U.PORTO

FEP FACULDADE DE ECONOMIA UNIVERSIDADE DO PORTO

Success Factors in Private Equity Investments – a literature review

Luís Miguel Costa e Sousa

Dissertation

Master's in Economics

Supervised by

Dr. Jorge Farinha

2020

Acknowledgements

First and foremost, I would like to express my sincere gratitude to my supervisor, Dr. Jorge Farinha, for his continuous support. Without his feedback and clever insights, this dissertation would not have been possible. Furthermore, I'd also like to show my appreciation towards all the professors in the Master of Economics.

To my colleagues at Inter-Risco, thank you for the opportunity and guidance. I consider myself fortunate for having the opportunity to learn from you.

Lastly, I'm extremely grateful to my parents, brother and sister, for their love, care and endless support.

Abstract

Assets under management in private equity have grown dramatically since the 1980s, surpassing $ 4 trillion in 2019. Despite the alleged outperformance compared with public markets, there is a wide dispersion between performance amongst different PE funds: some achieve systematically high profits; others destroy capital. The purpose of this dissertation is to provide a theoretical and empirical literature review of this fast growing industry, and answer the following research question: What are the success factors driving PE performance? First, we'll present a background of the sector, which shall comprise some key definitions, a brief history, the value creation drivers, and the historical performance of the asset class. Lastly, we'll discuss the success factors that drive PE performance, and in the process we'll synthesize the major points of consensus and disagreements in the literature.

JEL codes: G24, G34, G39

Keywords: Private Equity, Value Creation, Buyout, Leverage

Resumo

Os ativos sob gestão na indústria de *private equity* (PE) cresceram dramaticamente desde a década de 1980, ultrapassando os US $ 4 biliões em 2019. Apesar de um alegado desempenho superior face aos mercados públicos de ações, há uma grande dispersão entre o desempenho entre diferentes fundos de PE: alguns obtêm lucros sistematicamente elevados; outros destroem capital. O objetivo desta dissertação é fazer uma revisão teórica e empírica da literatura acerca desta indústria em rápido crescimento e responder à seguinte questão: Quais são os fatores de sucesso que impulsionam a boa performance de um fundo de PE? Em primeiro lugar, apresentaremos algumas definições-chave, uma breve história do setor, os determinantes na criação de valor e o desempenho histórico desta classe de ativos. Finalmente, discutiremos os fatores de sucesso associados a este indústria e, no processo, sintetizaremos os principais pontos de consenso e divergência na literatura.

Palavras-Chave: Private Equity, Criação de Valor, Buyout, Dívida

Códigos JEL: G24, G34, G39

Index

Index of Figures

Index of Tables

List of Abbreviations

ABS – Asset Backed Securities

AUM – Assets Under Management

CAPEX – Capital Expenditures

CEO – Chief Executive Officer

CFO – Chief Financial Officer

EBITDA - Earnings before Interest, Tax, Depreciation and Amortization

ECB - European Central Bank

EV – Enterprise Value

FCF – Free Cash Flow

FED - Federal Reserve

GDP – Gross Domestic Product

GP – General Partner

IPO – Initial Public Offering

IRR – Internal Rate of Return

KKR - Kohlberg Kravis Roberts & Co.

LBO – Leveraged Buyout

LP – Limited Partner

M&A - Mergers & Acquisitions

MBA – Master in Business Administration

MBO – Management Buyout

MIRR - Modified Internal Rate of Return

PE – Private Equity

PME – Public Market Equivalent

QE - Quantitative Easing

R&D – Research and Development

REIT – Real Estate Investment Trust

ROE – Return on Equity

ROI – Return on Investment

S&P – Standard and Poor's

UK – United Kingdom

USA – United States of America

VC – Venture Capital

1.Introduction

Private Equity (PE) is a hot topic in the world of finance and economics. No wonder. In a few decades, this asset class went from being a small segment of the investment industry to apparent omnipresence.

After years of alleged overperformance – compared to the public markets -, the industry has recently come under fire due to the high fees it charges and also to the somewhat volatile returns. Still, the best performing funds generate significant returns for its investors, which leads us to ask the following questions: What separates poorly-performing funds from outperformers? Which are the success factors that lead to good results?

In this study, we seek to review the literature and find what are the key elements of consensus and dissent in this area of research. Hopefully, this will materialize into answers that allow us to set the stage for further investigation.

The structure of the dissertation is the following: in Chapter 2 we introduce the concept of PE, and explain some important features; in Chapter 3 we present a brief historical review of the sector to further contextualize it; in Chapter 4 the theoretical value creation drivers (leverage, multiple arbitrage and operational improvements) are described; in Chapter 5 we discuss how well the industry performs; in Chapter 6, we synthesize the success factors driving PE outperformance; in Chapter 7, we describe the PE investment process through 2 case studies.

2. Private Equity

2.1 What is PE?

Private equity (PE) firms are ubiquitous across the globe. Virtually unknown up until the 1980s, they have since evolved into a mainstream asset class. But, what is PE? To put it briefly, PE is risk capital provided to companies outside the public markets. One should note that the term "Private" is only used to distinguish this asset class from "Public Equity", that is, financial equity products traded on a stock exchange (Gilligan and Wright, 2014).

2.2 Structure of a PE Investment

The organizational framework is based on two key players. The first are the Limited Partners (LP's), who are passive investors that provide capital to be invested in a PE fund. Each fund – most PE firms have more than one - pools money from LP's including pension funds (private and public), endowments, foundations, insurance companies, banks, high net worth individuals, asset managers, sovereign wealth funds, governmental agencies, etc. (Preqin Global Private Equity & Venture Capital Report, 2019). The equity in the fund then pays for investments in companies as well as management fees (Kaplan and Stromberg, 2009). The other key player is the General Partner (GP), who selects investment opportunities and manages this closed-end fund. Additionally, the GP can too provide funds, though they usually represent a small portion of total fundraising. Leleux et al. (2015) suggest a value between 1 and 5%.

On top of the equity investment in the fund, PE funds also rely on debt (or "leverage") to fund acquisitions (figure 1). This debt is usually provided by banks and other financial agents, and includes instruments such as bank debt, revolving credit facilities, junk bonds and mezzanine bonds, which are guaranteed by the target company's cash flows and asset base (Rosenbaum and Pearl, 2009). That allows for an investment company to acquire a target using a relatively low amount of capital. Hence, this strategy amplifies future returns, as the initial investment was smaller than it would have been if only equity was deployed (Gilligan and Wright, 2014).

2.3 GP Compensation

Fund managers (GP's) have two vital sources of income. First, the above-mentioned fixed management fee, which is meant to cover the operational expenses of the firm, is paid

by the LP's as a small percentage of the capital committed to a fund – usually 2%. Then, and in order to incentivize a strong performance, the GP's receive a "carried interest". Under this arrangement there is a "hurdle rate", usually of 8%, that a GP needs to achieve for that variable compensation to come into effect. After this threshold is surpassed, the fund managers receive a certain percentage of the any excess. Usually, it's 20%. On top of that, some other compensation may be agreed, like monitoring, transaction and advisory fees (Kaplan and Stromberg, 2009). Variable compensation is desirable, as it incentivizes the GP's to achieve the highest possible returns, unlike the fixed revenue component, which isn't sensitive to the performance of the fund. In theory investors should welcome GP's whose income is mostly dependent on performance, but in reality most income seems to be associated with fixed revenue: Metrick and Yasuda (2010) find that only one-third of the GP's income is associated with performance-linked metrics. The natural implication of this trend is that investment managers are strongly incentivized to raise larger funds even if they achieve lower returns, as most of their profit comes from their assets under management (AUM), not their return on investment (ROI).

2.4 Investment Phases

Generally speaking, there are three periods in a buyout: the acquisition, holding and divestment phase (Berg and Gottschalg, 2005). The fund itself has a limited life span, typically 10 to 12 years from inception to liquidation, that can only be extended with the consent of the LPs (Kaplan and Schoar, 2005). In the first 4 our 5 years after the fund is launched, investment professionals profile industries, analyze potential targets and formulate a business plan to approach the target firms. During this acquisition phase some thoughtful decisions must be made regarding the purchase price and the degree of financial leverage, which will ultimately influence the profitability of the investment. After that period, the fund stops investing in new firms and instead focuses on increasing shareholder value in portfolio companies. It's during this holding phase that the initial business plan materializes into organizational and operational improvements in the portfolio company. In the divestment phase there are two key elements to consider: the selling price and the exit route. The final sale price is of the upmost importance, as PE funds usually focus on realizing capital gains, not receiving steady dividends (unlike a public firm). Regarding exit routes for buyouts, the most usual are trade sales, which according to Cazalla et al. (2019) represented 44% of all exits in 2018. This happens when the portfolio company is sold to a strategic buyer with an intrinsic ability to generate synergies and engage in other cost saving initiatives. The second

most common strategy - with about 40% of all exits in 2018 – is to sell the target to another PE firm ("secondary buyout"). The third approach, responsible for 16% of all exits, consists on floating the target company in a stock exchange, through an IPO. This last method is losing some prominence, partly because it doesn't allow the PE sponsor to fully divest its shares in the IPO. Katz (2009) find that PE operators sell less than half of their total shares in the target company at the IPO moment (ownership drops from 79.9% to 48.9% in majority owned firms, and drops from 36.4% to 20.8% in minority owned firms). Some literature also suggests that the public scrutiny that comes with an IPO filling is unwelcomed. Despite not being an exit strategy, a portfolio company can borrow money to pay dividends to the parent company. This process, known as "dividend recapitalization", allows the shareholder to book a profit and keep control of the target company (Rosenbaum and Pearl, 2009).

2.5 PE Investment Categories

When most think of PE, leveraged buyouts (LBO) come to mind. In a LBO, a company is acquired by a specialized investment firm (not necessarily a PE firm) using proportionally much more debt (or "leverage") than equity. However, it's worth mentioning that PE is a far-reaching industry, and is branched into several specialized investment strategies, some of which require no leverage at all.

Leleux et al. (2015) specify four large categories of PE investments: Venture Capital, Growth Capital, Buyouts and Turnaround Capital. Venture capital (VC) provides equity capital to emerging companies. Usually, they are technologically advanced companies capable of offering significant returns on invested capital, much higher than other asset classes. However, the high risk involved means that failure rates are significative. Growth Capital is used to develop an already established business. The capital is used to increase production, enter new markets, increase R&D spending, etc.. Buyouts comprise capital investments in mature firms. At this point, the company should have stable revenues and profits. PE firms may invest in this area when they recognize opportunities to increase efficiency. Lastly, Turnaround Capital is an essential tool to large struggling businesses, associated with declining revenues, underwhelming profits, low returns on equity, among others. Besides, PE can also comprise other activities such as real estate, infrastructures, direct lending, etc. (Bain, 2019). Still, in this dissertation, we'll focus on the traditional definition of PE.

3. PE History

Georges Doriot, a French-born American, is frequently considered the father of venture capital. After serving in the US Army in the Second World War, this Harvard Business School professor founded "American Research & Development"(ARD) in 1946, believing that a combination of R&D skills and professional management could spur economic growth (Leleux et al., 2015).

However, it was only in the 1980s that private equity, especially through leveraged buyouts, became prominent (Kaplan and Stromberg, 2009). The idea of acquiring companies with large amounts of debt and limited amounts of equity was a financial novelty destined to succeed. However, there was one deal that changed the PE landscape, by attracting a great deal of attention from the financial community. In 1982, a PE fund led by former US Treasury Secretary William Simon acquired "Gibson Greetings", a card manufacturer, for the sum of $ 80 million. Remarkably, the firm was able to invest only 1 million dollars in the deal, as several banks offered to loan the remaining 79 million (Crittenden, 1983). Less than two years later, the company went public at a valuation of almost $ 300 million. Needless to say, the returns on this deal were extraordinary. One could argue that this transaction, which highlighted the power of using debt in obtaining greater returns, marked the beginning of a golden decade for the industry. The boom was essentially driven by a strong economic growth, increasing financial deregulation and a burgeoning junk bond market. This last element was of the upmost importance, as PE deals required large amounts of debt, and most of it was quite risky. Junk bonds –an idea first developed by financier Michael Milken – served as the financial backbone of the PE industry. Geographically, the United States was the largest market, although Kaplan and Stromberg (2009) also indicate Canada and the UK as relevant markets. In fact, these three countries alone accounted for almost 90% of all buyout deals in the 1985-89 timeframe. About half the deals were buyouts of large public firms operating in mature markets, like manufacturing. Most investments were similar in nature: PE firms would purchase large, diversified and inefficient conglomerates, and then split them apart. They would sell non-core subsidiaries, engage in layoffs and close redundant factories. However, this strategy stopped working in the late 80s, when the junk bond market went into remission after the demise of the investment bank Drexel Burnham Lambert, where much of these products were created. Without the issuance of those high-yield risky financial products, conducting a large buyout became virtually impossible. One of these

deals, the acquisition of RJR Nabisco - a producer of tobacco and food products – by private equity firm "Kohlberg Kravis Roberts" (KKR) became the largest deal ever at the time, valued at approximately $ 35 billion (including debt). The much publicized takeover fight, which gave origin to hundreds of news stories, several books and one movie, is considered by some to represent the peak of the buyout boom of the 1980s. The lack of funding sources for risky bonds, combined with a slowing economy and the excessive use of debt, caused many portfolio companies to file for bankruptcy. Moreover, there was less institutional investors willing to finance PE deals, as the returns in the more recent years were disappointing. At this point, it was apparent the boom had come to an end.

The 1990s market a new period for PE. GDP growth was strong, valuation multiples were increasing and the industry shifted its model: instead of going after huge companies, it started investing in smaller ones – those in the so-called mid-market - and in operational divisions of large public companies, who were now simplifying their structure. However, the dotcom crash of 2000 was just around the corner, and with it LBOs of public companies became nearly non-existent. Still, the strategy of focusing on smaller target worked well. In fact, during this time the industry got some of its best returns ever (Leleux et al., 2015).

The increasing liquidity of the early 2000s, on the back of expansionary monetary policy, paved the way for a resurgence in mega deals. The huge buyouts we saw in the 80s were again resurfacing, but this time in even bigger numbers. Of the eleven largest deals ever, as of 2020, 8 took place in just two years: 2006 and 2007 (table 1). Global economies were growing at a steady pace, and, again, the industry was booming. That is, until the subprime crisis hit the American economy. Suddenly, it was extremely hard to raise new funds: between 2008 and 2010, fundraising more than halved, from $ 695 billion to $ 320 billion (Bain). Additionally, many portfolio companies started to underperform, as a result of the economic crisis.

