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LBOs value generating process and Private Equity Fund's experience: evidence from the Equity Capital Market

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Un ringraziamento speciale ad amici e famiglia,
a chi mi ha sempre supportato
senza mai lasciarmi solo, a chi non c'è più
ma che sicuramente, ora, mi guarda orgoglioso
dall'alto…vi voglio bene.

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1. Introduction

1.1. Purpose of the study.

The purpose of this thesis is to assess the existence of a correlation between the value generated by Leveraged Buyout transactions and the experience of the Private Equity fund that carries on the investment. LBOs mechanism and dynamics has always been the focus of several economics and financial studies and research. This is due to two main reasons. Firstly, leveraged buyouts have a high potential in term of value generated especially when compared to similar but different types of investment. Historically there have been many LBO deals that were able to generate a substantial irr (internal rate of return) for the investors. For instance, we can remind two of the most successful investments: the Gibson Greetings acquisition in 1982 by the CIT Financial Corporation and the acquisition of Hilton Worldwide by Blackstone in 2007. The second reason that has putted LBOS in the point of attention of different economists is the structure this type of deal has and the financial dynamics it implies. Because of that the relationship that this thesis is going to explore is not related to the absolute value that the investments generate but to the three different drivers of values assigned to LBOs: Operating effect, Leverage effect and Multiple effect. On this basis the final purpose of the research is firstly to investigate if all these drivers are influenced by the Private Equity fund experience and secondly to identify the driver that more than others is connected with the fund experience.

1.2 Originality and Contributions.

As mentioned above, there are several studies concerning LBOs and Private Equity, but this thesis is trying to distinguish itself from the others and to assume some traits of originality. First, there have been different research where the value drivers of an LBO have been analyzed. Some real examples can be mentioned such as Jensen in 1989 for the Operating effect, Wright in 1992 and Lichtemberg in 1990 for the Leverage Effect or Hammer in 2022 as regard the Multiple Effect. In these papers the authors have analyzed how the LBO transactions are able to generate a high potential value through the enhancement of performance level or by applying financial engineering both from a Leverage and Multiple perspective. In this thesis the percentage contributions of each driver are analyzed, giving an overall breakdown of the value generating and not focusing on just one single aspect.

In 2013 there was research developed by Capital Dynamics and the University of Munich that have analyzed all in a glance the contributions of the three drivers of values in a sample of LBOs transactions. The difference that this thesis has with this study is the time span analyzed. The jointly research has observed transactions that occurred between 1980 and 2000, while this work will focus on deals concluded between 2000 and 2012. In this way it can be seen as an update of the research of Capital Dynamics and the München University.

The real originality of this thesis reveals in the second part of the work. Once the percentage contributions to the overall value of each driver have been assessed the existence of a correlation among these contributions and the Private Equity fund experience has been investigated. There are several previous studies whose aim was to demonstrate the presence of a relationship between the investment fund's experience and the value generated by LBOs, but all of them have used as dependent variable the overall value resulting from the transactions while this thesis is going to analyze the presence of a correlation among the Private Equity fund experience and each driver of value assigned to LBOs.

Summarizing, it can be said that the following work results original and different from the others under two different perspectives. First, it is the most update papers regarding the breakdown of the value generated by LBOs in its three main components: Operating Effect, Leverage Effect and Multiple Effect. Secondly, it is the first research in which is investigated the presence of a correlation between the Private Equity fund experience and the single value drivers, aiming to give an overall and complete idea of Private Equity and LBOs financial mechanisms.

Given its originality this thesis will have practical implications. It can be used by the investors as a discretional criterion in choosing the fund to invest in. Above all the several reasons that can influence the investor in deciding the fund to invest in, such as industry of focus or target characteristics, the experience of the fund and of its managers should be consider taking this type of decision. The more the fund is active and the more the capital it has invested since its vintage year the more should be the ability of mangers to generate return for investors and the more the investor should trust the fund.

It can also be useful for managers in developing their investment strategy. The investment period, the time of acquisition and the exit time can vary with respect to the general rule in private equity mechanisms due to the external factors such as the conditions in equity and debt capital market. Under this point of view General Partner might use the outputs of this thesis to take advantage of favorable market conditions, this means improving their ability to time the market.

1.3 Structure of the work.

The work is organized in 4 different sections. The following chapter is related to the existing literature about LBOs and Private Equity. In this section all the most relevant papers regarding LBOs will be analyzed. It will show how the literature has identified the three different value drivers in LBOs transactions, and it will indicate the rationale behind the value generated breakdown and the importance of Private Equity fund experience in those transactions. At the end of the chapter the three different research hypotheses will be generated.

The third Chapter is about the research sample and methodology. After having described quantitatively and qualitatively the sample object of analysis, the method of work will be introduced. The concepts of regression and moderation analysis will be explained. At this point the breakdown of the value added will be implemented and for each deal the percentage contribution of the different drivers will be assessed.

Chapter 4 is related with the statistical computations. The driver's contributions to the LBOs value added will be use as dependent variable while the experience of the investment fund will be used as independent variable. The chapter will show the three different regressions analysis and the two moderation ones summarizing the results and statistically describing them.

Finally, chapter 5 is the concluding ones, the overall research will be summarized, and its results will be outlined.

2. Literature Review

2.1 Definition of Buyout process.

To understand the fundamentals behind the Leveraged Buyout process, we start from some general and known principles about a firm life cycle. Generally, the life cycle of a firm is composed of four main stages: Introduction, growth, maturity, and decline. LBOs tend to occur in the growth stages, and sometimes even in the maturity one. The growth stage is the one where a newborn firm decides to expand its operations and tries to improve financial results and margins by following different strategies. When a business enters its growth stage it has two main opposite strategies to follow: organic growth or inorganic growth. Both have their advantages, challenges, and implications. Organic growth refers to an internal and gradual expansion, mainly achieved by investing in new technologies, products, or people. On the other side, an inorganic growth implies a merger, an acquisition, or a partnership of different businesses to achieve better financial and operating outputs and more favorable market conditions. The inorganic growth strategies are generally implemented in the Equity Market (Schefczyk 2006 "Financing with Venture Capital and Private Equity"). This is the market where entities raise equity capital from companies, investors, and entrepreneurs.

Among the different inorganic growth strategies Leveraged Buyout (LBOs) have played a crucial role in the past and present time. A leveraged buyout is the "acquisition of a company, division or business using debt to finance a large portion of the purchase price while the remaining portion is funded with an equity contribution by a financial sponsor" (Rosenbaum et Pearl 2009).

A leveraged buyout operation is generally carried out by private equity firms. Those are firms composed of professional investors and are characterized by limited years of life, by focus on value added generating operations and by the fact to not distributing dividends but obtaining capital gains on their investments. A private equity firm is composed by an investment fund (also called special purpose vehicle) in the form of a limited partnership. The fund collects money from external investors of different types that are called Limited Partners. That money is then invested by the General Partners, who are expert and prepared managers that have the power of allocating the funds raised among different targets, called Portfolio Companies (Zisberger, Prhal, White, "Mastering Private Equity" (2017).

According to this structure, the limited partners commit their funds in exchange of a return on their investment. On the other hand, the General Partner exchange their operational management, with a "management fee" and a small return on their investment. It is by summarizing the process, that we can capture the relevant role of the General Partners, who are completely entrusted by external, wealthy, and professional investors that only want to

gain money and for that reason are ready to pay a fee for the knowledge and experience that General Partners possess.

Private Equity funds can be differentiated according to different criteria. We can classify a fund based on its investment focus, that means by analyzing the fund's financing stage, industry, kind of management or target locations. We can also distinguish funds based on their type of structure. There are independent funds, that are backed by many different investors and organizationally not linked to one of them and there are dependent funds where one investor holds more than 50% of the share. The first category is composed by the Stock Market Listing fund, that raises funds from many investors via the public capital market, and the Limited partnership where the funds are raised from several personally known investors via the private capital market. Conversely, the second category includes the Captive funds where the sole investor is a financial institution and the corporate funds where the sole investor is an industrial company.

Being a firm itself, even the Private Equity funds have their different stages of life. Generally, they last for 10-12 years. In the first two years of life the fund is in the Fund-raising stage, where the Limited Partners invest providing money, and the General Partners begin to analyze the market and its potential investment options. Following on, from the second year to the fourth or fifth years the funds raised are now allocated to different portfolio companies, that all together constitute the Private Equity Fund portfolio. From the second to the tenth year the General Partner are in the management stage where they must actively influence the decision and the business of the target company with the purpose of enhancing their cash flow generating ability, their financing and operating efficiency and consequently the overall company value. In the last two years of life funds enter in the Harvest stage where the target companies are now mature and ready to be sold for realizing a substantial gain on the initial investment (Schefczyk 2006 "Financing with Venture Capital and Private Equity").

As we mentioned above, one of the operations carried out by the Private Equity Fund is the Leveraged Buyout that has as its main features the large portion of debt used to finance the acquisition of a company or business unit. Indeed, in a traditional LBO, debt has usually comprised by 60% and 70% of the financing structure. This amount of debt is generally a mix of different Financing Sources ranging from First Line secure debt such as Bank Loan and subordinated debt such as Mezzanine. The portion of each kind of securities on the total debt level is generally determined following the general rule that the higher is the debt instrument rank the lower is its risk and consequently the lower is its cost. This implies that, to generate value by the investment and the subsequent divestment, it is not only sufficient to use debt to finance the operation, but it is the different type of financing structure itself that can lead to different results.

Now we are going to analyze two different strategies that allow LBOs to generate value. Debt repayment and Enterprise Value growth (Rosenbaum, Pearl (2009). In the first scenario we assume that the private equity firm,

after having invested in a target company, used the cash flow generated to repay debt. We know that the debt repayment increases the equity value on a dollar-for-dollar basis, so at the exit date the Equity value results increased by the exact amount of the portion of debt that has been reimbursed to the financer. On the other side, the Private Equity fund can decide not to repay any debt used in the purchase of the target firm, but the cash flow generated is now reinvested into the business to directly increase the Enterprise Value of the portfolio company.

Since the rise of LBOs transactions many researchers have investigated which of those strategies is the most common and effective. Until now there are no single conclusions, but a large part of this studies has identified a combination of the two processes as the most successful one, characterized by dividing part of the cash flow generating in debt repayment and part in internal investment and realizing an Enterprise Value growth from the two different sources.

We are going to analyze more in depth the value drivers of LBOs transactions in the following paragraphs of this chapter, but first let see the historical development of this specific acquisition strategy.

2.2 Historical Overview of the LBOs transactions.

The history of LBOs goes back to the 1970s with the so-called de-conglomeration process (Rosenbaum, Pearl (2009).. The 60s were characterized by high stock prices and several firms began to go public allowing owners to make profit. However, in the years from 1970 to 1975 stock prices lowered and, as a result, the managers of companies that went public in the 1960s decide to make their companies private. In that way began the de-conglomeration process where the sale of division of conglomerates took place through LBOs. Some years later, during the 80s, occurred a peak in LBOs activities.

During the first years of the decade larger companies became the ideal target for private equity fund and leveraged buyout operations. Despite this in 1985 out of 3701 mergers only 259 were LBOs, that is almost the 7% of the overall transactions number. Towards the end of the decade this percentage rose and in 1987 the LBOs made up 21.3% of the total value of the transactions.

At the end of the 80s LBOs were a very attractive financial operation and the combination of reduction in barriers (because of availability of financial institutions to lend money) and high return generated in the decade attracted many competitors. The increase in competition generally tend to lower the returns level. Because of that the start of 90s corresponded with the start of a dramatic fall for LBOs returns. This reduction in LBOs transactions was caused not only from the increase in competition, but also from the junk bond market that started in 1988 and the recession that followed some years later (1990-1991). This is proved by the study of Cao and Lerner that registered an average return of 10%, while in the prior decade LBOs activities generated a 47% internal rate of return (Falat, Kilijanska – The History of PrivateEquity and Venture Capital Investment (2018). If it is true that the level of

return declined substantially from the 80s to the 90s, it was not the same for the number of transactions. By 1998 the number reached its highest until 2000, when the number of deals was almost double the 1980 level.

In the mid-2000s private equity firms continued to buy private companies and the world experienced a second LBOs boom, also known as "the age of mega buyouts," (Rosenbaum, Pearl (2009)). where large institutional investors become the main actors. The boost in transactions during the first years of the 2000s is mainly due to regulatory changes in the legal framework that resulted in lower legal costs and tax obligations.

This new boom ended very soon because of the global financial crisis in 2008. During those years the worldwide financial system experienced distress situations and the cost of debt financing became higher. Consequently, private equity firm were not able to contract debt at favorable conditions and LBOs volume and value declined.

From 2010 Private Equity activities expanded again and PE industry reach an overall capital under management of almost 3 trillion USD. The deal value grows at a CAGR of 12% in the period 2013-2018, leading the economist to refer to this period as the "Renaissance of Private Equity Market" (McKinsey 2019). From 2018 LBOs activities continue to grow or at least to not reduce their volume and the 2021 was all time high in Private Equity activities with 118 billion in fundraising and 138 billion of investment only in the EU. We have to mention the slowdown registered after the pandemic period when both deals' number and value decreased. In the last two year we've seen again an increase in LBO transactions, and private equity market start to achieve again the pre-pandemic scenario levels.

2.3 Value Creation in Leveraged Buyout process.

After the global financial crisis investors begin questioning whether the private equity value generation model is driven by financial leveraging or operational improvements (capital dynamics). Given the peculiar structure of this kind of financial operation, this question has not found a unique answer yet and many researchers and scholars are still trying to solve the problem.

In the past years, three different factors have been identified as the drivers of Leveraged Buyout value generation process. Each of those factors is related to a different aspect of the LBO transaction and in every single deal they differently combine and contribute to the creation of value.

In 2009, Capital Dynamics jointly with the Technische Universitat of Munchen, analyzed the LBOs process and defined the alpha generated by the transaction as the result of three different effects: the Operating Effect, the Multiple Effect, and the Leverage effect. Furthermore, in this study they analyzed a sample of 701 deals to assess which percentage each effect contributes to the cumulated alpha generated. The result showed that the Operating

Effect was the most important factor accounting for 52% of the total value generated while the leverage and multiple effects accounted respectively for 31% and 18%.

Even before this research, different studies have analyzed the LBO transactions and the way they work, focusing on the different potential factors that contribute the most to the value creation process. All these studies have identified as the most important aspect of the LBOs transactions one of the above-mentioned effects, but in contrast with the Capital Dynamic research the factors have been analyzed individually and not altogether.

2.3.1 Operating Effect

It is commonly believed that through a Leveraged Buyout process the General Partner of Private Equity fund can boost the operating performance of the target company due to two main reasons: a better corporate governance structure and a better operating efficiency.

Michael C. Jensen in 1989 was the first to understand that LBOs, and more in general going- private transactions, are fundamental in solving the conflict between owners and managers over residual cash flow that typically characterizes the public held company. He observed that there were more and more LBOs transactions in the 1980s and these seemed to create substantial wealth for the shareholders. The author identified as the central weakness of the large corporations the conflict between owners and managers over the control and use of corporate resources and payout of free cash. Here the free cash flow is defined as cash flow in excess of that required to fund all positive NPV projects. The reason for the conflict is that shareholder value maximizing companies must distribute free cash flow to investors, through dividends or debt repayment, while managers have incentives to retain cash and engage in empire building activities. An LBO transaction can solve this problem because increasing the debt-to-equity ratio introduces the legal obligation to meet periodic payments. Therefore, managerial discretion is reduced, and managers are forced to skip negative NPV investments. Under this perspective a Leveraged Buyout and financing through debt instead of public stock is like replacing non-obligatory dividends with obligatory payments to debtholders.

After Jensen's research, many different authors have identified the agency cost as one of the main weaknesses of the large public corporation. Roonebog et al., in May 2007, examinate the wave of "Going-private transaction" that took place in UK from 1997 to 2003. They identified that Private Equity fund that used leverage to acquire the target company realized a premium of approximately 41% and realized the higher CAGR in the sample. The authors related the better result achieved by those companies to a more efficient governance system mainly driven by the reduction in agency problems and agency costs between owner and managers. As Jensen said in his previous research, the efficient governance system is the result of the debt obligation introduced in the company by the LBO transaction structure. Consistent with Jensen and Roonebog, Viral V. Acharya et al. (2012) questioned

whether in PE firm the return on equity investment is simply due to financial leverage and market timing or if returns represent the value generated by the General Partner at the enterprise level in the portfolio companies. In their research, a sample of 395 deals realized during the period from 1991 to 2007 in Western Europe by thirty-seven mature PE funds generated an average gross IRR of 56.1%. Specifically, they analyzed the abnormal performance of the companies owned by PE houses and identified an operating margin that is, on average, 0.4% higher than their peers. In line with what we said above, one of the main reasons assigned to this result is the improvement in ownership structure and governance system.

On the other hand, there are many studies that present the increase in the operating performance of PE portfolio companies not only as the result of a higher-level corporate governance system but also as the consequence of an improvement in the efficiency of the core business process. The higher efficiency is originated by the knowledge and experience that Private Equity managers add to the company in which they invest.

Lichtenberg in 1990 develop research aimed to analyze that relationship. He investigated the effect of leveraged buyout on total factor productivity (TFP) using a database of 12.000 manufacturing plants. The TFP is defined as the output per unit of total input and the authors believe that it is the purest measure of technical efficiency. The result of the research identified that the mean productivity is significantly higher in the three years post buyout than in any of the eight years before the buyout. Specifically, the mean productivity is 1.7% for the three years before buyout while it increases to 3.9% for the first three years after the buyout.

To support this thesis is relevant to mention a well-known study developed by Wright, Thompson and Robbie in 1992 and called “Venture Capital and Management-led Leveraged Buyouts: a European Perspective”. The authors of this fundamental research observed a sample of 182 Buyout deals that took place in Europe from 1981 to 1990 and analyzed the increase in the company’s performance measured by the new product development factor. The survey indicates that 62.3% had introduced new products that they would not otherwise have done. Moreover, out of these 62.3% of buyouts 70% expand their product range in the existing markets while the remaining 30% diversified their operation in new and different markets. This points out the General Partners attempt to enhance profitability and efficiency of the portfolio companies by expanding their business to other markets or just improving their position in the market they already run. The research also highlights the fact that a small portion of the sample has reduced the products they offered to the market and even this way of conduct is seen as an operational improvement aimed at rationalizing the product range a business offers.

The paper achieved relevance because the authors not only were able to analyze how the private equity funds modify the supply of product to the market but also how a buyout deal affects the customer and suppliers’ level of satisfaction. In the study the buyout’s manager reported improvement in customer relations in 60% of the cases with only two cases of customer deterioration. With respect to the supplier relationship, the level of improvement

was less strong at only 37.3% with only three cases that had relationship deterioration. In the conclusion of the research the authors expressed that in the sample, target companies after the buyout performed substantially better than prior to transfer of ownership. The most favorable impact on performance improvements was due to new product development, followed by market improvements and improved margins.

