1.21 | 0.227 | -0.4407922 | 0.1053123 |
| _cons | 0.8236905 | 0.1131062 | 7.28 | 0.000 | 0.6003275 | 1.047054 |

*Source: Authors' calculation.*

**Table 7.** Model 1 bis output results

| *Source* | *SS* | *df* | *MS* |
|---|---|---|---|
| Model | 3.75875805 | 7 | 0.536965436 |
| Residual | 9.66621723 | 170 | 0.056860101 |
| Total | 13.4249753 | 177 | 0.075847318 |

| | | | |
|---|---|---|---|
| Number of obs. | 178 | R-squared | 0.2800 |
| F (7, 170) | 9.44 | Adj R-squared | 0.2503 |
| Prob > F | 0.0000 | Root MSE | 0.23845 |

| *Acquired stake* | *Coef.* | *Std. Err.* | *t* | *P > \|t\|* | *[95% conf. interval]* | |
|---|---|---|---|---|---|---|
| Sales t | -0.000078 | 0.0000198 | -3.94 | 0.000 | -0.000117 | -0.0000389 |
| CAGR | -0.17355225 | 0.0764609 | -2.27 | 0.024 | -0.3244575 | -0.0225875 |
| EBITDA margin | -0.2544147 | 0.1693366 | -1.50 | 0.135 | -0.5886879 | 0.0798585 |
| Invested amount | 0.0004062 | 0.000141 | 2.88 | 0.004 | 0.0001279 | 0.0006846 |
| EV EBITDA | -0.0055211 | 0.0028537 | -1.93 | 0.055 | -0.0111544 | 0.0001121 |
| Ownership | -0.1781913 | 0.0408153 | -4.37 | 0.000 | -0.2587614 | -0.0976212 |
| Crisis | 0.1502777 | 0.0379134 | 3.96 | 0.000 | 0.075436 | 0.2251193 |
| _cons | 0.764974 | 0.0621228 | 12.31 | 0.000 | 0.6423425 | 0.8876054 |

*Source: Authors' calculation.*

**Table 8.** Model 2 output results

| *Source* | *SS* | *df* | *MS* |
|---|---|---|---|
| Model | 4.66366967 | 25 | 0.186546787 |
| Residual | 8.76130562 | 152 | 0.057640169 |
| Total | 13.4249753 | 177 | 0.075847318 |

| | | | |
|---|---|---|---|
| Number of obs. | 178 | R-squared | 0.3474 |
| F (27, 152) | 3.24 | Adj R-squared | 0.2401 |
| Prob > F | 0.0000 | Root MSE | 0.24008 |

| *Acquired stake* | *Coef.* | *Std. Err.* | *t* | *P > \|t\|* | *[95% conf. interval]* | |
|---|---|---|---|---|---|---|
| Sales t | -0.0000778 | 0.0000219 | -3.56 | 0.001 | -0.000121 | -0.0000346 |
| CAGR | -0.1906632 | 0.0830884 | -2.29 | 0.023 | -0.3548204 | -0.02655059 |
| EBITDA margin | -0.3423463 | 0.1846535 | -1.85 | 0.066 | -0.7071652 | 0.0224726 |
| Invested amount | 0.0004493 | 0.0001487 | 3.02 | 0.003 | 0.0001556 | 0.000743 |
| EV EBITDA | -0.0068562 | 0.0030718 | -2.23 | 0.027 | -0.0129251 | -0.0007872 |
| Ownership | -0.1549302 | 0.0451111 | -3.43 | 0.001 | -0.244056 | -0.0658044 |
| Crisis | 0.1100964 | 0.2107816 | 0.52 | 0.602 | -0.3063435 | 0.5265362 |
| ***Sector number*** | | | | | | |
| Materials | -0.222949 | 0.1559025 | -1.43 | 0.155 | -0.5309645 | 0.0850666 |
| Industrials | -0.2647258 | 0.147224 | -1.80 | 0.074 | -0.5555954 | 0.0261439 |
| Consumer discretionary | -0.2459434 | 0.1546815 | -1.59 | 0.114 | -0.5515468 | 0.0596599 |
| Consumer staples | -0.2141455 | 0.1661847 | -1.29 | 0.199 | -0.5424756 | 0.1141847 |
| Healthcare | -0.0121482 | 0.2050390 | -0.06 | 0.953 | -0.4172441 | 0.3929477 |
| Financials | -0.0332507 | 0.2834803 | -0.12 | 0.907 | -0.5933211 | 0.5268197 |
| Information technology | -0.2389118 | 0.185853 | -1.29 | 0.201 | -0.6061005 | 0.128277 |
| Communication services | -0.1171187 | 0.1756831 | -0.67 | 0.506 | -0.4642148 | 0.2299773 |
| Utilities | -0.3211192 | 0.2198543 | -1.46 | 0.146 | -0.755484 | 0.1132456 |
| ***Crisis # Sector number*** | | | | | | |
| Post-crisis # Energy | -0.3269823 | 0.2878114 | -1.14 | 0.258 | -0.8956095 | 0.2416449 |
| Post-crisis # Materials | 0.0611418 | 0.24264 | 0.25 | 0.801 | -0.4182406 | 0.5405243 |
| Post-crisis # Industrials | 0.1007986 | 0.2187381 | 0.46 | 0.646 | -0.3313609 | 0.5329581 |
| Post-crisis # Consumer discretionary | 0.0131468 | 0.2282461 | 0.06 | 0.954 | -0.4377975 | 0.4640911 |
| Post-crisis # Consumer staples | 0.0469532 | 0.2352377 | 0.20 | 0.842 | -0.4178045 | 0.5117108 |
| Post-crisis # Health care | 0.0473337 | 0.2837248 | 0.17 | 0.868 | -0.5132196 | 0.607887 |
| Post-crisis # Financials | -0.0338278 | 0.4047732 | -0.08 | 0.934 | -0.8335357 | 0.7658801 |
| Post-crisis # Information technology | 0.037188 | 0.2641951 | 0.14 | 0.888 | -0.4847807 | 0.5591568 |
| Post-crisis # Communication services | 0.1434512 | 0.2939427 | 0.49 | 0.626 | -0.4372896 | 0.724192 |
| Post-crisis # Utilities | 0 | (omitted) | | | | |
| _cons | 0.0059059 | 0.1486311 | 6.70 | 0.000 | 0.7022564 | 1.289555 |

