Add-on acquisitions as a strategic tool for LBO value creation: an analysis of return drivers and market dynamics

Edoardo Miotto

Dissertation written under the supervision of Dr. Fatima Shuwaikh

Dissertation submitted in partial fulfilment of requirements for the MSc in Finance, at Universidade Católica Portuguesa and for the MSc in Accounting, Financial Management and Control at Bocconi University, 31st of January 2023.

Title: Add-on acquisitions as a strategic tool for LBO value creation: an analysis of return drivers and market dynamics.

Author: Edoardo Miotto

Abstract - English

Following a massive wave of leveraged buyouts (LBOs) which took place in the 1980s, the private equity asset class started gaining mediatic resonance both for its uncommonly sharp risk return profile and the meticulous exploitation of structured finance. Due to the increasing maturity of the LBO industry and the consequences of the covid pandemic, LBO firms have been progressively looking at buy and build strategies (BaBs) as a strategic tool to generate value for their limited partners, with the volume of add-on acquisitions increasing at a CAGR of 13,2% in the period 2006-2016. Through thorough research and analysis, this paper shows how PE firms can generate returns and value through BaBs and what are some distinctive features of the market for this peculiar type of transactions. Among its most interesting findings, this paper demonstrates how the increased volume of add-on activity has been driven majorly by mid-market operations and characterized by an increased focus on ICT industries and on the financial services industry. Furthermore, it provides evidence on how large cap platforms appear to be keener towards performing cross-border consolidation processes which, according to existing literature, should deliver the highest IRR. Finally, this paper demonstrates empirically the positive impact of performing add-on acquisitions on multiples expansion even after controlling for financial cycle conditions, which are the element with the largest impact on the multiples expansion achieved by PE firms.

Abstract - Portuguese

Após uma onda massiva de leverage buyouts (LBOs) que ocorreu na década de 1980, a classe de ativos de private equity começou a ganhar ressonância midiática tanto por seu perfil de retorno de risco excepcionalmente agudo quanto pela exploração meticulosa de finanças estruturadas. Devido à crescente maturidade da indústria de LBO e às consequências da pandemia de covid, as empresas de LBO têm vindo a olhar progressivamente para as estratégias de buy and build (BaBs) como uma ferramenta estratégica para gerar valor para os seus Limited Partners, com o volume de add-on aquisições aumentando a um CAGR de 13,2% no período 2006-2016. Por meio de pesquisa e análise minuciosas, este artigo mostra como as empresas de PE podem gerar retornos e valor por meio de BaBs e quais são algumas características distintivas do mercado para esse tipo peculiar de

transação. Entre suas descobertas mais interessantes, este documento demonstra como o aumento do volume da atividade complementar foi impulsionado principalmente por operações de mercado intermediário e caracterizado por um foco maior nas indústrias de ICT e na indústria de serviços financeiros. Além disso, fornece evidências de como as plataformas de grande capitalização parecem estar mais interessadas em realizar processos de consolidação transfronteiriça que, de acordo com a literatura existente, devem fornecer a IRR mais alta. Por fim, este artigo demonstra empiricamente o impacto positivo da realização de aquisições add-on na expansão de múltiplos.

To my family, my friends and everybody who has supported me in my academic career. I will be forever grateful for everything you have done for me.
Edoardo

Index

Introduction

Following a massive wave of leveraged buyouts (LBOs) which took place in the 1980s, the private equity (PE) asset class started gaining mediatic resonance both for its uncommonly sharp risk return profile and the meticulous exploitation of structured finance, of which the acquisition of RJR Nabisco by KKR is the prominent example. Despite the industry lingo which, especially in the US, associates PE to LBOs, the asset class is much broader and includes investment strategies such as Venture Capital (VC), Growth Capital, LBOs and Turnaround. After a period of slowdown driven by the Great Financial Crisis (GFC) and the Eurozone Crisis, in the last decade PE has witnessed a rebound in deal flow, leading industry experts to define the mid-late 2010s as the "Renaissance of Private Equity". Within the PE spectrum, LBOs play a dominant role. The peculiar features of this type of transaction imply that professionals have the possibility to actively intervene within the structure of portfolio companies in order to exploit the three levers of value creation: deleveraging, EBITDA growth and multiples expansion. Due to the increasing maturity of the LBO industry and the consequences of the covid pandemic, LBO firms have been progressively looking at buy and build strategies (BaBs) as a strategic tool to generate value for their limited partners. BaBs consist in investment approaches in which once a platform company is acquired, a series of further acquisitions are later performed in order to enlarge the group perimeter. This paper will focus on this M&A strategy with the objective of understanding how PE firms can generate returns and value through BaBs and what are some distinctive features of the market for this peculiar type of transactions. The paper will be therefore divided int three sections. The first one will provide initially a general overview of the PE industry with a drill down on the features of LBOs. The second one, will provide a review of the general literature available on buy and build strategies, investigating in particular the purpose of these transactions, the drivers which push PE firms towards the execution of add-ons and the ways in which add-on acquisitions can generate value for investors. The third and final section of this paper will contribute to the existing literature by exploiting data extrapolated from Mergermarket to perform a statistical analysis of relevant features of the market for add-on acquisitions such as the historical evolution over time, the geographical distribution, execution timing and industry focus. As part of this analysis, the paper will also highlight major changes which characterize the most recent PE wave, from 2013 onwards, with respect to previous market dynamics and any important differences between add-on

acquisitions performed by mid-cap platforms and those performed by large cap platforms. Finally, the analysis will be enriched by a simple regression model which will provide empirical evidence on the role of add-on acquisitions in contributing to value creation through multiples expansion.

Part 1: Leveraged Buyouts Literature Review

In order to understand the world of add-on acquisitions, it is fundamental to have a solid understanding of the broader PE industry and LBOs. In his book, "Introduction to Private Equity", Demaria explains how "Private equity can be described as investments in private companies in privately negotiated transactions". Indeed, the universe of equity transactions in private markets, includes a broad spectrum of deals, starting from VC and ending with Turnaround investments, with LBOs representing only one particular investment strategy (Demaria, 2013). Starting from the macro framework presented by Demaria, this section of the paper will describe the historical evolution and the macro-economic and societal impact of PE in its broader meaning.

1.1 The historical evolution of PE

PE activities are a long-standing tradition in the global economy, with some experts arguing that even Columbus' journey towards the West Indies could be classified as a PE investment financed by the Spanish monarchs. Despite its long history, the PE industry gained the attention of the general public as a consequence of the large LBOs performed at the end of the 1980s and in the period immediately before the great financial crisis. Among many, the event which shed light over the LBO industry was the RJR Nabisco deal in 1988. The transaction became mostly known due to unconventional reasons, namely the greed of the financial and strategic players involved, narrated in the business novel "Barbarians at the gate". From a purely financial and economic perspective, the deal can be considered as one of the turning points in the development of the industry. At the time, the transaction represented the largest LBO on record, with an EV of almost 25Billion dollars, and even more importantly it was the first one to involve a wide range of sophisticated players, a complex set of financial instruments and a challenging valuation process. Indeed, once RJR Nabisco was put for sale four different bidders expressed serious interest in the transaction: KKR, the management group of RJR Nabsico, willing to perform a management buy-out, First Boston and Forstman Little. The bidders recruited the support of the most prominent financial advisors on the market, among which: Merill Lynch, Morgan Stanley, Wasserstein

Parella, Salomon Brothers, Goldman Sachs, Citibank, Shearson Lehman Hutton and Manufacturers Hanover Trust. The asset was sold through a competitive process which, after a bidding war, was won by KKR (Michel and Shaked, 1991). Since then, LBO transactions have gained a significant mediatic resonance, leading to an interchangeability between the terms PE and LBO in the industry lingo. Contemporarily to the RJR Nabisco deal, another key element for the development of the industry emerged. Golder Thoma & Co.'s private equity house originated a very powerful strategic tool: the "buy-and build strategy", which will be discussed in depth in the next sections of this paper. Following its boom in the 1980s, in the period 1990-2012 the PE industry grew very rapidly, despite a decline in activities in the years immediately after the great financial crisis and some noise caused by Eurozone crisis. In this time horizon, the capital managed by PE firms witnessed an outstanding growth from USD 100 billion to USD 3 trillion (Demaria, 2013). The late 2010s, saw an even stronger development in PE activity, with deal value growing at a CAGR of 12.0% in the period 2013-2018, leading industry experts to renaming the mid-late 2010s as the "Renaissance of Private Equity" (McKinsey, 2019). Most recently, PE has continued its growth trajectory, with 2021 being a record-breaking year both in terms of fundraising and investments, with 118 billion euros raised and 138 billions invested only in the EU (Invest Europe, 2021). Private equity however did not remain unaffected by the Covid pandemic, with a decline in both funds raised and invested. In Europe, for example, the funds raised by PE firms fell from 114 billion in 2019 to 110 billion in 2020, with investments being even more affected and declining from 100 billion to 91 billion.

The remarkable cumulative growth of PE in the last three decades can be explained by multiple factors. Firstly, Demaria points out how PE activity has become an increasingly valid alternative to traditional sources of equity financing. Indeed, when compared to PE, public stock markets have the significant disadvantage of requiring more stringent thresholds such as a minimum amount of yearly revenues and a minimum number of years of existence (Demaria, 2013). Secondly, until the most recent macro-economic turmoil characterized by high inflation rates and the conflict in Ukraine, interest rate yields had remained particularly low, due to the extremely expansionary monetary policy implemented by central banks as a response to the great financial crisis and the Eurozone crisis. Low yields have been a strong boost for LBO activity as investors moved away from safer asset classes which provided unappealing returns. Of equal importance, Argawal points out how lower interest rates imply lower levels of cash outflow for debt service and a higher debt capacity for target companies, improving the IRR of LBO operations (Argawal, 2020). Finally,

another factor which has contributed to the expansion of the PE industry is the fact that the performance of PE funds in recent years has been remarkable, with the cumulative IRR for the PE industry in 2021 being 27.0%, and with a low degree of volatility. Ultimately, this risk return profile has made the asset class increasingly attractive for institutional investors, increasing the masses flowing to PE firms (Henry et al., 2020 and McKinsey, 2022).

1.1.2 Recent criticisms to the LBO industry

A very recent development in the LBO industry has been the attack received by investment professionals from Amundi and ATP, global asset managers with assets under management of 2 trillion and 156 billion respectively. High level executives of the firms have exposed their fear of PE evolving into a Ponzi Scheme in which large PE firms sell assets one to the other at overvalued prices on the premise that there will always be another buyer willing to perform a secondary buyout or that there will always be the possibility to set up a continuation fund (Pitchbook, 2022). The discussion obtained a remarkable mediatic attention with industry experts presenting contrasting opinions. Overall, the claims put forward appear to be extreme in the current state of the arts. Indeed, secondary buyouts still represent only 31.0% of the total exits for LBO firms and the use of continuation funds, despite being a growing phenomenon, still plays a minor role in the industry. Furthermore, most private equity firms still focus on value creation through growth and active management. Oppositely, a Ponzi Scheme consists in the mere resale of static assets (Pitchbook, 2022). However, it must be acknowledged that some concerns might arise about whether, in an illiquid market characterized by a moderately low level of disclosure, current asset prices might be inflated by the possibility to exit investments through secondary buyouts and continuation funds, exposing investors to the risk of value destruction (Pitchbook, 2022).