But this scenario didn't last long. In order to fight the recession, Central Banks around the world – especially the Federal Reserve (Fed) and the European Central Bank (ECB) – lowered interest rates and flooded the market with liquidity - a direct result of Quantitative Easing (QE) policies. As expected, those policies increased the amount of capital flowing into the industry (figure 4), and vastly increased the total assets the industry is responsible for. As of June 2019, these firms manage $ 4.11 trillion (Preqin), an all-time

high. In 2008, the industry only managed $ 1.42 trillion. After some uneventful years for mega deals, they appear to be back.

Hence, the private equity industry seems to be subject to "boom and bust" cycles - as Kaplan and Stromberg (2008) recently declared. Interestingly, the ability for PE firms to pull out mega deals seems to be related to the willingness of investors to lend the money: junk bonds in the 80s, monetary loosening in the 2000s and quantitative easing in recent times all ignited the appetite for larger and larger deals. But the idea that PE is cyclical isn't just based on circumstantial evidence. For instance, Axelson et al. (2013) found that leverage available to PE funds deals is indeed pro-cyclical: lower financing costs promote more deal-making ("booms"), and higher financing costs decreases deal-making ("busts").

4. Value Creation

In his 1989 seminal work, Michael Jensen predicted that the importance of the public corporation - the "main engine of economic progress in the United States for a century" – was in decline. The central argument of his thesis was based on the "Agency Theory", developed by the same author a few years earlier (Jensen, 1986). In a nutshell, it states that managers should act on behalf of shareholders, but in practice that doesn't happen. As it turns out, managers have their own agendas, which sometimes contradict the shareholder's best interest, and thus creates a conflict of interests.

It is eerily common to see managers being criticized for increasing the size of their business with little regard for productivity and efficiency. A good recent example is Softbank - the Japanese conglomerate -, whose founder and CEO Masayoshi Son is often accused of splurging in acquisitions. In early 2019, Mr. Son argued that his company is valued at less than half its real value (Proud, 2019), and has emphasized his investments skills, pointing out to early successes such as an investment in Alibaba (a Chinese tech company). Investors mostly remember Mr. Son's recent ill-fated investments in the likes of WeWork, Sprint and Uber, which have generated significant losses to Softbank shareholders. While the shareholder is interested in dividends and the stock price performance, managers may engage in "empire-building", that is, they may wish to increase the size and scope of their company beyond its optimum level (Hope and Thomas, 2008). For instance, too many subsidiaries, employees, products, offices, etc.. Public companies generally have a very disperse shareholder base, which makes monitoring more difficult. In those cases, executives may maximize their own interests, thus reducing profitability and destroying shareholder value. As Jensen (1989) brilliantly puts it :"*Rare is the CEO who wants to be remembered as presiding over an enterprise that makes fewer products in fewer plants in fewer countries than when he or she took office—even when such a course increases productivity and adds hundreds of millions of dollars of shareholder value.*".

Therefore, Jensen predicted PE would overtake the public markets, as it is a "superior organization form". Unlike public companies, whose directors often have too little involvement in the company's decisions - and seldom question the CEO's plans - PE has more control over the firm's decision makers (Anders, 1992). Unlike public companies CEO's, who usually have a small ownership stake in the business, PE promotes a significant ownership by the management team to ensure an alignment of interests (Jensen, 1986). This arrangements, sometimes referred to as "Governance Engineering", seek to create a better

alignment between owners and managers and avoid the destruction of shareholder value (Gompers et al., 2016).

Fast forward 3 decades, and it seems Jensen's previsions were premature: after all, the public company is alive and well. Still, there is evidence that private equity has grown faster than public markets. McKinsey, the consultancy firm, found that from 2002 to 2019 the PE industry has increased its assets seven-fold, which is about twice the growth of public markets in the same period. Likewise, the number of publicly-traded firms in the US contracted in the period, while the number of PE-backed firms increased (McKinsey, 2019). Following a similar trend, Gao et al. (2013) find a large reduction in the number of IPO's in the United States, from an average of 310 a year in the period 1980-2000 to 99 a year in the period 2001-2012. Clearly, professor Jensen wasn't entirely wrong. Governance engineering may no longer be the main driver of value creation, like it was in the 1980s. The rise of independent governance boards combined with the appearance of activist investors have lessened the need for PE operators to purchase public companies and discipline them. Furthermore, CEO compensation has risen substantially since the 80s. According to Frydman and Saks (2010) - who studied executive pay from 1936 to 2005 -, right after the II World War and until the early 1970s compensation was relatively low, but in the 1980s and 1990s compensation levels grew "dramatically", along with managerial incentives. Since then, a significant share of the management team's compensation is determined by shareholder-friendly metrics, such as stock market performance – which in theory should motivate managers to act on behalf of their shareholders (however, some authors, like Bolton et al. (2004), suggest that such methods could induce short termism and be detrimental to shareholders in the future). Notwithstanding, it seems that public companies have mostly fixed themselves, i.e., much of the bad behavior of the past appears to have been solved. Still, some of Jensen's ideas - like operational improvements - evolved and remained relevant. Nowadays, the term "value creation" has a more holistic approach, focusing particularly on three sources: (i) leverage, (ii) multiple arbitrage and (iii) operational improvements.

4.1 Leverage

Leveraged Buyouts without leverage (debt) is like Hamlet without the Danish Prince. Unconceivable. Accordingly, when many think of PE, debt comes to mind. Still, it's worth mentioning that LBO's represent only a fraction – albeit a significant one – of the entire industry. In a recent 2020 study, McKinsey (the consultancy) stated that the buyout's share

of the PE market has dropped by a third from 2010 to 2020 (from 75% to 50%), as a result of the faster growth of venture and growth capital. Consequently, it seems clear that debt may become less relevant if the trend persists. Regardless, debt is still a key element of the PE modus operandi, and it can be beneficial in different circumstances: at the portfolio company level, and at the fund level.

On the company level, debt serves two purposes. The first one is to limit the discretion with which a company's management makes decisions (Jensen 1986, 1989). The increasing pressure on repaying existing obligations limits the company's ability to splurge. It has less cash to use inefficiently – which means executives have to slash investment in less productive areas and focus on the core business. One could argue that indebtedness has a disciplinary role over management, and helps solve the FCF problem (Jensen, 1986). Furthermore, with the decreasing liquidity, the company's decision makers have fewer opportunities to waste resources, which can have positive effects on overall productivity.

Second, interest payments are tax deductible in most of the world's jurisdictions, so this strategy creates a tax shield (Kaplan, 1989). Some argue this strategy represent a wealth transfer from the government, who collects less revenue (Hannus, 2015). Still, from a PE operator's point of view, it would be naive not to consider this option.

On the fund level, leverage has the ability to amplify the return on equity of a particular investment, regardless of all other considerations (Gottschalg, 2007). Let's say a PE fund invests € 5 M in company ABC, and then sells it for € 10 M in the following year. It doubled its money (100% ROE). Now let's consider the scenario where the selling price is the same, but initially the PE fund invested only € 1 M, the other € 4 M being covered by a bank loan with a 0% interest rate (unrealistic assumption). Now the ROE is an astonishing 900%, even though the buying and selling price remained constant. Yet, it's important to remind that this strategy, despite being useful until a certain point, isn't a silver bullet for PE firms looking to achieve very high returns. After all, the higher levels of debt make the deal riskier, i.e., returns are more volatile. It is possible that the costs (increased risk) outweigh the benefits (increased returns). Regardless, this strategy became essential for the growth of the PE industry. In fact, Hannus (2015) argues that leverage is the reason PE has grown so much. In essence, debt fueled the acquisitions of larger and larger targets.

Still, leverage is controversial, with many arguing that it has a negative impact on investment levels, and that it induces short termism in investment decision (i.e., PE-owned firms supposedly only make investments that have a quick payback period - in order to help pay down debt - and ignore other important long-term projects with low payback in the short

term). Concerning the effects of leverage in investment levels, the literature suggests PE firms favor a reduction in operational expenses and not in CAPEX levels, likely because this last element in essential in influencing future productivity. For instance, Kaplan and Stromberg (2009) find no evidence of CAPEX reductions, while Boucly et al. (2011) actually discover an increase in investment.

Lastly, the claim that leverage increases the probability of financial distress of target companies has been studied extensively, with the literature showing some evidence to support that theory. If debt increases beyond a certain optimum level, firm value is likely to deteriorate. In fact, one of the features of buyouts is that some of the risk is assumed by the creditors. As a result, some PE firms may take too much risk knowing their losses are limited. Axelson et al. (2013) discover that PE-owned firms have much more debt in their balance sheet than their public counterparts. Using a sample of 1157 transactions during the period 1980-2008, they find that on average only 30% of the enterprise value (EV) of PE-owned companies is equity – the rest being debt. In public companies, the same equity ratio represents 70% of the EV. Thus, the authors conclude there is a distinct capital structure between public and PE-owned firms. Furthermore, they also determine that PE-owned companies are two times more likely to file for bankruptcy, which is consistent with a more risky capital structure. Unfortunately, the authors don't compare the default rates relative to non PE owned firms that have similar levels of debt, which would seem appropriate. This trend is particularly dangerous when there's a surge in liquidity in the markets. In a landmark study, Kaplan and Stromberg (2009) find the major factor affecting the capital structure (combination of equity and debt) of a target company is the price and availability of debt in the markets. Axelson et al. (2013) find the deal volume to be heavily influenced by the conditions of the credit market. Consequently, an increasing amount of leverage available to GP's may result in overleveraged portfolio companies. However, Jensen (1989) argues there are reputational damages to PE firms who let their companies go bankrupt. That is, in the future they will have a harder time raising new funds and securing new credit lines. Therefore, there is a clear incentive not to let these companies default on their loans.

To sum up, debt serves a good purpose for PE investors by (i) solving the FCF problem, (ii) providing tax savings and (iii) amplifying the return on equity. However, some criticize the negative effects debt may have, such as increasing the probability of bankruptcy of portfolio companies, and on the wealth transfer (from the government to the PE fund) that may occur.

4.2 Multiple arbitrage

It is widely accepted in the field of finance that in order to value a company, one should estimate the present value of the firm's future cash flows (Operational cash flow – Capital expenditures). However, that estimation is subjective, as it is influenced by hard-to-measure metrics, both internal (EBIT, EBITDA, FCF, etc.) and external (interest rates, gdp growth, competitors performance, etc.) to the company. As a result, the valuation of a company fluctuates over time, which potentially creates an opportunity to benefit from arbitrage (in the case of market inefficiency). Not surprisingly, PE firms will try to play this market imperfection in their favor. As Gompers et al. (2016) simply puts it, multiple arbitrage is "selling at a higher multiple than buying", irrespective of the portfolio company's underlying performance. For example, let's consider a company whose valuation is expressed as a multiple of EBIT. If the company has € 3 M of EBIT and is valued at 6.0x EBIT, then it's worth € 18 M. If for some reason the multiple increases to 9.0x, the company's value increases to € 27 M. This € 9 M increase in value is not related to superior performance – the company's EBIT is constant at € 3 M – yet, its value increased substantially. As we'll see, there are some possible explanations for this increased valuation, most notably (i) changes in market valuation, (ii) superior information and (iii) superior deal making capabilities.

First, we'll consider how changes in market valuation create opportunities for arbitrage. Market conditions, which are highly influenced by the business cycle, play a key role in setting valuation multiples. As the multiples fluctuate across time, PE firms should have the ability to assess whether a target is cheap or expensive, and act accordingly. This method is based on external factors, so timing is essential. Leleux et al. (2015) portray this technique as "acquiring assets at the bottom of a cycle and selling them at or close to the peak". Generally speaking, the evolution of public market valuations for similar companies is a very important variable to define the portfolio company's value. At first this strategy seems passive, but in reality the PE operator is profiting from his decision to provide liquidity to a market that had none.

Second, the gathering of superior information - compared to other investors -, provides a great advantage for PE investors. According to Berg and Gottschalg (2005), PE firms who engage in thorough market research may be able to predict future trends much better. Their distinctive network of CEO's, advisers, employees and consultants play a key role in securing proprietary knowledge which may be of interest in upcoming deals. For example, a technology focused PE firm who predicted the rise of cloud computing had the ability to invest early in cloud businesses – at a relatively low multiple. When the cloud

concept became ubiquitous, they could unload those assets for a much higher multiple. Following a similar trend, the PE firm may have superior information about a target company – not just about a specific industry -, though this is more relevant in management buy-outs, when managers seek to purchase a company they know better than anyone else. While rarer these days, some investors may recognize the so called "conglomerate discount". Some conglomerates own dozens or even hundreds of companies, which makes a valuation estimation of the whole thing extremely complex. The decision to value each of the subsidiaries according to their specific characteristics may result in the conclusion that the combined value of the individual businesses is higher than the value of the conglomerate. In those circumstances, there is a good incentive to invest in the company and reconfigure its scope ("asset striping").

Third, the deal making skills of the GPs are of the highest importance, and can be useful in both the acquisition and divestiture process. The ability to build a network of contacts, for example, will significantly expand the GPs knowledge about the multiples used at any given time. Occasionally, they will hear about companies who are being sold below their market price, which should be a good acquisition target. On the sell side, they can identify buyers willing to acquire portfolio companies above the market price, especially when the acquirers have the ability to create additional synergies. This awareness about the market will provide a valuable proprietary deal flow (Gottschalg, 2007), which combined with sound negotiation skills will allow the GP to find arbitrage opportunities in the market.

4.3 Operational Improvements

While most previous studies focused on the "financial engineering" side of PE, a new wave of research has attributed a much larger emphasis on operational engineering (for example, see Brigl et al., 2008). This is a more recent form of value creation. In the beginning, especially in the 1980's, most PE companies overlooked this strategy, but as the PE market grew, opportunities for financial arbitrage became scarcer, which compelled GPs to give this strategy a better look. In operational engineering, managers reconfigure a company's resources to enhance overall productivity (Gottschalg, 2007). Interestingly, the early literature found theoretical support to the idea that PE firms create operational value. Kaplan (1989) discovered clear improvements in productivity after considering industry-wide changes. Jensen (1989) suggested that PE operators, by improving management, could

restore growth and trigger productivity increases in portfolio companies. Still, only in recent years has this strategy became a differentiator. These day, many PE firms advertise their "operational skills" and "hands-on approach" in order to differentiate themselves for the more "standardized" financial focused PE operators. In this analysis, we consider three key sources of operational value creation: (i) cost-cutting and margin improvements , (ii) reducing capital requirements and (iii) operational/functional expertise.