*Source: Authors' calculation.*

**Table 9.** Model 3 output results

| *Source* | *SS* | *df* | *MS* |
|---|---|---|---|
| Model | 4.98745389 | 30 | 0.166248463 |
| Residual | 8.43752139 | 147 | 0.057398105 |
| Total | 13.4249753 | 177 | 0.075847318 |

| | | | |
|---|---|---|---|
| Number of obs. | 178 | R-squared | 0.3715 |
| F (27, 152) | 2.90 | Adj R-squared | 0.2432 |
| Prob > F | 0.0000 | Root MSE | 0.23958 |

| *Acquired stake* | *Coef.* | *Std. Err.* | *t* | *P > \|t\|* | *[95% conf. interval]* | |
|---|---|---|---|---|---|---|
| Sales t | -0.0004297 | 0.0001717 | -2.50 | 0.013 | -0.000769 | -0.0000904 |
| CAGR | -0.2176075 | 0.0851769 | -2.55 | 0.012 | -0.385937 | -0.049278 |
| EBITDA margin | -0.4271301 | 0.2745801 | -1.56 | 0.122 | -0.9697645 | 0.1155043 |
| Invested amount | 0.0013692 | 0.0004403 | 3.11 | 0.002 | 0.000499 | 0.0022394 |
| EV EBITDA | -0.004032 | 0.0069589 | -0.58 | 0.563 | -0.0177844 | 0.0097204 |
| Ownership | -0.1404416 | 0.067042 | -2.09 | 0.038 | -0.2729323 | -0.0079509 |
| Crisis | 0.1530361 | 0.2369094 | 0.65 | 0.519 | -0.3151521 | 0.6212243 |
| ***Sector number*** | | | | | | |
| Materials | -0.2386504 | 0.1573759 | -1.52 | 0.132 | -0.5496619 | 0.072361 |
| Industrials | -0.2735056 | 0.1481301 | -1.85 | 0.067 | -0.5662454 | 0.0192341 |
| Consumer discretionary | -0.2600102 | 0.1563452 | -1.66 | 0.098 | -0.5689847 | 0.0489644 |
| Consumer staples | -0.2105847 | 0.1667053 | -1.26 | 0.209 | -0.5400332 | 0.1188638 |
| Healthcare | -0.0695104 | 0.2174676 | -0.32 | 0.750 | -0.4992772 | 0.3602563 |
| Financials | -0.0846402 | 0.286966 | -0.29 | 0.768 | -0.651752 | 0.4824717 |
| Information technology | -0.2608913 | 0.1882205 | -1.39 | 0.168 | -0.6328588 | 0.1110763 |
| Communication services | -0.0685333 | 0.1821403 | -0.38 | 0.707 | -0.428485 | 0.2914184 |
| Utilities | -0.3357754 | 0.2224523 | -1.51 | 0.133 | -0.775393 | 0.1038423 |
| ***Crisis # Sector number*** | | | | | | |
| Post-crisis # Energy | -0.3496623 | 0.2910602 | -1.20 | 0.232 | -0.9248651 | 0.2255406 |
| Post-crisis # Materials | 0.0669484 | 0.2453194 | 0.27 | 0.785 | -0.41786 | 0.5517568 |
| Post-crisis # Industrials | 0.0802882 | 0.2222209 | 0.36 | 0.718 | -0.3588722 | 0.5194486 |
| Post-crisis # Consumer discretionary | 0.0052164 | 0.2337069 | 0.02 | 0.982 | -0.4566429 | 0.4670757 |
| Post-crisis # Consumer staples | 0.0202484 | 0.2388798 | 0.08 | 0.933 | -0.4518339 | 0.4923307 |
| Post-crisis # Health care | 0.0747166 | 0.3046821 | 0.25 | 0.807 | -0.5274064 | 0.6768395 |
| Post-crisis # Financials | -0.0121908 | 0.4148076 | -0.03 | 0.977 | -0.8319474 | 0.8075657 |
| Post-crisis # Information technology | 0.0329246 | 0.2651758 | 0.12 | 0.901 | -0.4911246 | 0.5569739 |
| Post-crisis # Communication services | 0.0369825 | 0.3077011 | 0.12 | 0.904 | -0.5711068 | 0.6450717 |
| Post-crisis # Utilities | 0 | (omitted) | | | | |
| crisis sales *t* | 0.0003566 | 0.0001731 | 2.06 | 0.041 | 0.0000144 | 0.0006987 |
| crisis CAGR | 0 | (omitted) | | | | |
| crisis EBITDA margin | 0.0962721 | 0.4005567 | 0.24 | 0.810 | -0.6953214 | 0.8878655 |
| crisis Invested amount | -0.0010301 | 0.0004792 | -2.15 | 0.033 | -0.0019772 | -0.000083 |
| crisis EV EBITDA | -0.0035792 | 0.0077252 | -0.46 | 0.644 | -0.018846 | 0.0116876 |
| crisis ownership | -0.0453867 | 0.0913208 | -0.50 | 0.620 | -0.2258578 | 0.1350844 |
| _cons | 1.016541 | 0.1775339 | 5.73 | 0.000 | 0.6657126 | 1.36737 |