1.2 The role of PE in the broader economy

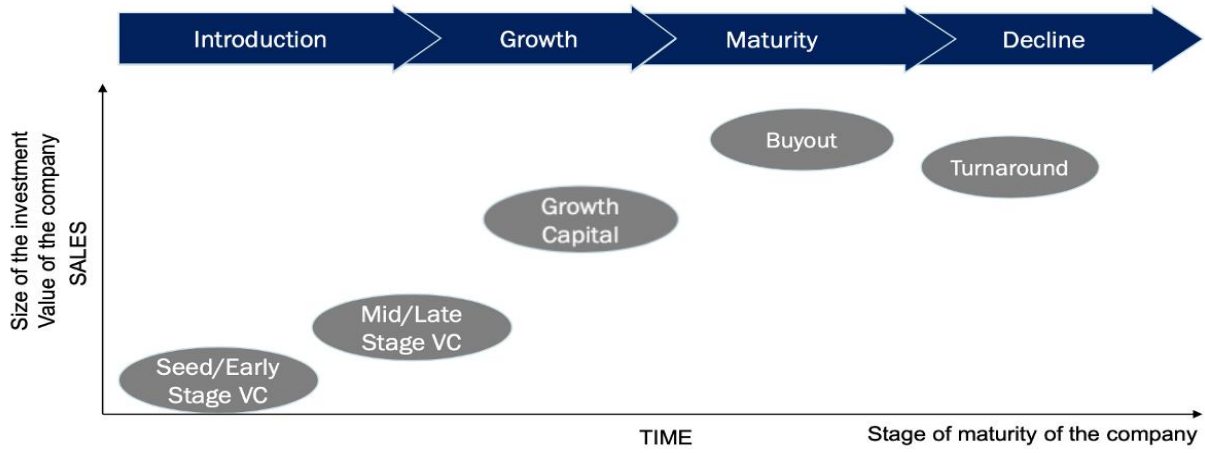
In today's advanced economic system, the role of PE is clear, it can be considered as the third type of financing for companies after bank loans and the public stock markets. Indeed, the entrepreneur has become the central figure of the PE ecosystem, with PE firms seen increasingly as partners that will support the growth of the company into a next phase of its life cycle. This is especially true in the so-called mid-cap market, where PE firms often acquire companies directly from their founders.

Demaria argues that this evolution of the industry has been gradual, with PE investors developing slowly the skill set and the network necessary to identify talented entrepreneurs and support them in the development of their venture while participating to the economic benefits (Demaria, 2013). Moving from a micro firm level to a macroeconomic level, according to various authors, PE firms have a positive impact on economic growth through two major causal roots (Strömberg, 2009). Firstly, PE improves on aggregate the individual firm productivity of target companies, therefore implying an overall increase in economic productivity at the macro level. Secondly, PE stimulates the development of a more structured stock market, one of the major exit strategies for PE firms. Seen that scholars have identified a positive relationship between stock market development and economic growth, it can be argued that, by contributing to stock market development, PE is ultimately supporting economic growth (Strömberg, 2009). Additionally, Stromberg highlights how PE generates a more efficient allocation of capital by supporting the growth and contribution to the overall economy of high-risk emerging industries which would otherwise remain unfunded (Strömberg, 2009). When discussing the macroeconomic impact of PE, a particularly important investment strategy is VC. The topic has been analyzed intensely by existing literature, showing that through a thorough screening, VCs identify the start-ups with the greatest potential and support them into becoming drivers of economic growth. Akcigit et al. develop a macro-economic model which exploits endogenous growth theory to conclude that the VC investments increases both innovation and the probability that a given firm will reach the right end of the size distribution ceteris paribus its pre-investment characteristics. The authors further elaborate the model and conclude that, under the assortative matching hypothesis, the presence of VCs increase economic growth on average by 9.0% with respect to a scenario in which VCs do not exist (Akcigit, et al. 2019). The causal link between VC activity and economic growth is further investigated by Romain and Von Pottelsberghe who argue that the economic contribution of VCs derives from innovation and absorptive capacity (Romain & Van Pottelsberghe, 2004). Gompers and Lerner further contribute that through a rounds-based approach (Series A, Series B etc.), VC activity mitigates the information asymmetry and principal agent problem between founders and investors as founders try to optimize the use of capital collected in previous rounds in order to access follow up funding. Finally, moving to the equivalently important theme of social contribution, Romain & Van Pottelsberghe argue that VC investments have a significantly higher impact with respect to the R&D carried out in general corporate businesses and public facilities.

1.3 The different types of PE investments

As previously mentioned, the term private equity in its broader term implies a broad range of investment strategies. This section of the paper will initially provide an upfront explanation of the functioning of private equity funds, necessary in order to understand value creation dynamics and the incentives of the different players involved. Secondly, it will address the various types of PE strategies with an in-depth study on LBOs. The graph below represents the different types of investment strategies discussed, classified according to the size of the company and the life cycle phase in which the company is acquired.

Diagram 1: The different types of PE investments



1.3.1 The LP-GP structure and performance evaluation

Almost all PE firms have a common overarching structure, the LP-GP structure. A General Partner (GP), is ultimately a legally authorized manager of investment funds. One GP can manage multiple funds at the same time, each incorporated through a different vehicle (Blake et al., 2015). On the other hand, the limited partners (LPs), are ultimately investors which provide capital to the fund managers by subscribing shares in the fund vehicle. The fund will then be managed by a specific agreement between LPs and GPs. The fund will typically be structured as a closed end fund which will have to be mandatorily liquidated within a specific number of years, typically ten. Limited Partnerships are very peculiar legal agreements which entail a significant level of requirements which often are country specific. For example, in the UK they are regulated by the Limited

Partnership Act of 1907 (Blake et al., 2015). One of the core benefits of the limited partnership structure is the fact that it limits the responsibility of LPs to the amount of capital contributed, as long as they do not participate in the management of the fund. Once the LP commits the capital, it will not be entitled to withdraw it. The only possibility to exit the investment prior to liquidation is to sell the shares of the fund on the secondary market at a price determined through private negotiations. This is often referred to as the secondary market for private equity stakes. In order to compensate the GPs for their operations, the LPs will pay them management fees, de facto paid through an intragroup fee from the fund vehicle to the GP. Management fees are paid on an annual basis, and they will typically be in the range of 1.5 - 2.5% of the committed capital. Additionally, the GPs will receive capital distributions in the form of the so called "carried interest", which essentially consists in a portion of the capital gains generated by the fund. However, the payment of carried interest is subject to the achievement of a minimum IRR, known as the "hurdle rate", negotiated between the GPs and the LPs. Carried interest typically represent 20.0% of the capital gains of the fund, with the remaining 80% delivered to LPs. Additionally, the distribution waterfall will typically include a catch-up structure in which the LPs will receive all capital gains until the hurdle rate is met. From that moment onwards all capital gains will be distributed to the GP until he has received the 20% of the cumulative distributions. Once the catch up is completed, all future capital gains will be distributed following the 80-20 rule. The objective of such structure is aligning the interest of the LPs with the one of the GPs, pushing the latter towards the achievement of the highest possible IRR and MoM multiple in the shortest time possible. Always with the idea of maximizing returns, another feature which is fundamental in a limited partnership is the so called "capital call". Even if the capital is committed, LPs will not provide it to the GP until the money is necessary in order to perform an investment in a target company. Once a deal is signed the GP will perform a capital call and collect the money from the investors. By the same principle, PE funds do not hold excess cash in their balance sheet. Instead, once an invested is exited, the proceeds are immediately distributed to the LPs.

Seen the less observable nature of PE funds with respect to public equity, one question which naturally emerges is whether these peculiar structures are generating the returns required by investors. By taking a sample which included funds with vintage 2005-2018, Dompé et al. determine that the average IRR of a PE fund is of 13.37% (Dompé et al., 2021). In terms of Money-on-Money multiple (MoM), Phalippou shows that in the period 2006-2019 the average MoM

received by large pension funds is of 1.57x, equivalent to a compounded annual growth rate of approximately 11% and therefore in line with the long term performance of public equities (Phalippou, 2020). Clearly, such results impose a negative view on the performance of PE funds, seen that they would be providing the same returns as public equities but with a significantly higher level of risk. However, it is questionable whether using public equity valuation metrics such as the CAGR is appropriate in the PE industry. Indeed, the evaluation of the performance of a PE fund is a theme on which the jury is still out. Considering a CAGR on the committed capital does not consider the timing of distributions and capital calls. IRRs are not an optimal measure either as they assume the possibility to reinvest at an equivalent rate of return. Finally, MoM multiples do not consider the time value of money.

1.3.2 Venture Capital

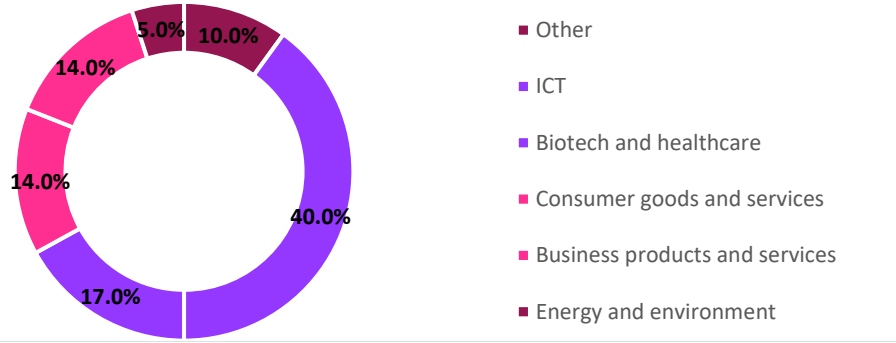
"Venture capital is a form of private equity and a type of financing that investors provide to startup companies and small businesses that are believed to have long term growth potential" (Chen, 2020). Typically, VC investments consist in the acquisition of minority stakes and the target companies are generally young start-ups with a low enterprise value and negative cashflows. The ecosystem is populated by three major types of investors: angel investors, financial VCs and strategic VCs. Angel investors are wealthy individuals which typically also have a background in the industry of the company in which they are investing. They carry out small equity injections, typically smaller than 1 million euros, and they invest both for financial purposes and for their personal interest in the technology. Financial VCs are investment firms which raise capital from institutional investors and individuals, and which have the sole purpose of maximizing the returns for their LPs. To fulfill their purpose, financial VCs are typically set up as limited partnerships which follow the previously explained structure. Finally, there are strategic venture capitalists. These are typically smaller divisions of larger corporations which invest in specific firms with the hope that their technology will develop and benefit the parent company (Farina, 2021). The VC industry, however, comprises a broad sub-set of investments. When talking about equity injections VC investments which can be classified according to different criteria. Farina, for example classifies VC investments into three different stages: early stage VC, composed by seed investing and start-up investing, mid-stage VC, and late stage VC (Farina, 2021). Another commonly used classification is the one of distinguishing

broadly between seed capital financing and investment rounds, starting from Series A and ending with series E. In addition to direct equity injections however, Gompers and Lerner identify in bridge financing a fourth type of VC investment (Gompers et al., 2002). Due to the peculiarity of the VC investment process, a clearcut distinction between each type of investment does not exist, however it is still possible to identify some distinguishing features associable to each financing stage. Seed financing is the earliest equity financing stage for a company. Typically, investors at this phase are family, friends and business angels. The amount of capital gathered is very volatile, ranging from 10,000 dollars to 2 million dollars (Chen, 2020). From a product point of view, typically the founders will not have developed a commercial product yet and the funds collected will be channeled towards R&D, market research and team expansion (Coxblue and Goldstein, 2022). The involvement of financial VCs in this investment stage is quite low, due to the extremely high risks involved. Start-up capital investing, or what some might refer to as a series A round, takes place once the company has reached valuable milestones, above all the development of a sample product and a business plan. The average investment size during this phase is around 2.7 million dollars which are typically used in order to fine tune the product, conduct additional market research, set-up manufacturing lines, hire more managerial staff and start investing on advertising (Gompers and Lerner, 2002 and Goldstein, 2022). In this phase, financial VCs start playing an important role and they can be considered as the most important investors. Expansion stage financing, which could be considered as Series B and Series C rounds, consists in raising the capital which allows the firm to move on from the development stage. Target companies at this stage are already quite successful with a high level of sales and a positive net income. The funds gathered will be used to increase sales, penetrate new markets, both in terms of products and geographies, to increase the advertisement power of the company and in some cases even to start carrying out some M&A operations. The VCs investing in expansion stages are typically highly specialized. Additionally, thanks to the availability of a track record and hence a lower level of risk, also different types of institutional investors, such as hedge funds, will start investing into the equity capital of these companies (Reiff, 2020). Finally, there is later stage venture capital, which can be associated with Series D and E rounds. This type of financing is rare and typically it is carried out either to give a “final push before the IPO” or because the company has not been able to obtain its target objectives through expansion stage financing (Gompers and Lerner, 2002). Finally, there is bridge financing which is significantly different from other VC investment strategies as it involves

the use of debt instruments rather than equity. Indeed, the typical structure will be the one of a short-term loan, which might include also collaterals and warrants, which is automatically converted into equity at the closing of the next financing round (Harris, 2002). The need for bridge financing essentially emerges from the fact that rarely VC firms are able to time perfectly their cash needs and they end up depleting their cash reserves before the closing of the next financing round. Bridge financing therefore acts as an intermediate source of funds with the major use of these resources being the fulfillment of working capital needs. Typically, bridge financing will be provided either from new financial VCs which will invest in the next round or from previous investors which already have a stake in the company. However, it is also common for these resources to be provided by wealthy individuals and angel investors. The peculiarity of bridge financing being provided by VCs which are already invested in the company essentially emerges from the fact that these players have a strong incentive to ensure the survival of the company and therefore the value of their investments, until the next round of financing (Harris, 2002).