First, let's consider cost-cutting and margin improvement initiatives. For a wide variety of reasons, a portfolio company may not be operating in its optimal state. That is, the firm could improve its cost structure to ensure higher profits. According to Kaplan (1989), one of the first tasks of PE operators after assuming control of a portfolio company is to launch a cost reduction program. Because PE has a greater grip on the enterprises it owns (compared with public markets) it has a better chance of tightening corporate spending (Anders, 1992). Common decisions include improving procurement and reducing the workforce. All else unchanged, this decision should boost profits and increase the firm's value.

Critics of PE often argue that these firms increase their profits by laying off workers, and do that on a recurrent basis. In some cases that might be true, but firing people isn't necessarily a goal of PE firms. For example, Amess and Wright (2012) find no evidence of a reduction in employment in PE-owned firms in the UK. Some authors, like Weir, Jones and Wright (2015), do find a drop in employment, but only temporarily. Davis et al. (2019) study the US market and detect a drop in employment, but only for buyouts of public companies. Employment in private companies actually increases post-buyout. Davis et al. (2011) discover a small decrease in jobs due to PE ownership, but point out that the "creative destruction" in the labor markets - PE firms eliminate jobs in unproductive areas and create jobs in growing ones - is a good way to allocate resources efficiency, thus offsetting the negative impact of job contraction. Hannus (2015) believes the reason employment drops so little is because of the type of firms targeted by PE. By choosing mature companies with stable FCF, there's no need for a significant downsizing.

Second, PE firms frequently consider reducing capital requirements. The most straightforward path is divestitures, that is, chopping under-performing and/or non-core divisions to raise capital and to give management more focus. This approach helps the portfolio company reduce its debt, and also frees up cash flow to invest in the company's

area of expertise (Anders, 1992). While these corporate reconfigurations reduce overall revenue, they also reduce the asset base more than proportionally, which will likely cause an increase in productivity. Similarly, there may also be a plan to close underperforming factories/offices, though this is more noticeable in companies with excess capacity. Occasionally, and this is more common in asset-rich companies, the PE firm may plan to sell assets for liquidity purposes. With real estate, it is normal to see "sale and leaseback" agreements, in which a company sells an asset to a third party but occupies that same property as a tenant. With equipment such as machinery and vehicles, the portfolio company can lease that asset instead of owning it. This kind of asset outsourcing strategies allow the company to improve its capital intensity without compromising operations.

Last but not least, PE firms have been building a network of external and internal consultants, usually former CEOs, looking to advise portfolio companies to improve operations (Kaplan and Strömberg, 2009). As more and more capital entered the industry, PE firms needed to differentiate themselves, and this network of contacts is of the upmost importance. For example, the Carlyle Group hired former IBM CEO Lou Gerstner, famous for his turnaround of the then struggling company. Clayton, Dubilier & Rice hired none other than Jack Welch, the legendary CEO of General Electric, as an advisor. Under some circumstances, PE firms may even use its own pool of talent to negotiate bank loans, credit facilities, etc., on behalf of the portfolio company, as it has a greater bargaining power than the individual portfolio companies (Anders, 92). That happens frequently in the so called "add-on investments", when the PE firm uses the portfolio company as a platform to acquire other businesses. According to McKinsey, and as of 2018, 45% of all PE transactions fit into this category, up from 34% in 2009. Hence, the ability of this advisers and consultants to identify attractive opportunities and help execute value creation plans deliver great usefulness to PE operators.

5. PE Performance

Franz Müntefering, the former chairman of Germany's Social Democratic Party (SPD), famously called Private Equity firms locusts, who "measure success in quarterly intervals, suck off substance and let companies die once they have eaten them away" (Bena et al., 2017). For years, these firms have been associated with cost-cutting strategies, "profit maximization" and restructuring processes, which often lead to lay-offs, bankruptcies and production relocation (usually to lower-income nations). In Europe in particular, foreign investors - usually Americans - are sometimes seen as villains whose only goal is short-term profits. Popular beliefs aren't necessarily based on facts. In a recent study, Bena et al. (2017) reach different conclusions. According to them, and based on data from 30 countries from 2001 to 2010, the long-term impact of foreign institutional ownership is overwhelmingly positive. The study finds greater investment levels in both physical and human capital, as well as an increase in innovation. Similarly, Boucly et al. (2011), while studying the French market, find that PE targets become more profitable, create more jobs and invest more. Cressy et al. (2007) find that profits of PE-backed firms are higher than non-buyout firms.

But while PE got a great deal of public attention for the effects it has on employment and investment, few have looked at the performance issue. That is a mistake. One way or another, everybody invests in PE these days, even though many don't seem to know it. Pension funds, which manage the savings of a large part of the population, are by far the largest investors in PE funds (table 2), committing more than 40% of the total AUM of the industry. Public entities, such as government agencies and sovereign wealth funds, contribute more than 10% (Leleux et al., 2015). As a result, there should be far more scrutiny of this industry, one which still lacks transparency. Although PE claims to offer a compelling investment case, the lack of data available to the public makes it hard to support this argument. In most cases, their statements can't be independently verified (Appelbaum and Batt, 2014). As we'll see, some disclosed returns are biased, and average global returns are inadequate because they hide the extreme disparity between the different funds.

5.1 Estimation Bias

First and foremost, it must be said that PE returns have been a somewhat controversial topic in the financial community, with PE firms highlighting their "superior returns", while some economists and investors dispute those figures, arguing they are built

upon unrealistic standards, thus inflating their fair values. Warren Buffett, arguably the best investor alive, once said PEs track record is "not as good as it looks". Indeed, there are many ways to inflate returns.

The simplest is to consider gross returns - which don't include management fees, carried interest and other costs - which obviously aren't relevant to LPs, for whom only the net returns matter.

Sometimes the disclosed returns are constructed on the concept of unrealized returns. Under normal circumstances, the global return is only clear after all investments have been sold. In reality, PE firms are required to value their portfolio companies at "fair value" (expected sale price) in a recurrent basis, and thus can calculate the IRR based in these forecasts. Needless to say, these values are subjective and far from certain, especially because GPs have the discretion to choose the valuation method (Appelbaum and Batt, 2014). Despite limited literature regarding this topic, a recent study by Jenkinson, Sousa and Stucke (2013) brought some clarity to the table. After analyzing 761 investments made by an American pension fund, the authors found the internal valuations to be fair, maybe even conservative. However, this is not the case when the PE firm is raising a new fund, which leads the paper to conclude that fund managers sometimes inflate their returns to impress potential investors.

Another common metric is using the internal rate of return, which may be extremely misleading, especially in the short term. The IRR formula, which includes the effects of cash flows such as capital calls and distributions to LPs, erroneously assumes money can be reinvested at a fixed rate in the long term. Let's say a firm achieves a 50% IRR by year 3, in a 10 year fund, after selling a portfolio company. That seems outstanding, but it is unrealistic, because for that rate to hold until the end of the fund, the GPs would have to find an asset that returns 50% a year (Phalippou, 2008). It's not unheard of, but it's definitely hard to achieve. If the PE fund distributes the cash to the LP, then it can say it achieved a 50% IRR, while the investor will probably invest that cash in a low interest investment, resulting in a much lower return over the 10 years. Hence, the disclosed IRR most likely won't correspond to the LPs rate of return. Phalippou (2008) argues that this overstatement partially justifies why investors put some much money in PE, especially because the author also finds that PE underperforms compared to the public markets. Another consequence is that GPs may seek to exit their investments quickly or force the target company to pay a dividend early on, to increase the IRR (table 3). IRR distortions can also happen at the beginning of the fund. When LPs commit a certain amount to a PE fund, the GPs don't ask for the money

immediately: they will only make "capital calls" from investors when they sign an agreement with a target firm's owner, which can happen in the first years of a fund. Usually, LPs have to provide the money in a two-week period (Gottschalg, 2007). The greatest problem with this arrangement is that the LPs money must be invested in highly liquid - but low interest – securities, such as treasuries (Appelbaum and Batt, 2014). Needless to say, when PE firms disclose their returns, they don't incorporate this value, which certainly lowers the LPs aggregate return. Alternatively, PE firms could disclose their performance using the modified internal rate of return (MIRR), which assumes that the inflows are reinvested at the firm's required cost of capital, i.e., the opportunity cost of capital. That's in clear contrast with the traditional IRR, which assumes that positive cash flows are reinvested at the IRR rate. However, this metric is seldom used.

Another common criticism is the lack of data for risk-adjusted performance. Because PE investments are highly leveraged, they are more risky. Therefore, the final IRR may seem too high at first, but when risk is considered, it may not be particularly praiseworthy (Phalippou and Gottschalg, 2009). The illiquidity associated with PE investments, thanks to the closed-end fund structure, also represents a hard to measure disadvantage compared with public markets, especially because the liquidity premium varies from investor to investor (Harris et al., 2014).

Thus, this industry's lack of transparency makes this analysis extremely difficult. Unfortunately, many of the returns analyzed in academic papers are provided by industry professionals, the only agents with such data, so their accuracy may not be flawless.

5.2 PE Returns

According to Bain (2019), the consultancy firm, buyout funds systematically outperform public equities in all major regions (US, Europe, Asia-Pacific). That conclusion is consistent with much of the literature available.

Gottschalg and Groh (2006) analyze the risk-adjusted performance of buyout funds between 1984 and 2004, and conclude they significantly outperform the S&P500 gross of fees. To reach this conclusion, the authors built an imitating portfolio of public companies to match the playing field with PE-backed companies, regarding aspects such as operational and leverage risks. Furthermore, they also suggest this outperformance is large enough to guarantee investors a net-of-fees return that beats the public markets.

Phalippou (2014) compared the performance of almost 400 buyouts with the S&P500 and discovered that these funds, on average, generated an outperformance of 20% during the average holding period of PE firms, which in the sample used is 3.3 years. Hence, the author finds a strong outperformance of 5,7% a year (net of fees). However, when he compares PE performance with that of small leveraged indexes, which appear to be more similar in nature to PE funds, there's no outperformance. In fact, the average fund underperforms by approximately 3% a year in those circumstances.

Kaplan and Schoar (2005) reach different conclusions. First, they calculate a "public market equivalent" (PME), which allows a fair comparison between a PE fund and an investment in the S&P500. If the PME is higher than one, it outperforms the S&P500 net of fees, and vice-versa. In this case, the authors find a mean PME of 0.96, which means investing in an average fund represents a 4% loss compared to the alternative. Overall, the study finds a slight underperformance after fees, and overperformance before fees.

Phalippou and Gottschalg (2009) also base their research on the PME model, finding results that are consistent with Kaplan and Schoar (2005). The average PE fund lags the S&P500 by 3% net of fees, but beats the market by 3% gross of fees. Furthermore, they also consider that the higher risk of PE – especially thanks to leverage - brings the total underperformance to 6%, more 3% than in the risk-free version. Despite being based in the same methodology, this study was important because it used an independent commercial database.

More recently, however, some literature has pinpointed flaws in the analysis of both Kaplan and Schoar (2005), and Phalippou and Gottschalg (2009). For example, Harris, Jenkinson and Kaplan (2014) find an outperformance of more than 3% a year compared to the S&P500, in the 80s, 90s and the 2000s, after fees. These results are fairly different from the other papers, even though they use similar methods. That's a consequence of the usage of better data: by gathering data directly from Limited Partners, who have access to perfect information, Harris, Jenkinson and Kaplan (2014) reach unbiased conclusions. The authors also highlight the unreliability of much of the literature available.

Unfortunately, most literature available in this area considers only data from the U.S, the most established market. Analyses of other countries and regions are far scarcer, and when they exist they may be subject to the previously mentioned estimation biases, which arise when GPs are the ones providing the data. Researchers in the U.S, after learning from the mistakes of the past, successfully built or sourced data from LPs, which is likely harder

to do in Europe and Asia considering PE is not as entrenched. For example, Lopez de Silanes, Phalippou and Gottschalg (2015) collected data from around the world, and found a median IRR of 21% and a PME of about 1.3 (in other words, investing in a PE fund lead to a 30% gain over an investment in a public market equivalent). Sadly, their returns were before fees. Others focused on country-specific results. For instance, Nikoskelainen and Wright (2007), using a sample of 321 buyouts in the UK, discover a global IRR of 70,5% for the entire holding period of 3.5 years (about 22% a year). A more thorough study was conducted by Bain, the consultancy. Using data from Cambridge Associates, it discovered that American PE funds, on average, slightly outperform the S&P500, even after considering a public market equivalent. That's consistent with much of the literature available. It also found that European PE funds vastly outperform the European public markets, which in their analyses is represented by the MSCI Europe Index. Nonetheless, much of this outperformance was caused by a lackluster performance of the index used. As a matter of fact, the European funds results were astonishingly similar to the S&P500 Index. Hence, these results seem to suggest that PE outcomes in Europe aren't much different from America, but because of the relative weakness of the European stock market, PE is more likely to outperform.

Similarly, one should look closely at the stock market performance of formerly PE owned firms. That is, when a portfolio company floats in a public market, the PE sponsor almost always retains a stake in that business. Hence, it's important to consider the stock market performance of that company, as it will ultimately influence the fund's internal rate of return. Moreover, there are circumstances when PE firms distribute securities to investors, instead of cash, after one of its portfolio companies goes public ("distribution in kind")(Leleux et al., 2015). Katz (2009) finds that the target company's stock performance compared to firms controlled by management (founders, top executives, directors, etc.) depends on the level of control the PE sponsor has. When PE owns a majority stake, the target company outperforms, but when the PE sponsor owns a minority stake, the company underperforms. The monitoring provided by the PE operator combined with the strong incentives – instigated by the large equity stake – likely play a role in this outperformance. Cao and Lerner (2009) reach somewhat identical conclusions, and find evidence of outperformance compared to other IPOs in a 5-year timeframe. Levis (2011) divides IPOs in the UK among VC-backed companies, PE-backed companies and non-backed companies (all others), in the 1992-2005 period. Not only does he find a higher performance in PE-

backed companies in a 3-year period, he also says this outperformance is positively related to both their debt and their PE ownership levels.