The aim of distinguish between improvement in performance due to Governance System or to Operational Efficiency has still been carried out during the last years.

In 2000 Wright, R. Hoskisson and J. Dial decided to test whether privatization through an LBO boosts the performance of the target company only from the agency theory point of view or also from an entrepreneurial point of view. They affirmed that Private Equity firm implies for the target company a shift from a managerial to an entrepreneurial mindset. The study is based on the concept that individual behavior is heuristic based. The term heuristics refers to the strategy that individuals, that in that specific case scenario are the managers, use to make strategic decisions. Entrepreneurial cognition is the more extensive use of heuristics and individual beliefs that impact decision making. Under this perspective the purpose of the study is to illustrate how cognitive skills may lead to competitive advantage. The result presents that heuristic-based logic in decision making provides valuable entrepreneurial decision and this theoretical approach is common in Private Equity fund's managers.

Based on the above-mentioned study of 1990 by Lichtenberg, in more recent time (2005), Richard Harris, Donald Siegel and Mike Wright, compared the total factor productivity pre and post buyouts among 35,752 manufacturing establishments in UK. The purpose is to demonstrate that the leveraged buyout deal structure along with the managers knowledge and experience implies a substantial increase in productivity and leads to a higher level of economic efficiency. The peculiarity of that study is represented by the research methodology. The authors developed a model composed of 148 parameters and presented two sets of results: the short-run and long-run estimates. The long-run derived from the dynamics of the short-run estimates. Both the regressions include values of output, labor, materials, and capital as regressor. Consistent with the previous research the main findings of this study revealed that the plants that experienced a LBO were less productive, respectively 1.6% and 2% less in the short and long run, than other plants in the same industry, while after the transaction the LBO plants experienced a substantial increase in the Total Factor Productivity, specifically +70.5% and 90.3% in the short-run and long-run, respectively.

We have just remind some relevant literature about the idea that private equity funds through a LBO transaction are able to improve the operating performance of their portfolio companies and this improvement is due to two different and simultaneous aspects: a better corporate governance structure, that reduce agency cost and

managerial discretion over cash flow allocation, and to a strict improvement in the economic efficiency that is the result of the professional, strategic, and entrepreneurial mindset that characterizes private equity firm.

Year	Authors	Journal	Paper Title
1989	Micheal C. Jensen	Harvard Business Review	Discipling Effect of the Debt
1990	Lichtenberg, Siegel	Journal of Financial Economics	Total Factor Productivity increase after Buyout
1992	Wright, Thompson, Robbie	Journal of Business Venturing	Venture Capital and Management-led Leveraged Buyout
2000	Wright, Hoskisson, Dial	Academy of Management Review	Entrepreneurial Growth Through Privatization: Th upside of Buyouts
2005	Harris, Siegel, Wright	The MIT Press	Assessing the Impact of MBO on Economic Efficiency
2007	Rennebog, Wright	Journal of Corporate Finance	Privatization as Incentive Realignment
2012	Viral V. Acharya	Oxford University Press	Corporate Governance and Value Creation: Evidence from Private Equity

2.3.2 Leverage Effect

As we said at the beginning of the chapter, the operating effect is just one of the value drivers of LBO transactions. Another driver of LBO value generation process is the Leverage Effect. The use of debt is a source of wealth for different reasons. As demonstrated by Jenes it is useful to enhance governance system, but it also generates high valuation due to interest tax deductibility, and lastly debt repayment increases equity value given a fixed level of Enterprise Value. Now we are going to mention some relevant research and studies related to the Leverage Effect.

In May 1991, Steven N. Kaplan, and Jeremy C. Stein published in the National Bureau of Economic Research an interesting study label “The evolution of buyout pricing and financial structure”, where the role of debt in a buyout process is analyzed. The research is based on a sample of 124 large leveraged buyouts completed between 1980 and 1989. The authors decided to compare the price, financial structure and ex post-performance of the deals that took place in the earlier years of the decade and the deals that took place in the later years of the decade. The median debt to capital ratios of the sample companies appeared constant between 1980 and 1989, never dropping below 86% and never rising above 90.7%. Analyzing the performance of the sample the research reveals that the deals in the earlier part of the decade presented a higher performance level than the deals of the latter part of the decade. Furthermore, the acquisition price in the deal increased during time and this was due to the increased confidence in the investor’s belief driven by the first year results that LBO achieved in the decade. Summarizing this study showed that the higher level of debt in the LBOs process results in a higher level of performance.

This study is helpful to comprehend how the level of debt is crucial and tricky in a leverage buyout transaction, but this is not the only aspect that really matters. Indeed, it is the ability to repay the debt obligation, more than its absolute level, that needs to be considered.

In August 2007, Per Stromberg, Michael Weisbach et Alt published a research where they analyzed the relationship that the economy-wide cost of borrowing has with the level of leverage in buyouts. Collecting data from different databases they ended up with a sample of 153 buyouts, 75 of which were in the U.S and 78 outside, mainly in Europe. On average for each transaction the debt accounts for 75 % of the overall financial sources implied. The first aspect highlighted by the authors is that the private equity portfolio companies have a significantly different financial structure from that observed for comparable firms listed on public equity market. Then, they analyzed the differences in the capital structure among the buyouts firms and investigated the cross-sectional differences in leverage level. Having identified such variations in the sample the authors wanted to investigate what was the driver of leverage decisions. They run a regression of leverage on firm characteristics, aggregate financial market conditions and buyout fund characteristics. The statistical results proved that that none of the firm's characteristics are consistently related with leverage level but conditions in the financial markets are.

Kaplan, jointly with Stromberg, in 2009 developed a new study that observed the role of leverage in LBO. They focused on the exit process and the components that determine its success. As we've done until now Kaplan and Stromberg identified as crucial determinants of LBO exit Financial, Governance and Operational Engineering. Focusing on the Financial aspect, the authors observed that the level of Leveraged used by the PE fund to finance the transactions was directly related to the cost of debt and that for the deals with higher debt-to-equity ratios the return tend to be higher.

Lastly, I believe that is appropriate to mention the work of Ivashina and Kovner published on the Oxford Press in 2011. Even if their purpose is not the same as mine, they developed relevant and useful argument related with the role of debt in PE transactions. They wanted to analyze the connection between the level of leverage, investment returns and the relationship between the fund and the banks who provide the loan. In doing so, they examined a sample of 1.509 bank loans financing leveraged buyouts between 1993 and 2005. The main output of the research was that private equity fund's relationship with bank institutions is cross-sectionally the main determinant of interest rate, covenants and other contractual condition for the loan. Subsequentially, they point out the role of those contractual conditions in the value creation process. The better the bargaining power for investment funds the lower the cost of debt and the higher the return on the transaction. Under this perspective, it is confirmed even by this last research that the level of leverage and the contractual conditions (cost of debt) play a crucial role in the fascinating world of Leveraged Buyouts.

Year	Authors	Journal	Paper Title
1991	Kaplan, Stein	National Bureau of Economic Research	The evolution of Buyout pricing and financial structure
2007	Stromberg, Weisbcah	Journal of Financial Economics	Leverage and Pricing in Buyout: An empirical Analysis
2009	Kaplan, Stromberg	Journal of Economic Perspective	Leveraged Buyout and Private Equity
2011	Ivashina, Kovner	Oxford University Press	The Private Equity Advantage: LBO and Banking Relationhsip
2013	Axelson, Stromberg, Weisbach	The Journal of Finance	Borrow Cheap buy High? Determinants of Leverage and Pricing in Buyout

2.3.3 Multiple effect

The third relevant aspect to analyze when we talk about LBOs is the role that the equity market plays in the value generating process. While the level of leverage and the operating performance are aspects that must be monitored dynamically from the initial stages of the transaction to the central ones, the external market factors are crucial in the exit stages, properly the divestment process.

Private equity funds, and general partners, have to strategically decide when the right moment is to sell the portfolio companies to external investors and realize their return. The hotter are the market activities and the higher should be the exit price and consequently the return on the investment for the funds. Several studies and research have investigated the existence of a relationship among market conditions and the value enhancing process in leverage buyouts transactions.

In March 2018, Tim Jenkinson and Stefan Morkoetter develop research questioning whether private equity funds managers have market timing abilities in buying low and selling high. Their analysis is based on 7.591 private equity transactions completed between January 1998 and December 2019 both in North America and Europe. The sample has an average investment size of 356.4 USD million dollars, an average exit size of 564.2 USD million dollars with an average holding period of 4.6 years until the portfolio companies are sold. The authors measure market timing ability by comparing PE deal multiples with the average strategic M&A multiples in the same industry. The finding of the research provided evidence that private equity fund managers do have market timing ability. The exit multiples of the transactions are on average 0.32 higher than the entry multiples and moreover private equity funds do realize higher multiples compared to M&A benchmark multiples and it does not matter whether the multiple is benchmarked by region, industry or industry and region.

On the same line is the research of Oleg R. Gredil published in 2020. He wanted to demonstrate that general managers in private equity fund observe the public equity market conditions and that the level of information they get is related with the exit price. Using a sample of 941 US private equity deals he measured the Timing Track

Record (TTR), that is the component of the fund's total return that the Public Market Equivalent (PME) explicitly disregards. The paper showed that PE fund exits generate higher return than the comparable market benchmark and that this is due to the ability of managers to understand the capital market dynamics. Lastly the author identified two reasons for the higher returns: superior information and market timing. Specifically, 69% of the excess return is due to the higher level of information on the market conditions that general managers of private equity fund usually develop, and the other 31% is due to the ability of the general partners to properly react to variations in market conditions (Market timing).

In 2022 Benjamin Hammer, Nikolaus Dehm and Denis Schweizer published a paper on the Journal of Corporate Finance where they identified the ability of private equity transactions to generate, on average, higher return than comparable strategic acquisitions and they assessed that this is because both higher top-line growth and multiple expansion. The authors used a sample of 3.399 buyouts between 1997 and 2020 and conclude that Private Equity funds pay less than strategic acquirers and at the same time can sell their investments at a higher price generating, in this way, higher returns. This is related with what the authors call "multiple arbitrage". This is a combination of high sales growth and multiple expansion with the idea to capitalize on the market's tendency to assign large companies with higher valuations than smaller companies because of the differences in the risk perceptions the two generate. In the sample, the average EV/Sales multiple for large-cap firm is almost three times higher than the one for small-cap firm (3.05 against 1.15).

The last value drivers have now been analyzed and we've shown the role that the capital market plays in the valuation and divestment process. All the above-mentioned value drivers do not occur themselves but must be achieved and combined by the General Partners. At this point we can start to understand the importance of the knowledge, background and experience of Private Equity managers and their fundamental contribution to the total value generated by LBO transactions.

Year	**Authors**	**Journal**	**Paper Title**
2018	Jenkinson, Morkoetter	Journal of Banking and Finance	Buy low, Sell high? Do PE fund have managers have Market Time abilities
2020	Gredil	Journal of Business Venturing	Do PE managers have Superior Information on Public Markets?
2022	Hammer, Schweizer	Journal of Corporate Finance	Pricing and Value Creation in PE backed transaction

2.4 Private Equity fund experience

Managerial resources, and more in general the so-called resource-based approach to the creation of value, have attracted academic attention for a long time. In the 90s there were several scholars that started to observe a relationship between the knowledge and the experience of managers and the company's performance.

For instance, Josef Brudler and Peter Preisenderfer wrote a paper published in 1992 by the American Sociological Review where they observe to which extent the human capital is related with the survival chances of newly founded business organization. The two main variables of the study are survival times of the business and general human capital, where the second is measured based on years of schooling and years of work experience of the top managers. Moreover, the general human capital is affected by dummy variables that the authors considered as relevant: Industry specific human capital and Entrepreneur specific human capital. The former is related to the knowledge that managers have of the specific industry of the company while the latter is related to the manager's prior employment and leadership experiences. The data were analyzed by a bivariate analysis and the result showed that more years of schooling and work experience of the managers significantly improved the survival chances of newly founded business and moreover, businesses whose managers have industry specific and entrepreneurial specific prior experiences are significantly less likely to fail.

Similar results were produced by the research of Richard Castanias and Constance Helfat published in 2001 by the Journal of Management. The managerial rent model is analyzed in this paper. The theory assesses that skills and ability of managers are important contributions to the firm's value generating ability. The managerial rent model is based on the generic idea that managers differ in the type and quality of their skills. The paper identifies three categories of managerial human capital: generic, industry specific and firm specific. This means that managers may differ from each other according to which skills they possess, to the level of ability for each type of skill and to the combination of different types and abilities they have. Even here the output of the paper contributed to validating the human capital and resource-based theories and to the presence of a positive correlation between managerial experience and firm operating performance.

During the more recent years scholars have continued to develop the human capital theory literature and have started to analyze it differently depending on the industry, region, and economic transactions. Under a private equity and leverage buyouts perspective there are some relevant papers that need to be cited.

In 2005 Dimo P. Dimov and Dean A. Shepherd published on the Journal of Business Venturing an article labelled "Human capital theory and venture capital firms" where they used a venture capital perspective and investigated the relationship between the private equity managers experience and the firm performance. More specifically they explored the degree of education and experience of fund managers and analyzed its relationship with two different

aspects of investment performance: the “home run” and the “strike out”. The first are the portfolio companies that after the holding period went public on the market while the second are those firms that experienced bankruptcy. Furthermore, the authors divided the concept of general human capital from the concept of specific human capital. The general human capital is represented by the overall education and experience while specific refers to those education and experience that are strictly related with venture capital and private equity activities. The performance of the firm is measured by the rates of return of the funds because they represent the ability of managers to sell the fund stake to a third party at a selling price that is supposed to be higher than the purchase one. The two authors ran regressions with home run and strike out as dependent variables and education and industry experience as independent variables. The results showed how the general human capital is positively associated with the home runs, while the specific capital is not. However, the specific human capital has a negative correlation with the strike while the general human capital has not.

Miguel Meuleman in 2008 investigated the connection of strategic entrepreneurship and private equity performance. He analyzed a sample of 238 private equity buyouts in the UK between 1993 and 2003. The research topic is originated by the idea that buyouts often involve firms where entrepreneurial opportunities have been stifled by parental control structures and that may not possess all the required resources and capabilities to exploit growth opportunities. In that specific case the human capital of the PE general partners could be seen as an advisory resource able to enhance the firm’s performance and productivity. In the study the central question is how do differences in private equity experience impact the performance of firms undergoing a buyout? The author developed a regression implying as dependent variable the firm performance and as independent variable the private equity experience. The former is measured by the firm ROCE (return on capital employed) and the latter by counting the cumulative number of buyouts investments for each fund. Moreover, the author observed the effect of a control variable that is the specialization of the private equity fund computed by developing a specialization index derived as the ratio of the share of a fund buyout transaction in a specific industry and the overall buyouts realized by the same fund in any industries. The results showed that the independent variable in the model is significant, and the R-squares indicated that the model is a reasonable fit for the data. The main conclusion of the research is that a more experienced private equity investor may be able to create higher value from the transaction for different reasons. First, they may be able to select better deals. Second, they are likely better in monitoring the initial investment and in exploiting growth opportunities. Finally, they may be able to reduce agency problems both in the pre and post buyouts stage by developing strong competencies in writing effective contracts.

At this point it is useful to mention the research developed in 2011 by Hans Bruining, Ernst Verwaal, and Mike Wright, published on the Business Economic Journal and labeled “Private Equity and entrepreneurial management in management buy-outs”. The peculiarity of that study is the research question. The author began from the

assumption that new managerial skills and knowledge may be fundamental for the efficiency and effectiveness of a firm involved in a buy-out transaction. Given this as a fact, the research is oriented to analyze the differences in the firm's post buy-out performance distinguished between Private Equity backed transactions and other buy-out transactions. The initial hypothesis is that PE backed buyouts significantly increase entrepreneurial management practices if compared to non-PE backed transactions. The author collected data for Dutch firm that underwent buyout during 1996 – 2004. The sample is not normally distributed, and we have 35% of the firms analyzed that were not PE- backed, with the other 65% composed by transactions led by Private Equity funds. The dependent variable is entrepreneurial management. This is measured using Stevenson's conceptual managerial scale. This is a bipolar scale that analyzes managerial skills under two different dimensions. The administrative and the entrepreneurial ones. The Stevenson scale works in a way where high scores in entrepreneurial management implies low scores for administrative management. The independent variable is a dichotomous variable and is assigned with the value of 1 if PE fund has the majority of voting rights in the target companies or 0 if it hasn't. The result showed that PE majority in ownership is positively related to managerial entrepreneurship. After that the author compared the regression for PE and non-PE backed transactions. Even if for both the scenarios the buy-out increases the managerial capabilities of the target firm this effect is stronger for PE-backed buyouts rather than for non-PE backed one. This consolidates the discussion we've developed since here: in Private Equity fund general partner knowledge, experience and capabilities are fundamental in the value-added generation process and can have an important role in determining the investment rate of return for the limited partner who have invest their resources.

Similar results were produced by the article published in 2013 on the European Journal of Operational Research and written by Yan Alperovych, Kevin Amess, and Mike Wright. They used a dataset composed of 88 Private Equity LBOs completed in the period 1999-2008 with the purpose of observing the impact of fund manager experience on post-buyout efficiency during the first three years after the transaction. After having reviewed the literature related with this topic the authors developed their main hypothesis: PE investors with greater investment experience will be associated with higher LBO efficiency after the transaction. To measure the efficiency of a firm (the dependent variable) they used the dynamic-slacks based measure developed by Tone and Tsutsui in 2010. This proxy of efficiency allowed the research to account for both the changes in performance level of a firm during two different periods and the continuity in firm operations during time. On the other hand, the general partner experience is measured as the cumulative number of LBOs investments undertaken prior to the buyout analyzed. Consistent with prior studies the regression showed that the target companies experienced on average a 5% increase in performance during the three years after the conclusion of the deal. Moreover, the increase in performance pattern is concave but growing suggesting that the third year-end level of performance tends to be superior to the previous ones. Taking together the positive correlation between the PE firm's experience and the post-transaction efficiency levels with the concave and growing

patterns of the term efficiency the main conclusion of the research is that the capabilities of arising from general partners experience are very important in the value creation process and their importance is more significant immediately after the LBO transactions.

Concluding this chapter, we can say that since the first 90s several searches have observed the role that the manager's experience and capabilities have on the performance level of a firm. The most of those studies identified positive relation between those two variables. When in the late 90s, Private Equity firms began to expand their operations and to conduct a relevant number of deals, much research started to focus on this specific topic observing if there were differences in the role of managers between private equity backed and non-private equity backed deals. In the introduction we've seen that the ideal LBO target is a company in its mature stage but still with growing opportunities or performance enhancing margin. Given these peculiarities, for private equity backed transactions managerial skills tend to assume a much more significant and important role when compared to similar deals.