Significant data about the underlying trends in the industry, at least at the European level, can be extrapolated from Invest Europe, which estimated a total of 20.4 Billion Euros in investments in 2021. As the diagram below demonstrates, the industry which benefitted the most from VC investments, as easily expectable, was the IT industry (40.0%), followed by Biotech and healthcare (17.0%), Consumer goods and services (14.0%) and Business products and services (14.0%).

Diagram 2: Distribution of VC investments per industry

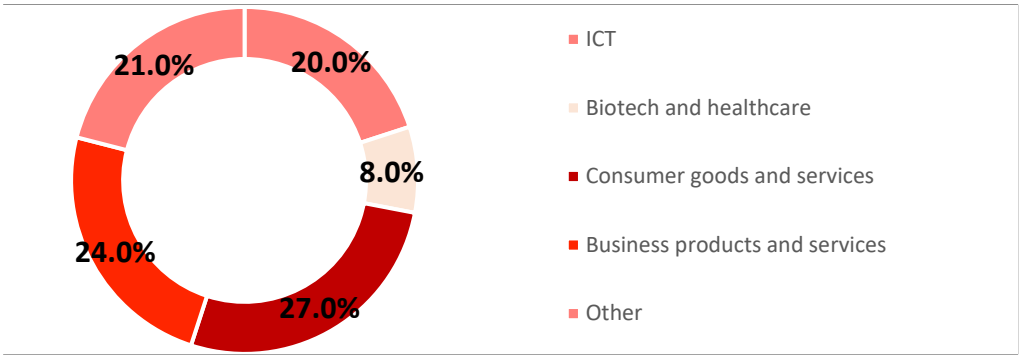


1.3.3 Growth Capital

Growth capital, also known as growth equity, lays in the grey territory between Venture Capital and traditional LBOs, often getting confused with late-stage venture capital or with small and mid-

size LBOs. However, while LBOs consist in the acquisition of already existing shares, growth capital consists in injecting new capital in the investee, through a capital increase which provides the investors with a minority stake in the company. Typically, however there will also be a minor liquidity event for the founders. Furthermore, while LBOs are characterized by the use of financial leverage, growth capital does not typically use debt in order to perform equity injections (Demaria, 2013 and Venero Capital advisors, 2018). At the same time, growth capital can't be considered as a form of VC due to the later stage of the company in its life cycle and evolution. Indeed, investee companies are typically well-established, already profitable and seeking for funds to increase their customer base, production capacity or international presence. These differences also reflect themselves in the size and types of risks which are taken on by VC investors and growth capital investors. While VCs face majorly market and product risk, growth capital investors will be exposed majorly to execution risk and management risk. The role of growth capital is therefore to finance companies which already have a much lower risk with respect to start-ups but are still considered too risky by banks to grant them large loans to finance their growth (Demaria, 2013). The typical investment ticket for a growth fund lies between 10 million euros and the 100 million euros, with optimal targets being firms with a potential for revenue growth through a scalable and profitable customer acquisition process (Venero Capital Advisors, 2018). Indeed, together with the already existing management team, growth capital investors create value through accelerated revenues growth, may this be organic or through M&A, and accelerated operational improvements. In terms of investor characteristics, growth capital will often be carried out as a minor investment strategy by funds which are specialized either in VC or in buyouts. It is rare to find firms which are specialized exclusively in growth capital. The market for this type of investment strategy is quite active. Indeed, data from Invest Europe shows how, at least at the European level, the amount of funds raised for growth capital in 2021 was second only to LBO funds (20 billion euros vs 71 billion euros). Again, by exploiting the data from Invest Europe it is possible to get a proxy of which are the industries which benefit the most from growth capital investments. Differently from VC, the group is led by consumer goods and services (27.0%), followed by business products and services (24.0%) and ICT (20.0%), showing therefore a significantly lower appetite for IT companies.

Diagram 3: The distribution of Growth Capital dealflow by industry



1.3.4 Turnaround Investments

Turnaround investments are a smaller and less traditional niche in the PE industry, and they consist in the acquisition of companies which are facing a situation of financial distress with the objective of restructuring them and re-selling them with an improved financial situation. Turnaround investments have a high-risk high return profile, and they are typically carried out either by specialist investment firms such as Sator in Italy and FC Crestone in the US, or by specialized divisions of large private equity houses such as Blackstone. A particular feature of turnaround investors is the fact that they often retain within their organization professionals with greater managerial and legal skills with respect to

traditional buyout funds, as they need to be able to deal with the possibility that the target companies will default (Esposito and Gagliardi, 2019). Clearly, turnaround investors are not government owned entities with the objective of saving jobs and improve welfare. Rather, they have obligations towards their shareholders to maximize their returns on the invested capital. As such, the firms in which they invest are highly selected companies, which satisfy two fundamental characteristics. Firstly, the assets are not excessively toxic and there is the possibility to renew them effectively. Secondly, the assets operate within markets in which the demand will survive in the long run. For example, Kodak, which used to produce photographic film was not an adequate candidate for a turnaround operation, seen that the demand for its products was destined to decline in favor of digitalization (Harrigan, 2020). Furthermore, it is important to understand how differently from LBOs, turnaround investors do not use leverage seen the already distressed situation of the firm (Esposito and Gagliardi, 2019). An interesting aspect of turnaround

investments is the fact that the assets acquired are often divisions of firms rather than large groups. This strategy allows turnaround investors to focus on the performance of the individual business unit, eliminating elements of complexity related to intercompany dynamics and thus increasing the likelihood of success of the operation (Harrigan et al., 2020). Another aspect which incentivizes turnarounds on individual business units is the higher appeal of spinoffs, carveouts and divestures as a tool for managers to dispose of underperforming businesses with respect to the implementation of managerial revival operations. This approach lowers complexity for managers, but it exposes shareholders to higher value destruction risks due to the fire sale prices at which assets are often sold (Harrigan et al., 2020).

1.3.5 Focus on LBOs

Leveraged buyouts are probably the most renowned sector of the private equity industry and they consist in acquiring a company through the use of "financial, legal and tax levers" (Demaria, 2013). Differently from VC and Growth capital, LBOs consist in the acquisition of a controlling stake from the previous shareholders of the company, and therefore do not represent an equity injection. The acquisition therefore does not have the purpose of allowing the company to further invest in its growth, but rather to provide the control of the company to a PE fund which will then play a crucial role in the management of the company. The fund will preserve control over the firm for a period between 3 and 5 years and will then exit by selling the asset to a strategic player, a second PE fund or by listing the company on the public equity markets, all with the objective of maximizing the return on the invested equity. Buyout funds invest in companies which are mature, profitable and with positive cashflows. These aspects are fundamental in order to allow the fund to service the debt used to perform the acquisition (Farina, 2021). Furthermore, Demaria argues that the companies targeted by LBO funds will satisfy one of the two following criteria: either they have a specific ownership problem to solve, such as inheritance, retirement, divorce of the owners or exit of one of the co-owners, or there is a specific project which can be put in place by gaining control of the company ex. consolidation, vertical integration or internationalization. In terms of industries in which LBOs are carried out, by using European investments as a preliminary indication, it is possible to conclude that 27.0% of total investments are performed on Business products and services, followed by Consumer goods and services, 25.0%, and finally ICT with

18.0% (Invest Europe, 2021). In terms of competitive environment, the LBO industry can be classified into two broad branches. On one side, the so called “mega” and “large funds” while on the other side the so called “mid-market” funds. Mega funds typically raise capital between ten and fifteen billion dollars, and they invest in companies with an EV around one billion dollars and through equity tickets above 300 million dollars. Furthermore, these funds are highly diversified in terms of industry, geography and investment strategies. Following the definition provided by Invest Europe, large funds are those funds which invest equity tickets between one hundred and fifty and three hundred million. Additionally, large funds tend to be much less diversified in terms of geography and industry with respect to mega funds. Mid-Market funds invest equity tickets between fifteen million and 150 million and often acquire the companies directly from the founding entrepreneurs. All funds with equity tickets smaller than fifteen million are considered as “small funds” and they are characterized by a lower level of assets under management and a lower degree of diversification (Invest Europe, 2021). Examples of mega fund firms include Blackstone, KKR and The Carlyle Group among others. Examples of large firms on the include Silverlake, CVC and Permira. Examples of mid-market firms include Bridgepoint and Ardian. When distinguishing between mega and large funds with respect to mid-market funds, it is also important to understand the different investment approach of these firms. Indeed, large-cap deals imply investing in companies with a lower growth potential with deleveraging and multiple’s expansion becoming the two core determinants of value creation (Ilg, 2015). On the other hand, in middle-market buyouts, growth is the ultimate driver for value creation (Chapman et al. 2009). This also forces PE professionals to adopt a much more hands on approach, transforming them also into operational executives, board members, strategists, headhunters and in some occasions even family mediators (Chapman et al. 2009). Additionally, another peculiar feature of mid-market funds is the fact that companies are often acquired directly from entrepreneurs, often with a reinvestment from the latter. In this case, the role of the PE firm consists in supporting the entrepreneur in the development of the company through a more managerial approach. Despite being smaller in terms of size and equity investments, the large number of mid-market funds has transformed these investors into the most prominent players in the buyout industry. Indeed, as shown by data from invest Europe, at least at the European level, mid-market firms represent 289 out of the total 339 billions invested in LBOs in 2021, an 85.3% share. In terms of deal flow volume, the average number of investments

carried out by mid-market funds in the period 2017-2021 is of 518 investments, while the average for Mega funds is of 39 deals per year in the same time horizon (Invest Europe, 2021).

Diagram 4: The distribution of LBO activity in 2021 by industry and capitalization

After having understood the broad functioning and purpose of LBO transactions, it is now necessary to understand the way in which they are financed. In an LBO deal, the value which the private equity fund will need to finance is the EV of the company and the fees which will have to be paid during the transaction. The sources used will be a combination of debt and equity. The equity injected in the operation will take typically one of three forms: equity invested by the PE fund itself on behalf of its investors, equity injected through a co-investment process or equity re-invested by the entrepreneurs or management team of the company. The latter is especially true in the case of mid-market transactions. Co-investments are processes through which an investor, either a limited partner of the fund, or an external investor, will invest side by side the fund and will ultimately become a minority shareholder of the target company. The returns that the co-investor makes will be unrelated from the ones generated by the fund and will depend exclusively on the performance of the individual deal and the specific agreements with the GP. Typically, when the co-investor is already an LP of the fund, the investment opportunity is offered on a no fee no carry basis. On the other hand, when the co-investor is not an LP of the fund, the treatment of the agreement will depend on the policy of the investment house. Some will continue to offer the co-investment on a no fee no carry basis while others will charge some form of management fee and carry (Cole, 2018). In the case of the re-investment by the entrepreneurs, the latter will typically remain as partners to further assist the company's growth and benefit from the return generated by the operation at exit. A good example of this is the acquisition of In&Out by 21 Invest in 2021, during which the founder, Angelo L'Angellotti, re-invested in the company and is currently the chairman of the firm (21 Invest, 2021). The debt used to finance the acquisition on the other hand