A much less discussed issue in the world of PE is the enormous variance in the returns among different firms/funds, likely caused by the high leverage sitting in the balance of target companies. According to McKinsey (2019), PE returns are extremely disperse compared to public markets, meaning the best PE firms show extraordinary returns (as high as 50% per year), while the worst PE firms destroy capital (some have yearly returns of -30%) (figure 2). Lopez-de-Silanes et al. (2015) find that in approx. 10% of deals there are no profits, while in 25% of deals returns exceed 50% annually. These findings are consistent with much of the literature available - for example, Higson and Stucke (2012) -, which also find evidence that the dispersion of returns between funds is very wide, so investors who pick the right funds get enormous profits, while some investors will lose significant amounts of invested capital.

To sum up, most of the literature seems to agree that PE, on average, either outperforms or equals the S&P500 returns, a popular benchmark. However, if there is some disagreements in this area (with some authors finding a small level of underperformance), there's no doubt that PEs returns are extremely disperse - the top funds are clear outperformers, while many funds are laggards (compared to the public market) (figure 3). As Appelbaum and Batt conclude in their 2014 book, "Only the top-performing PE funds - the top 25 percent, or perhaps the top 10 percent - outperform the stock market by a reasonable margin.

At this point, one begs the question: what justifies the tremendous divergence in returns among different funds? Why are some funds better than others? What can a GP do to increase the probability of outperformance against his peers? In Chapter 6 we'll analyze some factors that contribute to the success of an investment fund. Hopefully, that investigation will shed some light on why returns differ so much across different funds.

6. Success Factors in PE Investments

6.1 Target firm characteristics

6.1.1. Strong Financial Profile

One of the key factors influencing the success of a PE investment consists on making sure the target firm has a strong financial profile, i.e., it should generate positive and predictable operating cash flows (or EBITDA).

There are a growing number of PE firms who advertise their restructuring skills, and invest in underperforming firms hoping a fast turnaround will follow. But in reality, restructurings are time consuming efforts and the odds of success are usually smaller than expected. In a recent study, Lopez de Silanes et al. (2015) find there is a negative relation between the duration of an investment and the final IRR, that is, quick flips (< 2 years) are associated with higher profits, while long term investments do worse. This could explain why selecting firms with an unhealthy financial profile - who need more time to overcome their struggles - is a poor strategy. Indeed, the literature backs the idea that investments in companies with stronger financials generate a better performance.

Opler and Titman (1993), using a sample of 180 LBOs during the period 1980-1990, found that companies with higher cash flows were more likely to experience an LBO. Not only does the positive and predictable cash flows help pay down debt after the deal is closed, it also helps raise additional funds, as the possibility of financial distress is perceived as lower in such companies.

But while the previously mentioned authors tried only to forecast what type of company is more likely to undergo a LBO, Carow and Roden (1998) went a little bit further, and analyzed the returns of the firms that effectively were purchased by PE firms. Their results corroborate the theory first proposed by Opler and Titman (1993): firms with high free cash flow show better investment outcomes.

This is not to say that there is no place in the market for PE firms who specialize in the acquisition of underperforming companies, i.e., those with low free cash flows. However, the evidence suggests that target firms with a healthy financial profile generate superior returns to their investors.

6.1.2. Unused borrowing capacity and redundant assets

When looking for potential targets, PE companies usually assess their respective borrowing capacity, as it will inevitably influence how much leverage can be used in the deal. For instance, deals for companies whose liquidity exceeds working capital requirements can carry more debt. Similarly, companies with limited or no debt in their balance sheet prior to the deal will have an easier time issuing new debt, unlike companies who were already indebted. A slightly more complicated method consists on converting non-cash assets into cash, i.e., asset conversion (Hannus, 2015). This can happen with the issuance of asset-backed securities (ABS) – which are backed by the cash flow of an underlying asset, such as receivables – or through sale and leaseback agreements – a popular method of transforming fixed assets like building and land into cash, while keeping the right to use those assets for a pre-arranged period of time. Likewise, the GP may decide that the target firm should dispose of its subsidiaries and other redundant assets, especially if they're non-core businesses. This would help pay for existent debt obligations.

Renneboog et al. (2007) find that those who consider purchasing a public firm are willing to pay higher prices for companies with lower debt-to-equity ratios, given that such companies can increase their debt levels more easily. That's consistent in the theoretical framework. Not only would this make it easier for the GP to finance the acquisition, but it would also reduce tax liabilities at the portfolio company level (due to the tax shield).

Likewise, Aslan and Kumar (2007) analyzed 157 buyouts of public companies in the UK during the period 1996-2006, and then they compared them with their publicly traded counterparts. The authors discovered that companies which went private had lower leverage ratios and were in industries that traded at a lower market-to-book ratio (relation between the market capitalization and net assets). These characteristics of the target firm appeal to the GP in two ways: first, when companies are purchased at lower multiples, the PE firm can more easily borrow against the company's assets; second, the selection of companies with low initial debt means there's more room to increase leverage in a deal. Thus, it seems that GPs recognize that a firm's unused borrowing capacity is a valuable feature of a successful buyout.

And while some authors tried to identify whether unused borrowing capacity and redundant assets were attractive to PE operators, others investigated if these features ultimately generate superior returns. According to Carow and Roden (1998), who use a sample of 88 buyouts in the period 1981-1990, target companies with a greater capacity to increase debt ultimately generate superior returns to their owners. That's consistent with the

findings of Opler and Titman (1993), who found that firms with a low Tobin's q constitute better investments, because they have more collateralizable assets.

Likewise, when the target firm owns undervalued assets, these can be used as collateral for debt from asset based lenders (for instance, real estate debt investors). Also, if an asset is to be revalued after the deal, there's an opportunity to decrease tax expenses, because higher depreciations will lead to lower reported profits.

To sum up, there is evidence that unused borrowing capacity is a valuable element of a PE investment. Still, it's worth reminding that some of the literature regarding this issue predates the 2000's.

6.1.3. Competent and Motivated Management

One of the key elements of a successful buyout is to ensure there is a proper management team working in the portfolio company. Under normal circumstances, value won't be created by some "grand strategy", but by thoroughly executing an operational plan on a day-to-day basis. Occasionally, the pre-deal management team may remain in place after the investment, which offers some notable advantages: there is less information asymmetry, due diligence can be made faster, and the management team already knows the business well. More often than not, that solution won't be available, and there is a need to hire a competent team. However, competency alone won't be enough. A well-defined system of incentives must be arranged to align the interests of the PE fund with those of the target firm's managers – hopefully, this will help solve the agency problem. First, the management team should be paid a relatively low salary. Also, they may be required to make a significant personal investment alongside the GPs (Leleux et al., 2015). The greatest benefit of this system is that it encourages the management team to deliver good results: there's a significant upside if things go according to plan, and a big personal downside if not.

According to Heel and Kehoe (2005), the management's incentive represents between 15% and 20% of the target firm's equity, which can represent a significant reward should the deal be successful. The authors discover that the most important source of value creation in a buyout derives from operational outperformance, at around two thirds of total value creation, which dwarfs the arbitrage and leverage effects. Hence, an appropriate incentive to management performance is essential.

6.2. PE Firm characteristics

6.2.1. Fund Size

PE firms differ tremendously in size, with some managing a few millions and others managing hundreds of billions. For instance, Blackstone, the largest PE firm in the world, currently manages a sum equivalent to the GDPs of Sweden or Belgium. With funds, the story is similar: some are quite small; others are colossal.

At first sight, it seems logical to assume that large funds perform better. If not, rational investors would shift their allocation towards smaller ventures. Indeed, there are many great arguments to back the idea that large funds have an inherent ability to outperform the market: due to their dimension, they can attract better managers, draw in a superior external network (think lawyers, investment bankers and consultants, among others), and have access to a broader set of deals. This last argument needs some clarifications, as it comprises two very distinctive benefits. The first is related to the network and size effects of having a large fund: these funds will likely have access to a better deal flow. The second benefit relates to the ability of large funds having the discretion to acquire small or large targets, in clear contrast with smaller funds, who usually can't buy very large firms. In other words, large funds can acquire small companies; small funds can't buy very large companies.

Nevertheless, there are also strong arguments against the idea that bigger is better. The most noticeable concern is related with the inherent conflict of interests between the LPs and the GPs. As discussed in Chapter 2, there are two components in the GPs compensation: a fixed one, which is dependent on the total amount of AUMs, and a variable one, that is dependent on certain performance metrics. As some literature has shown (for example, see Metrick and Yasuda, 2010), the fixed portion exceeds the variable component. The greatest consequence of such a structure is that there is an incentive for PE firms to increase their AUM even if such a decision is detrimental to investors. Some firms might argue that their ambition to raise larger funds can be combined with similar (or higher) performance, though many investors believe the original model of alignment between GPs and LPs has weakened (Giligan and Wright, 2014).

Some of the literature available backs the theory that there is a trade-off between fund size and performance. Aigner et al. (2008) conclude there is a negative relation between fund size and returns. That's consistent with the findings of Lossen (2006), who found that increasing commitments to a certain fund causes systematically lower returns.

Kaplan, Harris and Jenkinson (2014) also study the relation between size and performance. They start out by exposing the importance of such study: from the 1980s to the 2000s, the average fund's size has more than tripled, from $ 390 million to $ 1.42 billion. The authors divide the funds by quartiles, according to their size, and don't find significant correlation between fund size and returns. They do, however, conclude that funds in the first quartile – which contains the smaller ones – underperform all other quartiles, which seems to transmit the idea that smaller funds to worse. And while funds in the second quartile improve their performance substantially compared to smaller funds, that overperformance starts to fade away for funds in the 3rd and 4th quartiles. Surprisingly, funds in the last quartile – the very big ones - barely exceed the returns of the small funds in the 1st quartile. Still, the authors don't find a strong correlation.

Others, like Phalippou and Zollo (2006), discover a positive and linear relation between fund size and performance, in clear contrast with the aforementioned authors.

Remarkably, Kaplan and Schoar (2005) formulate a theory that seems to reconciliate and harmonize these apparently conflicting beliefs that fund size can both be good and bad. The authors find an overall positive relation between fund size and performance but only to a certain point. They include fund size as a variable, and find that larger funds do better. Subsequently, they estimate the squared value of the log "fund size", and discover it is negative. Consequently, it becomes clear the relation between fund size and performance is concave – increasing the size of a fund improves overall performance for a while, but there's a threshold from which performance starts to decline. In other words, the authors find a momentaneous positive relation, but only until a turning point when the effects of diminishing returns start to kick in. These diseconomies of scale could be triggered by several reasons. First, it's possible that finding enough good deals is difficult, i.e, there is a limited number of great deals to choose from, and GPs have to settle for less desirable targets (Kaplan and Schoar, 2005). Second, it could be the case that larger funds have more companies in their portfolio. Thus, the GP may pay less attention to each individual company (Aigner et al., 2008). The logical solution to this problem – hiring more GPs – could be challenging, as "qualified individuals GPs are scarce" (Kaplan and Schoar, 2005).

To sum up, the literature provides different theories that both support and contradict the idea that large funds perform better. However, I suspect the approach of Kaplan and Schoar (2005) is particularly useful in blending these seemingly paradoxical beliefs. Furthermore, it is also likely that the optimum level for fund size varies among PE firms: $

1 billion isn't much for KKR and Apollo, who could deploy that capital efficiently, but it may be too much for, say, a Portuguese PE firm.

There is some evidence to support the idea that investors are doubtful about the ability of the very large funds to overperform. According to Giligan and Wright (2014) many LPs stopped believing that larger funds were better after the 2008 crisis. The poor performance of large funds combined with hefty fees have persuaded LPs to put more emphasis on middle market investments.

6.2.2. GP Experience

A recent wave of research has determined that the long suspected idea that more experienced GPs get better returns is accurate. For a while, studying whether or not more managerial experience would translate into higher performance was tricky, especially because the PE industry was in its infancy and there wasn't much of a track record. Nevertheless, the arguments were plausible: more experienced GPs have better negotiation skills, which helps them negotiate lower prices for entry and higher prices for exit; they have more experience in executing value creation plans, where much of the value is added; they have more adequate due diligence abilities, which helps prevent overpaying for a company; they have a larger external network (banks, advisors and consultants, among others), that helps secure loans, formulate value creation plans, etc..

The literature available overwhelmingly agrees that GP experience has a positive effect on fund performance. Aigner et al. (2008), using a sample of 358 American and European deals, discover that the experience of the fund manager is positively correlated with performance. The same conclusion was reached by other authors, most notably Schmidt et al. (2004), Phalippou and Zollo (2005) and Gottschalg and Kreuter (2006). Kaplan and Schoar (2005) conclude not only that returns increase with the manager's experience, but also that this relation is persistent. That is, fund managers that outperformed their peers in the past are likely to do it again in the future.

While there is a wide consensus that experience is beneficial to fund performance, the literature diverges in defining how experience substantiates into better results. For instance, Kaplan and Schoar (2005) believe this outperformance is due to a better access to investments, i.e., deal flow. Demiroglu and James (2010) claim that PE firms with a better reputation – usually built on experience - have simultaneously the ability of borrowing more

money and at lower interest rate. Aigner et al. (2008) believe the more seasoned investors have a higher tolerance for risk. According to the authors, experienced managers actually have more losses, i.e., the number of portfolio companies with an IRR below 0 is higher for more experienced GPs. Their willingness to take bigger risks ultimately causes more of their investments to fail, though the abnormal profits generated by a small number of deals outweighs the underperformers.

Instead of looking at the number of years of experience, Acharya et al. (2013) take a different approach, suggesting that the background of the managing partner plays an important role in performance. Using a sample of 395 deals in Western Europe in the 1990s and the 2000s, they found that GPs with a background in finance - like former investment bankers - had a higher performance in deals where M&A occurrences, such as add-on acquisitions by the target firm, were frequent. Similarly, GPs with an operational background – such as former CEOs and management consultants - have a better performance in deals focused on organic value creation, i.e., operational improvements. This corroborates the findings of Gompers et al. (2008), who also discovered that industry-specific know-how is more important than overall knowledge.

To sum up, there is evidence that experience can be important, although there's still some doubts on how this translates into an advantage. Better access to deals, more advantageous financing and a higher risk-taking predisposition likely play a role in getting better results, though there's still some debate on how experience substantiates into superior performance.