2.5 Macroeconomic Conditions.

Summarizing what we've seen since now, we can say that we've reviewed the LBO process, and we've assessed that from the overall level of the value generated by the transaction (Exit price – Entry price) we can distinguish and measure three different drivers: The increase in the operating performance level, the use of debt to finance the transactions and the consequent reimbursement of the principal landed and the multiple expansion. The three of them don't exclude each other but generally occur together and assume different roles and importance from deal to deal.

The dedicated literature shows that general partner experience and abilities determine the level of value created through the manipulation of those different drivers. Following that idea that may be a positive correlation between PE fund experience and each value driver and in the sequent chapter we will conduct a regression among those variables with the aim of asses the existence and the magnitude of those correlation. Before doing that, we must question if there may be other variables able to influence each component of the value. Regarding the operating efficiency is understandable how the manager skills are the main determinant for firm performance since the mangers are the ones that exploit growth opportunities and act on the level of efficiency and effectiveness of a firm operations. For the other two drivers, debt level and market multiple expansion, the general partners of a private equity firm must be ready and timely to take advantage of favorable macroeconomic conditions. The two macroeconomic variables that we consider as most significant in LBOs

transactions are the debt market conditions and the equity market conditions. In the following paragraphs we are going to analyze the two of them.

2.5.1 Debt Market Conditions.

At this point we can say that the use of debt to finance the purchase price plays a significant and relevant role in the leveraged buyout process. Generally, Private Equity funds in an LBO transaction try to maximize the debt-to-equity ratio of the target company because the more the level of debt implied in the acquisition the less is the initial investment for the fund (Equity part of the purchase price) and the higher should be the internal rate of return on that investment. Obviously, general partners cannot casually decide the amount of money to borrow but they must pay attention to some intrinsic constraints of the portfolio company. The main two are presence of fixed assets to use as debt collateral and predictable cash flow that will be necessary for meet the debt repayment and interest expenses.

However, there are not only the firm's internal factors that affect the choice of managers regarding the debt level to be used but also external ones. The main variable to observe is the debt market condition. The financial market of debt has assumed various patterns during the years ranging from period where obtaining financial resources from lender was cheap and easy to period where borrow money was expensive and time consuming. The main determinant of the cost of debt is liquidity, that is the availability of resources. When the debt market is liquid there are more lenders ready to invest than borrowers looking for money. This means that the supply is higher than the demand, and for microeconomic reasons the cost of debt is lower. In the opposite scenario, that is the one where the market is illiquid, the demand is higher than the supply, the lenders are less than the borrowers consequently they have much bargaining power and this cause debt borrowing cost to be higher.

From a private equity perspective this makes us assume that in cheap debt market period the use of leverage is supposed to be elevated, and the debt-to-equity ratio of the transaction tends to be higher. On the other hand, when the debt is costly it will be more difficult for the fund to meet interest payments, and the use of leverage is supposed to decline.

In the past year different research has investigated the existence of a correlation among debt market conditions and the use of leverage in LBOs. In that respect, Axelson, Stromberg, and Weisbach developed a paper in 2007 where they demonstrated that the economy – wide cost of borrowing seems to drive the leverage level in buyouts. They used a sample of 153 buyouts and after having observed that the leverage in those deals is cross-sectionally unrelated to leverage of matching public firm they proved that it is largely driven by other factors, first the cost of debt. In doing this, they collect the different LIBOR values in the year of transactions and use them as proxy

for debt market conditions. The results showed that partners in buyouts firms borrow as much money as they can and that the capability to borrow money is higher in those years where LIBOR assumed the lower values.

Kaplan and Stromberg some years later (2009) wrote a paper where they recalled the "mispricing theory". According to that, relatively more deals will be undertaken when debt markets are unusually favorable. The authors analyzed the cyclicity of leveraged buyout in the U.S. for the period 1985 – 2006. The relative pattern was suggestive and indicated that a necessary condition for a private equity' activities boom to occur is for earning yields (measured by the average EBITDA/EV for the S&P 500) to exceed interest rates on High Yield Bonds. The main conclusion of the paper was that leveraged buyouts capital structure is most strongly related to prevailing debt market conditions at the time of the buyouts.

More in general, from the literature developed about LBO and debt market conditions emerges that Private Equity fund managers, thanks to their knowledge and experience are uniquely positioned to time the market by arbitraging debt versus equity when leverage is relatively cheap and in this way, they can boost return on investments.

2.5.2 Equity Market Conditions.

For the equity market we can make the same reasoning that we've just done for the debt market. One of the crucial steps in the LBO process is the exit strategy. It is at the exit moment that the PE funds realize the potential gain on the initial investment. The general partners, who acquire companies using resources invested by the limited partners, want to maximize the overall internal rate of return for the deal. This becomes more intuitive if we recall how private equity funds work. The general partners to obtain their return not only must ensure the return of the entire commitment to the limited partners but have also to generate a return that is higher than a certain "hurdle rate". This rate is the portion of profit besides the principal commitment that the investors must achieve before general partners can take part in the profit share process. From this structure we can understand how general partners care about the return on the investment. On one hand, it can enhance their professional profile and expand their working reputation, on the other hand the higher is the rate of return on the investment the easier is to go above the hurdle rate and the more managers earn as profit.

The exit strategies are various, and they differ from deal to deal. The more common options are IPO, Trade Sale, and Secondary Purchase. The first one is the process of selling a company in the equity stock market by listing the entity. The trade sale is the process of selling the company to a private acquiror and similar is the Secondary Purchase with the only difference that the acquiror is another Private Equity firm.

Independently of the strategy chosen, the equity market conditions play a significant role in the evaluation process. The sale of a company implies valuation. One of the main valuation techniques is the multiple approach. It consists

in assigning a value to an asset based on the value that the market gives to similar and comparable assets. Even if the valuation process in private equity and leveraged buyout are slightly different to the valuation process for other entities, it relies on the average industry multiple of M&A transactions. At this point we can understand why general managers must care about the equity market environment. This is because in periods of hot market where there are several transactions the average multiple tends to be higher while in periods characterized by a low volume of deals the multiple tends to be lower and so will be the exit price. An effective strategy for private equity managers would be to acquire companies when the equity market is drain and sell them again when the equity market is favorable, and the valuation multiples become higher.

This concept recalls the notion of market timing that we've already analyzed in the paragraph related to the Multiple Effect on LBO return. In addition to the papers quoted in the dedicated paragraph; to deeply understand the role of the equity market in the LBO value generating process, we need to mention a paper developed by Benjamin Hammer, Nikolaus Dem, and Denis Schweizer in 2022 and published on the journal of Corporate Finance. In this paper the authors investigated the rationale behind the value generating process. They identified two main variables as drivers of return: top-line revenue growth and multiple expansion. For my purpose, I'm going to focus just on the second factor as from that analysis we'll be able to better understand the significant role that the equity market conditions assume. The researchers collected a sample of 3.399 LBOs between 1997 and 2020 and a sample of 3132 non-PE backed acquisitions. From that sample emerged that the PE backed transactions tend to be characterized by higher acquisitions and exit multiple (measured as EV/Sales) when compared to similar non-PE backed transactions. Specifically, the Private Equity entry multiples are lower by 0.35 to 0.48 than comparable transactions, and the difference assumes a significance level at 1%. On the other hand, for Private Equity fund the exit multiples tend to be from 1.2 to 1.6 higher than the multiple implied for the comparable sample with a significance level of 10%. The conclusions of this paper are relevant because, as the authors stated, the managers must time the market and boost results. The implication that the authors highlighted is that even if the private equity fund theoretically sold their portfolio companies when they have reached their maturity and there are not more significant growth opportunities, sometimes the exit year is decided based more on the market conditions than on the firm's intrinsic characteristics.

Even the already mentioned paper of Jenkinson et Alt. (2022), gives us evidence to easily understand the role of equity market on multiples level and consequently on an LBO return. The central idea is that the manager's ability to time the market. The authors measured the market timing ability both at the entry and exit moment. From their study emerges that PE managers do have market ability and that they exploit market timing more at the exit moment than at the entry one. To measure the market ability the authors identified for each deal of their 1.956 deals sample the entry and exit multiple and compared them with the average M&A multiples for the same industry and region. The conclusion of the paper reveals that PE fund managers can positively contribute to value

creation in PE fund and at the same time it reveals proves that the divestment decision is much more driven by portfolio companies' external factors (e.g. Equity Market Conditions) than internal ones.

2.6 Research Hypothesis

Reviewing the already existing literature related to Private Equity funds and Leveraged Buyouts has been useful and necessary to develop the research hypothesis. What we've understood so far is that Private Equity funds are investments funds with their peculiar structure composed of Limited Partners and General Partners. The former are external investors who provide money and resources to invest. The latter are the management section of the fund that are continuously observing the market in order to find target companies to acquire using the resources committed by Limited Partners. The companies acquired then are managed and improved by General Partners and then sold again to generate return and gains on investments. One of the typical operations carried out by Private Equity fund are Leveraged Buyouts. Generally, those transactions create value through the contribution of the three different drivers already analyzed: Operating Effect, Leverage Effect and Multiple Effect. The literature quoted in the previous paragraphs highlights that those drivers do not occur themselves but are achieved by General Partner thanks to their knowledge of Private Equity activities and to their experience in Private Equity funds. Because of that much research refers to the activities carried out by General Partners as Operating, Financial and Multiple Engineering. These different definitions are useful to emphasize the relevant and essential activities of General Partners in an LBO transactions.

More specifically, we've seen that an LBO tends to improve the operating result of the target company. This is due to better governance and higher efficiency. While the first one is a direct consequence of debt level (introducing debt obligations implies constraints in cash flow allocation), the second one should be strongly related to the managers' (GPs) experience and knowledge.. As already stated in Paragraph 2.3.1 the discipling effect of the debt joint with the presence of qualified and experienced managers allows LBOs to enhance the market value of the target company. In this way there should be a direct influence of Private Equity fund experience on the percentage contribution of the Operating Effect to the total value generated by the transaction. The rationale behind this consideration is that the more the firm's debt level, the more the constraint on the free cash flow, and consequently the less the managerial decision-making power on cash allocation (Jensen 1989). At the same time, Wright at alt (2000) and Harris (2005) have highlighted that the experience of the GPs in managing firms leads to higher performance level for those companies that have experienced Buyouts transactions. This idea is the base for the first research hypothesis:

H1: The Operating Effect in LBOs is positively correlated to PE fund experience.

As regards the Leverage Effect, we've seen that Financial Engineering implies using debt to obtain high value at the time of exit. This occurs for three main reasons: Debt implies interest expense and consequently for corporate finance reasons a tax shield and so higher valuation (Kaplan, Stromberg (2009), debt implies a better governance system (Jensen 1989), as we already said, and lastly debt repayment means increase equity value (Axelson, Stromberg (2013). Under this perspective General Partners must think and decide the level of debt to use in financing the deals, the debt instruments to use, and the consequences that the debt obligations cause on the Balance Sheet, Profit and Loss and Cash Flow statement. The main conclusion of paragraph 2.3.2 makes clear that one of the main strength of Private Equity Fund is the manager's ability to implement what is called "Financial Engineering" (Kaplan, Stromberg 2009). This means that PE firms in LBOs uses leverage to boost the return on target investments. General Partners when carry on the investment, must focus on the most profitable D/E ratios, considering the different ways the debt contribute to generating value (higher valuation, disciplining effect, debt repayment capacity). Now it is easier to understand the importance for PE firms to have experienced managers, the more the experience of GPs the more their ability in identified the correct capital structure for target companies and so the more their capacity in applying Financial Engineering. In this way it is possible to predict a direct and positive influence of the Private Equity Fund experience to the percentage contribution of the Leverage Effect to the value generated after an LBO transaction. This reasoning conducts us to generate the second research hypothesis:

H2: The Leverage Effect in LBOs is positively correlated to PE fund experience.

The last value driver, identified by the literature, is the Multiple Effect. LBOs imply valuation and the multiple approach is one of the most common valuation techniques. The main determinant of the entry and exit multiple is the movement in the Equity Market. Historically, there always have been periods when the valuation multiples tend to be higher and opposite periods when valuation multiples tend to be lower. As for the Leverage Effect, the existing literature has identified the ability of GPs to time the market.. As stated by Gredil in 2020, Private Equity managers must constantly observe the equity market conditions in order to identified both those period when there are frequent market transactions and high valuation multiples and the period when the transactions in the market slowdown and the valuation multiples lowers. Accordingly to what I've just said, the research published in 2022 by Jenkinson and Wetzer highlight the fact that even if it true that generally the holding period in Private Equity investment tends to be around 5-7 years, it can varies under specific market conditions and the target companies may be sold by GPs earlier or later with the aim of maximizing the investment return thanks to the multiple levels or, in other word, with the aim of boosting the percentage contribution of the Multiple Effect at the cost of the Leverage and Operating effect.

Given those last considerations it is intuitive why it is predictable a positive and direct influence of Private Equity fund experience to the percentage contributions of Multiple Effect. From this idea we can now formulate the third research hypothesis:

H3: The Multiple Effect in LBOs is positively correlated to PE fund experience.

3. Dataset and Methodology

3.1 Research Method

The final purpose of this thesis is to investigate the existence of a relationship between the value generated by LBOs and the experience of the Private Equity fund involved in the transaction. The research method is composed of four main steps.

Firstly, it is necessary to obtain a sample of LBO transactions that must be sufficient to ensure a minimum level of reliability to the research outputs. For each unit of the sample is then needed to know: Entry Price, Exit price, Debt/Equity Ratio, Holding Period, Entry EBITDA, exit EBITDA and Fund's Cumulated Investment. Those variables will be implied in the statistics computation implemented later in the study.

Once the sample is obtained the second step is to determine the total value generated by each transaction. This is then broken down into the three different drivers explained in the literature chapter. In this way the 100% of value generated by a single LBO will be the sum of the percentage contributions of each driver of value.

Substantially, the first two steps are based on the research of Capital Dynamics and The University of Munich where the purpose was to identify how leverage, operational efficiency and multiple expansion combine to generate value during an LBO.

This thesis tries to go one step further and assess a potential correlation between value's components and General Partners' experience and capabilities.

The third and the fourth steps consist of statistical computations through the implementation of regression and moderation analysis.

The following paragraphs of this chapter will define the sample and further explain the statistics method and the variables implicated.

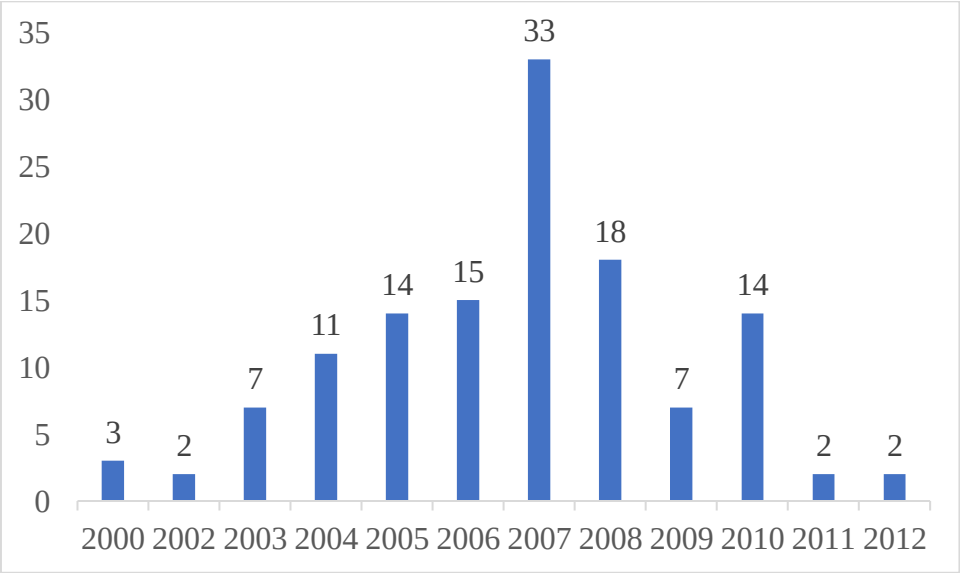
3.2 Sample Description

The sample of the research is composed of 128 Leveraged Buyouts occurred in the period 2000 - 2012 in private equity industry.

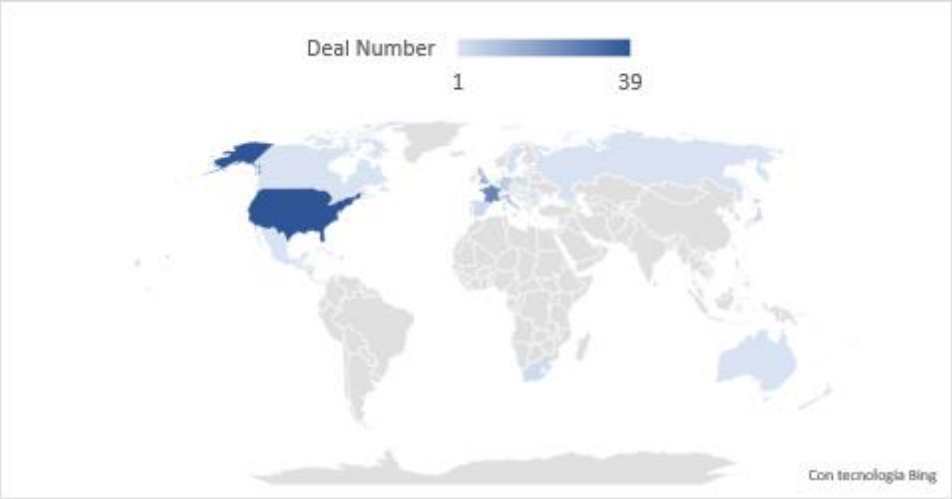
The timeframe has been identified following two different criteria. The first is related to the average holding period that characterized LBO in private Equity fund. Generally, this is equal to 6-8 years. Some of the data we need are related to the exit moment of the investment. To be sure to analyzed only closed and divested deals the last year for acquisitions is 2012. The second factor is related to data availability. Several information at entry time is needed and not all of them are present for deals that took place before the 2000s.

The database used for the deals' fundamental is *Orbis M&A* (Ex Zephyr) that used Moody's Analytics (Ex Bureau Van Dijk) as source. After having sorted all the deals that occurred in the period of interest, I've selected the only deals where the following information were available: Date of Entry, Entry Value and Deal Financing (D/E ratio). This first research ended up with 1.473 100% acquisitions. I've then identified all the 100% acquisitions that took place from the 2013. Lastly, I've conducted a cross-sectional analysis to identify related transaction in both samples. This process produced the 128 delas sample used in the statistics.