can take one of 3 major forms: bank debt, high yield debt and mezzanine financing (Corporate Finance Institute, 2022). Bank debt is the most senior debt in the capital structure and consequentially it will have the lowest interest rates. It will typically have a payback period which ranges between five and ten years (Corporate Finance Institute, 2022). However, bank debt will typically be structured in two different tranches, often referred to as Term Loan A and Term Loan B in the industry lingo, with Loan B being more junior and entailing a higher level of risk. High yield debt will be the second one in terms of seniority. It implies a higher risk and will be remunerated with higher interest rates. This type of debt is raised in the form of bonds which are subscribed by investors rather than loans from banks. It can be raised either in the private debt markets or in the public debt markets. Finally, there is mezzanine debt. Mezzanine financing is a form of quasi-equity instrument. It is the most junior form of debt, and it is typically structured with an equity kicker. This implies that if the company defaults on its obligations, the debt will be transformed automatically into equity, often making the provider of mezzanine debt the controlling shareholder of the company. Mezzanine debt is often provided by specialized funds or by larger private debt funds with a mezzanine desk. Additionally, due to know how synergies, it is common for large private equity firms to have their own mezzanine fund. Examples of the latter include Blackstone, Partners Group, KKR, Apollo and CVC. Once the type of debt used in order to perform the deal has been identified, it is necessary to further distinguish according to the way in which the debt is repaid. There are three major types of repayment schedules which might be used: amortized repayments, bullet repayments and payment in kind (PIK) repayments. Term loans A will be in the form of an amortized loans, where for each installment, the firm will repay both the interests due and a portion of the principal amount. Bullet bonds imply that for every installment the firm will repay the interest matured on the principal, however the principal will be repaid all in one tranche at the maturity of the bond. Typically, Term Loans B provided by banks will be in the form of a bullet bond. Additionally, also high yield debt will typically be in the form of a bullet bond (Lenglet,2022). Finally, PIK debt implies no repayment of neither interest nor principal during the lifetime of the bond. The unpaid interest will compound over time and add up to the principal of the bond, leading to a larger principal repayment at maturity with respect to the initial amount borrowed. PIK repayment is often the typical form which is used for mezzanine financing. The quantities of the different debt typologies used in an LBO operation will depend according to the deal characteristics. Here below is reported an example of a Uses and Sources table which exploits

all the previously mentioned sources of financing. The table is constructed on an EV of 100 million euros, 10 Million euros of EBITDA and a 10x EBITDA acquisition multiple.

Diagram 5: Example of a Uses and Sources table for LBO financing (Million Euros)

Uses		Sources	
EV	100.0	Fund equity	30.5
Financing fees	0.25	Entrepreneur re-investment	15.0
Due Diligence fees	0.25	Co-investment equity	15.0
		Term Loan A (Amortized)	15.0
		Term Loan B (Bullet)	15.0
		High yield debt (Bullet)	5.0
		Mezzanine debt (PIK)	5.0
Total	**100.5**	**Total**	**100.5**

Due to their peculiar structure, LBOs are exposed to multiple risks, namely default risk, execution risk and management risk, making this investment strategy particularly risky (Venero Capital Advisors, 2018). The Great financial crisis of 2008 showed the vulnerability of LBO targets to strong economic shocks due to their high level of leverage. This led to the amount of debt used to decrease significantly, moving to an average amount of 50.0% equity and 50.0% debt, with respect to the peaks of 90.0% debt and 10.0% equity often witnessed in the pre-crisis years.

Once the context and the structure of LBO operations has been understood, it is possible to analyze the way in which these transactions can generate value for investors. Just like for cumulative fund performance, the value generated for investors by a standalone deal can be measured either in terms of IRR or in terms of the MoM multiple deriving from the capital gain obtained at exit with respect to the equity ticket invested at entry. In the industry it is common practice to consider that there are three different ways in which value can be generated. Firstly, the deleveraging of the company. Secondly, the growth in the EBITDA of the company, which is a measure of productivity and cash generation. Finally, multiple expansion, which in practice is the increase in the valuation multiple applied to the EBITDA of the company at exit with respect to the multiple applied on the acquisition date. Demaria summarizes three studies by Quiry & Le Fur, which show that on average the equity investment of LBO funds is multiplied by 2.72 over a period of 3.5 years (Demaria,2013). According to the study, deleveraging explains 0.89 out of 2.72 of the multiple, multiples expansion explains 0.47 of the multiple and EBITDA growth explains 1.36 of the multiple. Deleveraging allows to generate value through the repayment of debt by exploiting the

operating cashflows of the company. Through this operation, even at parity of EV, the equity value of the company will gradually increase. Following Modigliani-Miller's basic theorems, debt also allows LBOs to generate value through the yearly tax shield that it provides, equivalent to the interest paid multiplied by the tax rate. The multiples expansion generates value because even at parity of EBITDA at entry and exit, an increase in the valuation multiple would imply an increase in the value of the company. Finally, an increase in EBITDA would imply that at parity of the valuation multiple, the value of the company would increase. While the deleveraging effect can be seen merely as an accounting repayment of debt, the generation of additional EBITDA and a multiples arbitrage are related majorly to business aspects of the firm development. Seen the focus of this paper on the role of add-on acquisitions in LBOs, these levers will be analyzed more in depth in the next sections of the paper by addressing them from the perspective of BaB strategies and providing practical examples on how add-on acquisitions can contribute to the value creation process.

Part 2: Literature review on add-on acquisitions

In recent years, add-on acquisitions have become an increasingly important strategic tool within the LBO industry, with McKinsey reporting that add-on acquisitions represented 71.0% of PE deal volume in 2021 with respect to a 43.0% in 2004 (McKinsey, 2021). Seen the increasing importance of buy-and-build strategies, the next section of this paper will focus on explaining the role add-on acquisitions in the PE industry and the way in which such acquisitions can contribute to the value creation process.

2.1 Introduction to Buy and Build strategies

Buy and build strategies (BaBs) consist in a PE fund acquiring as target for the LBO a "platform company" which, guided by the PE firm, will then acquire numerous smaller firms that are synergistic to its operations (General Equity, 2021). The performance of add-on acquisitions can be seen as an extension of the core business of PE firms. Indeed, PE houses are comfortable in performing add-on acquisitions seen that their primary business is acting as buy-side operators and they possess extensive knowledge in M&A transactions (Hammer 2013). Within the broader definition of BaB strategies, it is necessary to distinguish between two major sub-strategies: consolidation and transformation. A consolidation strategy has the objective of consolidating a

fragmented industry with the objective of creating a larger player with a critical size either at the national level or at the international level (Hoffman, 2012). Consolidation strategies can further be split into "Build-up strategies" and "Roll-up strategies". Build-up strategies consists in acquiring many companies where each acquisition is relatively small with respect to the platform company and carries a limited risk for the investment as whole. However, once the individual deals are combined, their impact on the existing business is significant (Hoffman, 2012). Roll-Up strategies on the other hand, consist in imposing the strategy of the platform company, which has historically proven successful, to the add-on acquisitions. Moving on to transformational strategies, the latter may be defined as "a deal that changes the very nature and operations of a company" (Divestopedia, 2022). Some examples include acquisition of new channels or products. Transformational deals require a significant integration, and the outcome of the operation will have a significant impact on the company's overall performance and success (Divestopedia, 2022). Within these two broader strategies, an aspect which deserves particular attention is the geographical location of the acquisitions. Indeed, it is particularly relevant to distinguish between domestic and cross border BaBs, with cross border BaBs defined as those strategies which involve at least one add-on acquisition performed in a different country with respect to the country of the platform company (Hammer, 2013). Internationalization strategies could represent either an international consolidation, for example by acquiring international competitors with the objective of creating a champion at the European level, or a transformational strategy, for example with the objective of entering a new product market. In the ex-ante design of a BaB strategy, two aspects are particularly important: the choice of the platform company and the speed of the execution of add-ons. Regarding the selection of the platform company, Hammer et al. conclude that PE backed firms are more acquisitive than non-PE-backed firms even before the acquisition by the PE fund. From a practical perspective, this can be reconducted to the fact that possessing a track record of acquiring targets, signals that the firm has the know-how and characteristics necessary to become a platform company for the implementation of an add-on strategy (Hammer et al., 2013). In terms of timing of the execution, Hammer et al., demonstrated how for the first three years after the acquisition of a PE firm, platform companies are on average more acquisitive than non-PE backed companies (Hammer et al., 2013). When considering the previously discussed structure of PE funds it appears clear that the choice to be highly acquisitive in the years immediately after the platform

deal derives from the objective of maximizing the synergistic potential by the time of exit, in order to extract the maximum value from the sale of the asset.

2.2 Value creation through add-on acquisitions

Add on acquisitions, have the potential to impact all three of the value creation levers in an LBO operation. Firstly, add-on acquisitions can lead to value creation through the process of deleveraging in the same way as the platform companies. Indeed, Borell et al. report evidence of add-on acquisitions being financed with a significant leverage level (Borell, 2013). Through the repayment over time of the debt used in order to perform the add-on acquisition, the equity value of the group will increase.

The second way through which an add-on acquisition can generate value in an LBO transaction is the increase in group productivity. Increased group productivity will augment the EBITDA of the group and therefore generate additional value, with respect to the sum of the parts, even at parity of multiples and debt levels. In the broader M&A literature increases in productivity achieved through M&A activities are known as cost and revenue synergies and there are multiple ways through which PE firms can generate them through add-on acquisitions. Firstly, buy and build strategies will result in an increase in the size of the combined entity. Already in 1967 Hall et al. reported how there was a positive relationship between firm size and profitability. The relationship, however, appears to be quadratic rather than linear, with the marginal increase in profitability diminishing as firm size increases (Hall et al., 1967). From a practical perspective, this finding can be explained though the fact that larger entities can carry out high return investments which are not available to smaller companies and by the benefits generated from economies of scale (Hall et al., 1967 and Shepherd, 1972 and Scherer, 1973). A second way through which add-on acquisitions can increase profitability is through concentration (Borell, 2013). Indeed, a buy and build strategy allows the platform company to increase its market share in the industry. By adapting the concepts developed by Porter in his “Five Forces”, it appears clear that the increased market share will augment the bargaining power of the firm as a supplier to the industry of its customers, ultimately raising the mark-up which it is able to charge (Porter, 2008). PE firms are aware of the benefits which can be reaped from the size and concentration effects, with Borell identifying the creation of an industrial champion at the regional, national or international level as the number one reason why private equity practitioners engage in BaB strategies in the first place (Borell, 2013). A third

and final way through which add-on acquisitions can lead to an increase in profitability is the elimination of excess capacity. When the platform company is suffering from excess capacity, buying another firm and serving its customers will allow to increase the saturation level. Furthermore, it might provide large operational savings, by shutting down the now unnecessary plants of the target and increase the liquidity available for debt service through the sale of surplus assets (Borell, 2013 and McKinsey, 2017). Finally, add-on acquisitions are often companies that are underperforming with respect to their potential and from which value can be extracted by providing resources, improving management decision making and optimizing the business plan. In addition to examples which are more tailored to add-on acquisitions, all the synergies achievable through general M&A operations can also be obtained through add-ons. On the cost side, the most important synergy achievable is the reduction of labor costs through a streamlining of the labor force and the managerial structure. For example, the combined entity will be managed exclusively by one CEO, therefore removing a duplicated role. In addition to labor related savings, firms can share their supply chain connections and IT systems in order to improve the production process. Finally, the combined entity would possess the proprietary knowledge of both companies, reducing the need for the payment of royalties and fees to third parties (Corporate finance institute, 2021). On the revenues side the most important synergies will emerge from the bundling of products and the acquisition of complementary customers. Product bundling will allow the combined entity to offer its clients a complete package, therefore attracting customers looking for a one stop shop and increasing cumulative sales. Customer acquisition will take place by cross selling the products of the platform to the customers of the add-on or vice versa. This is particularly important at the geographical level. For example, Ausaffer Due, a 21 Invest portfolio company, acquired Ramo as an add-on in 2021. Ramo had a strong presence in Germany and Austria and this provided Ausaffer Due with the possibility enter into a new geographical market by tapping Ramo's customer base.
Due to its particularly high relevance within the paper, the way in which add-on acquisitions can create value through multiples expansion will be discussed in depth separately in the following section.

2.3 Value creation through multiples expansion

The final way in which add-on acquisitions can support value creation in LBO transactions is through a multiples expansion. Hammer et al. have performed a natural experiment in which they exploited LBOs which did not implement BaBs as the control group. The authors conclude that, for domestic BaBs, the EV/Sales and EV/EBITDA multiples at exit are higher by 38.0% and 37.0% respectively when compared to the control group. The effect appears to be even stronger when analyzing cross border BaBs, with the percentage increase of the multiples being of 41.0% and 44.0% respectively (Hammer et al., 2013). Similar results are reached by Acharya et al. who show that deals with add-on acquisitions perform better than deals without add-ons in terms of EBITDA margin improvement and multiples expansions, using a sample of 395 Western European deals performed between 1996 and 2004 (Acharya et al., 2013).