6.2.3. Firm Specialization

One of the key ongoing debates in the world of PE consists on determining whether or not firm specialization confers a competitive advantage. As can be concluded by examining this industry, certain PE firms choose to invest exclusively on a specific area of their expertise. First, a PE company can specialize itself in a special industry, such as consumer goods or financial services. Second, it can pursue exclusively investments in companies according to their financial stage (growth capital, restructurings, etc..). Lastly, it can limit itself to invest solely in one country. This study is relevant. According to Cornelius et al. (2009), whose sample consists on 131 American and European funds raised during the period 1997-2006, most funds are actually well diversified, with almost two thirds of them

investing in at least seven different industries. However, more often than not, a substantial amount of the fund's assets are deployed in just one industry. Therefore, there's a need to scrutinize the arguments for and against specialization, and determine if this is a success factor.

First, let's consider the potentially positive effects of being a specialist PE operator.

Cressy, Munari and Malipiero (2007) suggest two advantages compared to generalist funds. First, specialist have less information asymmetries, as their specific knowledge is superior. By reducing the "information gap", GPs can more easily distinguish successful from unsuccessful investments (Lossen, 2006). Second, they benefit from reduced uncertainty, because their in-depth knowledge of companies in a certain industry, stage or country enables them to invest in the right companies.

Bartkus and Hassan (2009) believe specialization can be beneficial before (ex-ante) and after (ex-post) the deal. Before the investment, specialists will have the ability to screen potential targets more thoroughly, by leveraging their distinctive set of skills. After the deal, they'll provide a more vigilant monitoring of the portfolio company. Since company managers act on behalf of the GPs, we may be in presence of the agency problem, i.e., the management team may take decisions that are detrimental to investors. The greater the knowledge PE firms have about an industry, stage or country, the easier it will be to discipline the managers (Lossen, 2006). This bears a strong resemblance to the argument made by Kaplan and Stromberg (2009), who defended that specialized PE firms can implement their control rights more effectively.

Furthermore, specialization helps PE firms promote themselves in what can only be described as a crowded market. As the market for deals became more competitive, the ability to bring something other than capital to the table became increasingly important (Mathis, 2017). In some cases, PE firms can even engage in the managerial activities of the portfolio company (Lossen, 2006).

On the other hand, some authors have come up with arguments that back the idea that generalist funds have an intrinsic advantage over specialists.

By building a well-diversified portfolio of companies, these PE funds can much more easily minimize industry, stage or country specific risk, in clear contrast with funds that invest disproportionately high amounts of their assets into a single category (Barkus and Hassan, 2009). From that point on, the PE fund will be mostly exposed to systematic risk, i.e., risks that affect the entire economy. In other words, an unsuccessful investment in a specific

portfolio firm – one that generates losses to the fund – can be overshadowed by other investments.

Furthermore, Berg and Gottschalg (2005) suggest that PE firms bring their knowledge and experience – obtained from previous deals – to their portfolio companies. The GPs network of contacts across different industries, most notably in the financial and consulting markets, ultimately add value to the deal.

Lastly, Aigner et al. (2008) argue that generalist funds can effortlessly integrate industry, stage or country experts in their firms. This arrangement would provide the firm with all the benefits of specialization, while allowing it to deploy capital much more broadly.

Overall, there are strong theoretical arguments supporting the idea that specialists have an advantage over generalists, and vice-versa. Hence, there's a need to scrutinize the performance of both.

Lossen (2006) provides the most extensive analysis about the effects of specialization in PE returns: using a sample of 2.871 deals from 100 different funds in the period 1979-1998, the author uses a multivariate regression to determine if specialists across industries, financial stages and countries outperform their generalist peers. First, the author concludes that diversification across industries has a positive impact on fund performance. Thus, industry-specific funds don't do any better than the diversified ones. It could be the case that industry-specific knowledge is less important than assumed, that know-how can be outsourced from outside the PE firm, or that generalists are less constrained in picking investments. Second, Lossen (2006) also doesn't find a superior performance of country-specific funds (his sample includes deals from 34 countries). Lastly, and in line the specialization argument, the author finds that being a specialist across financial stages is beneficial.

Regardless, this conclusion contradicts the finding of other authors, who discovered that industry-specific specialization improves fund performance. For example, Cressy et al. (2007), using a sample of 122 buyouts in the United Kingdom, found that industry specialization causes better performance. More specifically, they conclude that specialists get between 6% and 8.5% higher profits from their investments. Hence, their expertise seems to outweigh the risk of a lower portfolio diversification. Still, the authors acknowledge that their study focuses on a very developed PE markets, where these effects may be particularly relevant. It's possible their finding are less robust in other regions.

Similarly, some authors don't validate the argument that specialization by financial stage represents an advantage. For instance, Aigner et al. (2008), using a sample of 104 American and European funds active in the period 1971-2005, conclude that diversification across financial stages, not specialization, exerts a positive influence in overall performance. Otherwise, they achieve results that are mostly similar to those of Lossen (2006).

The only aspect the literature overwhelmingly agrees is that there is little correlation between geographical focus and firm performance (for example, see Lossen (2006), Brigl et al. (2008) and Aigner (2008)). The benefits of other types of specialization (across industry and financial stages) are still subject to debate, and require further investigation.

6.2.4. Ability to spot undervalued firms

There's little doubt that a firm's undervaluation – measured by a firm´s P/E ratio, transaction multiple, etc. -, can be beneficial for PE investors. After all, vigilant investors browsing the market for undervalued companies - hoping to benefit from future appreciations - are not a recent trend.

Already in 2005, and in order to establish whether undervalued firms are more likely to go private (after being publicly-trade), Weir, Laing and Wright compared some key attributes – like valuation, ownership structure and governance – between firms who went private and those that remained public. The authors conclude that firms who went private had substandard governance mechanisms and higher CEO and board ownership, which presumably caused the management team to have superior information about the business. Under such an arrangement, it's possible that the shareholders were incapable of determining the company's true value. To summarize, the authors found that companies perceived as undervalued – possibly augmented by high agency costs – are more likely to go private.

Rath and Rashid (2016) also examine the effects of firm undervaluation and information asymmetry, but for Australian PE takeovers during the period 1990-2012. The authors consider several valuation methods (for instance, price-to-book value), and achieve statistically significant results suggesting undervaluation is, on its own, a sufficient condition for a company to be purchase by a PE operator.

So, it seems clear that these relatively cheap companies are desirable for PE operators. Consequently, and in order to determine if undervalued firms ultimately generate

better outcomes, a group of authors tried to find a connection between apparent firm undervaluation and better GP performance.

For instance, Renneboog et al. (2007) made a list of 8 possible sources of value creation in a PE investment: undervaluation; tax benefits; incentive realignment; control reasons; free cash flow reduction; transaction cost reduction; takeover defenses and wealth transfers. Using a sample of 177 public-to-private transactions in the UK during the period 1997-2003, the authors find that some of the listed elements positively affect overall wealth creation (for example, the incentive realignment issue). However, it is the pre-transaction undervaluation (of the target company) that creates the most value to the buyer. That gain is particularly relevant in management buyouts (MBO's), likely due to the fact that there are less information asymmetries. Hence, the authors discover that purchasing undervalued targets is a sound decision.

Jenkinson et al. (2018) base their research around the idea that GP's don't invest funds raised from LP's immediately, unlike, for example, mutual or hedge funds. Instead, they have the ability to invest solely in companies perceived as undervalued, i.e., they can wait until a good opportunity comes along. Using a sample of 5,366 deals in North America and Europe – responsible for 54% and 46% of all deals, respectively -, during the period 1998-2013, the authors estimate the difference between the entry and the exit multiple in order to determine if GP's create value by spotting undervalued targets. The market multiple is calculated using the standard formula EV/EBITDA. Eventually, they discover a mean market multiple expansion of 0.5 for the entire sample, and an increase of 3.2 for the best performing funds (i.e., those in the first quartile). While North American deals performed better than their European counterparts (mean multiple expansion of 0.7 and 0.3, respectively), the effects of timing are statistically significant in both regions.

In summary, there is consensus in the literature that purchasing underpriced firms is an optimal decision for PE investors. However, the degree to which returns are higher for investments in the above-mentioned firms is still subject to debate.

6.3. Timing

6.3.1. Macroeconomic Factors

Macroeconomic conditions will certainly play a significant role in determining the success of an investment, for better or worse. Broadly speaking, there are two major elements

to take into account: the GDP growth rate, on the one hand, and interest rates, on the other. Ideally, the GP should deploy capital at a time of challenging economic conditions, such as recessions, because there's a general consensus that funds launched during "boom" years tend to underperform compared to the funds launches during downturns (Leleux et al., 2015). During times of adversity one expects cheaper deals and lower interest rates, essential for the PE industry, which relies heavily on leverage. Alternatively, deals made during boom years will be more expensive, which will lower overall returns (Lossen, 2006). Already in 1999, Gompers and Lerner hypothesized the idea that the flow of money in the PE sector – reinforced in years of strong economic growth – is the major driver of valuations in the PE industry, something they called the "Money chasing deals" phenomenon. Hence, the theory states that PE firms should allocate capital not in boom years, but in periods of lower interest rates and cheaper deals.

Phalippou and Zollo (2006) formulate several regressions to determine how certain macroeconomic conditions influence fund performance throughout the United States and the European Union (the authors bundle the data form both regions to run the regressions). Using a sample of 705 funds raised between 1980 and 1996, and as anticipated, the regression demonstrates a strong correlation between GDP growth and fund performance, and a significant and negative link between interest rates and PE returns. Accordingly, GPs who deploy capital at a time of high interest rates or high GDP growth (or both) are more likely to have a underperforming fund.

Aigner et al. (2008) also build a model that comprises some variables capable of affecting PE performance in the US and Europe, including GDP growth and interest rates. Unlike Phalippou and Zollo (2006), they break down the results by region. Remarkably, the authors don't find evidence that investments made when the economy is performing well cause inferior return, at least in Europe. However, and in accordance with previous studies, they find that counter-cyclical investments drive performance in American funds, though it is unclear why outcomes diverge across these two regions. Furthermore, the authors find a negative link between interest rates and performance, consistent with the theoretical background. More specifically, they find that the lower cost of capital will increase the IRR. Still, they don't detect a strong impact on the PME (Public Market Equivalent), which could be explained by the fact that publicly listed firms also benefit from lower interest rates.

Finally, Cornelius et al. (2009) reach perhaps the most interesting conclusion on the importance of appropriately predicting the business cycle during a PE investment. According to the authors, the best performing funds – those in the top quartile – can't generate that

kind of outperformance based solely on operational and financial engineering skills. On average, these funds need to invest at the appropriate time if they wish to outperform their peers. In the same way, having a perfect timing alone won't be enough to be in the top quartile.

The facts identified by the abovementioned authors are quite interesting, but they are likely to require further examination. As some large economies - such as the US, Japan, and Germany – display historically low interest rates and anemic economic growth rates, one wonders how the PE industry will adjust itself. The consequences (for PE) of living in a world where interest rates are close to zero and where growth fades away is an area worthy of study. The most likely outcome is that PE will benefit from lower interest rates, but on the other hand competition for deals will be fiercer.

6.3.2. Movement of the public markets

The extent to which the returns of PE funds are influenced by the stock market is still subject to debate. Traditionally, there was a belief that PE offered investors a way to diversify from long-established asset classes, like equities (stocks). More recently, however, that idea has been questioned, with many studies in this area suggesting that correlations between them are quite high, i.e., a positive movement of the public markets will lead to better fund performance. Two reason could explain this association. First, the funding of PE deals is determined by the environment around the capital markets. Second, the stock market provides a yardstick for valuations: ceteris paribus, higher valuations in public markets will translate into higher valuations for private companies. Therefore, a fund launched in a period that precedes a positive performance of the public markets has greater chances of success.

Lopez de Silanes et al. (2015), using a sample of 7,453 deals in 81 countries during the period 1971-2005, develop a model that includes the determinants of performance in a PE fund. Eventually, they accomplish that a 1-standard-deviation increase in the stock market performance generates a 13.7% increase in the IRR.

Phalippou and Zollo (2006) create a regression that considers the impact of certain macroeconomic variables on performance, using a sample of 705 funds raised in the 1980s and the 1990s. Despite discovering that the evolution of the GDP and the availability of low interest rates were more significative, they also determined that PE returns were positively correlated to the performance of the public markets.

Aigner et al. (2008) use a sample of American and European funds, and find that fund performance is positively correlated with the evolution of the MSCI World Index. That's consistent with the theoretical framework, which states there's a strong correlation between the two asset classes.

Likewise, Gompers et al. (2008) document that changes in public market valuations influence the decision making process of venture capitalists (VCs). More specifically, he finds that VCs – especially the more experienced ones – increase their investments when public market signals are encouraging. That's consistent with the theory that public markets are a benchmark for valuation. It's unclear if these findings apply to the entire PE industry, but it seems reasonable to believe so.

Thus, the literature overwhelmingly backs the argument that stock market performance and PE fund returns are linked.

7. Case Studies

7.1. Case study 1

Acquirer: Blackstone Group

Target: Hilton Worldwide

Year: 2007

Hilton was founded in 1919 in Cisco, Texas, by Conrad Hilton. The company rapidly built a reputation for its luxurious hotels and excellent service, being present in most large American cities, as well as in several international ones. Throughout its history, the firm remained in the hands of the eponymous Hilton family, which became one of America´s most recognized business dynasties, on par with the Fords or the Mellons. In 1996, CEO Barron Hilton was succeeded by Stephen Bollenbach, who became the first ever non family member to lead the firm. Under Bollenbach – a former CFO at The Walt Disney Company – the firm became very active in the M&A market, picking up chains such as the Doubletree and the Hampton Inn, just to name a few, and it expanded organically as well. This strategy was a break from a past marked by slower growth. During this period, Hilton became one of the world's fastest growing hospitality companies, increasing its hotel number from 388 in 1995 to 2901 in 2007 (the increase in hotel rooms was much less pronounced, as the added brands owned, on average, smaller hotels).

Blackstone, a private equity company founded in 1985 by Steve Schwarzman and Peter Peterson, was no stranger the hospitality industry, having owned several hotel chains over the years (for example, the Wyndham, Extended Stay America and La Quinta, among others). Thus, it wouldn't be unfeasible for the firm to consider taking Hilton private through an LBO, even if such deal would be valued at more than $ 20 billion. After all, Blackstone was at the time the nº 1 PE firm in the world ranked by AUM - where it remains until the present day (table 4) –, and it was also a respected real estate investor, a useful attribute when the purchased target owns a significant portfolio of real estate assets.