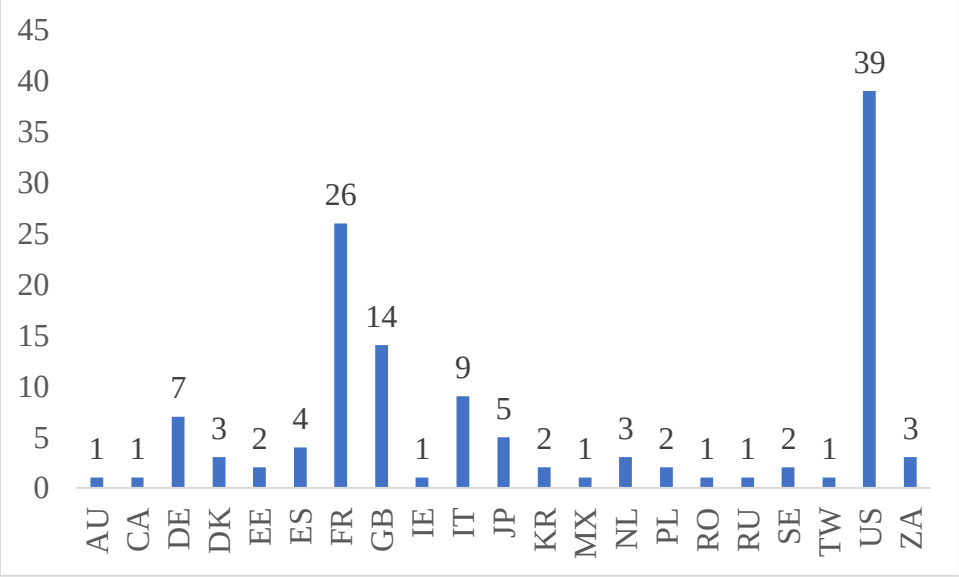
Looking at the distributions of the sample during the time it is not homogeneous, 70% of the deals occurred between 2003 and 2008. 2002, 2011 and 2012 are the years with the smallest deal number (2).



Even the geographic distribution is not homogenous. 60% of the deals took place in Europe, 30% in U.S and 10% in the rest of the world.



Specifically, 39 LBOs in U.S, 26 in France and 14 in Grain Britain.



The aggregate acquisition price is 103.565.550,48 USD, the aggregate exit price is 189.570.831,81 USD for an aggregate generated value of 86.005.281,34 USD. The average level of debt implied is 68%, the average EBITDA at entry is of 191.559 USD and the average acquisition multiple (EV/EBITDA) is 4.6x. The average holding period is of 6.7 years. As regard the exit moment, the average EBITDA is of 256.166,51 USD and the average exit multiple (EV/EBITDA) is 6.8x.

	Average
Entry EBITDA	191.559,75
Entry EV/EBITDA Multiple	4,64
Exit EBITDA	256.166,51
Exit EV/EBITDA Multiple	6,87
Holding Period	6,7
% Leverage	58

3.3 Breakdown of Value Added

As already mentioned, the joint research of Capital Dynamics and The University of Munich is the basis for the first part of this thesis. That was the first time that the three different components of value have been analyzed simultaneously and that the total percentage of value has been broken up into three drivers. All the previous research has already analyzed those drivers but individually and therefore none of them produced a unique vision on the LBO particular and fascinating way of producing value.

The first driver is what we have called the Leveraged Effect. As we said before, an LBO implies substantial leverage, and this may generate higher return for two main reasons. Firstly, debt repayment can increase the Equity Value of a firm and consequently the exit price for the equity holder, secondly the debt has its financial implication on a company's value due to the tax advantages of interest payments. The best way to capture all the different implications that the debt can have on the transaction would be to compare the performance of the deal to the potential performance it would have had if the purchase price would been entirely covered by equity. To do so, it is needed to compute the unlevered Irr from the levered one. As for beta computation in corporate finance the formula is:

$$\mathbf{Irr_{levered} = Irr_{unlevered} + (Irr_{unlevered} * r_d) * (\frac{D}{E})}$$

The problem with this formula is that it would have reduced even more the number of units in the sample because it requires to know the cost of debt for each company and the average debt to equity ratio during the entire holding period. To solve this problem, we decided to compute the leverage effect just under one of its implications in LBO, that is the debt repayment. In this way the drivers of value related with leverage will be computed as:

Entry Level of Debt – Exit Level of Debt

The second value driver identified is the Operating Effect. It is the output of the combination of two factors: a better governance system and a higher level of operating efficiency. While it is difficult to assign a quantitative value to governance improvements, there are several measures related to a firm's operative performance. It is common within the Private Equity industry to base valuation on EBITDA numbers. It is a profitability measure widely used because it allows investors to compare companies regardless of depreciation assumptions and financing costs. In other words, it represents the profitability of the ordinary and core operations of the firm. This is why it is the most correct measure of the Operating Effect in LBOs. The General Partner are expert managers who should know how to improve operating performance through both top-line growth and cost reduction. In this thesis the operating effect will be calculated as follows:

$$\mathbf{[EBITDA_{Entry} - EBITDA_{Exit}] * \left(\frac{EV}{EBITDA}\right)_{Entry}}$$

The third value driver analyzed is the Multiple Effect. The final stage of the Private Equity Investment is the sale of the target company. The valuation process of the exit value is based on the valuation multiple of comparable companies in the market. This is why the average value of the public M&A multiple plays a significant role on the LBO return. Some deals can achieve high return because of the favorable macroeconomic conditions in the equity market. To account for the multiple expansion's contribution in each deal we'll implement the sequent formula:

$$\mathbf{\left[\left(\frac{EV}{EBITDA}\right)_{Exit} - \left(\frac{EV}{EBITDA}\right)_{Entry}\right] * EBITDA_{Entry}}$$

As regards the multiple and the operating effect, the last term of the equations are correction factors added to avoid the combined impact of EBITDA and multiple on the Enterprise Value. For instance, between entry and exit, it is possible that EBITDA increases while at the same time the EBITDA multiple decreases. If this is the case, the increase in Enterprise Value due to the increase in EBITDA will be less pronounced than it would have been with a constant multiple. The correction factors mitigate this possible bias in the computation process.

3.4 Regression Analysis

The definition of the variables is the first step of the research method. Once the value of each variable is assessed, they have to be used in the statistic model. The thesis is based on Linear Regression. This statistical technique is useful to observe and investigate the influence and effect that certain variables have on other variables. Specifically in this case, the linear regression's purpose is to assess if and how the Private Equity fund's

experience affect the single value driver in LBOs. This paragraph is dedicated to explanation of the mechanisms and the dynamics of the regression analysis in statistics.

The linear regression is composed of two different kinds of variables. There are *n* independent or explicative variables and one dependent variable. The regression is used to study the influence that the independent variables have on the dependent one. The final output of the linear regression is the following equation:

$$\boldsymbol{Y = \beta_0 + \beta_1 \times X_1 + \beta_2 \times X_2 + \cdots + \beta_n \times X_n + \varepsilon}$$

Y is the dependent variable and X are the *n* independent variables and the β are the coefficient of the model. β_0 is the intercept and the other β are the angular coefficients of each of the *n* explicative variables X. The intercept represents the value that the dependent variable Y is expected to have when all the independent variables are equal to zero. The angular coefficient represents the predicted variation of Y due to a variation of one unit of the X variable. For that reason, the single β are also called the marginal effect of X on Y. The last term of the equation (ε) is the error term that is added to capture some potential bias that may affect the statistics model such as estimation errors or the presence of other explicative variables not included in the analysis. The error term has its specific statistical features: Variance Homogeneous (homoscedasticity), Expected Value equal zero and absence of correlations. In quantitative method it can be said that:

$$\boldsymbol{\epsilon \sim N(0, \sigma^2)}$$

The estimation of the β parameters are the final output of a linear regression. The most common method used to estimate them is the Ordinary Least Square (OLS). The idea behind this method is that we want to minimize the error terms in order to predict value for the dependent variable that is the closest as possible to their observed value. The error term can also be computed as the difference between the value of the empirical value of Y and the estimated value of Y produced by the regression:

$$\boldsymbol{\varepsilon_i = y_i - \hat{y}_1}$$

To obtain a reliable analysis of the relationship investigated the purpose of the regression is to estimate the β parameters trying to minimize all the ε parameter. In this way, giving all the variables and their estimation the linear regression must find the value of the β that minimize the residual sum of square (RSS), where RSS is:

$$\boldsymbol{RSS = \varepsilon_1^2 + \varepsilon_2^2 + \cdots + \varepsilon_n^2}$$

Once the regression has produced the estimations of the betas the work is not done yet, but some tests have to be conducted to verify the "goodness of fit" of data to model. There are two main variables to observe the trustworthy of model: The residual standard error, and the R^2.

The residual standard error is the average distance between the estimated parameters and the observed ones. It is intuitive that the less the value of the residual error the more the goodness of the statistics results. But this measure has its own limitations. It is an absolute value dependent on the number of Y observed, for that reason it is difficult to assess if the value of the standard error is related to a good or not good estimation of the betas.

The R^2 solves this problem. It is a relative and not more absolute measure of the model's adaptability to data. This measure assumes values between 0 and 1. A value to 1 indicates that the model explains the 100% of the total data variability. Consequently, the closer to 1 is the R^2 the higher is the goodness of fit.

The regression analysis gives us evidence of the existence of a relationship between value driver contributions and Private Equity fund experience. While the Operating Effect is the only driver that is mostly related to GP's experience the Multiple and Leverage effect may be also affected by external factors. As we've explained in Chapter 2 managers should be able to take advantage of favorable market conditions both for the debt and equity side.

This is why a moderation analysis is added to the research methodology. This is a statistical technique that investigates when or under what conditions the effect of the independent variables on the dependent variable changes. In other words, it identifies a potential third variable (moderator) which influence the relationship between X and Y.

Statistically the moderation analysis is slope of the variable of interests' interaction. To test the moderator effect is firstly required to compute the interaction term:

$$\boldsymbol{XZ = X \times Z}$$

And then fit a regression model with Y and XZ.

With this last step, this research is now supposed to capture the ability of manager to benefit from period of cheap debt and/or high valuation multiple in conducting an LBO operation.

4. Research Output and Analysis

4.1 Value Driver Contributions

This paragraph is analyzing for each deal the breakdown of the value generated into its three main drivers. The formulas used for the computations have already been explained in Chapter 3.

To do this it is firstly necessary to determine the role of the debt reduction in each transaction. As Capital Dynamics and the University of Munich have done, the Leverage Effect is calculated by computing the proportion of the debt reduction on the entire value generated by the LBO. Note that not the 100% of the deal experienced a reduction of debt. There are some transactions where the debt level is increased from entry to exit period. This is a non-common but possible scenario. It can happen that the target company has experienced some non-ordinary costs that need to be financed through more debt or simply that the strategy of the Private Equity fund is more relied on Operating and Multiple drivers rather than the Leverage one.

As we can see from the table 1 in the appendix the average Leverage Effect is 27,7%. This is equivalent to say that almost the 30% of the total value generated by the sample is due to Financial Engineering and to the General Partners ability to determine the appropriate entry D/E ratio and to generate sufficient cash flow to repay the debt during the years.

Now that we have computed the leverage effect, we can divide the remaining portion of total value generated in Operating and Multiple Effect.

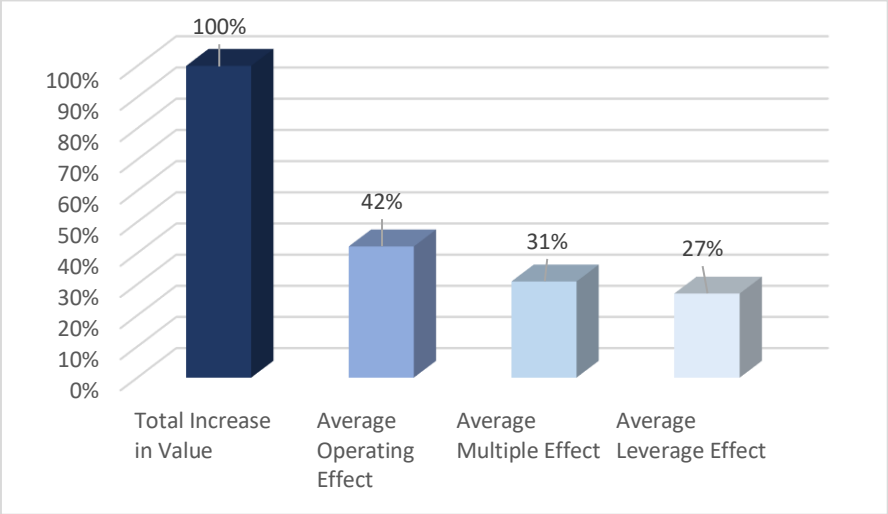
As regard the operating effect, it can be seen as the improvement in performance level thanks to GP's managerial skills. For that reason, as already expressed in Chapter 3, the computation for this driver of value is based on EBITDA level both at entry and exit time.

On the other side as regard the Multiple Effect, it can be seen as the contributions that the equity market valuations of comparable companies have in the Exit Value assed for the target company.

Looking at tables 2 and 3 in the appendix we can say that the remaining 73% of the total value generated by the sample of LBOs derives on average for its 58% from the Multiple Effect and for the 42% from the Operating Effect.

At this point it is necessary to rebalance the value of the Operating and Multiple Effect to the total value generated by the LBOs. This means answering the question: what the Operating and Multiple contributions would be on the 100% if they contribute 58% and 42% on the 73% (1 - %Leverage effect) of the total value?

After having implemented the basic equation, the overall results indicate a homogeneous distribution of the driver's contributions to the value generating process. Specifically, 27% is generated using Leverage, 31% by the improve in EBITDA value and the last 42% by the effect of multiple on valuation.



4.2 Regression Analysis Output

We have just determined the value drivers' contributions for each deal and those are the dependent variables for the regression analysis. It is still missed the value of the independent variables. As mentioned in Chapter 3, the research hypothesis investigates the relationship between the value drivers' contributions and the Private Equity fund experience.

The experience of the fund is the independent variable. To measure the Private Equity fund experience I decide to follow the research of Alperovych and Wright (2013). In this research the authors analyzed the relationship between target companies' post buyout performance and the experience of the managers. This last variable has been measured by the cumulated investment of the fund from its "Vintage year" to the investment's year. The Vintage year is the year when the fund has made its first investment. The rationale behind this is that the more a fund invest in different target companies the more the different scenarios encountered, the more the different strategies implemented and consequently the more its experience in Private Equity and LBOs activities.

The sample of this thesis is composed of 128 delas implemented by 88 different Private Equity fund. For each of the fund involved in the research the vintage year and the cumulated investment has been assessed thanks to the Orbis database.

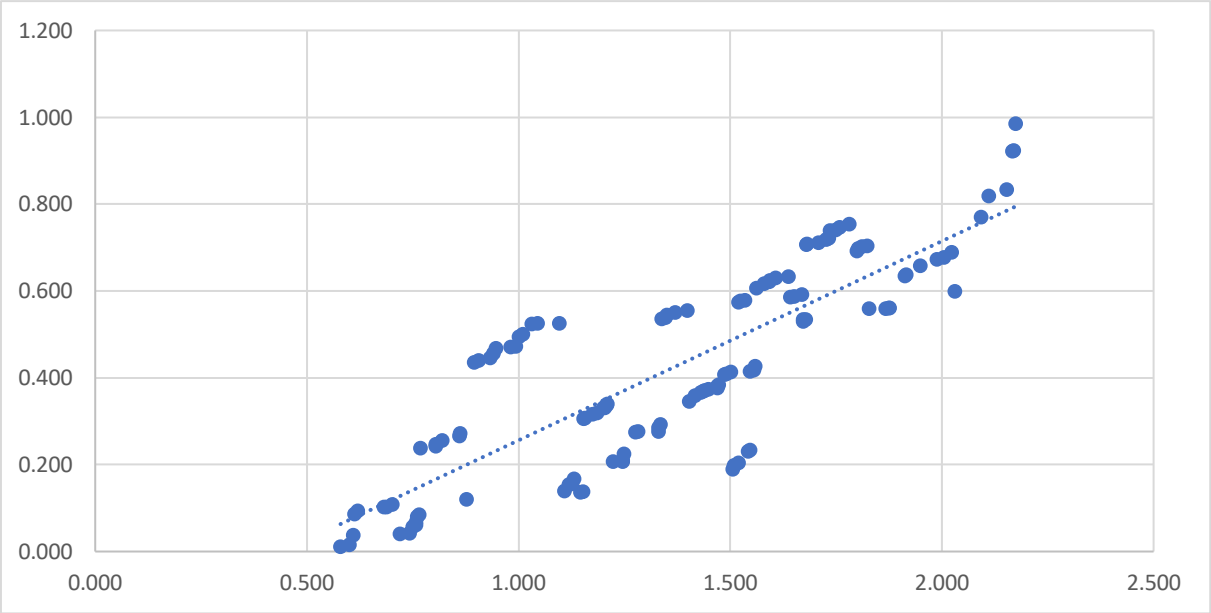
Private Equity Fund	Vintage Year
2SS HOLDINGS INC.	2003
3I GROUP PLC	1945
ACTIVA CAPITAL SAS	2000
ADVENT INTERNATIONAL CORPORATION	1984
AERCO INTERNATIONAL ACQUISITION COMPANY	1988
AMERICAN CAPITAL STRATEGIES LTD	1986
AMPLIFON SPA	1981
APAX PARTNERS WORLDWIDE LLP	2002
ARBIS CAPITAL PARTNER	2001
ASTORG PARTNERS SAS	1988
AURORA MANAGEMENT PARTNERS LLC	2000
AVISTA CAPITAL HOLDINGS LP	2005
AXA INVESTMENT MANAGERS PRIVATE EQUITY EUROPE SA	1995
BANCA POPOLARE DI MILANO SCARL AND WISEQUITY II'S ACQUISITION VEHICLE JOINT VENTURE	2006
BANCROFT PRIVATE EQUITY LLP	2004
BARCLAYS PRIVATE EQUITY LTD	1973
BEHRMAN BROTHERS MANAGEMENT CORPORATION	1991
BIMBO TEAM	1985
BUTLER CAPITAL PARTNERS SA	1998
CANDOVER INVESTMENTS PLC	1980
CARDINAL EQUITY PARTNERS LLC	2010
CARLYLE GROUP LP, THE	1990
CDC ACQUISITION CORPORATION	2006
CHARTERHOUSE (DELTA) SPV 1 LTD	2010
CHARTERHOUSE CAPITAL PARTNERS LLP	2003
CINVEN LTD	1987
COBALT CAPITAL SAS	2004
CONSILIUM SGR SPA	2005
CONSORTIUM	1988
CVC CAPITAL PARTNERS LTD	2003
DEUTSCHE EFFECTEN- & WECHSEL- BETEILIGUNGSGESELLSCHAFT AG'S UNNAMED SUBSIDIARY	2000
DIAMOND HEALTHCARE	1985
DMWSL 617 LTD	2009
DOUGHTY HANSON & CO., LTD	1994
ELECTRA PARTNERS EUROPE LTD	1988
EQT V	1990
FD, KK	1999
FRANCISCO PARTNERS MANAGEMENT LLC	1999
GALLOP, KK	2000
GROUPE SERMA SAS	1991
HELLMAN & FRIEDMAN LLC	1984
IIM ACQUISITION CORPORATION	2005
IPCAR BETEILIGUNGS GMBH	1997
JLL PARTNERS INC.	1988
JZ INTERNATIONAL LTD	2003