In order to understand how add-on acquisitions can contribute to the expansion of a given multiple it is necessary to understand what the theoretical drivers of the multiple are. Seen the importance of the EV/EBITDA multiple in the PE industry, the paper will focus on this measure. Through the simplifying assumption that the company will have a constant growth rate, the EV of the firm can be rewritten as[1]:

$$EV = \frac{FCFF_1}{(WACC - g)}$$

This implies that the EV/EBITDA multiple of the company can then be re-written as:

$$\frac{EV}{EBITDA} = \frac{\frac{FCFF_1}{(WACC - g)}}{EBITDA} = \frac{FCFF_1}{EBITDA} x \frac{1}{(WACC - g)}$$

Once the different drivers of the multiple have been decomposed, it appears clear that add-on acquisitions could generate a multiples expansion in three different ways. Firstly, by improving the future cash conversion of the company, secondly by causing a decline in the WACC of the firm and finally through an increase in the growth rate of the entity. This is consistent with the findings of Hammer et al., who report that there are three major ways in which add-on acquisitions could lead to a multiple's expansion. The first driver identified by the authors is the fact that add-on acquisitions improve the growth potential of the firm by signaling the possibility to carry out further

[1] "g" in the equation represents the terminal growth rate of the free cash flows to the firm generated by the company.

acquisitions, also thanks to the experience gained in the M&A arena (Hammer et al., 2013). This would reflect itself into a higher growth rate in the terminal value. The second factor identified by the authors is the increased size of the company through add-ons. This would provide it with easier access to capital and labor and make it less vulnerable to external shocks and information asymmetries (Hammer et al., 2013). In the context of the above framework, this would reflect itself into a reduction of the WACC through a reduction in the overall risk level of the company. A particularly important size threshold to overcome, also through the use of add-ons, is the one of 10 million EBITDA (Lynch, 2022). This will broaden the pool of potential buyers, thus increasing the competition for the asset, and will improve the financing conditions for the firm, making it easier for acquirors to finance the deal using debt. These two factors combined imply that buyers will be willing to pay a higher valuation for target companies, ultimately increasing the acquisition multiple (Lynch, 2022). Furthermore, by increasing the size of the company, add-on acquisitions increase the probability of exiting the transaction through an IPO as larger companies are less impacted by IPO costs and are more attractive for analyst coverage and investors (Hammer,2015). By trading on the public markets, firms will lose the so-called liquidity discount associated to private companies. This lower risk level would also reflect itself in a reduction of the WACC and therefore in an expansion of the EV/EBITDA multiple. Indeed, IPO exits will typically generate higher rates of return for PE firms despite higher transaction costs, the requirement of lock up periods, and the risk of uncertain proceeds (Hammer,2015). A third factor identified by Hammer et al., is the fact that through add-on acquisitions, platform companies increase their degree of diversification by acquiring a package of corporate real options (Hammer et al., 2013). Again, this would reflect itself into a decline in the WACC of the company. In addition to the factors identified by Hammer et al., another specific element through which PE firms can generate a multiples arbitrage on an add-on acquisition is the so-called mid-market discount. Mid-market company valuations will typically suffer due to their smaller size and a less developed managerial structure. This would ultimately reflect itself in a combination of a higher WACC and a lower cash conversion capacity. By becoming part of the platform's larger group, not only the add-on will benefit from the previously discussed size benefits, but it will also be possible for the PE firm to improve its management structure during the holding period. At exit the add-on will be re-sold as part of a larger group with integrated processes, leading to a higher exit multiple with respect to the entry multiple paid. Additionally, more recent research by Hammer suggests that add-on

acquisitions also offer PE firms the possibility to gradually reposition the platform company into more attractive market segments by the time of exit, thus increasing the value of the entire group (Hammer, 2022). Finally, it is necessary to point out how PE firms could generate multiples arbitrage by simply acquiring the add-on at a discounted value due to market opportunities, financial cycle dynamics or specific company dynamics. Seen the opportunity to generate multiples expansion through the use of buy-and build strategies, PE firms are also willing to pay higher prices for companies which can be exploited as platforms. Indeed, research performed by Hammer et.al by exploiting a sample of deals performed between 1997 and 2020 showed that the transaction multiples paid by PE firms for platform companies are similar to those paid by strategic players, which typically are willing to pay significant premiums as they have the opportunity to exploit synergic potential (Hammer et.al, 2022). According to the authors, despite paying a higher entry price, BaB investments still outperform non BaB investments carried out by PE firms.

2.4 Operational decisions related to add-on acquisitions

As add-on acquisitions are only one of the ways through which a PE firm can generate value, it is important to understand what are the key drivers that determine the decision to execute this inorganic growth strategy. According to Hammer, these drivers can be summarized into 4 macro factors: buyout characteristics, target characteristics, PE sponsor characteristics, and finally industrial and economic conditions. Starting from buyout characteristics, the authors identify how many variables, such as the use of syndicated equity, have an unclear impact on the probability of performing add-on acquisitions. The most important LBO feature which the author identifies as having a significant impact on add-on probability is the management buyout structure, which reduces the probability that the platform firm will perform M&A. Moving on to the characteristics of the platform company, the first variable with a positive impact on the probability of executing an add-on deal is the size of the platform company (Hammer, 2015). This result is the consequence of two major causal routes. Firstly, large platform companies possess the necessary capacity and infrastructure for the integration of subsequent acquisitions. Secondly, large companies can scale up faster through larger add-ons which will contribute a significant amount to the EBITDA of the group. This is particularly important in the private equity environment as funds need to generate value as quick as possible (Hammer, 2015). A second variable which is positively correlated to

add-ons is the experience of the platform company in the M&A arena. If the firm has solid M&A experience, this will reduce transaction costs and increases the efficiency of post-acquisition integration (Hammer, 2015). Furthermore, another factor with a crucial role is the geographical and industrial nature of the available targets. Indeed, targets operating either abroad or in different industries, will imply higher advisory costs and longer integration periods, thus decreasing the probability of performing an add-on acquisition. However, the literature also identifies the existence of an interaction term between the nature of the add-on acquisitions and the level of experience of the private equity firm, with more experienced firms being more willing to perform more add-ons abroad or in different industries (Hammer, 2015). Regarding PE firm characteristics, the most important feature is probably experience. More experienced PE firms have access to a superior deal flow and have more interactions with banks and other PE firms, therefore broadening the pool of potential targets and debt providers available to finance the deal (Hammer,2015). Finally, in terms of macroeconomic factors, the first variable with a positive impact on the execution of add-ons is industry fragmentation. As long as there is a sufficiently large firm able to act as a platform company, a fragmented industry will provide the PE firm multiple targets which it can acquire (Hammer, 2015). A second relevant factor is represented by the conditions of the debt markets. In phases where debt markets are more favorable, the probability of performing add-on acquisitions increases as PE firms will typically try to perform add-on acquisitions with the highest debt levels possible. Indeed, BaB strategies are sometimes referred to as "leveraged build-ups" (Hammer, 2015).

Section 3: A statistical analysis of the market for add-on acquisitions

After having explored the theoretical background related to add-on acquisitions and BaB strategies, this next section of the paper will try to provide quantitative evidence of the role of BaBs within the PE industry, assessing the evolution of this strategic tool over time and by providing insightful considerations regarding the breakdown of the market in terms of geographical distribution, type of strategy implemented and segment of the LBO market to which they belong. Where possible, the results obtained will also be assessed from the perspective of the existing literature. Additionally, the paper will provide empirical evidence on the role of add-on acquisitions to multiples expansion and therefore ultimately to value creation.

3.1 Data and methodology

The provider used for the creation of the database used in this paper is Mergermarket. The construction of the database began with the identification of platform deals. Joenväärä identifies that on average GPs will wait 6 years before exiting a portfolio company (Joenväärä, 2022). For the sample not to be biased by acquisitions which are still inside the portfolio of PE firms, the sample of platform deals has been restricted to the period 2006-2016. A similar approach was used also by Hammer et al. in their 2017 paper. The determination of which deals belonged the above mentioned time horizon was based on the "Completion Date" variable of Mergermarket rather than on the "Announcement Date". The type of deals selected were filtered by including Buyout deals only and it resulted in 27,352 LBOs being identified at the global level. In terms of add-on acquisitions the database is based on all the add-ons performed in the period 2006-2022, therefore including all the currently mapped add-on deals relative to the 2006-2016 LBOs. This initial sample resulted in 20,354 add-ons identified at the global level. The add-on acquisitions were then matched to the strategic buyer. Unmatchable deals and deals for which the completion dare was not available were removed from the sample. This led to the generation of a subsample of 8,963 add-on observations. The dataset was then enhanced by considering that some platform companies went through more than one round of LBO. It was therefore necessary to associate each add-on deal to the correct round. This was done by cross matching the year in which the add-on acquisition was performed and the years of the different LBO rounds. For illustrative purposes, if an add-on deal took place in 2010, with the platform company going through one LBO round in 2006 and one LBO round in 2012, then the add-on deal taking place in 2010 will necessarily belong to the 2006 LBO round.

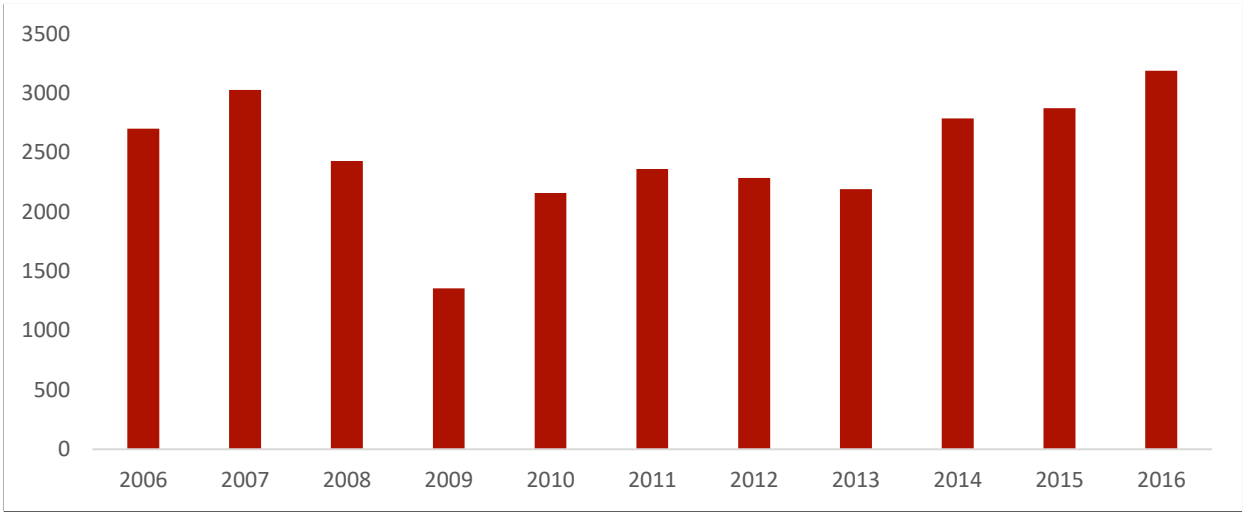
As previously discussed, this section of the paper also focuses on verifying empirically the role of add-on acquisitions in LBO multiples expansion. In order to do so, the database was enhanced by creating an archive of all the exits which took place between 2006 and June 2022. This was possible by selecting the "Exit" variable within the Mergermarket filters. Overall, 17,261 observations were identified. The second step in data processing consisted in creating a subset of deals for which it was possible to compute the EV/EBITDA multiple expansion. This was done by matching "Buyout deals" with "Exit deals" and by considering only those targets which had been subject exclusively to one private equity round. The matched observations were 6,473. However, seen the limited disclosure of transaction valuations, once cleaned for outliers it was possible to identify a

regression sample of only 410 observations for which it was possible to calculate a multiples expansion. Despite being relatively low, this number of observations is within the same magnitude of the datasets extrapolated by previous authors writing on the relationship between PE acquisition multiples and BaB strategies. In order to perform the statistical analysis, it was fundamental to control for the macro-economic conditions in the years of entry and exit, as they have a significant impact on multiples. Consistently with existing literature, the global financial conditions were proxied through US data, due to the prominence of the US in the global monetary system (IMF, 2017). The dataset was therefore enhanced with the Chicago FED Weekly National Financial Conditions Index (NFCI). The average of the weekly values was computed to represent the yearly value of the index. The NFCI expresses positive values in the moment in which financial conditions are more stringent than average, while it expresses negative values in the moment in which financial conditions are more relaxed than average.