While Hilton wasn't generally perceived as inefficient or particularly undervalued, Blackstone executives believed they could draft a value creation plan capable of generating significant returns for the firm and for its LP's. On July 2007, after months of negotiations, the firm announced it reached a deal with Hilton shareholders to purchase the firm for $ 26.5 billion ($ 47,50 a share), including debt. That raises the question: what was the logic behind Blackstone's decision? How were they planning to achieve a desirable rate of return - PE firms usually aim at a 20% a year return – for such a mature firm?

First of all, Hilton's shares – at the time valued at 12.2 times EV/EBITDA – were trading at a discount compared to rivals Starwood (14.3x) and Marriot (13.8x) (table 5). Hence, there was an opportunity to benefit from "multiple arbitrage". Moreover, there was also an opportunity to increase Hilton's valuation by changing its business model: until then, the company owned a valuable portfolio of real estate assets, which Blackstone believe were redundant. Instead, Hilton should sell those assets and focus on the managing and franchising segments, two capital-light business areas that generate superior returns. Also, those sales would help pay down debt.

Second, Blackstone structured the deal in a way that only $ 5.7 billion (21,5% of the total) would be invested by two of its funds (Blackstone Real Estate Partners VI and Blackstone Capital Partners V). The vast majority of the purchase price (78,5%) was funded by a group of 26 creditors, including banks, hedge funds and real estate debt investors. Excessive leverage can indubitably make a PE investment such as this one riskier, i.e., with such a high debt burden, target companies are more likely to face financial distress, and equity holders are more likely to lose their original investment. Having said that, this approach creates a tax shield (lower tax obligations), on the one hand, and it amplifies future returns, on the other. Blackstone certainly believed that the potential benefits outweighed the risks.

Lastly, there was a belief that some operational improvements could spur growth and reduce costs. Blackstone hired Chris Nassetta, formerly the CEO of Host Hotels & Resorts - a publicly listed real estate investment trust (REIT) - with the clear goal of going upmarket (i.e., increase the number of upscale hotels), improving profit margins and expanding internationally (in 2007 Hilton still derived approximately 80% of sales from North America).

Soon after the deal closed, however, the world economy went into a deep recession (figure 5). Within months, the value Blackstone attributed to its Hilton stake fell by 70% (from $ 5.7 billion in 2007 to $ 1.8 billion in 2009); the bonds issued to finance the acquisition were trading considerably below the par; some of the financial backers behind the deal were financially distressed, and some of them, like Lehman Brothers, were effectively bankrupt. It soon became clear that Blackstone invested at the peak of the economic cycle, and some pundits believed it was only a matter of time for the company to file for bankruptcy, effectively wiping out an equity investment of almost $ 6 billion.

Fast forward 4 years, and Hilton went public at a valuation of over $ 20 billion, and Blackstone's 76% stake was valued at 16 billion (Gelles, 2013). On paper, the profit stood at about $ 10 billion, making it the 2nd most profitable deal ever (trailing only Apollo's acquisition of LyondellBasell, a chemical manufacturer). However, by the time Blackstone

fully divested its shares in 2018, total profits reached $ 14 billion, and the deal became officially the most profitable ever in the world of Private Equity (Gottfried, 2018). So, how did Blackstone pull it off?

Well, first of all, Hilton benefited tremendously from the surrounding environment: the economy started to recover after 2009, which meant more business for the company; QE made borrowing costs lower (particularly beneficial for highly indebted firms such as Hilton), on the one hand, and drove up the prices of real estate (which Hilton owned abundantly), on the other; the stock market quickly rebounded after the great recession (figure 6), and, by 2013, the S&P500 was back to its 2009 levels; and finally, the tourism industry grew at a faster pace than the overall economy. Notwithstanding, Hilton's management team deserves praise. During this challenging times Hilton still grew, becoming the largest hotel chain in the world in 2013 (it was the 4th largest on 2007). International expansion was by and large the most important driver of growth, though Hilton's concentration on a capital-light strategy (focusing on management and franchising of hotels, instead of outright ownership) also helped the chain grow. As Nassetta latter stated "Our category-killer brands are attracting capital from all over the world, and it is their capital we are growing with, not ours" (Phalippou, 2014). Blackstone managers too deserve praise. They managed to wait for the economy and the stock market to bounce back to its normal levels before exiting the investment. But above all, the GP's were able to renegotiate Hilton's debt with all 26 creditors when the economy crashed, something that generated losses of about $ 4 billion for bondholders (total debt went from approx.. $ 20 billion to $ 16 billion). In the process, some lenders received as little as 35 cents on the dollar from their original investment. Likewise, Blackstone agreed to invest more than $ 800 million in Hilton in the restructuring process, which increased its exposure to a highly indebted firm.

To sum up, even though the GP's invested at the peak of the bubble, they still managed to profit greatly from the deal. Hilton's revenue didn't grow much during Blackstone's ownership (table 6). As a matter of fact, revenue was growing at a much faster pace before Blackstone took control of the enterprise (table 7). Still, a combination of leverage, debt renegotiation skills, timing (in the exit, not the entry) and operational improvements (overseas growth and capital-light model) transformed this deal into a smashing success for Blackstone.

Overall, the success factors behind this deal can be described as follows: at the portfolio company level, Hilton's strong financial profile and redundant assets proved valuable in the challenging years of the Great Recession, as did the management team's

competency to change the firm's business model even during those difficult times; at the firm level, both the experience of the GP's (who successfully renegotiated debt, among other useful contributions) and fund size (helpful when Hilton requested additional capital) ended up contributing to this deal's successful outcome; lastly, timing was, for a while, the largest obstacle to this deal's ultimate success, but the strong economic growth (and a roaring stock market) that followed minimized the effects of that early mistake.

7.2. Case study 2

Acquirer: Cortec Group

Target: YETI Inc

Year: 2012

YETI Coolers was founded in 2006 in Austin, Texas by brothers Roy and Ryan Seiders, two fishing and hunting enthusiasts who were disappointed with the lack of high quality coolers - used to keep food and beverages cold - in the market. Sensing a lack of an adequate alternative for outdoorsmen like themselves, they set out to build their ideal version of a cooler: rugged, in order to adjust to challenging surroundings and last long; and industrially insulated, to guarantee a long lasting cold environment. YETI coolers quickly became a hit among fishers and hunters, even though the prices were far higher than the competition. Their prices ranged anywhere from $ 250 - for the simplest version - to $ 1300 - for a cooler that could hold three elks, for the more experienced hunter -, whereas competing products could be purchased in a supermarket for less than $ 50. From the early days, the brothers set out to create a product for outdoor enthusiasts, not for mass-discount retailers.

Cortec Group, a private equity firm headquartered in New York, was accustomed to dealing with family firms such as YETI, having a solid track record of successful middle-market investments since it was founded in 1984. The firm claims to be a differentiated PE operator. It invests only in a small number of firms every given year, and then works closely with the portfolio company's management team to ensure everything goes according to plan. Occasionally, the firm partners with the former owners of a family business, as is the case of YETI, to help companies reach their next stage.

By early 2012, YETI's founders were considering the idea of letting an outside investor take a majority stake in the business. They were looking to diversify their assets, as most of their wealth was concentrated in a single investment, and were also searching for a partner who had the resources to expand the business. At the time, the firm was already large enough to attract private equity bidders, having booked almost $ 30 million in revenue in 2011 (not bad for a 5-year-old business). In June 2012, after some months of negotiation, Cortec announced the purchase of two-thirds of YETI for $ 67 million, i.e., it took a controlling stake at a $ 100 million valuation. At approx.. 3.3 times 2011 revenue, the acquisition wasn't perceived as cheap, but Cortec figured the hefty price tag was justifiable considering YETI was a "cult brand" – that is, it had a loyal group of followers -, and it still

had much potential - by the time the deal closed, YETI had just 11 SKU's in a single category (premium coolers).

The first order of business was to find a new CEO, given that Roy Seiders, the former head of the company, planned to spend more time on product development. Eventually Cortec selected Matt Reintjes, a Darden MBA whose career included several management roles at Danaher Corporation, a Fortune 500 company, and had in recent years served as vice president of Vista Outdoor Inc, a publicly-traded manufacturer of outdoor sports and recreational products. Cortec believed that Mr. Reintjes's, with his leadership experience in a very large company and his knowledge of the outdoor market, possessed the necessary skills to take this business to the next level. (Ryan, 2019)

Next, and because Cortec intended to make YETI less reliant on its cooler business, the company started to market new lower priced products such as drinkware (mugs, bottles, etc.), bags, apparel and other miscellaneous goods, all associated with the outdoors. The goal was to sell the YETI brand to the masses, even to those who weren't willing to pay a high price for a premium cooler, or for those who didn't need one at all. Crucially, there were no plans to offer a cheaper version of their iconic coolers. Such decision would likely transmit the idea that YETI was in the process of becoming a mass-market and inexpensive brand, something undesirable for the company. To put it briefly, Cortec believed that given YETI's reputation in the outdoor segment, the firm could leverage the brand and expand into new categories, and in the process attract new customers.

Another key issue was distribution. Even though the company had a well-known brand in the niche premium coolers segment, it needed a broader distribution network to become an established household brand. The goal was to increase its presence in national retailers like Amazon and Target, without neglecting traditional partners such as specialty hunting and fishing retailers and hardware stores, among others. Likewise, the direct-to-consumer (through e-commerce) and international segment should also be prioritized.

Under Cortec, whose strategy relied almost exclusively on implementing operational improvements in the portfolio firm, YETI kept an extraordinary growth rate (table 8). By 2015, the firm had $ 469 million in revenue and $ 137 million in EBITDA, and as soon as 2016 the PE-controlled firm was preparing to go public. Some market rumors - which proved to be too optimistic - suggested a valuation of about $ 5 billion for the 10 year old company (Jarzemsky, 2016). Operationally wise, the company improved across the board, from marketing to distribution and product development. Most significantly, the firm managed to shift its business from premium coolers to other miscellaneous goods. By 2016, 62% of total

sales came from categories that didn't exist prior to Cortec's entry in the company, such as drinkware. In late 2018, the company went public at a valuation of approx.. $ 2 billion, which combined with dividends received in the past (including a $ 312 million one in early 2016), and future stock appreciations (Cortec kept much of the company's stock, which performed well after the IPO), culminated in a tremendously profitable deal. In the end, Cortec got a 25 times multiple on the YETI deal, and the LP's got 20 times their original investment - the difference is justified by the fees paid to the PE firm (Lin, 2020).

Cortec's ability to steer YETI in the right direction, i.e., it bought a small niche supplier and transformed it into a mass market phenomenon (without damaging brand value), allowed the firm to achieve one of the most successful PE investments in recent history. Remarkably, "financial engineering" and leverage played a small or even non-existent role in this deal, showing that PE operators can still add intrinsic value to a company when the delineated strategy is carefully executed.

Hence, the success factors behind this deal were mostly related to management skills. At the portfolio company level, having a competent and motivated management team proved to be critical, since this was a young company where traditional sources of value creation weren´t obtainable (no redundant assets, no non-core subsidiaries, etc.). At the fund level, GP experience was the key differentiator: Cortec's ability to work with all stakeholders, including the former owners and a newly appointed management team, ended up promoting an alignment of interests between the several interested parties. Lastly, the timing of the deal was exceptional. Despite the fact that this asset wasn't purchased during an economic downturn, it's worth mentioning that this investment predated a strong economic growth and an excellent performance of the S&P500.

8. Conclusion

The primary goal of this dissertation was to summarize the drivers of successful PE investments. As we've seen, investment in PE have much higher return dispersion than the public markets, with the best performing funds generating significant profits, and the worst performing funds generating underwhelming – sometimes negative – returns on invested capital. Hence, there is pertinence in defining the best practices.

Generally speaking, we've found a consensus in the literature regarding the importance of the target firm's specific characteristics, and in the importance of proper timing. The former relates to the idea that some key attributes of the portfolio company – such as having unused borrowing capacity and a strong financial profile – ultimately produce better investment outcomes. The latter underlines the value of being counter-cyclical, i.e., investments have better outcomes when done at the bottom of the economic cycle (when interest rates are lower, targets are cheaper and the stock market is undervalued).

A promising area for future research consists on determining how characteristics specific to each PE fund affect overall performance. Our survey of the literature found seemingly paradoxical findings in this area. For instance, regarding the influence of fund size on performance, we've found researchers stating a positive relation, a negative relation and even no (strong) relation. The same thing happened when we analyzed the effects of PE-firm specialization on performance.

Still, I believe the estimation methods currently being used by most authors – such as the PME – are adequate. The problem is the lack of unbiased data, such as the one easily obtained when analyzing publicly-traded companies. PE firms are notoriously parsimonious with the amount of data they share with the public. If the policy-maker were to demand greater transparency from PE operators – a reasonable request, considering this industry's growing influence in our society -, I suspect the divergences in the literature would be much less pronounced.

Bibliographic references

Acharya, V. V., Gottschalg, O. F., Hahn, M., and Kehoe, C. (2013). Corporate Governance and Value Creation: Evidence from Private Equity. *The Review of Financial Studies, 26*(2), 368-402.

Aigner, P., Albrecht, S., Beyschlag, G., Friederich, T., Kalepky, M., and Zagst, R. (2008). What Drives PE? Analyses of Success Factors for Private Equity Funds. *The Journal of Private Equity, 11*(4), 63-85.

Amess, K., and Wright, M. (2012). Leveraged buyouts, private equity and jobs. *Small Business Economics, 38*(4), 419-430. doi:10.1007/s11187-010-9280-9

Anders, G. (1992). The "barbarians" in the boardroom. *Harvard Business Review, 70*(4), 79-87. Retrieved from http://europepmc.org/abstract/MED/10119720

Appelbaum, E., and Batt, R. (2014). *Private Equity at Work: When Wall Street Manages Main Street*. Russell Sage Foundation.

Aslan, H., and Kumar, P. (2011). Lemons or Cherries? Growth Opportunities and Market Temptations in Going Public and Private. *The Journal of Financial and Quantitative Analysis, 46*(2), 489-526.

Axelson, U., Jenkinson, T., Strömberg, P., and Weisbach, M. (2013). Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts. *The Journal of Finance, 68*(6), 2223-2267.