KKR & CO LP	1977
KOREA RETAIL HOLDINGS BV	2006
LBO FRANCE GESTION SAS	1998
LBO TEAM	1998
LEEDS EQUITY PARTNERS LLC	1993
LYNX PROPERTY BV	2006
MANAGEMENT	1996
MATRIX ACQUISITION CORPORATION	2001
MAXIMUS HOLDINGS INC.	2009
MBO TEAM	1994
MBO TEAM - FRANCE	1994
MBO TEAM - ITALY	1994
MBO TEAM - JAPAN	1994
MBO TEAM - NETHERLANDS	1994
MBO TEAM - UNITED KINGDOM	1994
MID EUROPA PARTNERS LLP	2004
MILESTONE CAPITAL PARTNERS LLP	1998
MONTY BIDCO LTD	2004
MR KRZYSZTOF OLSZEWSKI	2001
NEW OMAHA HOLDINGS LP	2007
NORDIC TELEPHONE COMPANY APS	2005
PAI PARTNERS SAS	2004
PASALBA LTD	2007
QUEST DIAGNOSTICS INC.	1996
RIVERLAKE EQUITY PARTNERS LP	2003
RIVERSIDE COMPANY, THE	1990
ROCAFIN SAS	2004
RREEF INFRASTRUCTURE LTD	2005
SAGARD SASU	2001
SG INVESTMENTS LTD	1999
SUB SILVER SPA	1997
SUN CAPITAL PARTNERS INC.	1995
TAGLICH BROTHERS INC.	1991
TEXAS PACIFIC GROUP INC.	1992
THAYER HIDDEN CREEK LLC	1991
THOMA CRESSEY BRAVO INC.	1998
THOMAS H LEE PARTNERS LP	1974
TPG CAPITAL ADVISORS LLC	1992
TRANSPAC CAPITAL PTE LTD	1989
ULTRAVOLT ACQUISITION COMPANY INC.	1990
UNITED INTERNATIONAL BANK BSC	2006
WIND POINT ADVISORS LLC	1984
WL ROSS & CO. LLC	2000

At this point all the inputs for the statistical computations are available and we can implement the three different regression analysis. The first hypothesis assumes a positive relationship between Operating Effect and Private Equity fund experience; therefore, the dependent variables is the percentage contribution of the Operating Effect

for each deal and the independent variable is the cumulated investment for each of the different fund that carried out the LBO operation. The values assigned to the dependent and independent variables are shown in table 4 in the appendix. The results of the regression analysis are summarized in the table below:

β	Std. error	R^2
0,458649	0,027582	0,68696



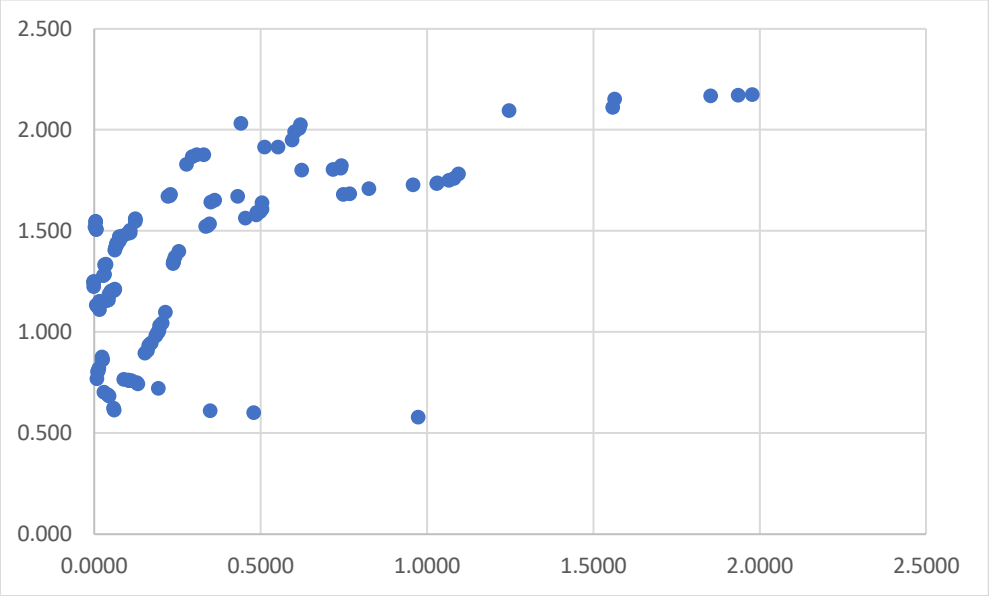
Looking at both the statistical result and at the scatter plot the statistics confirms the first hypothesis. It exists a positive relationship between the Operating Effect and the Private Equity fund experience. The R^2 is 0,69 and this means the model is able to explain almost the 70% of the data. Even the standard error of the regression assumes a value (0,028) that allows us to assess the reliability of the results.

To verify the second and third hypothesis the process is the same with the only exception that the dependent variables are Leverage Effect for the second hypothesis and Multiple Effect for the third one.

As regard the Leverage Effect, table 5 in the appendix illustrates the variable implied.

The statistical computation doesn't confirm the initial hypothesis. The R^2 of the regression analysis assumes a low value 40% and this means that the data doesn't fit the model and consequently is not possible to assess the presence of any kind of a relationship between Private Equity Fund experience and the Leverage Effect.

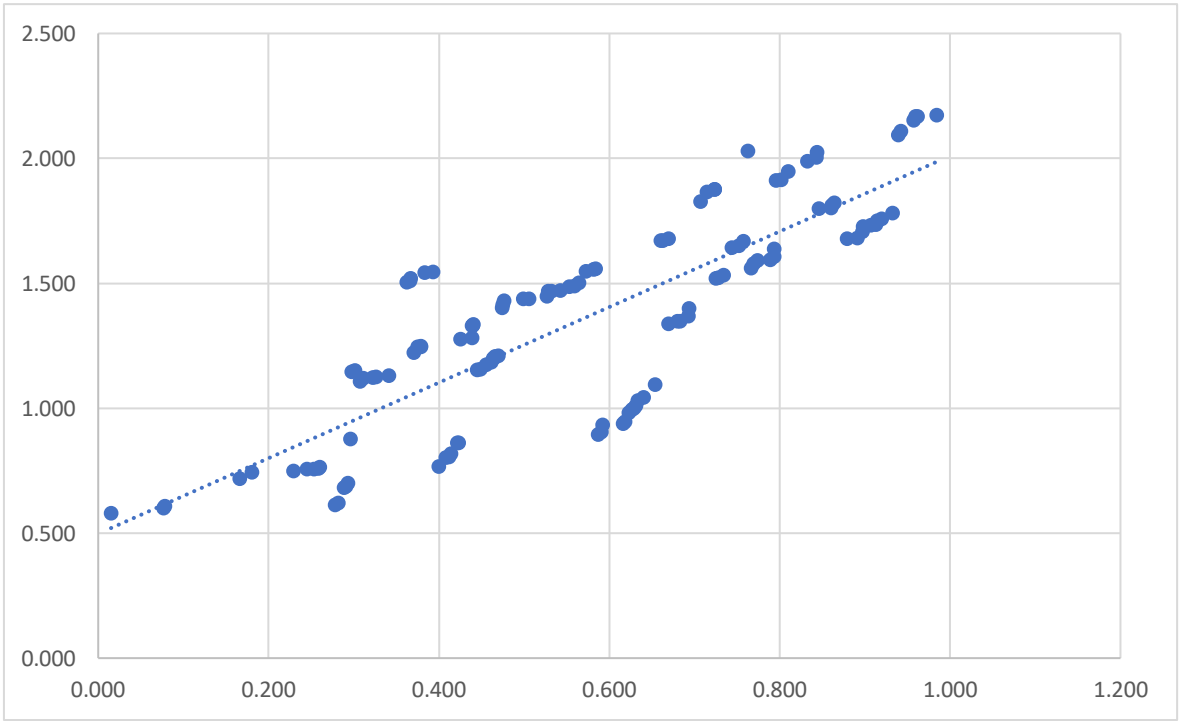
β	Std.error	R^2
0,632674	0,069247	0,398494



The last regression aims to verify the existence of a relationship between Private Equity fund experience and the Multiple Effect (H3). Table 7 in the appendix summarizes the variables used for the statistics.

The statistics are presented in the table below. It is possible to observe that the third hypothesis has been confirmed. Intuitively from the scatter plot exists a positive correlation between Multiple Effect and Private Equity fund experience. The standard error (0,02) and the R^2 (69%) assume values that make the result trustworthy.

β	Std.Error	R^2
0,453945	0,027327	0,686522



The overall outputs of the research confirm two hypotheses out of three. Specifically, H1 and H3 has been validated, while H2 has not. In the sample of 128 LBOs both the Operating and Multiple Effect are positively related to the Private Equity fund experience. As regard the Leverage Effect there are no evidence of a correlation with the investment fund's experience and knowledge.

As already mentioned, the Operating effect is the value drivers that should be more directly and positively correlated with General Partner's experience. The improvement in efficiency and performance indicator are the results of the way the target company is managed. When a Private Equity fund conducts a buyout, the management of the target company is generally replaced by the fund managers in order to enhance the company KPI (Key Performance Indicators) and subsequently sell it to a third part realizing a gain on the initial investments.

It is not the same for the Leverage and Multiple Effect. The General Partners experience may not be directly related with those two drivers. Differently from the Operating Effect, the Private Equity fund's managers do not control the debt and equity market no matter their degree of experience. General partners skills and practice must be used to take advantage of favorable conditions in debt and equity market.

This last concept is the base for the next paragraph. In order to capture the light differences in the nature of the relationship between fund's experience and Operating effect on one side and between fund's experience and Multiple and Leverage Effect on the other side, a moderation analysis is going to be implemented.

4.3 Moderation Analysis Output

As already explained in Chapter 3, the purpose of moderation analysis is to capture the effect of a third variable on the relationship among two other variables. In this specific case we're going to analyze the effect of the debt market conditions and of the equity market conditions respectively on the relationship between fund's experience and Multiple effect and between fund's experience and Leverage Effect.

As regard the Leverage Effect, the debt market conditions assume the role of moderator. An LBO is characterized by a substantial use of leverage to finance the transactions, but as we've already seen the use of debt not only allows Private Equity fund to acquire companies with small equity commitment but until the exit date it also boosts return due to the different causes explained in chapter 2. For that reason, the cost of debt plays a significant role in LBO return. The lower the cost of financing the higher the percentage of debt implied in the transaction, the easiest its repayment and the higher the Leverage Effect. To capture the cost of debt for

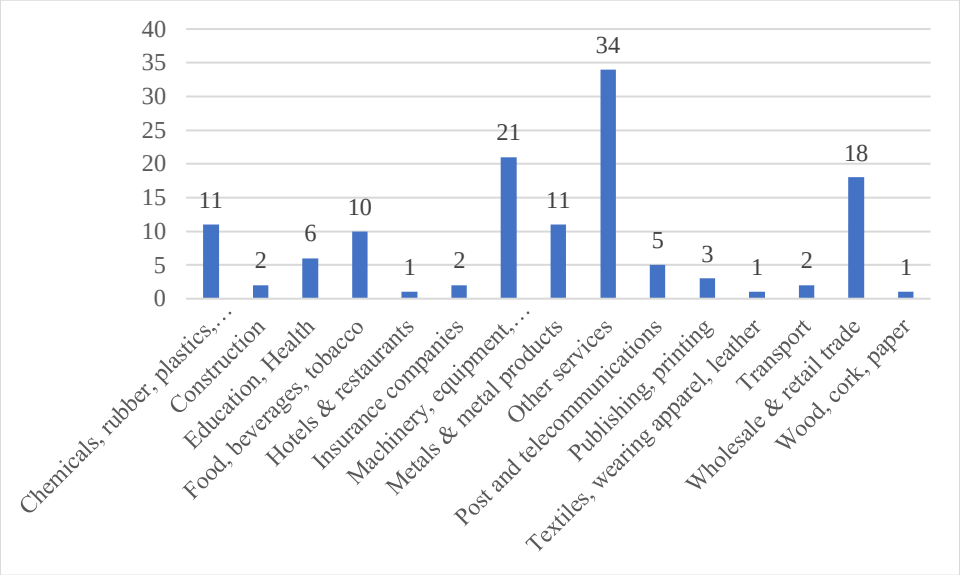
each deal has been identified the “Credit Spread”. This is measured by the difference between the High Yield Index of the year and geography of the transaction and the risk-free rate in the same year and country.

In the research sample there are three different countries (Europe, U.S.A, and Asia) and 12 different years. Table 8 in the appendix reports the High Yield Index, the Risk-Free rate and the Credit Spread for each of those countries and years.

It is possible now to compute the XZ variables required by the moderation analysis by simply multiply the credit spread with the fund experience and then run a regression on the Leverage Effect (Y variable). The moderation analysis does not produce relevant result for the research. It is intuitive that given the absence of a linear relationship among Leverage Effect and Private Equity fund experience the moderation analysis can’t give us evidence of a moderation effect of the cost of debt on the initial relationship itself.

As regard the Equity Market conditions, those play a crucial role on the exit valuation time for the target company. The multiple approach is one of the first step in company valuation. Historically there have been period characterized by high valuation multiple and period characterized by lower ones. General Partners in Private Equity should always observe the market and be aware of the trend of multiples. In this way they can be able to identify those periods when the multiples tend to increase, take advantage of them and realized a substantial return.

To conduct the moderation analysis, it is necessary to identify for each deal the average multiple on the equity market for each specific region and industry. The total 128 transactions are related with 15 different industries.



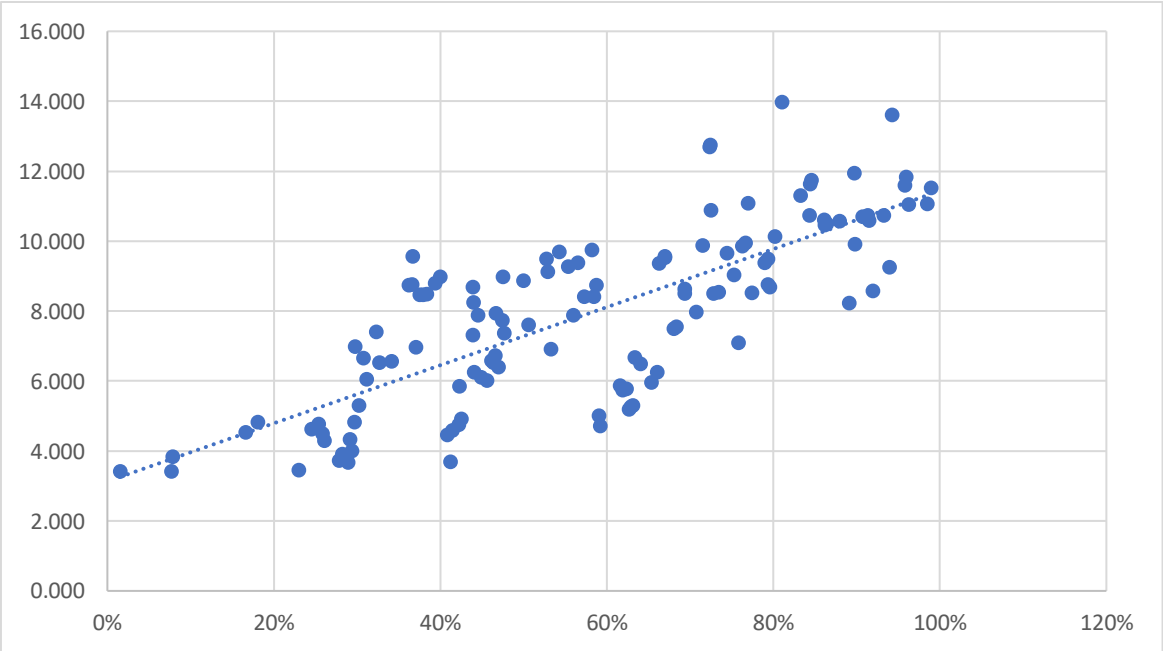
The most populated industries “Machinery, Equipment, Furniture, recycling” with 21 deals and “Wholesale & Retail Trade” with 18 deals while the less populated are “Hotel & Restaurants”, “Textiles”, and “Wood, Cork,

paper all with 1 deal. There are 34 deals that in Orbis database are not related with any specific industries and fall under "Other Services" industry. For each industry and year has been identified on the Bloomberg Database the average valuation multiple for company acquisition. To be coherent with the rest of the research the multiple identified is EV/EBITDA, but any multiple would be appropriate for the thesis' purpose. The average multiples are shown in table 8 in the appendix.

As for the Debt Capital Market and the Leverage Effect, the average multiple is the moderator. The product between average EV/EBITDA multiple and the fund experience is the new "XZ" variable, and the Multiple Effect remains the Dependent variable (Y). For the values assigned to the variables see table 9 in the appendix.

The moderation analysis this time confirms the expectation. Looking at the statistics is observable how the introduction of the average multiple as moderator returns a more precise model.

β	Std. Error	R^2
0,7128	0,0052	0,7118



The more precise model resulting from the moderation analysis is useful as supporting evidence to the idea that the Multiple Effect, differently from the Operating one, is not uniquely related to the General Partner

managerial experience and ability but is more related to their capability of take advantage of favorable conditions in the Equity Market. Indeed, the moderation analysis explains how deals that occurred in period of high valuation multiple the Multiple Effect tends to increase, and this is due to the Market Timing ability of Private Equity firms.

6. Conclusion

To conclude this thesis, it is useful to summarize and highlight its main outputs and results.

The breakdown of the value added in LBOs transactions confirms the result of the previous research. The driver of value that contributes more than the other to the generation of value is the Operating effect followed by the multiple effect and then by the Leverage effect. More specifically, the Operating effect is responsible for the 42% of the value generated by the sample, the Multiple effect is responsible for the 31% and lastly the Leverage effect for the 27%. The research of Capital Dynamics and the University of Munich showed that the Operating effect accounts for the 51% of the Value creation in LBOs, the Leverage effect for the 33% and the Multiple Effect for the 18%.