3.2 Statistics on platform deals

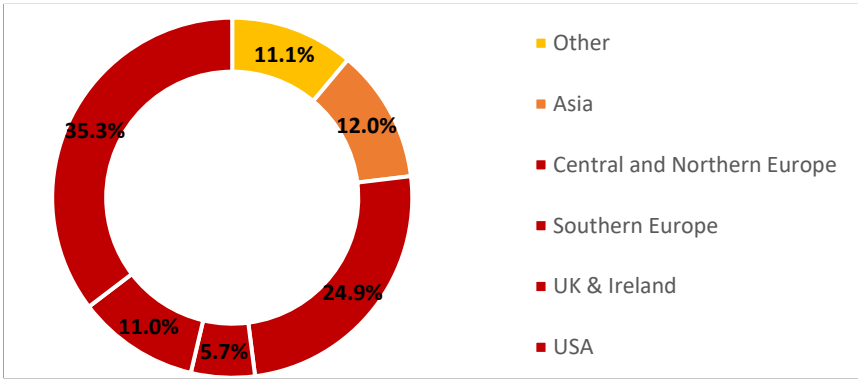
According to the collected sample of 27,352 LBOs, in the interval 2006-2016 the CAGR of the number of deals per year has been 1.7%. However, this number should be read in the context of the financial crisis which caused a sharp decline in deal flow, with a CAGR from 2006 to 2009 of -20.5%. When looking at the post-crisis numbers it appears clear that the industry has undergone a sharp rebound. The cumulative CAGR in the period 2009-2016 was ultimately of 13,0% according to the collected sample. The latter can be further split in a 12.7% CAGR in the period 2009-2013 and an even faster growth after the end of the Eurozone crisis, resulting in a 2013-2016 CAGR of 13.3%.

Diagram 6: The historical distribution of platform deals over time (2006-2016)



In terms of geographical distribution, the majority of the Buyouts were carried out in the USA (35.3%), followed by Central and Norther Europe (24.9%), UK & Ireland (11.0%) and Asia (10.1%). It is noteworthy that when combining the UK & Ireland with Central and Northern Europe, the cumulative percentage of buyouts represented is 35.8%, surpassing the USA.

Diagram 7: The geographical distribution of platform deals (2006-2016)

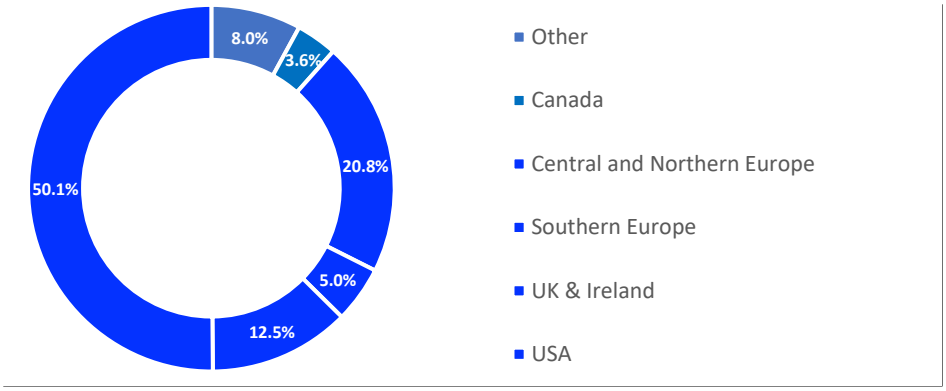


3.3.1 Geographical and historical statistics on add-on acquisitions

In terms of geographical distribution, the largest share of the observations can be identified in the USA (50.1%), followed by Central and Northern Europe with 20.8%, and the UK & Ireland with 12.5% of the observations. Differently from the data represented in the platform deals sample, the

combined number of deals in the UK and Central and Northern Europe, representing 33.3% of the sample, is still significantly lower than the amount of activity in the USA.

Diagram 8: The geographical distribution of add-on acquisitions (2006-2022)



In order to appreciate the evolution of the volume of add-on acquisitions over time, it is valuable to compare it to the evolution of platform deals. While in the period 2006-2016 platform deals expressed a CAGR of 1.7%, in the same time horizon add-on acquisitions expressed a 13.2% CAGR, with a further acceleration in the period 2019-2021 (14.2% CAGR).[2] From the above figures, it appears clear that, despite the influence of the economic crisis, the market for add-ons has been growing at a significantly higher pace than the market for platform deals. According to existing literature, this impressive growth can be explained by the increasingly high level of competition in the LBO arena. Indeed, the rise in the number of GPs has caused a significant upwards revision of buyout multiples (McKinsey,2022). Data from Pitchbook shows that the median EV/EBITDA multiple paid in 2019 was around 13x, while a decade earlier, in 2009, an average company could be acquired at 6-7 times its EBITDA (Pitchbook, 2019). Higher purchase prices imply a reduction in the possibility to exploit multiples arbitrage as a value creation tool. This has pushed PE firms towards alternative strategies, and especially towards BaBs (Bain, 2019). This already structural dynamic was further exacerbated by the exogenous shock of the covid pandemic. In general, 2021 represented an extremely buoyant year for M&A deals, with some

[2] The extracted sample of matched add-on acquisitions might be underestimating the growth and volumes of add-on acquisitions in the post crisis period, especially in the 2019-2021 horizon. Indeed, the cumulative sample of add-on acquisitions expressed a 29,4% CAGR in the interval 2019-2021, resulting in a 14,3% CAGR in the period 2013-2021.The choice of excluding 2022 from the analysis of growth dynamics is driven by the fact that at the time of writing data was available only for the first half of 2022. Therefore, the volume of add-ons performed is not comparable on a yearly basis.

renaming it the "seventh big wave" of M&A activity. Indeed, in the pandemic environment, financial and strategic players were forced to re-align their business portfolio with the "new normal", leading to an urge for acquisitions and divestments, which, combined with an increasingly expansionary policy by central banks and a consequentially low cost of capital, provided a fertile environment for M&A activity (Financier Worldwide, 2021). In addition to the factors which boosted the overall M&A market, add-on acquisitions deal flow was further pushed by multiple elements. Firstly, private equity firms suddenly found themselves managing large volumes of dry powder which had to be invested in a highly risky global environment, driving up even further the prices for high quality assets. This increased even further the importance of add-on acquisitions (Bain, 2019). Secondly, the high uncertainty generated by the pandemic, pushed large funds to deploy their capital in add-on acquisitions rather than platform deals seen the much lower level of risk which add-ons entail (Wolpert, 2021). Finally, the pandemic further accelerated the already active consolidation process of certain industries. A primary example of this is the healthcare industry which was hit severely by the pandemic due to mounting financial pressures, the challenges related to moving to a digital health system and downward pressures on reimbursements. This further pushed private owners to sell their businesses, with private equity owned practices being 86.0% higher in 2021 with respect to 2018 (Clemens, 2022).

A geographical breakdown of the growth of the add-ons market supports the positive relationship between PE maturity and the use of BaBs. To avoid short term biases caused by the covid pandemic, the analysis was performed by using the average deal volume in 2006-2007 and in 2018-2019. The table below represents the results extracted from the sample.

Table 1: Add-on activity growth per geography from 2006 to 2019

Macro-Geographic Area	Absolute	% increase	Initial average value	Final average value
Africa	0.0	0.0%	1.5	1.5
Asia	7.0	155.6%	4.5	11.5
Canada	12.5	166.7%	7.5	20.0
Central and Northern Europe	51.5	75.7%	68.0	119.5
Eastern Europe	2.5	35.7%	7.0	9.5
Oceanie	4.5	64.3%	7.0	11.5
RoW	0.0	0.0%	1.0	1.0
South America	3.0	100.0%	3.0	6.0
Southern Europe	10.0	52.6%	19.0	29.0
UK & Ireland	25.0	61.7%	40.5	65.5
USA	152.0	103.8%	146.5	298.5
Average	**24.4**	**74.2%**	**27.8**	**52.1**
Median	**7.0**	**64.3%**	**7.0**	**11.5**

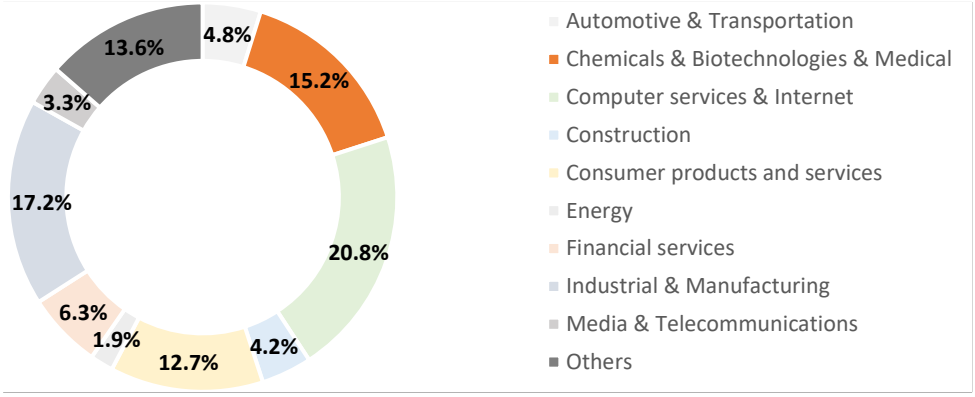
Of particular relevance is the interpretation of these results in the light of the definition of "emerging private equity markets" provided by the Emerging Markets Private Equity Association (EMPEA), which includes in the definition only CEE (ex USSR countries), Continental Africa, Emerging Asia, Latin America, the Caribbeans and the Middle East. The above table shows how the regions which have driven the growth of add-on volumes are mostly mature PE markets[3], with the USA, Central and Northern Europe and the UK & Ireland leading in absolute terms and Canada, the USA, and Central and Northern Europe expressing percentage growth rates all above 75,0%. Exceptions to the above are represented by Asia (+155.6%) and South America (+100.0%). These exceptions are relevant and represent a valuable input for further research. However, it must be considered that these regions started from an initial average value of respectively 4.5 and 3.0. Thus, even an inertial and small increase in add-on volumes would still have a strong impact in percentage terms.

In addition to explaining the surge in add-on activity, increased competition in the PE arena also contributes to explain why the USA represents a larger share of add-on acquisitions with respect to its share of platform deals (50.1% vs 35.3%). Indeed, being the most mature private equity market world-wide, it involves a higher degree of competition, therefore pushing even more GPs towards the use of BaBs.

In terms of industry distribution, the sectors which witnessed the largest share of add-on acquisitions were: Computer services and the internet (20.8%), Industrial & Manufacturing (17.2%), Chemicals, Biotechnologies and Medical (15.2%) of the deals and consumer products and services (12.7%).

[3] Please note that in this paper ex USSR countries are included inside the "Eastern Europe" macro area. Consequentially the region "Central and Northern Europe" is not overlapping with EMPEA's definition of CEE.