Bain and Company (2019). "Global Private Equity Report 2019". Retrieved from https://www.bain.com/contentassets/875a49e26e9c4775942ec5b86084df0a/bain_report_private_equity_report_2019.pdf on November 2019

Bartkus, J. R., and Hassan, M. K. (2009). *Specialization versus diversification in venture capital investing.*

Bena, J., Ferreira, M. A., Matos, P., and Pires, P. (2017). Are foreign investors locusts? The long term effects of foreign institutional ownership. *Journal of Financial Economics, 126*(1), 122-146.doi:https://doi.org/10.1016/j.jfineco.2017.07.005

Berg, A., and Gottschalg, O. F. (2005). Understanding value generation in buyouts. *Journal of Restructuring Finance, 02*(01), 9-37. doi:10.1142/s0219869x05000221

Bolton, P., Scheinkman, J., and Xiong, W. (2006). Executive Compensation and Short-Termist Behaviour in Speculative Markets. *The Review of Economic Studies, 73*(3), 577-610.

Boucly, Q., Sraer, D., and Thesmar, D. (2011). Growth LBOs. *Journal of Financial Economics, 102*(2), 432-453. doi:https://doi.org/10.1016/j.jfineco.2011.05.014

Brigl, M., Herrera, A., Liechtenstein, H., Meerkatt, H., Prats, M.J. and Rose, J. (2008). *The Advantage of Persistence. How the Best Private-Equity Firms "Beat the Fade".*

Cao, J., and Lerner, J. (2009). The performance of reverse leveraged buyouts. *Journal of Financial Economics, 91*(2), 139-157. doi:10.1016/j.jfineco.2008.03.002

Carow, K. A., and Roden, D. M. (1997). Determinants of the stock price reaction to leveraged buyouts. *Journal of Economics and Finance, 21*(3), 49-59. doi:10.1007/BF02929038

Cazalaa, G., Hayes, W. and Morgan, P. (2019). *Private Equity Exit Excellence: Getting The Story Right.* McKinsey and Company [online] Available at: <https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/private-equity-exit-excellence-getting-the-story-right> [Accessed November 2019].

Cornelius, P., Juttmann, K., and Veer, R. d. (2009). Industry Cycles and the Performance of Buyout Funds. *The Journal of Private Equity, 12*, 14 - 21.

Cressy, R., Munari, F., and Malipiero, A. (2007). Playing to their strengths? Evidence that specialization in the private equity industry confers competitive advantage. *Journal of Corporate Finance, 13*(4), 647-669. doi:10.1016/j.jcorpfin.2007.04.007

Crittenden, A. (1983). "Reaping The Big Profits From a Fat Cat". Retrieved from https://www.nytimes.com/1983/08/07/business/reaping-the-big-profits-from-a-fat-cat.html on November 2019 on November 2019.

Davis, S. J., Haltiwanger, J., Handley, K., Lipsius, B., Lerner, J., and Miranda, J. (2019). The Economic Effects of Private Equity Buyouts. *NBER Working Paper Series.*

Davis, S. J., Haltiwanger, J., Jarmin, R. S., Lerner, J., and Miranda, J. S. (2011). Private Equity and Employment. *National Bureau of Economic Research.*

Demiroglu, C., and James, C. M. (2010). The role of private equity group reputation in LBO financing. *Journal of Financial Economics, 96*(2), 306-330. doi:https://doi.org/10.1016/j.jfineco.2010.02.001

Frydman, C., and Saks, R. E. (2010). Executive Compensation: A New View from a Long-Term Perspective, 1936-2005. *The Review of Financial Studies, 23*(5), 2099-2138.

Gao, X., Ritter, J. R., & Zhu, Z. (2013). Where have all the IPOs gone? *Journal of Financial and Quantitative Analysis*, *48*(6), 1663-1692. https://doi.org/10.1017/S0022109014000015

Gelles, D. (2013). A Surprise From Hilton: Big Profit for Blackstone. *New York Times*, [online] Available at: <https://dealbook.nytimes.com/2013/12/12/a-surprise-from-hilton-big-profit-for-blackstone/> [Accessed July 2020].

Gompers, P., and Lerner, J. (1998). *Money chasing deals? The impact of fund inflows on private equity valuation?*

Gompers, P., Kaplan, S. N., and Mukharlyamov, V. (2016). What do private equity firms say they do? *Journal of Financial Economics, 121*(3), 449-476. doi:10.1016/j.jfineco.2016.06.003

Gompers, P., Kovner, A., Lerner, J., and Scharfstein, D. (2008). Venture capital investment cycles: The impact of public markets. *Journal of Financial Economics, 87*(1), 1-23. doi:https://doi.org/10.1016/j.jfineco.2006.12.002

Gottfried, M. (2018). *Blackstone To Check Out Of Hilton Investment*. [online] Wall Street Journal. Available at: <https://www.wsj.com/articles/blackstone-to-check-out-of-hilton-investment-1526683423> [Accessed July 2020].

Gottschalg, O. (2007). *Private Equity and Leveraged Buy-outs*. Retrieved from https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL-ECON_ET(2007)393515 on November 2019

Gottschalg, O., and Groh, A. (2006). *The risk-adjusted performance of US buyouts*.

Hannus, S.G. (2015). *The Price of Nothing – The Value of Everything: Towards an Understanding of Value Creation in Private Equity Buyouts*

Heel, J., and Kehoe, C. (2005). Why Some Private Equity Firms Do Better than Others. *McKinsey Quarterly, 1*, 24-26.

Higson, C. and Stucke, R. (2012). "The Performance of Private Equity". *SSRN Electronic Journal*. doi:10.2139/ssrn.2009067

Hope, O.-K., and Thomas, W. B. (2008). Managerial Empire Building and Firm Disclosure. *Journal of Accounting Research, 46*(3), 591-626.

Jarzemsky, M. (2016). *Yeti: How A $67 Million Investment Became A $3.3 Billion Windfall*. [online] WSJ. Available at: <https://www.wsj.com/articles/yeti-how-a-67-million-investment-became-a-3-3-billion-windfall-1474714801> [Accessed July 2020].

Jenkinson, T., Morkoetter, S., and Wetzer, T. (2018). *Buy Low, Sell High? Do Private Equity Fund Managers Have Market Abilities?*

Jenkinson, T., Sousa, M., and Stucke, R. (2013). *How Fair are the Valuations of Private Equity Funds*.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review, 76*(2), 323-329.

Jensen, M. C. (1989). Eclipse of the public corporation. *Harvard Business Review, 67*(5), 61-74. doi:10.2139/ssrn.146149

Kaplan, S. (1989). Management Buyouts: Evidence on Taxes as a Source of Value. *The Journal of Finance, 44*(3), 611-632. doi:10.2307/2328773

Kaplan, S. N., and Schoar, A. (2005). Private Equity Performance: Returns, Persistence, and Capital Flows. *The Journal of Finance, 60*(4), 1791-1823.

Kaplan, S. N., and Stromberg, P. (2009). Leveraged Buyouts and Private Equity. *Journal of Economic Perspectives*, 23(1), 121-146. doi:10.1257 jep.23.1.121

Katz, S. P. (2009). Earnings quality and ownership structure: The role of private equity sponsors. *Accounting Review, 84*(3), 623-658. doi:10.2308/accr.2009.84.3.623

Kreuter, B., and Gottschalg, O. (2006). *Quantitative Private Equity Fund Due Diligence: Possible Selection Criteria and their Efficiency*.

Leleux, B., Swaay, H., and Megally, E. (2015). *Private Equity 4.0 : Reinventing Value Creation*: Wiley.

Levis, M. (2011). The Performance of Private Equity-Backed IPOs. *Financial Management, 40*(1), 253-277.

Lin, E. (2020). *Yeti Investor Cortec Group Sells 'Substantially All' Of Its Stock*. [online] Barrons.com. Available at: <https://www.barrons.com/articles/yeti-investor-cortec-group-sells-all-its-stock-51591182000> [Accessed July 2020].

Lopez-de-Silanes, F., et al. (2015). "Giants at the Gate: Investment Returns and Diseconomies of Scale in Private Equity." *Journal of Financial and Quantitative Analysis* 50(3): 377-411.

Lossen, U. (2006). *The Performance of Private Equity Funds: Does Diversification Matter?*

Mathis, C. (2017). Three Trends in Middle Market Private Equity. *The Journal of Private Equity, 20*(3), 16-18.

McKinsey & Co. (2019). Private markets come of age. *McKinsey Global Private Markets Review 2019*. [Retrieved from https://www.mckinsey.com/~/media/McKinsey/Industries/Private%20Equity%20and%20Principal%20Investors/Our%20Insights/Private%20markets%20come%20of%20age/Private-markets-come-of-age-McKinsey-Global-Private-Markets-Review-2019-vF.ashxon November 2019]

McKinsey & Co. (2020). A new decade for private markets. *McKinsey Global Private Markets Review 2020*. [Retrieved from https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/mckinseys-private-markets-annual-review on April 2020]

Metrick, A., and Yasuda, A. (2010). The Economics of Private Equity Funds. *The Review of Financial Studies, 23*(6), 2303-2341.

Nikoskelainen, E., and Wright, M. (2007). The impact of corporate governance mechanisms on value increase in leveraged buyouts. *Journal of Corporate Finance, 13*(4), 511-537. doi:https:/doi.org/10.1016/j.jcorpfin.2007.04.002

Opler, T., and Titman, S. (1993). The Determinants of Leveraged Buyout Activity: Free Cash Flow vs. Financial Distress Costs. *The Journal of Finance, 48*(5), 1985-1999. doi:10.2307/2329077

Phalippou, L. (2008). The Hazards of Using IRR to Measure Performance: The Case of Private Equity. *Corporate Finance: Valuation*.

Phalippou, L. (2014). *Hilton Hotels: A Case Study in Real Estate Private Equity*.

Phalippou, L. (2014). Performance of Buyout Funds Revisited. *Review of Finance, 18*,189-218.

Phalippou, L., and Gottschalg, O. (2009). The Performance of Private Equity Funds. *The Review of Financial Studies, 22*(4), 1747-1776.

Phalippou, L., and Zollo, M. (2005). *What Drives Private Equity Fund Performance ?*

Preqin (2019). *2019 Preqin Global Private Equity & Venture Capital Report*. [Retrieved from https://www.preqin.com/insights/global-alternatives-reports/2019-preqin-global-private-equity-and-venture-capital-report/24905 on November 2019]

Preqin (2020). *2020 Preqin Global Private Equity & Venture Capital Report*. [Retrieved from https://docs.preqin.com/samples/2019-Preqin-Global-Alternatives-Reports-Sample-Pages.pdf in April 2020]

Proud, L. (2020). *Softbank's C.E.O. Insists That The Company Is Undervalued. Is It?*. [online] Nytimes.com. Available at: <https://www.nytimes.com/2019/02/06/business/dealbook/softbank-market-capitalization.html> [Accessed July 2020].

Rath, S., and Rashid, M. (2016). Undervaluation and private equity takeovers. *Australian Journal of Management, 41*, 735 - 759.

Renneboog, L., Simons, T., and Wright, M. (2007). Why do public firms go private in the UK? The impact of private equity investors, incentive realignment and undervaluation. *Journal of Corporate Finance, 13*(4), 591-628. doi:https://doi.org/10.1016/j.jcorpfin.2007.04.005

Rosenbaum, J., and Pearl, J. (2009). *Investment Banking: Valuation, Leveraged Buyouts, and Mergers & Acquisitions*. Hoboken: Wiley.

Ryan, K. (2019). *The 1 Decision That Helped Yeti Move From Cult Brand To Nearly $800 Million In Revenue*. [online] Inc.com. Available at: <https://www.inc.com/magazine/201908/kevin-j-ryan/yeti-coolers-cortec-roy-ryan-seiders-private-equity.html> [Accessed July 2020].

Schmidt, D., Nowak, E., and Knigge, A. (2004). *On the Performance of Private Equity Investments: Does Market Timing Matter?*

Weir, C., Jones, P., and Wright, M. (2015). Public to private transactions, private equity and financial health in the UK: an empirical analysis of the impact of going private. *Journal of Management & Governance, 19*(1), 91-112. doi:10.1007/s10997-013-9270-9

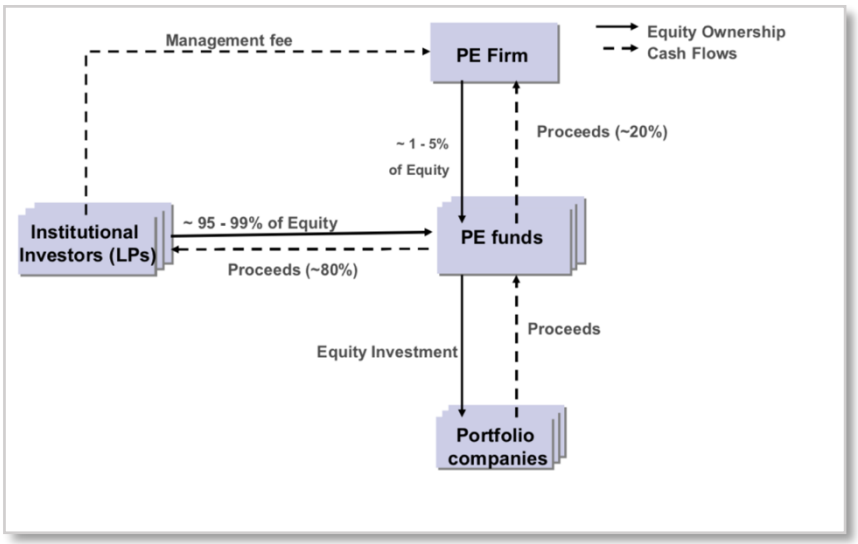
Weir, C., Laing, D., and Wright, M. (2005). Undervaluation, private information, agency costs and the decision to go private. *Applied Financial Economics, 15*, 947 - 961.

Wright, M., and Gilligan, J. (2014). *Private equity demystified: an explanatory guide*. London: ICAEW.