Both the sample of this thesis and the Capital Dynamics one proves that the Operating Effect is the first driver of value in Leveraged buyouts transactions. But while in this thesis the second driver is Multiple effect followed by the Leverage one in the research of Capital Dynamic the Leverage Effect was more responsible for the creation of value than the Multiple Effect. This can lead us to a relevant conclusion. The ability of Private Equity fund in enhancing the Operating Performance of the target company is the principal reason for the value generating process in LBOs. In other words, in this type of transactions the main purpose of General Partners in Private Equity firm is to identify target companies characterized by growing opportunity or lack of efficiency. After having identified those type of companies the General Partner acquire them, enhance their operating performance and sold them again to obtain a gain on the initial investment.

Given the peculiarity of LBOs structure the increase in the performance level of the target company is not the only aspect attributed to the investment's capacity to generate value. As already said the Operating Effect is the only one that is directly related to the Private Equity and Managers skills and knowledge. The other two components, that are Multiple and Leverage Effect, play a crucial role in LBOs delas but they are influenced by external factors such as Equity and Debt markets conditions. This last consideration may justify the differences between this research and the previous one. Accordingly, to the time frame analyzed the contribution of Leverage Effect and Multiple Effect can vary and can be differently responsible for the overall amount of value generated. In my sample that comprise delas occurred between 2000 and 2012 the Multiple expansion (Multiple Effect) assumes a more relevant role than the Financial engineering (Leverage Effect).

In its second part this thesis tries to investigate the existence of a relationship among each of the value driver and the experience of the Private Equity fund, measured as the cumulative investments of the fund since its vintage year. The relationship is analyzed by implanting three different regression analysis where the value driver is the dependent variable, and the PE fund experience is the independent one.

The output of the statistical computations shows that there are significant and positive relationship among fund experience and Operating and Multiple effect, while as regard the Leverage Effect no relationship has been assessed. This means that the more the private equity fund experience, the more the ability of the manager to increase the performance level and to time the Equity market and consequently, the more the contributions of the two drivers to the overall amount of value generated. If analyzed under a different perspective, this fact highlights the importance that the General Partners assume in Private Equity firms. As the previous literature showed, the real strength of Private Equity funds lies in its managers and in their ability to identify the perfect deal both in term of target characteristics and Equity Market conditions. Even if in the past years the economists have also demonstrated the GP's ability to time the debt market this thesis has not identified it. As already said, this can be explained by two different reasons. Firstly, it is possible that changing the proxy for the Leverage Effect computation the final outputs can be different. Several research have used a different way to compute the role of the Leverage in the value generating process of LBOs transactions and those have proved the existence of a relationship among leverage effect and PE fund's experience. The second reason can rely in the way this thesis is structured. As mentioned before, the Leverage Effect, as the Multiple one, is not directly related to the General Partners knowledge and experience but it is also influenced by the Debt Market conditions. In this way it is possible that the delas analyzed occurred mostly in period where the Debt Market was not favorable for LBOs transactions.

Given the dependency of the Multiple Effect to the external Equity Market conditions, the last step of this thesis is the implementation of a moderation analysis that investigates the role that the Equity Market environment plays in the relationship between Fund experience and Multiple Effect. The moderation analysis produces the expected the results: the more favorable are the market conditions the more crucial is the role of the Multiple Effect in the value breakdown process. This fact confirms the General Partner's ability to time the Equity Market.

Adding up together all these conclusions the overall practical implications of this work can be summarized as follows. Under General Partner perspective, it shows that the Managers in Private Equity fund must develop their investing strategies focusing on three different aspects: the lack of efficiency in the performance level of the target company that translates in growing and enhancing opportunities, the Equity Market conditions and the Debt Market conditions. In other words, the strategy to follow during an LBO even if always similar is not predefined but it varies accordingly to target company's internal and external factors. Specifically, General Partners in Private Equity firms when involved in LBOs transactions must not just identified the target company and the optimal capital structure but have to consider several aspects that can strongly affect the final output of the investments. In this way the work and task of GPs in LBOs result much tricky and complex than how it is believed. At the entry moment they must assess operative results and governance system of the target company

to identified room for Operating improvement (Operating Effect), they must understand the cost of debt and the facility in borrowing money to decide the Capital Structure able to make the Debt a source of valuer (Leverage Effect) and must decide if the Equity Market is in a condition that is favorable for acquire a company (Multiple Effect). At the exit moment, the area of focus remains the same, but the point of attention is little different. To boost Operating Effect GPs must be aware that there are not more concrete growing opportunity for the target company, to boost the Leverage Effect they must decide if it is favorable to repay all the debt level or to refinance it and for the Multiple Effect they must understand if, accordingly to the Equity Market Conditions, is the right time for sell the company or they should hold it, Aa already said in the previous chapter this considerations don't have to lead us in believing that LBOs strategy is similar and constant in the years but GPs have to observe several factors to determine the right mix of Operating, Leverage and Multiple effect or to choose just some of them to generate returns.

Consequently, under the investor perspective, the choice of the Private Equity fund to invest in must be more related to the fund history and experience than to the fund investment focus. Or at least after having identify the possible fund to provide money based on industry of focus or geographical region the last choice must be done taking into considerations the previous fund activities and investments. Indeed, as the thesis highlight the more the fund experience the more the chance to obtain a substantial gain on their investments. This means that Limited Partners in Private Equity must have a passive role. It is strictly necessary that the fund have experienced and trustable managers to generate high gain and the external investors (Limited Partners) commit their resource hoping to receive a substantial returns

Lastly, may be useful to analyze the potential biases of this thesis and to give some advice for future research.

As first point is important to evidence how the time framework is crucial in this type of research. Given the functioning of a Private Equity fund and its general investment period of 5-7 years, the sample of this thesis includes deals that have occurred between 2000 and 2012. It will be useful to update the research with subsequent transactions even if it would be difficult under the data collection perspective. Private Equity is a dynamic industry that is constantly under innovation and sample that differs in time could produce different outputs.

A second advice for future researcher might be to develop new studies starting from the result that this one will produce. The purpose of this thesis is to highlight if the value drivers in LBOs are related to the investment fund experience. Once the presence of a relationship is proved it could be useful to investigate the reasons and the crucial factors responsible for this relation. Obviously, there are different causes for each driver of value and analyze them deeply might lead to important results both for Limited and General Partners in Private Equity firm.

As third suggestion is related to the sample selection. Not only the time frame can be the reason for different result in different sample but there are also some more, such as the feature of the deal included. This thesis will focus only on successful transactions that were able to generate wealth for the investors. If also unsuccessful deals have been included the value breakdown and the statistical computations would have produced totally different outputs, and the study would have had a different conclusion. In this way could be interesting analyze the delas that were not able to assign a gain on the investment and to investigate the cause of this and the difference that them have with successful deals.

One last reason that might upgrade this thesis would be to reproduce this same study but adding a geographical breakdown of the transactions. It can be beneficial to analyze how the value generating by LBOs is divided into the three drivers in the different region of the world and to investigate the relationship between the drivers and the fund experience keeping this distinction. This is because the contributions of each driver vary according to external factors that in a certain period can be present in a region and not in another one. This way of work would certainly enhance the result of the thesis.

Appendix

Table 1 "Leverage Effect"

Deal Numbers	Deal value th USD	Exit value	Value Added	Target Entry Level of Debt	Target Exit Level of Debt	Debt reduction	Leverage Effect
1	125.000	1.867.091	1.742.091	95.000	31.250	63.750	4%
2	215.764	1.131.350	915.587	151.035	88.463	62.572	7%
3	215.764	1.131.350	915.587	174.769	116.513	58.256	6%
4	652.621	820.866	168.245	261.048	319.784	-58.736	-35%
5	69.207	213.158	143.951	53.289	24.914	28.375	20%
6	2.022.838	2.814.755	791.917	788.907	586.623	202.284	26%
7	145.000	248.500	103.500	104.400	52.200	52.200	50%
8	590.414	852.621	262.206	271.591	301.111	-29.521	-11%
9	842.381	1.530.000	687.619	522.276	219.019	303.257	44%
10	161.806	400.000	238.194	132.681	77.667	55.014	23%
11	151.326	4.254.037	4.102.710	127.114	81.716	45.398	1%
12	40.509	151.326	110.818	32.407	14.178	18.229	16%
13	81.972	208.164	126.192	32.789	29.510	3.279	3%
14	2.600.000	4.300.000	1.700.000	1.586.000	728.000	858.000	50%
15	307.422	1.656.866	1.349.444	178.305	86.078	92.227	7%
16	829.209	2.547.162	1.717.953	530.694	456.065	74.629	4%
17	548.800	2.547.162	1.998.362	290.864	214.032	76.832	4%
18	42.497	87.921	45.423	22.099	8.074	14.024	31%
19	287.000	875.000	588.000	200.900	91.840	109.060	19%
20	3.806	87.921	84.115	2.283	1.865	419	0%
21	605.620	952.621	347.001	484.496	109.012	375.484	10%
22	151.190	225.000	73.810	78.619	40.821	37.797	51%
23	102.221	214.385	112.164	76.666	51.110	25.555	23%
24	241.723	465.056	223.334	84.603	41.093	43.510	19%
25	85.000	287.500	202.500	39.950	17.850	22.100	11%
26	674.125	1.656.866	982.741	289.874	121.343	168.531	17%
27	264.500	445.000	180.500	95.220	66.125	29.095	16%
28	55.107	350.765	295.658	39.126	31.962	7.164	2%
29	405.782	938.321	532.538	162.313	194.776	-32.463	-6%
30	11.585	17.322	5.737	8.805	2.896	5.908	13%
31	9.100.000	11.400.000	2.300.000	7.826.000	3.276.000	4.550.000	98%
32	215.764	429.823	214.059	75.517	81.990	-6.473	-3%
33	175.000	345.000	170.000	140.000	35.000	105.000	62%
34	89	441	351	38	23	15	4%
35	189.081	920.000	730.919	81.305	58.615	22.690	3%
36	84.115	122.565	38.450	63.086	15.141	47.946	15%
37	652.621	1.053.476	400.855	554.728	332.837	221.891	55%
38	523.779	605.620	81.841	340.456	277.603	62.853	77%
39	215.764	420.000	204.236	172.611	122.985	49.626	24%
40	165.000	500.000	335.000	105.600	69.300	36.300	11%

41	13.294	80.000	66.706	10.103	3.323	6.780	10%
42	976.000	3.400.000	2.424.000	673.440	263.520	409.920	17%
43	56.710	652.119	595.410	22.117	32.324	-10.208	-2%
44	52.123	378.979	326.856	29.189	26.583	2.606	1%
45	52.123	76.727	24.604	44.305	23.977	20.328	83%
46	9	155.181	155.172	6	5	1	0%
47	842.381	1.824.698	982.317	522.276	286.410	235.867	24%
48	548.800	936.727	387.927	181.104	197.568	-16.464	-4%
49	445.000	636.727	191.727	244.750	151.300	93.450	49%
50	405.782	615.000	209.218	158.255	198.833	-40.578	-19%
51	3.123.170	4.124.252	1.001.082	2.529.768	968.183	1.561.585	15%
52	2.547.162	4.576.360	2.029.198	1.426.411	433.018	993.393	49%
53	2.456	7.667	5.211	1.031	639	393	8%
54	1.015.000	1.400.000	385.000	477.050	527.800	-50.750	-13%
55	3.830.206	6.263.566	2.433.360	2.144.915	1.263.968	880.947	36%
56	1.660.207	3.547.389	1.887.182	946.318	581.072	365.245	19%
57	311.744	420.000	108.256	177.694	96.641	81.054	75%
58	140.925	298.459	157.534	64.825	54.961	9.865	6%
59	128.000	298.459	170.459	65.280	65.280	0	0%
60	143.951	368.229	224.278	57.580	67.657	-10.077	-4%
61	88.619	240.000	151.381	47.854	46.968	886	1%
62	799.574	938.321	138.747	551.706	399.787	151.919	19%
63	17.847	24.309	6.462	13.207	8.566	4.640	72%
64	1.300.000	1.800.000	500.000	884.000	351.000	533.000	10%
65	595.552	1.084.305	488.753	303.731	136.977	166.754	34%
66	240.000	855.600	615.600	74.400	79.200	-4.800	-1%
67	1.309.397	2.200.000	890.603	746.356	340.443	405.913	46%
68	2.085	13.587	11.502	917	751	167	1%
69	265.887	2.657.193	2.391.307	138.261	146.238	-7.977	0%
70	265.000	715.000	450.000	90.100	55.650	34.450	8%
71	317.000	412.253	95.253	259.940	110.950	148.990	56%
72	4.928	65.256	60.328	3.992	1.823	2.168	4%
73	218.645	476.000	257.355	80.899	41.543	39.356	15%
74	1.650.619	3.995.643	2.345.024	957.359	478.680	478.680	20%
75	29.000.000	39.000.000	10.000.000	15.660.000	12.180.000	3.480.000	35%
76	20.179	30.200	10.021	17.152	11.098	6.054	60%
77	35.448	161.806	126.359	11.343	13.470	-2.127	-2%
78	35.448	161.806	126.359	19.496	11.343	8.153	6%
79	4	88.619	88.615	3	2	1	0%
80	628.000	1.000.000	372.000	477.280	244.920	232.360	62%
81	481.344	722.674	241.330	269.553	149.217	120.336	50%
82	49.800	317.000	267.200	22.908	25.896	-2.988	-1%
83	12.600	33.861	21.261	8.568	3.528	5.040	24%
84	184.309	264.500	80.191	97.684	47.920	49.763	62%
85	2.085	12.600	10.515	1.126	1.188	-63	-1%
86	48.991	280.267	231.276	22.046	23.516	-1.470	-1%
87	43.011	56.335	13.324	33.548	7.742	25.806	94%
88	2.650.000	3.700.000	1.050.000	1.033.500	1.537.000	-503.500	-48%

89	7.573.992	13.712.000	6.138.008	4.165.695	3.408.296	757.399	12%
90	186.526	242.672	56.146	63.419	39.170	24.248	43%
91	18.522	57.000	38.478	8.705	9.446	-741	-2%
92	24.309	39.771	15.462	8.022	8.022	0	0%
93	484.000	1.100.000	616.000	411.400	208.120	203.280	33%
94	110.209	725.144	614.935	93.678	40.777	52.900	9%
95	509.600	600.000	90.400	305.760	219.128	86.632	96%
96	151.190	883.132	731.943	48.381	57.452	-9.071	-1%
97	161.806	293.412	131.606	77.667	80.903	-3.236	-2%
98	179.980	299.810	119.829	98.989	70.192	28.797	24%
99	284.073	502.718	218.645	167.603	90.903	76.700	35%
100	468	3.266	2.799	295	168	126	5%
101	52.622	150.142	97.521	22.627	10.524	12.103	12%
102	11.016	32.981	21.964	6.610	5.288	1.322	6%
103	215.764	348.047	132.283	133.774	97.094	36.680	28%
104	1.800.000	5.800.000	4.000.000	1.314.000	1.044.000	270.000	7%
105	1.223.912	2.305.791	1.081.879	514.043	611.956	-97.913	-9%
106	1.223.912	1.500.000	276.088	391.652	660.912	-269.261	98%
107	377.454	834.000	456.546	166.080	67.942	98.138	21%
108	197.612	1.324.599	1.126.987	77.069	92.878	-15.809	-1%
109	1.300.000	1.650.000	350.000	884.000	624.000	260.000	74%
110	600.786	1.115.349	514.564	258.338	324.424	-66.086	-13%
111	80.191	128.000	47.809	35.284	19.246	16.038	34%
112	486.313	964.945	478.632	393.913	252.883	141.031	29%
113	103.500	355.000	251.500	54.855	47.610	7.245	3%
114	140.925	222.897	81.972	52.142	36.640	15.502	19%
115	189.081	1.200.000	1.010.919	132.356	47.270	85.086	8%
116	2.758	58.169	55.411	1.627	965	662	1%
117	1.400.000	5.350.000	3.950.000	728.000	602.000	126.000	3%
118	348.047	543.185	195.138	142.699	118.336	24.363	12%
119	151.273	214.309	63.036	125.557	60.509	65.048	13%
120	158.238	280.267	122.029	129.755	56.966	72.790	60%
121	298.459	502.900	204.441	149.229	170.122	-20.892	-10%
122	500.000	1.900.000	1.400.000	415.000	105.000	310.000	22%
123	928.000	1.280.000	352.000	445.440	482.560	-37.120	-11%
124	20.179	33.300	13.121	9.282	8.475	807	6%
125	661.000	850.000	189.000	502.360	152.030	350.330	85%
126	20.179	44.000	23.821	9.484	10.897	-1.413	-6%
127	222.897	700.000	477.103	149.341	124.822	24.519	5%
128	753.947	981.344	227.397	385.075	216.605	168.470	74%

Minimum Value	***Maximum Value***	***First Quartile***	***Third Quartile***
97%	***-48%***	***12%***	***46%***

Table 2 "Operating Effect"

Deal	Deal value	Exit value	Value Added	Target Entry EBITDA	Target Exit EBITDA	EBITDA Growth	Operating Effect	Operating Contributions
1	125.000	1.867.091	1.742.091	29.774	278.740	248.967	1.045.240	60%
2	215.764	1.131.350	915.587	73.373	178.428	105.055	308.931	34%
3	215.764	1.131.350	915.587	28.422	92.799	64.377	488.709	53%
4	652.621	820.866	168.245	224.426	254.809	30.383	88.352	53%
5	69.207	213.158	143.951	27.683	45.353	17.670	44.175	31%
6	2.022.838	2.814.755	791.917	272.888	302.249	29.361	217.644	27%
7	145.000	248.500	103.500	28.895	36.669	7.773	39.006	38%
8	590.414	852.621	262.206	190.168	211.762	21.594	67.042	26%
9	842.381	1.530.000	687.619	241.101	422.465	181.363	633.664	92%
10	161.806	400.000	238.194	32.603	42.722	10.119	50.219	21%
11	151.326	4.254.037	4.102.710	40.630	814.241	773.612	2.881.349	70%
12	40.509	151.326	110.818	25.318	30.883	5.565	8.904	8%
13	81.972	208.164	126.192	27.022	50.360	23.338	70.795	56%
14	2.600.000	4.300.000	1.700.000	604.651	800.000	195.349	840.000	49%
15	307.422	1.656.866	1.349.444	53.934	192.659	138.725	790.734	59%
16	829.209	2.547.162	1.717.953	180.263	314.464	134.202	617.327	36%
17	548.800	2.547.162	1.998.362	97.312	361.833	264.522	1.491.795	75%
18	42.497	87.921	45.423	11.679	14.560	2.880	10.480	23%
19	287.000	875.000	588.000	56.868	120.282	63.414	320.033	54%
20	3.806	87.921	84.115	2.003	29.307	27.304	51.877	62%
21	605.620	952.621	347.001	97.948	129.421	31.472	194.596	56%
22	151.190	225.000	73.810	32.583	41.760	9.177	42.581	58%
23	102.221	214.385	112.164	33.543	36.743	3.200	9.753	9%
24	241.723	465.056	223.334	53.164	68.209	15.044	68.402	31%
25	85.000	287.500	202.500	24.286	30.585	6.299	22.048	11%
26	674.125	1.656.866	982.741	143.431	176.262	32.831	154.308	16%
27	264.500	445.000	180.500	50.883	52.987	2.105	10.941	6%
28	55.107	350.765	295.658	8.477	28.516	20.039	130.265	44%
29	405.782	938.321	532.538	162.313	164.618	2.305	5.762	1%
30	11.585	17.322	5.737	4.756	6.308	1.552	3.781	66%
31	9.100.000	11.400.000	2.300.000	2.757.576	3.127.273	369.697	1.220.000	53%