*Source: Authors' calculation.*

**Table 10.** Model 3 bis output results

| *Source* | *SS* | *df* | *MS* |
|---|---|---|---|
| Model | 4.17058411 | 12 | 0.347548676 |
| Residual | 9.25439117 | 165 | 0.056087219 |
| Total | 13.4249753 | 177 | 0.075847318 |

| | | | |
|---|---|---|---|
| Number of obs. | 178 | R-squared | 0.3107 |
| F (27, 152) | 6.20 | Adj R-squared | 0.2605 |
| Prob > F | 0.0000 | Root MSE | 0.23683 |

| *Acquired stake* | *Coef.* | *Std. Err.* | *t* | *P > \|t\|* | *[95% conf. interval]* | |
|---|---|---|---|---|---|---|
| Sales *t* | -0.000357 | 0.000159 | -2.25 | 0.026 | -0.0006709 | -0.0000431 |
| CAGR | -0.2066104 | 0.0783621 | -2.64 | 0.009 | -0.3613321 | -0.0518887 |
| EBITDA margin | -0.1769491 | 0.2233048 | -0.79 | 0.429 | -0.6178524 | 0.2639542 |
| Invested amount | 0.0012231 | 0.0004238 | 2.89 | 0.004 | 0.0003863 | 0.0020599 |
| EV EBITDA | 0.0017243 | 0.0057892 | 0.30 | 0.766 | -0.009706 | 0.0131547 |
| ownership | -0.1457832 | 0.0590469 | -2.47 | 0.015 | -0.262368 | -0.0291984 |
| crisis | 0.297724 | 0.1257879 | 2.37 | 0.019 | 0.0493626 | 0.5460855 |
| crisis Sales *t* | 0.0002812 | 0.0001602 | 1.76 | 0.081 | -0.0000351 | 0.0005975 |
| crisis CAGR | 0 | (omitted) | | | | |
| crisis EBITDA margin | -0.1388393 | 0.3568187 | -0.39 | 0.698 | -0.8433584 | 0.5656798 |
| crisis Invested amount | -0.0009435 | 0.0004589 | -2,06 | 0.041 | -0.0018496 | -0.0000374 |
| crisis EV EBITDA | -0.0093868 | 0.0065457 | -1.43 | 0.153 | -0.022311 | 0.0035374 |
| crisis ownership | 0.076947 | 0.0817946 | -0.94 | 0.348 | -0.2384461 | 0.0845521 |
| _cons | 0.6943963 | 0.0938288 | 7.40 | 0.000 | 0.50913644 | 0.8796561 |

*Source: Authors' calculation.*