Diagram 9: The distribution of add-on activity per industry (2006-2022)



3.3.2 Statistics on add-on acquisitions strategy

By comparing the country and industry of the add-on acquisition, with the country and industry of the platform company, it was possible to perform a preliminary assessment of what were the strategic objectives of the add-on acquisitions present in the sample. The results showed that 28.9% of the acquisitions were performed in the same country and industry, suggesting a consolidation strategy at the national level. 40.1% of the acquisitions were performed in the same country but in different industries, suggesting a transformational domestic strategy. 12.7% of the acquisitions were performed in the same industry but in different countries, suggesting a consolidation strategy at the international level. Finally, 18.3% of the acquisitions were performed in different industries and in a different country, suggesting a transformational strategy at the international level. These results interestingly find a contradiction between the optimal type of add-on strategy for a PE firm and the actual feasibility of operations. Indeed, a study performed by the Boston Consulting Group in collaboration with the HHL Leipzig Graduate School of Management, shows how add-on acquisitions within the same industry or across country will generate higher IRRs (BCG, 2016). More specifically, deals which perform add-ons in the same industry will generate an average IRR of 43.5%, while deals that seek inorganic growth in an industry different from the one of the platform company will generate on average an IRR of 23.1%. Similarly, deals characterized by a cross border BaB strategy generate an average IRR of 38.2%, while domestic BaB strategies only generated a 27.3% IRR on average. The sample data collected however, shows how overall 69.0% of the deals took place in the same country as the platform company and 41.6% of the deals took place in the same industry as the platform company, with most add-ons therefore being sub-optimal

in terms of IRR generation. A partial explanation to this conflict is Hammer's consideration that cross-border and cross-industry deals imply higher transaction costs, therefore making them less appealing (Hammer, 2015). However, this observation is not consistent with the finding that most add-ons are performed in different industries with respect to the platform company, leaving this issue open for future research.

3.3.3 Statistics on execution timing

A very interesting aspect of BaB strategies is the timing of the execution. In other words, how much time passes from the acquisition of the platform to the acquisition of the first add-on. At the global level, the first add-on takes place on average 2.2 years after the acquisition of the platform company. However, the distribution is highly skewed to the right with the median of the distribution being of 1 year. This result is consistent with the PE theoretical background according to which add-on acquisitions will be performed as soon as possible to have already rolled out synergies by the moment of exit. Furthermore, the result appears to be backed up by previous literature, with Hammer suggesting that BaB strategies based on multiple add-ons will on average perform the first add-on acquisition 1.23 years after the platform deal.

3.4 The evolution of the add-on market during the expansion phase of PE

After the financial turmoil caused by the great financial crisis and Eurozone crisis, the PE industry went through a period of unprecedented growth which became known as the "Renaissance of Private Equity". Seen the significant growth of the industry it can't be excluded ex-ante that these developments have not impacted the structural features of the market for add-on acquisitions. For this reason, this section will investigate whether there are significant differences in add-on activity performed between 2013-2022 and activity performed in 2006-2012.

The first, non-surprising, result of this analysis is that the 2006-2012 sub sample represents only 2,708 observations (30.2% of the overall sample), with the remaining 6,255 observations taking place between 2013 and 2022 (69.8%).

In terms of geographical distribution, the difference between the two samples appears to be moderate. When looking at the horizon 2006-2012, the highest share of deals took place in the USA (47.3%), followed by Central and Northern Europe (22.8%), the UK & Ireland (13.9%) and

Southern Europe (4.9% of the deals). When looking at the 2013-2021 sub-sample, the USA still leads the group (51.6%), followed by Central and Northern Europe (20.0%), the UK & Ireland (11.9%) of the total and finally Southern Europe (5.0%).

In terms of growth trajectory, the 2006-2012 sample is clearly influenced by the economic turmoil of the period, with 2008, 2009 and 2010 all showing lower levels of activity with respect to the 394 add-ons performed in 2007. Only in 2011 did add-on activity overcome 2007 levels, with 471 add-ons performed. When talking about the period 2013-2021, the growth in this decade has been remarkable, with the number of add-on acquisitions performed per year growing at a CAGR of 14.3%. Similarly to prior sections, a breakdown of the growth per geographic region was performed by taking the average value of add-ons per year at the two extremes of the distribution, 2013-2014 and 2020-2021. The following table summarizes the results obtained.

Table 2: Add-on activity growth from 2013 to 2021

Macro-Geographic Area	Absolute	% increase	Initial average value	Final average value
Africa	2.0	200.0%	1.0	3.0
Asia	-2.0	-10.3%	19.5	17.5
Canada	3.5	16.3%	21.5	25.0
Central and Northern Europe	47.5	47.7%	99.5	147.0
Eastern Europe	4.5	-36.0%	12.5	8.0
Oceanie	0.5	3.4%	14.5	15.0
RoW	1.0	-50.0%	2.0	1.0
South America	4.5	75.0%	6.0	10.5
Southern Europe	22.5	140.6%	16.0	38.5
UK & Ireland	17.5	26.9%	65.0	82.5
USA	87.5	31.9%	274.0	361.5
Average	**16.2**	**40.5**	**48.3**	**64.5**
Median	**3.5**	**26.9**	**16.0**	**17.5**

To appreciate fully the implications of these results, it is necessary to compare them with the ones of the overall sample described in section 3.3.1. In terms of overall growth, the regions driving the 2013-2021 sub-sample are de-facto the same as for the overall dataset, consisting in the more mature markets of the USA, Central and Northern Europe, Southern Europe and the UK & Ireland. A special mention needs to be awarded to Southern Europe, which over the 2013-2021 period grew by 140.6%, an even higher rate with respect to the 52.6% expressed over the cumulative period. Section 3.3.1 highlighted how Asia and South America were two emerging markets which had shown an exceptional growth over the sample period. The results of this table add some further

details, suggesting that while Asia's growth took place majorly before the 2013 expansion, South America's growth was instead more constant over time, with a lower growth in the 2013-2021 period. Regarding Eastern Europe, the combined results show that the moderate growth of the region is driven majorly by pre 2013 evolutions, with interest in the region declining in more recent years (-36.0%). A special mention needs to be given to the African region which expressed a 200.0% growth rate in the 2013-2021 period, a figure which however is highly influenced by the almost negligible starting level of 1 add-on per year on average.

Moving on to the comparison of the strategies implemented, the table below represents the classification of add-ons according to the strategy performed for both the pre 2013 period and during the expansion phase of 2013-2021.

Table 3: The different types of Buy and Build strategies implemented by PE firms

Type of strategy implemented	Pre-expansion phase	Expansion phase
Domestic consolidation	30.5%	28.2%
Cross border consolidation	10.5%	13.6%
Domestic transformation	40.6%	39.9%
Cross border transformation	18.4%	18.3%

From the above table, the core message which can be extracted is that overall, the type of buy and build strategies put in place by PE firms, essentially did not change during the post crisis expansion. As an exception to the above, there has been a slight increase in the interest of PE firms for cross-border consolidation strategies which have increased their weight in the sample by 3.1%. This result is consistent with the previously mentioned findings of BCG, signaling that the industry might have further understood the benefits of performing add-on acquisitions at the international level and within the same industry.

Regarding the concentration of add-on activity per industry, the table below compares the results between the two historical sub-samples.

Table 4: Add-on activity per industry

Industry	Pre-expansion %	Expansion phase %
Automotive & Transportation	3.3%	3.2%
Chemicals & Biotechnologies & Medical	16.3%	14.7%
Computer services & Internet	15.5%	23.0%
Construction	15.5%	4.1%
Consumer products and services	4.5%	11.4%
Energy	15.7%	3.3%
Financial services	4.1%	7.1%
Industrial & Manufacturing	4.3%	16.9%
Media & Telecommunications	17.8%	2.9%
Others	4.5%	13.4%

The clearest result is the significant increase in add-on activity in the computer services and internet industries, which increase their share from 15.5% to 23.0%. This increase is consistent with the existing literature which suggests that the PE industry in general has been increasing its appetite for Software and Computer Services as ICT has become a core strategic pillar for firms, representing in some cases a mission critical tool (Smith, 2021). Other two remarkable results are the decline in add-on activity in consumer products and services and the increase in activity in the financial services industry. Regarding the decline in the share represented by consumer products and services, a possible explanation for this phenomenon is the fact that M&A activity in the sector was hit particularly badly by the Covid-19 pandemic, with the buyout volumes in constant decline in 2019, 2020 and 2021, even though the LBO market as a whole witnessed a strong growth during those years, with the exception of the 2020 pandemic peak (Titanbay, 2021). In the case of financial services this finding is also consistent with the literature which suggests that PE investments in the industry have witnessed a significant boost in recent years, driven by increased regulatory requirements such as the MiFIDII, the digitalization of financial services and the macrotrend of the ageing populations spurring a greater demand for pension plans and wealth management (Bain, 2019). The authors also find that financial services investments have generated a cumulative MOIC of 2.2x in the period 2009-2015, second only to healthcare and tech investments.

Overall, it is possible to conclude that, net of the strong increase in the volume of add-on activity, the expansion phase of the PE industry did not revolutionize the way in which add-on acquisitions are performed. However, there are some elements of discrepancy worth highlighting. Firstly, following the overall shift of LBO activity, the 2013-2021 period has witnessed a relevant increase

in add-on activity in the computer services and internet industries and in the financial service industries. Secondly, there has been a further consolidation of the market share represented by the USA, at the detriment of Central and Northern Europe and the UK & Ireland. Finally, there has been a slight increase in the interest of PE firms for cross border consolidation processes, consistently with the findings of BCG that add-ons performed abroad and in the same industry will yield the highest IRR.

3.5 Differences between large-cap and mid-cap platform deals

As previously mentioned, the private equity industry can be split between two different broad categories, the market for mid-cap buyouts and the one for large cap acquisitions. Following the criteria suggested by industry experts, this paper will consider large cap deals those with an EV superior to 500 Million (Costabile et al., 2022). Out of the entire database, the sample of observations for which it was possible to both match the buyer and extract the EV, consists of 3,343 add-ons. Of these, 1060 were related to large cap platform companies, while 2,283 were related to mid-cap platform companies. The first result which can be drawn from the sample is therefore the fact that mid-cap platform companies perform a higher number of add-ons. Furthermore, the average EV per add-on for large cap platforms was of 120.3M euros, while for mid-cap platforms the average EV per add-on was of 24.3M euros. Ultimately therefore large-cap platforms perform less but larger add-on acquisitions. The literature on this phenomenon appears to be scarse, however the result is theoretically consistent with the idea that in order to have an impact on the overall performance of large-cap platforms, add-ons must have a minimum size. Additionally, the larger the add-on acquisition and the greater the complexity involved in the deal, making it difficult for GPs to perform multiple add-ons with a large EV.

In terms of geographical distribution, it is possible to observe similar but slightly different patterns across the two sub-samples. When talking about mid-cap add-ons, 35.6% of the deals took place in the USA, followed by Central and Northern Europe (24.4%) and the UK & Ireland (19.8%). For large cap deals instead, 39.4% of the deals take place in the USA, with Central and Northern Europe representing 22.5% and UK & Ireland representing 13.9%. The results suggest that in the USA PE industry has a greater focus on large cap deals, while in the UK & Central Europe, the focus is slightly shifted towards the mid-cap segment. This is consistent with existing literature which

suggests that the greater maturity and capacity of performing mega deals is attributable both to the historical establishment of mega fund firms such as Blackstone and KKR and to a much more liquid stock markets which provides PE firms with a greater chance of exiting deals through IPOs (Seretakis, 2015).

In terms of evolution over time, what we see is that essentially the number of add-on acquisitions related to large cap deals has remained stable. The average number of add-ons in the period 2006-2007 was of 63.5 deals per year, while the average in the period 2020-2021 was of 66.0 deals per year. On the other hand, when assessing mid-cap deals, the average number of add-ons per year was of 105.5 in the period 2006-2007 while in the period 2020-2021 it was of 133, a 26.1% increase. This finding suggests that the growth in the interest of the PE industry towards add-on acquisitions has been driven majorly by mid-cap PE firms.

In terms of strategy implemented, the comparison between the two different subsets is represented in the table below.

Table 5: Strategy implementation according to market capitalization

Type of strategy implemented	Mid-cap	Large Cap
Domestic consolidation	28.4%	20.1%
Cross border consodilation	14.6%	15.4%
Domestic transformation	35.8%	34.6%
Cross border transformation	21.2%	29.9%

The result which appears clear from this first reclassification is the fact that mid-market platform companies will be a lot keener on performing consolidation strategies at the domestic level. The latter indeed represent 28.4% of the total add-ons performed by mid-market platforms, while they only represent 20.1% of the total add-ons performed by large cap platforms. With respect to the findings of BCG, it is possible to conclude that for mid-cap platforms, 64.2% of the add-ons were performed within the same country and 43.1% of the deals were performed within the same industry. For large cap platforms instead, 54.7% of the deals were performed within the same country and 35.5% of the deals were performed within the same industry. Both contradict the hypothesis that PE firms are keener to perform add-on acquisitions internationally and within the same industry. However, it appears that mid-cap platforms have a stronger tendency towards performing add-ons in the same industry and in the same country, while larger platforms appear as

relatively more inclined towards performing add-ons within a different industry and a different country. From a practical perspective, one could argue that the results are consistent with the fact that mid-cap PE firms might be less keen to take on transformational deals and cross border deals as they require the management of greater complexity, and they are less consistent with fund strategy. Indeed, mid-cap PE firms often have fewer professionals, and the investment strategy tends to be more country specific. Furthermore, following the research by Hammer, the impact of transaction costs should also be kept in mind (Hammer et al., 2015). Indeed, mid-market funds and platforms are more impacted by the higher transaction costs which involved in cross-border and cross-industry add-ons, reducing the appetite for this type of transactions.