Appendix

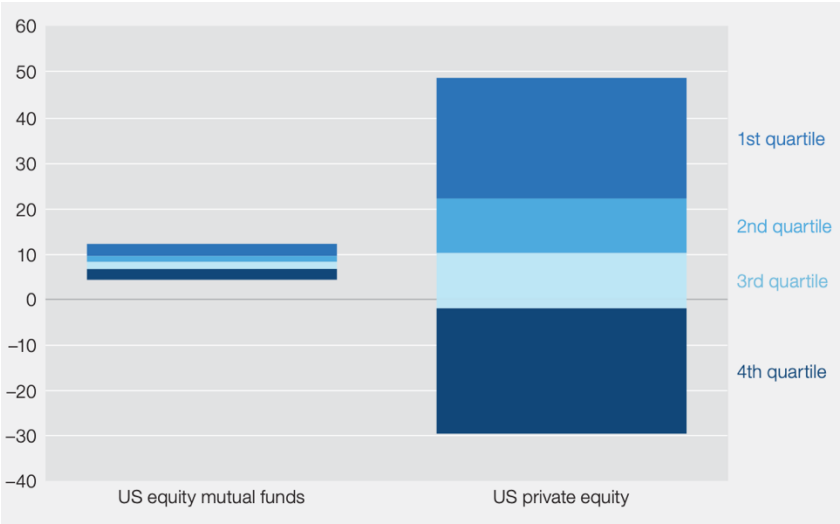
Figures

Figure 1. Private Equity Governance Structure



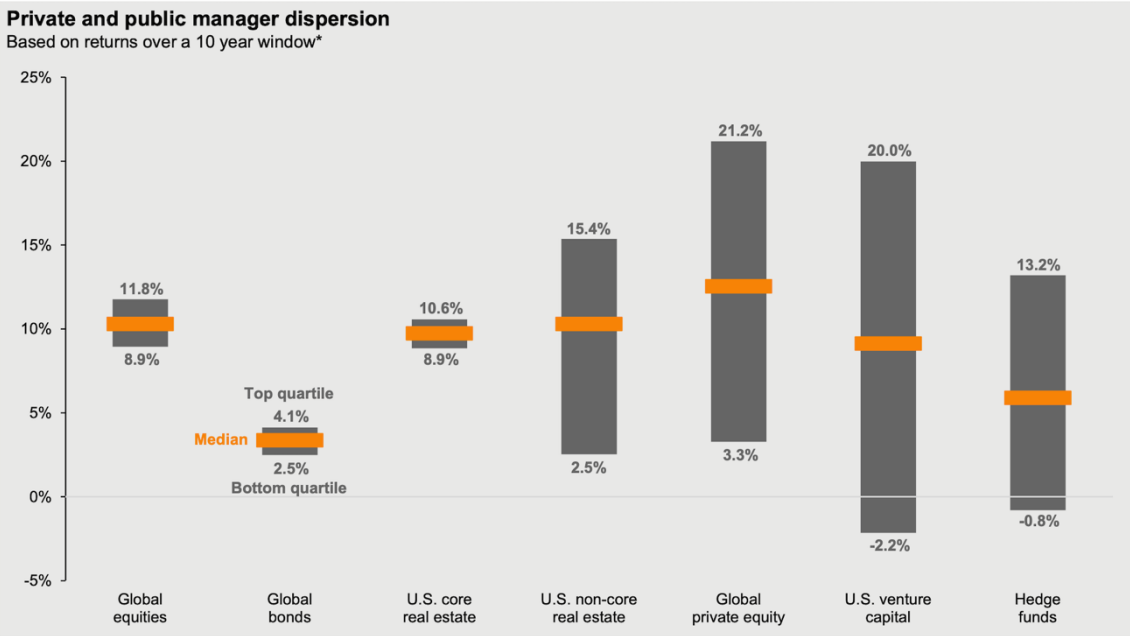
Source: Gottschalg (2007)

Figure 2. 5-year annual returns from US private equity funds and US mutual funds by performance percentile, 2013-2018, $



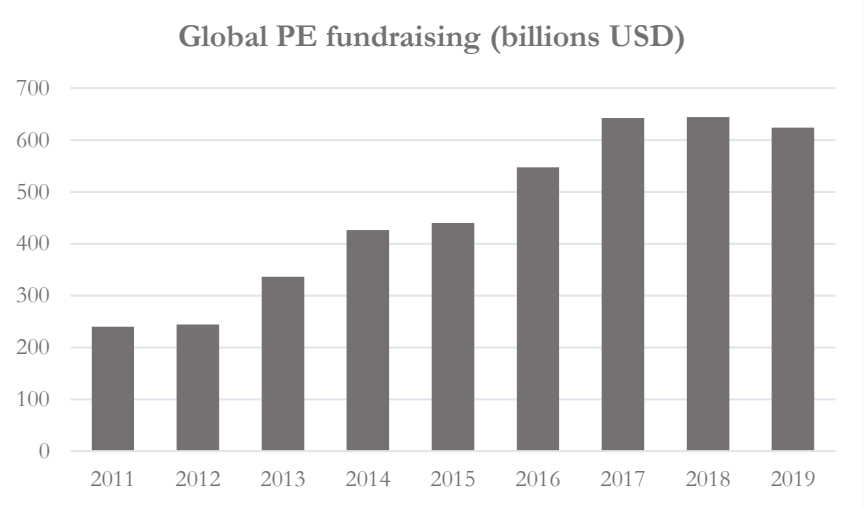
Source: McKinsey Global Private Markets Review 2019

Figure 3. Private and Public managers return dispersion, 2009-19, %



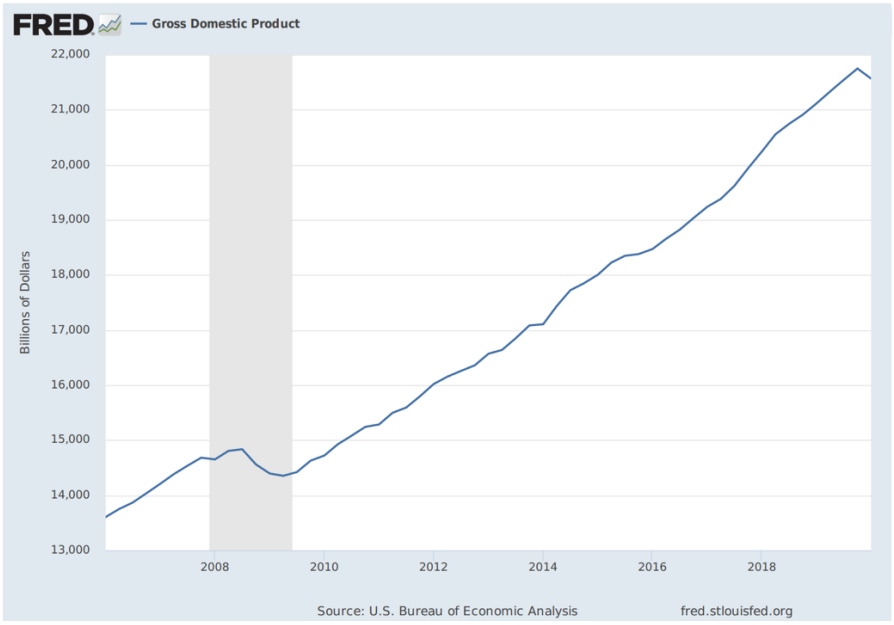
Source: JP Morgan Asset Management, 2020

Figure 4. Global Private Equity fundraising, 2011-19, billions $



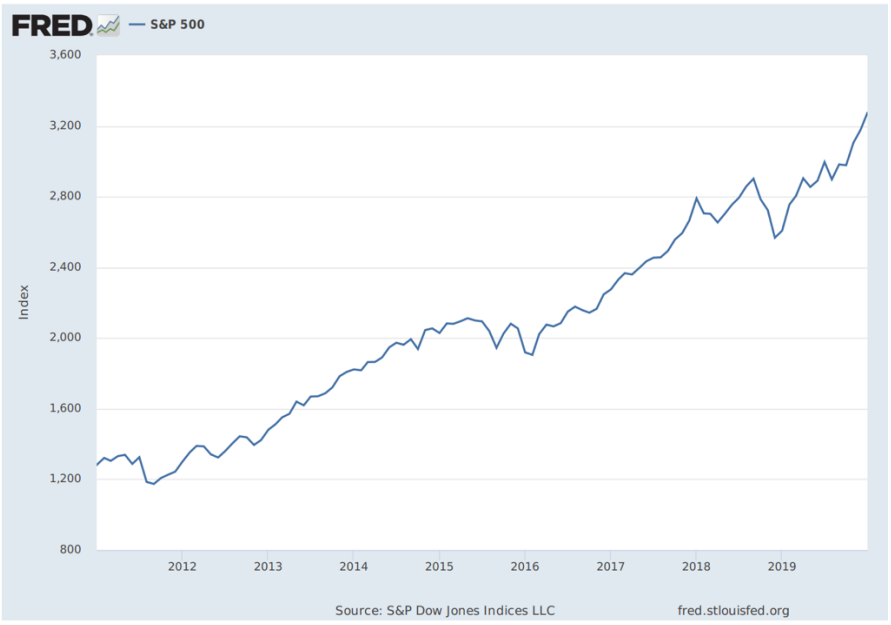
Source: JP Morgan Asset Management

Figure 5. USA GDP, 2006-19, billions $



Source: Federal Reserve Bank of St. Louis

Figure 6. S&P500 Index performance, 2011-19



Source: Federal Reserve Bank of St. Louis

Tables

Table 1. Largest Leveraged Buyouts ever

11 Largest LBOs in history					
	Target	Deal Size ($ B)	Investor(s)	Location	Year
1	TXU Corp.	32.1	KKR, TPG, Goldman Sachs, etc.	US	2007
2	First Data	25.7	KKR	US	2007
3	Alltel	25.1	TPG, Goldman Sachs	US	2007
4	RJR Nabisco	25.1	KKR	US	1988
5	Equity Office	24.7	Blackstone	US	2006
6	HJ Heinz	23.5	3G Capital, Berkshire Hathaway	US	2013
7	B.A.A	21.8	Ferrovial	UK	2006
8	Dell	21.5	Michael Dell, Silver Lake	US	2013
9	HCA	21.2	KKR, Bain Capital	US	2006
10	Hilton	20.2	Blackstone	US	2007
11	Alliance Boots	19.6	KKR	UK	2007

Source: Cnbc

Table 2. Largest Private Equity Investors

Top 20 Private Equity Investors (Billions of dollars;2017)				
	Investor	Type	Country	Allocation to PE
1	CPP Investment Board	Public Pension Fund	Canada	44,4
2	ADIA	Sovereign Wealth Fund	United Arab Emirates	39,6
3	GIC	Sovereign Wealth Fund	Singapore	31,5
4	CalPERS	Public Pension Fund	United States	25,4
5	APG	Asset Manager	Netherlands	21,6
6	Ontario Teachers Pension Plan	Public Pension Fund	Canada	21
7	CDPQ	Public Pension Fund	Canada	20
8	Washington State Investment Board	Public Pension Fund	United States	17,6
9	National Pension Service	Public Pension Fund	South Korea	17,1
10	CalSTRS	Public Pension Fund	United States	16,3
11	John Hancock Financial Services	Asset Manager	United States	16
12	Teacher Retirement System of Texas	Public Pension Fund	United States	15,9
13	New York State Common retirement	Public Pension Fund	United States	14
14	Oregon State Treasury	Public Pension Fund	United States	13,7
15	TIAA	Private Sector Pension Fund	United States	13,5
16	Florida State Board of Administration	Public Pension Fund	United States	12,1
17	Hong Kong Monetary Authority	Sovereign Wealth Fund	Hong Kong	11,8
18	PGGM	Asset Manager	Netherlands	10,2
19	China Life Insurance	Insurance Company	China	9,9
20	Bahrain Mumtalakat Holding Compar	Sovereign Wealth Fund	Bahrain	9,7

Source: Preqin Special Report 2017

Table 3. IRRs calculated at varying exit years and varying exit multiples of original investment

Year invested	Multiple of original investment										
	1	1.25	1.50	1.75	2	2.25	2.5	2.75	3	3.25	3.5
1	0%	25%	50%	75%	100%	125%	150%	175%	200%	225%	250%
2	0%	12%	22%	32%	41%	50%	58%	66%	73%	80%	87%
3	0%	8%	14%	21%	26%	31%	36%	40%	44%	48%	52%
4	0%	6%	11%	15%	19%	22%	26%	29%	32%	34%	37%
5	0%	5%	8%	12%	15%	18%	20%	22%	25%	27%	28%
6	0%	4%	7%	10%	12%	14%	16%	18%	20%	22%	23%
7	0%	3%	6%	8%	10%	12%	14%	16%	17%	18%	20%
8	0%	3%	5%	7%	9%	11%	12%	13%	15%	16%	17%
9	0%	3%	5%	6%	8%	9%	11%	12%	13%	14%	15%
10	0%	2%	4%	6%	7%	8%	10%	11%	12%	13%	13%

Source: Gilligan and Wright (2014)

Table 4. Largest Private Equity companies in the world, 2020

	20 Largest PE firms	
	Name	Country
1	Blackstone	United States
2	The Carlyle Group	United States
3	KKR	United States
4	TPG	United States
5	Warburg Pincus	United States
6	Neuberger Berman	United States
7	CVC Capital Partners	Luxembourg
8	EQT	Sweden
9	Advent International	United States
10	Vista Equity Partners	United States
11	Leonard Green & Partners	United States
12	Cinven	United Kingdom
13	Bain Capital	United States
14	Apollo Global Management	United States
15	Thoma Bravo	United States
16	Insight Partners	United States
17	BlackRock	United States
18	General Atlantic	United States
19	Permira Advisers	United Kingdom
20	Brookfield Asset Management	Canada

Source: Private Equity International (May 2020)

Table 5. Comparable Companies Financials (2007)

	Market Cap.	Total Debt	EV	LTM EBITD	EV/EBITDA
Hilton	13 045	7 471	202 479	1 680	12.2x
Marriot	16 706	2 606	16 874	1 180	14.3x
Starwood	14 427	2 606	16 874	1 180	11.4
Wyndham	6 610	3 132	9 568	837	11.4x
Choice	2 613	184	2 762	177	15.6x

Source: Phalippou, 2014

Table 6. Hilton Worldwide Revenue and EBITDA, 2007-13, millions $

	2007	2008	2009	2010	2011	2012	2013
Revenue	8 665	8 875	7 576	8 068	8 783	9 276	9 735
EBITDA	1 603	1 703	1 211	1 564	1 753	1 956	2 210

Source: Phalippou, 2014

Table 7. Hilton Worldwide Revenue and EBITDA, 1995-2006, millions $

	1995	2000	2001	2002	2003	2004	2005	2006
Revenue	3 555	4 345	3 952	3 816	3 819	4 146	4 437	8 126
EBITDA	497	1 235	1 023	951	849	988	1 104	1 715

Source: Phalippou, 2014

Table 8. YETI Inc Revenue, Gross Profit and Net income, 2013-19, millions $

	2013	2014	2015	2016	2017	2018	2019
Net sales	89 923	147 729	468 946	818 914	639 239	778 833	913 734
Gross Profit	44 382	67 186	218 701	413 961	294 601	383 128	475 314
Net income	7 261	14 210	74 222	48 788	15 401	57 763	50 434

Source: YETI Inc annual reports