32	215.764	429.823	214.059	34.631	58.619	23.988	149.456	70%
33	175.000	345.000	170.000	56.452	62.073	5.622	17.427	10%
34	89	441	351	21	80	59	247	70%
35	189.081	920.000	730.919	39.392	97.872	58.481	280.707	38%
36	84.115	122.565	38.450	21.519	27.487	5.968	23.328	61%
37	652.621	1.053.476	400.855	176.384	198.769	22.385	82.825	21%
38	523.779	605.620	81.841	77.026	80.552	3.525	23.972	29%
39	215.764	420.000	204.236	61.647	78.276	16.629	58.202	28%
40	165.000	500.000	335.000	29.519	66.758	37.240	208.159	62%
41	13.294	80.000	66.706	2.508	7.207	4.699	24.904	37%
42	976.000	3.400.000	2.424.000	171.228	485.714	314.486	1.792.571	74%
43	56.710	652.119	595.410	15.327	90.572	75.245	278.407	47%
44	52.123	378.979	326.856	10.276	46.374	36.098	183.096	56%
45	52.123	76.727	24.604	10.220	12.879	2.659	13.559	55%
46	9	155.181	155.172	1	20.006	20.005	127.164	82%
47	842.381	1.824.698	982.317	409.035	483.385	74.350	153.120	16%
48	548.800	936.727	387.927	150.151	186.923	36.772	134.402	35%
49	445.000	636.727	191.727	127.143	129.209	2.067	7.233	4%
50	405.782	615.000	209.218	81.966	92.433	10.467	51.816	25%
51	3.123.170	4.124.252	1.001.082	861.677	877.577	15.900	57.631	6%
52	2.547.162	4.576.360	2.029.198	454.850	488.604	33.753	189.018	9%
53	2.456	7.667	5.211	308	577	270	2.152	41%
54	1.015.000	1.400.000	385.000	236.047	254.545	18.499	79.545	21%
55	3.830.206	6.263.566	2.433.360	1.038.111	1.647.015	608.904	2.246.608	92%
56	1.660.207	3.547.389	1.887.182	232.685	343.240	110.555	788.814	42%
57	311.744	420.000	108.256	97.420	105.455	8.034	25.710	24%
58	140.925	298.459	157.534	66.243	77.649	11.406	24.266	15%
59	128.000	298.459	170.459	31.220	57.396	26.176	107.323	63%
60	143.951	368.229	224.278	42.339	53.365	11.027	37.490	17%
61	88.619	240.000	151.381	11.395	24.802	13.406	104.258	69%
62	799.574	938.321	138.747	243.390	256.775	13.385	43.971	32%
63	17.847	24.309	6.462	5.249	6.683	1.434	4.876	75%
64	1.300.000	1.800.000	500.000	516.725	664.091	147.365	370.747	74%
65	595.552	1.084.305	488.753	90.336	120.577	30.241	199.369	41%
66	240.000	855.600	615.600	55.814	152.786	96.972	416.979	68%
67	1.309.397	2.200.000	890.603	374.113	444.444	70.331	246.159	28%
68	2.085	13.587	11.502	295	1.063	769	5.441	47%
69	265.887	2.657.193	2.391.307	42.885	250.679	207.794	1.288.321	54%
70	265.000	715.000	450.000	54.082	119.168	65.085	318.916	71%
71	317.000	412.253	95.253	42.813	48.876	6.063	44.893	47%

72	4.928	65.256	60.328	781	8.145	7.365	46.481	77%
73	218.645	476.000	257.355	50.848	58.081	7.233	31.102	12%
74	1.650.619	3.995.643	2.345.024	306.236	615.660	309.424	1.667.798	71%
75	29.000.000	39.000.000	10.000.000	6.738.761	7.062.659	323.898	1.393.882	14%
76	20.179	30.200	10.021	9.530	10.837	1.307	2.767	28%
77	35.448	161.806	126.359	19.693	25.684	5.990	10.783	9%
78	35.448	161.806	126.359	5.396	15.025	9.629	63.252	50%
79	4	88.619	88.615	2	21.614	21.613	56.193	63%
80	628.000	1.000.000	372.000	86.780	103.770	16.990	122.952	33%
81	481.344	722.674	241.330	132.643	153.911	21.269	77.181	32%
82	49.800	317.000	267.200	7.433	28.818	21.385	143.282	54%
83	12.600	33.861	21.261	3.393	3.977	584	2.171	10%
84	184.309	264.500	80.191	49.761	63.464	13.704	50.758	63%
85	2.085	12.600	10.515	877	1.780	903	2.147	20%
86	48.991	280.267	231.276	11.664	42.465	30.800	129.361	56%
87	43.011	56.335	13.324	16.617	20.253	3.636	9.412	71%
88	2.650.000	3.700.000	1.050.000	343.010	361.832	18.823	145.419	14%
89	7.573.992	13.712.000	6.138.008	1.847.315	2.185.051	337.735	1.384.715	23%
90	186.526	242.672	56.146	66.616	77.334	10.718	30.010	53%
91	18.522	57.000	38.478	11.576	13.194	1.618	2.588	7%
92	24.309	39.771	15.462	3.424	4.419	995	7.066	46%
93	484.000	1.100.000	616.000	64.828	124.071	59.243	442.301	72%
94	110.209	725.144	614.935	14.965	72.771	57.807	425.729	69%
95	509.600	600.000	90.400	130.667	150.000	19.333	75.400	83%
96	151.190	883.132	731.943	35.160	92.961	57.801	248.544	34%
97	161.806	293.412	131.606	26.656	26.992	337	2.043	2%
98	179.980	299.810	119.829	24.267	27.464	3.196	23.706	20%
99	284.073	502.718	218.645	56.371	81.885	25.514	128.572	59%
100	468	3.266	2.799	208	857	650	1.465	52%
101	52.622	150.142	97.521	9.232	13.775	4.543	25.893	27%
102	11.016	32.981	21.964	1.620	2.819	1.199	8.152	37%
103	215.764	348.047	132.283	89.902	104.889	14.988	35.971	27%
104	1.800.000	5.800.000	4.000.000	300.371	598.395	298.024	1.785.939	45%
105	1.223.912	2.305.791	1.081.879	163.303	253.530	90.227	676.231	63%
106	1.223.912	1.500.000	276.088	154.714	174.888	20.174	159.590	58%
107	377.454	834.000	456.546	104.848	151.636	46.788	168.437	37%
108	197.612	1.324.599	1.126.987	40.031	193.756	153.725	758.850	67%
109	1.300.000	1.650.000	350.000	282.688	314.322	31.633	145.473	42%
110	600.786	1.115.349	514.564	80.570	97.279	16.709	124.596	24%
111	80.191	128.000	47.809	16.433	23.502	7.069	34.496	72%

112	486.313	964.945	478.632	173.683	196.927	23.244	65.084	14%
113	103.500	355.000	251.500	43.125	81.528	38.403	92.167	37%
114	140.925	222.897	81.972	52.194	63.772	11.578	31.260	38%
115	189.081	1.200.000	1.010.919	34.684	110.584	75.900	413.765	41%
116	2.758	58.169	55.411	383	4.807	4.424	31.855	57%
117	1.400.000	5.350.000	3.950.000	285.714	732.877	447.162	2.191.096	55%
118	348.047	543.185	195.138	44.666	49.415	4.750	37.010	19%
119	151.273	214.309	63.036	79.618	99.255	19.638	37.312	59%
120	158.238	280.267	122.029	54.565	72.881	18.316	53.116	44%
121	298.459	502.900	204.441	51.632	74.190	22.558	130.394	64%
122	500.000	1.900.000	1.400.000	192.308	422.222	229.915	597.778	43%
123	928.000	1.280.000	352.000	126.288	137.481	11.193	82.251	23%
124	20.179	33.300	13.121	2.611	2.679	68	528	4%
125	661.000	850.000	189.000	296.224	379.650	83.426	186.158	98%
126	20.179	44.000	23.821	7.761	8.148	387	1.006	4%
127	222.897	700.000	477.103	96.912	205.882	108.971	250.633	53%
128	753.947	981.344	227.397	77.677	85.424	7.747	75.193	33%
	103.565.550	**189.570.832**	**86.005.281**	**24.519.649**	**32.789.314**	**8.269.665**	**37.069.105**	**42%**

Minimum Value	***Maximum Value***	***First Quartile***	***Third Quartile***
4%	***98%***	***23%***	***59%***

Table 3 "Multiple Effect"

Deal	Deal value	Exit value	Value Added	Target EV/EBITDA entry	Target EV/EBITDA exit	Multiple Expantion	Multiple Effect %
1	125.000	1.867.091	1.742.091	4,20	6,70	2,50	40,00%
2	215.764	1.131.350	915.587	2,94	6,34	3,40	66,26%
3	215.764	1.131.350	915.587	7,59	12,19	4,60	46,62%
4	652.621	820.866	168.245	2,91	3,22	0,31	47,49%
5	69.207	213.158	143.951	2,50	4,70	2,20	69,31%
6	2.022.838	2.814.755	791.917	7,41	9,31	1,90	72,52%
7	145.000	248.500	103.500	5,02	6,78	1,76	62,31%
8	590.414	852.621	262.206	3,10	4,03	0,92	74,43%
9	842.381	1.530.000	687.619	3,49	3,62	0,13	7,85%
10	161.806	400.000	238.194	4,96	9,36	4,40	78,92%
11	151.326	4.254.037	4.102.710	3,72	5,22	1,50	29,77%
12	40.509	151.326	110.818	1,60	4,90	3,30	91,97%
13	81.972	208.164	126.192	3,03	4,13	1,10	43,90%
14	2.600.000	4.300.000	1.700.000	4,30	5,38	1,08	50,59%
15	307.422	1.656.866	1.349.444	5,70	8,60	2,90	41,40%
16	829.209	2.547.162	1.717.953	4,60	8,10	3,50	64,07%
17	548.800	2.547.162	1.998.362	5,64	7,04	1,40	25,35%
18	42.497	87.921	45.423	3,64	6,04	2,40	76,93%
19	287.000	875.000	588.000	5,05	7,27	2,23	45,57%
20	3.806	87.921	84.115	1,90	3,00	1,10	38,33%
21	605.620	952.621	347.001	6,18	7,36	1,18	43,92%
22	151.190	225.000	73.810	4,64	5,39	0,75	42,31%
23	102.221	214.385	112.164	3,05	5,83	2,79	91,30%
24	241.723	465.056	223.334	4,55	6,82	2,27	69,37%
25	85.000	287.500	202.500	3,50	9,40	5,90	89,11%
26	674.125	1.656.866	982.741	4,70	9,40	4,70	84,30%

27	264.500	445.000	180.500	5,20	8,40	3,20	93,94%
28	55.107	350.765	295.658	6,50	12,30	5,80	55,94%
29	405.782	938.321	532.538	2,50	5,70	3,20	98,92%
30	11.585	17.322	5.737	2,44	2,75	0,31	34,10%
31	9.100.000	11.400.000	2.300.000	3,30	3,65	0,35	46,96%
32	215.764	429.823	214.059	6,23	7,33	1,10	30,18%
33	175.000	345.000	170.000	3,10	5,56	2,46	89,75%
34	89	441	351	4,20	5,50	1,30	29,64%
35	189.081	920.000	730.919	4,80	9,40	4,60	61,60%
36	84.115	122.565	38.450	3,91	4,46	0,55	39,33%
37	652.621	1.053.476	400.855	3,70	5,30	1,60	79,34%
38	523.779	605.620	81.841	6,80	7,52	0,72	70,71%
39	215.764	420.000	204.236	3,50	5,37	1,87	71,50%
40	165.000	500.000	335.000	5,59	7,49	1,90	37,86%
41	13.294	80.000	66.706	5,30	11,10	5,80	62,67%
42	976.000	3.400.000	2.424.000	5,70	7,00	1,30	26,05%
43	56.710	652.119	595.410	3,70	7,20	3,50	53,24%
44	52.123	378.979	326.856	5,07	8,17	3,10	43,98%
45	52.123	76.727	24.604	5,10	5,96	0,86	44,89%
46	9	155.181	155.172	6,36	7,76	1,40	18,05%
47	842.381	1.824.698	982.317	2,06	3,77	1,72	84,41%
48	548.800	936.727	387.927	3,65	5,01	1,36	65,35%
49	445.000	636.727	191.727	3,50	4,93	1,43	96,23%
50	405.782	615.000	209.218	4,95	6,65	1,70	75,23%
51	3.123.170	4.124.252	1.001.082	3,62	4,70	1,08	94,24%
52	2.547.162	4.576.360	2.029.198	5,60	9,37	3,77	90,69%
53	2.456	7.667	5.211	7,98	13,28	5,30	58,70%
54	1.015.000	1.400.000	385.000	4,30	5,50	1,20	79,34%
55	3.830.206	6.263.566	2.433.360	3,69	3,80	0,11	7,67%
56	1.660.207	3.547.389	1.887.182	7,14	10,34	3,20	58,20%
57	311.744	420.000	108.256	3,20	3,98	0,78	76,25%
58	140.925	298.459	157.534	2,13	3,84	1,72	84,60%
59	128.000	298.459	170.459	4,10	5,20	1,10	37,04%
60	143.951	368.229	224.278	3,40	6,90	3,50	83,28%
61	88.619	240.000	151.381	7,78	9,68	1,90	31,13%
62	799.574	938.321	138.747	3,29	3,65	0,37	68,31%
63	17.847	24.309	6.462	3,40	3,64	0,24	24,55%
64	1.300.000	1.800.000	500.000	2,52	2,71	0,19	25,85%
65	595.552	1.084.305	488.753	6,59	8,99	2,40	59,21%
66	240.000	855.600	615.600	4,30	5,60	1,30	32,26%

67	1.309.397	2.200.000	890.603	3,50	4,95	1,45	72,36%
68	2.085	13.587	11.502	7,08	12,78	5,70	52,70%
69	265.887	2.657.193	2.391.307	6,20	10,60	4,40	46,12%
70	265.000	715.000	450.000	4,90	6,00	1,10	29,13%
71	317.000	412.253	95.253	7,40	8,43	1,03	52,87%
72	4.928	65.256	60.328	6,31	8,01	1,70	22,95%
73	218.645	476.000	257.355	4,30	8,20	3,90	87,91%
74	1.650.619	3.995.643	2.345.024	5,39	6,49	1,10	28,88%
75	29.000.000	39.000.000	10.000.000	4,30	5,52	1,22	86,06%
76	20.179	30.200	10.021	2,12	2,79	0,67	72,39%
77	35.448	161.806	126.359	1,80	6,30	4,50	91,47%
78	35.448	161.806	126.359	6,57	10,77	4,20	49,94%
79	4	88.619	88.615	2,60	4,10	1,50	36,59%
80	628.000	1.000.000	372.000	7,24	9,64	2,40	66,95%
81	481.344	722.674	241.330	3,63	4,70	1,07	68,02%
82	49.800	317.000	267.200	6,70	11,00	4,30	46,38%
83	12.600	33.861	21.261	3,71	8,51	4,80	89,79%
84	184.309	264.500	80.191	3,70	4,17	0,46	36,70%
85	2.085	12.600	10.515	2,38	7,08	4,70	79,58%
86	48.991	280.267	231.276	4,20	6,60	2,40	44,07%
87	43.011	56.335	13.324	2,59	2,78	0,19	29,36%
88	2.650.000	3.700.000	1.050.000	7,73	10,23	2,50	86,15%
89	7.573.992	13.712.000	6.138.008	4,10	6,28	2,18	77,44%
90	186.526	242.672	56.146	2,80	3,14	0,34	46,55%
91	18.522	57.000	38.478	1,60	4,32	2,72	93,27%
92	24.309	39.771	15.462	7,10	9,00	1,90	54,30%
93	484.000	1.100.000	616.000	7,47	8,87	1,40	28,20%
94	110.209	725.144	614.935	7,36	9,96	2,60	30,77%
95	509.600	600.000	90.400	3,90	4,00	0,10	16,59%
96	151.190	883.132	731.943	4,30	9,50	5,20	66,04%
97	161.806	293.412	131.606	6,07	10,87	4,80	98,45%
98	179.980	299.810	119.829	7,42	10,92	3,50	80,22%
99	284.073	502.718	218.645	5,04	6,14	1,10	41,20%
100	468	3.266	2.799	2,25	3,81	1,56	47,65%
101	52.622	150.142	97.521	5,70	10,90	5,20	73,45%
102	11.016	32.981	21.964	6,80	11,70	4,90	62,89%
103	215.764	348.047	132.283	2,40	3,32	0,92	72,81%
104	1.800.000	5.800.000	4.000.000	5,99	9,69	3,70	55,35%
105	1.223.912	2.305.791	1.081.879	7,49	9,09	1,60	37,49%
106	1.223.912	1.500.000	276.088	7,91	8,58	0,67	42,20%

107	377.454	834.000	456.546	3,60	5,50	1,90	63,11%
108	197.612	1.324.599	1.126.987	4,94	6,84	1,90	32,67%
109	1.300.000	1.650.000	350.000	4,60	5,25	0,65	58,44%
110	600.786	1.115.349	514.564	7,46	11,47	4,01	75,79%
111	80.191	128.000	47.809	4,88	5,45	0,57	27,85%
112	486.313	964.945	478.632	2,80	4,90	2,10	86,40%
113	103.500	355.000	251.500	2,40	4,35	1,95	63,35%
114	140.925	222.897	81.972	2,70	3,50	0,80	61,86%
115	189.081	1.200.000	1.010.919	5,45	10,85	5,40	59,07%
116	2.758	58.169	55.411	7,20	12,10	4,90	42,51%
117	1.400.000	5.350.000	3.950.000	4,90	7,30	2,40	44,53%
118	348.047	543.185	195.138	7,79	10,99	3,20	81,03%
119	151.273	214.309	63.036	1,90	2,16	0,26	40,81%
120	158.238	280.267	122.029	2,90	3,85	0,95	56,47%
121	298.459	502.900	204.441	5,78	6,78	1,00	36,22%
122	500.000	1.900.000	1.400.000	2,60	4,50	1,90	57,30%
123	928.000	1.280.000	352.000	7,35	9,31	1,96	76,63%
124	20.179	33.300	13.121	7,73	12,43	4,70	95,98%
125	661.000	850.000	189.000	2,23	2,24	0,01	1,50%
126	20.179	44.000	23.821	2,60	5,40	2,80	95,78%
127	222.897	700.000	477.103	2,30	3,40	1,10	47,47%
128	753.947	981.344	227.397	9,71	11,49	1,78	66,93%
	103.565.550	**189.570.832**	**86.005.281**	**4,64**	**6,87**	**2,23**	**58%**

Minimum Value	***Maximum Value***	***First Quartile***	***Third Quartile***
7%	***98%***	***39%***	***75%***

Table 4 "Regression analysis Operating Effect-Cumulated Investment"

Cumulated Investment "X"	Operating effect "Y"
2,174	0,985
2,170	0,923
2,167	0,922
2,153	0,834
2,111	0,820
2,093	0,770
1,781	0,755
1,760	0,747

1,750	0,741
1,737	0,740
1,733	0,722
1,728	0,718
1,709	0,711
1,682	0,709
1,680	0,706
1,824	0,704
1,811	0,702
1,803	0,698
1,799	0,692
2,024	0,689
2,005	0,677
1,989	0,673
1,949	0,659
1,916	0,638
1,914	0,634
1,638	0,633
1,608	0,630
1,595	0,625
1,592	0,621
1,580	0,617
1,562	0,607
2,031	0,600
1,670	0,592
1,652	0,588
1,643	0,586
1,534	0,578
1,525	0,577
1,521	0,575
1,876	0,561
1,876	0,561
1,868	0,560
1,829	0,559
1,399	0,555
1,371	0,551
1,350	0,544
1,348	0,539
1,338	0,536
1,679	0,534
1,673	0,534
1,672	0,530
1,096	0,525
1,045	0,525
1,032	0,524
1,010	0,501
1,001	0,494
0,994	0,473

0,982	0,471
0,947	0,468
0,940	0,457
0,933	0,446
0,906	0,441
0,896	0,435
1,560	0,427
1,557	0,418
1,548	0,416
1,502	0,413
1,491	0,409
1,487	0,408
1,473	0,384
1,470	0,381
1,470	0,377
1,448	0,373
1,439	0,371
1,437	0,369
1,430	0,366
1,416	0,359
1,404	0,346
1,210	0,340
1,209	0,337
1,204	0,331
1,201	0,331
1,186	0,320
1,175	0,317
1,158	0,307
1,154	0,306
1,335	0,293
1,332	0,285
1,331	0,276
1,283	0,276
1,277	0,275
0,863	0,272
0,861	0,266
0,819	0,256
0,806	0,248
0,804	0,242
0,768	0,237
1,547	0,234
1,543	0,231
1,249	0,226
1,246	0,211
1,246	0,207
1,223	0,207
1,520	0,204
1,510	0,198

1,506	0,190
1,132	0,167
1,127	0,157
1,124	0,156
1,120	0,154
1,109	0,139
1,152	0,138
1,146	0,136
0,877	0,121
0,702	0,109
0,689	0,103
0,682	0,102
0,621	0,093
0,613	0,087
0,766	0,085
0,761	0,080
0,758	0,067
0,758	0,061
0,751	0,058
0,744	0,042
0,720	0,040
0,610	0,038
0,601	0,016
0,580	0,011

Table 5 "Regression Analysis Leverage Effect-Cumulated Investment"

Leverage Effect "Y"	Cumulated Investment "X"
1,9783	2,174
1,9369	2,170
1,8536	2,167
1,5642	2,153
1,5599	2,111
1,2469	2,093
1,0949	1,781
1,0821	1,760
1,0660	1,750
1,0319	1,737
1,0298	1,733
0,9583	1,728
0,8262	1,709
0,7680	1,682
0,7487	1,680
0,7429	1,824
0,7409	1,811
0,7180	1,803

0,6246	1,799
0,6206	2,024
0,6176	2,005
0,6041	1,989
0,5965	1,949
0,5535	1,916
0,5121	1,914
0,5047	1,638
0,5043	1,608
0,4986	1,595
0,4895	1,592
0,4874	1,580
0,4558	1,562
0,4410	2,031
0,4319	1,670
0,3620	1,652
0,3508	1,643
0,3480	1,534
0,3412	1,525
0,3355	1,521
0,3300	1,876
0,3087	1,876
0,2947	1,868
0,2773	1,829
0,2554	1,399
0,2430	1,371
0,2403	1,350
0,2401	1,348
0,2371	1,338
0,2310	1,679
0,2278	1,673
0,2214	1,672
0,2150	1,096
0,2041	1,045
0,1971	1,032
0,1948	1,010
0,1935	1,001
0,1891	0,994
0,1855	0,982
0,1715	0,947
0,1691	0,940
0,1645	0,933
0,1612	0,906
0,1529	0,896
0,1249	1,560
0,1241	1,557
0,1234	1,548
0,1091	1,502

0,1084	1,491
0,1016	1,487
0,0860	1,473
0,0842	1,470
0,0766	1,470
0,0754	1,448
0,0683	1,439
0,0683	1,437
0,0675	1,430
0,0645	1,416
0,0636	1,404
0,0626	1,210
0,0615	1,209
0,0602	1,204
0,0514	1,201
0,0451	1,186
0,0434	1,175
0,0432	1,158
0,0384	1,154
0,0366	1,335
0,0359	1,332
0,0319	1,331
0,0310	1,283
0,0288	1,277
0,0260	0,863
0,0242	0,861
0,0145	0,819
0,0119	0,806
0,0111	0,804
0,0080	0,768
0,0059	1,547
0,0050	1,543
0,0000	1,249
0,0000	1,246
0,0000	1,246
0,0000	1,223
0,0033	1,520
0,0059	1,510
0,0064	1,506
0,0078	1,132
0,0112	1,127
0,0124	1,124
0,0140	1,120
0,0168	1,109
0,0171	1,152
0,0193	1,146
0,0246	0,877
0,0302	0,702

0,0424	0,689
0,0449	0,682
0,0593	0,621
0,0610	0,613
0,0905	0,766
0,1022	0,761
0,1055	0,758
0,1126	0,758
0,1284	0,751
0,1318	0,744
0,1940	0,720
0,3491	0,610
0,4795	0,601
0,9753	0,580

Table 6 "Regression Analysis Multiple Effect-Cumulated Investment"

Multiple Effect "Y"	Cumulated Investment "X"
0,984	2,174
0,962	2,170
0,960	2,167
0,958	2,153
0,942	2,111
0,939	2,093
0,933	1,781
0,920	1,760
0,915	1,750
0,913	1,737
0,907	1,733
0,898	1,728
0,897	1,709
0,891	1,682
0,879	1,680
0,864	1,824
0,862	1,811
0,861	1,803
0,846	1,799
0,844	2,024
0,843	2,005
0,833	1,989

0,810	1,949
0,802	1,916
0,796	1,914
0,793	1,638
0,793	1,608
0,789	1,595
0,774	1,592
0,769	1,580
0,766	1,562
0,763	2,031
0,758	1,670
0,752	1,652
0,744	1,643
0,734	1,534
0,728	1,525
0,725	1,521
0,724	1,876
0,724	1,876
0,715	1,868
0,707	1,829
0,694	1,399
0,693	1,371
0,683	1,350
0,680	1,348
0,669	1,338
0,669	1,679
0,663	1,673
0,660	1,672
0,654	1,096
0,641	1,045
0,634	1,032
0,631	1,010
0,629	1,001
0,627	0,994
0,623	0,982
0,619	0,947
0,616	0,940
0,592	0,933
0,591	0,906
0,587	0,896
0,584	1,560
0,582	1,557
0,573	1,548
0,565	1,502
0,559	1,491
0,554	1,487
0,543	1,473
0,532	1,470

0,529	1,470
0,527	1,448
0,506	1,439
0,499	1,437
0,476	1,430
0,475	1,416
0,475	1,404
0,470	1,210
0,466	1,209
0,466	1,204
0,464	1,201
0,461	1,186
0,456	1,175
0,449	1,158
0,445	1,154
0,441	1,335
0,440	1,332
0,439	1,331
0,439	1,283
0,425	1,277
0,423	0,863
0,422	0,861
0,414	0,819
0,412	0,806
0,408	0,804
0,400	0,768
0,393	1,547
0,383	1,543
0,379	1,249
0,379	1,246
0,375	1,246
0,370	1,223
0,367	1,520
0,366	1,510
0,362	1,506
0,341	1,132
0,327	1,127
0,323	1,124
0,311	1,120
0,308	1,109
0,302	1,152
0,298	1,146
0,296	0,877
0,294	0,702
0,291	0,689
0,289	0,682
0,282	0,621
0,278	0,613

0,260	0,766
0,259	0,761
0,253	0,758
0,245	0,758
0,230	0,751
0,180	0,744
0,166	0,720
0,078	0,610
0,077	0,601
0,015	0,580

Table 7 "Credit Spread"

Country	Year	High Yield Index	Risk free	Credit Spread
AU	2012	7,05	1,50	5,56
CA	2008	13,06	3,66	9,40
DE	2002	15,94	12,63	3,30
	2004	6,66	4,04	2,63
	2005	6,23	3,35	2,88
	2007	7,12	4,22	2,90
	2008	14,34	3,98	10,35
DK	2007	7,12	4,22	2,90
	2008	14,34	3,98	10,35
EE	2007	7,12	4,22	2,90
ES	2004	6,66	4,04	2,63
	2005	6,23	3,35	2,88
	2007	7,12	4,22	2,90
	2008	14,34	3,98	10,35
FR	2003	9,46	4,07	5,39
	2004	6,66	4,04	2,63
	2005	7,70	3,35	4,35
	2006	6,47	3,76	2,71
	2007	7,12	4,22	2,90
	2008	14,34	3,98	10,35
	2009	16,44	3,22	13,22
GB	2000	12,68	5,26	7,41
	2003	8,90	4,07	4,83
	2004	6,66	4,04	2,63
	2006	6,47	3,76	2,71
	2007	7,12	4,22	2,90
	2008	14,34	3,98	10,35
	2009	16,44	3,22	13,22
	2010	8,40	2,74	5,65
IE	2002	15,94	4,78	11,15
IT	2000	12,68	5,26	7,41
	2003	8,90	4,07	4,83
	2005	6,23	3,35	2,88
	2007	7,12	4,22	2,90
	2008	14,34	3,98	10,35
	2010	8,40	2,74	5,65
JP	2005	3,87	1,35	2,52
	2009	2,89	1,33	1,56
	2010	3	1,15	1,85
KR	2006	3,43	1,74	1,69
	2009	3,4	1,33	2,07
MX	2007	8,14		8,14
NL	2006	6,47	3,76	2,71
	2007	7,12	4,22	2,90
PL	2005	6,23	3,35	2,88

	2007	7,12	4,22	2,90
RO	2007	7,12	4,22	2,90
RU	2008	14,34	3,98	10,35
SE	2007	7,12	4,22	2,90
TW	2008	2,76	1,47	1,29
US	2003	9,46	4,01	5,45
	2004	7,58	4,27	3,31
	2005	7,70	4,29	3,42
	2006	8,06	4,80	3,27
	2007	8,14	4,63	3,51
	2008	13,06	3,66	9,40
	2009	13,83	3,26	10,57
	2010	8,34	3,22	5,13
	2011	7,79	2,78	5,01
	2012	7,05	1,80	5,25
ZA	2007	3,50	1,67	1,83
	2010	2,80	1,15	1,65

Table 8 "Average EV/EBITDA Multiple"

Industry	Year	Europe EV/EBITDA	U.S.A EV/EBITDA	Asia EV/EBITDA
Chemicals, rubber, plastics, non-metallic products	2003		4,9x	
	2005	5,4x		
	2006	5,7x	5,8x	
	2007	6,1x	5,4x	
	2008	6,3x		
	2009	5,8x		
	2010	6,1x	5,5x	
Construction	2004		5,9x	
	2008	4,7x		
Education, Health	2000	5,3x		
	2005	5,9x		
	2006		5,4x	
	2007	5,6x		
	2008		6,2x	
Food, beverages, tobacco	2005	5,3x		4,9x
	2006	5,7x		
	2007	4,6x	4,7x	
	2008	4,8x		
	2010		4,6x	
Hotels & restaurants	2010			5,7x
Insurance companies	2007		5,5x	
	2009	6x		
Machinery, equipment, furniture, recycling	2003		6,1x	
	2005	5,5x	5,9x	
	2007	5,3x	5,2x	

	2008	5,7x	5,8x	
	2010		6,5x	
	2011		6,3x	
Metals & metal products	2000	5,1x		
	2004	4,9x		
	2005	5,3x		
	2006		5,6x	
	2007	5,6x		
	2008	5,8x		
	2009		5,4x	
	2010	6,1x		
Post and telecommunications	2007	6,4x		
	2008	5,9x		
	2010	5,9x	6,1x	
Publishing, printing	2003	6,2x		
	2009		5,8x	
Textiles, wearing apparel, leather	2005	4,3x		
Transport	2004	5,4x		
	2008	5,8x		
Wholesale & retail trade	2002	5,5x		
	2003	6,1x		
	2004	5,8x		
	2005	5,6x		
	2006	5,6x		
	2007	5,3x	6,2x	
	2010	5,4x		5,6x
	2012	5,9x	5,7x	
Wood, cork, paper	2003		5,2x	
Other services	2003	6,5x		
	2004	5,8x	7,1x	
	2005	6,3x	7,3x	
	2006	7,1x	6,8x	
	2007	6,3x	6,6x	
	2008	6,8x		
	2009	6,6x		5,8x
	2010	7,2x	6,3x	
	2011	6,7x	5,9x	

Table 9 "Moderation Analysis"

Multiple Effect	EV/EBITDA Multiple	PE fund experience	XY Variable
99%	5,3	2,174	11,523
98%	5,1	2,170	11,065
96%	5,1	2,167	11,054
96%	5,5	2,153	11,841
96%	5,5	2,111	11,608
94%	6,5	2,093	13,607
94%	5,2	1,781	9,263
93%	6,1	1,760	10,733
92%	4,9	1,750	8,577
91%	6,1	1,737	10,594
91%	6,2	1,733	10,746
91%	6,2	1,728	10,711
90%	5,8	1,709	9,910
90%	7,1	1,682	11,943
89%	4,9	1,680	8,230
88%	5,8	1,824	10,578
86%	5,8	1,811	10,507
86%	5,8	1,803	10,459
86%	5,9	1,799	10,614
85%	5,8	2,024	11,740
84%	5,8	2,005	11,630
84%	5,4	1,989	10,741
83%	5,8	1,949	11,305
81%	7,3	1,916	13,985
80%	5,3	1,914	10,143
80%	5,3	1,638	8,683
79%	5,9	1,608	9,487
79%	5,5	1,595	8,770
79%	5,9	1,592	9,393
77%	5,4	1,580	8,533
77%	7,1	1,562	11,088
77%	4,9	2,031	9,951
76%	5,9	1,670	9,854
76%	4,3	1,652	7,104
75%	5,5	1,643	9,034
74%	6,3	1,534	9,667
73%	5,6	1,525	8,537
73%	5,6	1,521	8,515
73%	5,8	1,876	10,882
72%	6,8	1,876	12,755
72%	6,8	1,868	12,699

72%	5,4	1,829	9,876
71%	5,7	1,399	7,976
69%	6,3	1,371	8,635
69%	6,3	1,350	8,505
68%	5,6	1,348	7,551
68%	5,6	1,338	7,494
67%	5,7	1,679	9,571
67%	5,7	1,673	9,534
66%	5,6	1,672	9,363
66%	5,7	1,096	6,250
65%	5,7	1,045	5,957
64%	6,3	1,032	6,499
63%	6,6	1,010	6,668
63%	5,3	1,001	5,304
63%	5,3	0,994	5,270
63%	5,3	0,982	5,203
62%	6,1	0,947	5,774
62%	6,1	0,940	5,737
62%	6,3	0,933	5,879
59%	5,2	0,906	4,714
59%	5,6	0,896	5,015
59%	5,6	1,560	8,736
58%	5,4	1,557	8,408
58%	6,3	1,548	9,751
57%	5,6	1,502	8,409
56%	6,3	1,491	9,394
56%	5,3	1,487	7,881
55%	6,3	1,473	9,279
54%	6,6	1,470	9,704
53%	4,7	1,470	6,909
53%	6,3	1,448	9,126
53%	6,6	1,439	9,500
51%	5,3	1,437	7,619
50%	6,2	1,430	8,867
48%	5,2	1,416	7,366
47%	6,4	1,404	8,986
47%	6,4	1,210	7,747
47%	5,3	1,209	6,408
47%	6,6	1,204	7,945
47%	5,6	1,201	6,724
46%	5,5	1,186	6,522
46%	5,6	1,175	6,580
46%	5,2	1,158	6,021
45%	5,3	1,154	6,118
45%	5,9	1,335	7,878
44%	4,7	1,332	6,258
44%	6,2	1,331	8,251
44%	5,7	1,283	7,315

44%	6,8	1,277	8,683
43%	5,7	0,863	4,918
42%	6,8	0,861	5,858
42%	5,8	0,819	4,752
41%	5,7	0,806	4,591
41%	4,6	0,804	3,699
41%	5,8	0,768	4,455
40%	5,8	1,547	8,974
39%	5,7	1,543	8,796
38%	6,8	1,249	8,496
38%	6,8	1,246	8,475
37%	6,8	1,246	8,473
37%	5,7	1,223	6,971
37%	6,3	1,520	9,573
37%	5,8	1,510	8,758
36%	5,8	1,506	8,737
34%	5,8	1,132	6,566
33%	5,8	1,127	6,536
32%	6,6	1,124	7,417
31%	5,4	1,120	6,048
31%	6	1,109	6,652
30%	4,6	1,152	5,300
30%	6,1	1,146	6,994
30%	5,5	0,877	4,824
29%	5,7	0,702	4,001
29%	6,3	0,689	4,342
29%	5,4	0,682	3,683
28%	6,3	0,621	3,912
28%	6,1	0,613	3,739
26%	5,6	0,766	4,291
26%	5,9	0,761	4,490
25%	6,3	0,758	4,778
25%	6,1	0,758	4,624
23%	4,6	0,751	3,453
18%	6,5	0,744	4,833
17%	6,3	0,720	4,536
8%	6,3	0,610	3,844
8%	5,7	0,601	3,424
2%	5,9	0,580	3,419

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