Moving on to the concentration per industry, the results are summarized by the table below.

Table 6: Add-on activity per industry per market capitalization

Industry	**Mid-cap%**	**Large cap %**
Automotive & Transportation	6.0%	2.8%
Chemicals & Biotechnologies & Medical	13.4%	17.4%
Computer services & Internet	18.9%	23.8%
Construction	4.2%	2.2%
Consumer products and services	15.3%	17.0%
Energy	2.4%	2.1%
Financial services	5.0%	8.0%
Industrial & Manufacturing	16.8%	12.0%
Media & Telecommunications	3.6%	3.1%
Others	14.3%	11.7%

The most interesting results which can be extrapolated from the sample are the following. Firstly, large-cap platforms appear to have a greater appetite for the execution of add-ons in the life sciences, the computer services and internet industry and in the financial services industry. Secondly, large cap platforms perform a lower share of add-ons in the automotive industry and in the industrials and manufacturing industry.

To sum-up, it is possible to conclude that large cap companies perform a lower number of add-ons with a higher average EV. Additionally, it is possible to conclude that large-cap add-on activity is more concentrated in the USA and less concentrated in the UK relatively to mid-cap add-on activity. Furthermore, large cap add-ons appear to be keener on performing cross-border add-ons and transformational add-ons. In terms of industrial distribution, large cap platforms are more

active in performing add-ons in the life sciences, the computer and internet industry and the financial services industry. Finally, high relevance is attributable to the finding that the growth in the market for add-on acquisitions has been driven majorly by mid-market PE rather than by large cap Buyouts.

3.6 Empirical evidence on multiples expansion and add-on acquisitions

This sub-section will provide empirical evidence on the relevance of add-on acquisitions in value creation through multiples expansion by using a regression model. The model will be applied on different subsamples to verify not only if add-on acquisitions lead to multiples expansion, but also if there are any differences in their value creation role when talking about large cap platforms and mid-cap platforms.

3.6.1 Research questions and model construction

The research questions addressed in this paper can be summarized as follows:

> ***H1*****:** *add-on acquisitions have an impact on multiples expansion in PE deals different from zero.*
>
> ***H2*****:** *the impact of add-on acquisitions on multiples expansion is greater for mid-cap companies than for large cap companies.*

In order to address the research questions, the following model was built with the objective of capturing all the major variables which could lead to a multiples expansion.

$$\frac{\Delta EV}{EBITDA_i} = \beta_1 Add\_on_i + \beta_2 Expansion_i + \beta_3 \Delta FCI_i + \beta_4 Strategic\ Exit_i + \varepsilon_i$$

Below are reported the definitions for each variable:

Dependent variable

$\frac{\Delta EV}{EBITDA}$: the difference between the natural logarithm of the exit multiple and the natural logarithm of the entry multiple.

Independent variable (variable of interest)

Add_on : a dummy variable which takes the value of 1 if the platform company has performed at least one add-on acquisition and the value of zero if the platform company has not performed add-ons.

Control variables

$Expansion$: a dummy variable which takes the value of 1 if the exit was performed after 2013. This variable has the objective of capturing the effect on multiples generated by the increasingly high level of competition between GPs for assets from 2013 onwards.

$\Delta NFCI$: the difference between the NFCI in the year of entry and the NFCI in the year of exit. This variable has the objective of capturing the delta in multiples between entry and exit caused by the variations in financial conditions. The variable will take positive values when there is an improvement in the financial conditions over the holding period and it will take negative values in the moment in which there is a worsening of the financial conditions over the holding period.

$Strategic\ Exit$: dummy variable which takes the value of 1 if the PE firm exits the deal through a strategic sale. This variable has the objective of capturing any difference in willingness to pay between a financial buyer and a strategic buyer for example due to the synergies from which a strategic buyer could benefit.

To address the second research question, the model will be run on two subsamples of the identified observations. The first subsample will be composed by mid-cap platform companies, while the second subsample will be composed by large cap platform companies.

3.6.2 Preliminary information on the regression sample

The tables below represent the distribution of the regression sample according to the entry year and the core geography of the platform company.

Table 7: Distribution of the regression sample by entry year

	Overall sample		B&B		Not B&B	
Year	***N***	***%***	***N***	***%***	***N***	***%***
2006	56	13.7%	12	2.9%	44	10.7%
2007	68	16.6%	19	4.6%	49	12.0%
2008	41	10.0%	9	2.2%	32	7.8%
2009	8	2.0%	1	0.2%	7	1.7%
2010	30	7.3%	9	2.2%	21	5.1%
2011	31	7.6%	9	2.2%	22	5.4%
2012	23	5.6%	11	2.7%	12	2.9%
2013	34	8.3%	12	2.9%	22	5.4%
2014	49	12.0%	10	2.4%	39	9.5%
2015	33	8.1%	8	2.0%	25	6.1%
2016	37	9.0%	8	2.0%	29	7.1%
Total	***410***	***100.0%***	***108***	***26.3%***	***302***	***73.7%***

Table 8: Distribution of the regression sample by macro-geographic area

	Overall sample		B&B		Not B&B	
Macro geographic area	***N***	***%***	***N***	***%***	***N***	***%***
UK & Ireland	109	*26.6%*	26	6.3%	83	20.2%
Central and Northern Europe	91	*22.2%*	32	7.8%	59	14.4%
USA	63	*15.4%*	24	5.9%	39	9.5%
Asia	62	*15.1%*	2	0.5%	60	14.6%
Southern Europe	57	*13.9%*	18	4.4%	39	9.5%
Oceania	15	*3.7%*	4	1.0%	11	2.7%
Canada	5	*1.2%*	2	0.5%	3	0.7%
South America	3	*0.7%*	0	0.0%	3	0.7%
Eastern Europe	3	*0.7%*	0	0.0%	3	0.7%
Africa	2	*0.5%*	0	0.0%	2	0.5%
Total	***410***	***100.0%***	***108***	***26.3%***	***302***	***73.7%***

3.6.3 Model Validation

To verify the soundness of the results of the model, some basic validation checks were performed. Firstly, when assessing the fitted vs residuals plot, the model does not appear to suffer excessively from heteroskedasticity. Secondly, when looking at the only numerical variable, "Delta FCI", it is possible to observe how it is linearly correlated to the dependent variable, therefore fulfilling the

linearity assumption. Additionally, the model is not subject to multicollinearity issues as all independent variable pairs express a low Pearson coefficient of correlation. Finally, the Q-Q plot shows that the residuals of the model are relatively normally distributed, despite having some deviation from the theoretical percentiles on the right end of the distribution. Overall, therefore, the model appears to be respecting sufficiently the underlying assumptions of OLS regression.

Diagrams 10, 11 & 12: Fitted vs Residuals plot, Linearity Plot and Q-Q Plot

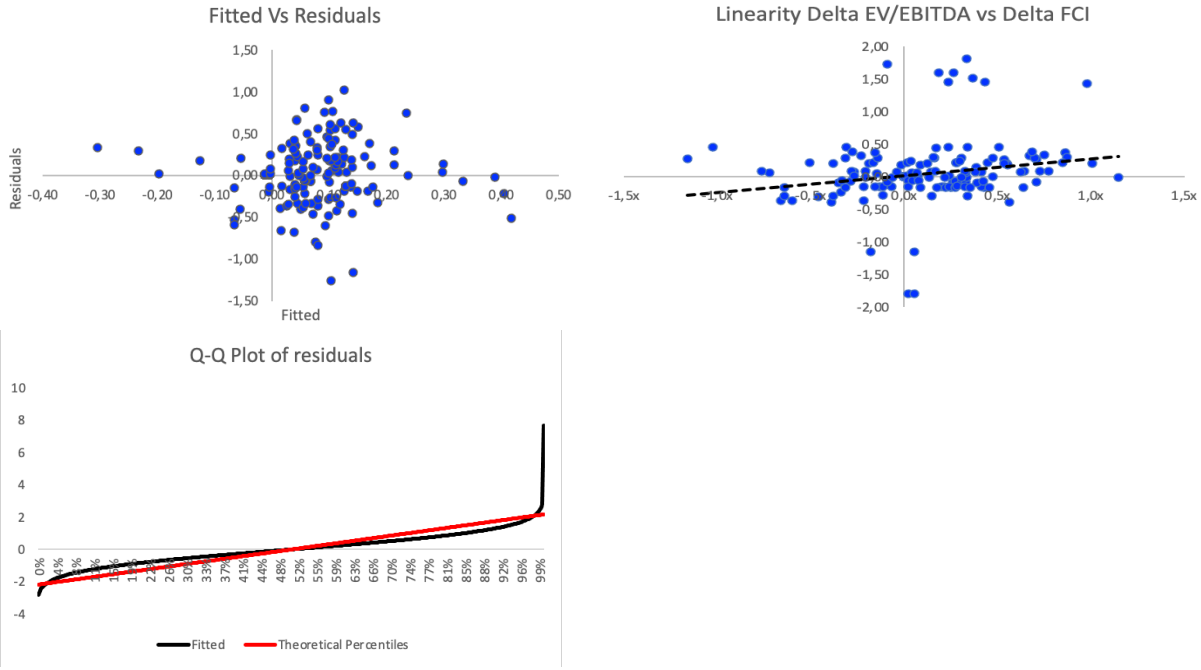


Table 9: Pearson Correlation Coefficient matrix

	Add-ons dummy	Expansion Dummy	Delta FCI	Strategic Exit
Add-ons dummy	1.0	-0.01	-0.02	-0.01
Expansion Dummy	-0.01	1.0	0.14	0.21
Delta FCI	-0.02	0.14	1.0	0.08
Strategic Exit	-0.01	0.21	0.08	1.0

3.6.4 Results and discussion – Full sample model

Here below is reported a summary table showing the results of the regression model and the related statistics.

Table 10: Regression output

	Coefficients	*T-stat*	*P-value*	*Significance F*	*Adjusted R Square*
Intercept	-0.01	-0.75	45.4%	0.0%	7.5%
Add_on	0.07	2.71	0.7%		
Expansion	0.07	2.91	0.4%		
Delta FCI	0.17	4.14	0.0%		
Strategic Exit	0.01	0.33	74.1%		

The model is highly significant, with an F-test significance lower than 1.0%. The model also explains a valuable portion of the variance found within the sample, with an adjusted R Square of 7.5%.

Moving on to the individual variables, the "Add_on" variable has a p-value lower than 1.0%. As such it is possible to reject H1 at the 1.0% significance level. The variable shows a positive coefficient, implying that ceteris paribus all other conditions, a platform which has performed at least one add-on will see the LN EV/EBITDA multiple expand by 0.07 more with respect to a platform deal which has not performed add-on acquisitions. This result clearly has an important implication for GPs, as it provides evidence of the financial benefits which can be reaped as a result of performing add-on acquisitions. Moving on to the other variables of the model, it is possible to see how the "Expansion" dummy variable has a positive coefficient, implying that ceteris paribus the deals which were exited after 2013 benefitted from an LN multiples expansion greater by 0.07 with respect to those deals which were exited before 2013. These findings are consistent with the theory that in the last decade there has been a gradual increase in multiples over time because of increased competition in the PE asset class. The Delta FCI variable has a positive coefficient, signaling that an improvement in financial conditions over the holding period will generate a multiples expansion. More specifically, a unitary increase in the value of the yearly FCI index will lead to an LN multiple expansion of 0.17 ceteris paribus all other conditions. This is consistent with expectations and the variable is significant even at the 1.0% significance level. It is also worth highlighting, how this variable has the strongest coefficient within the model. As such it is possible to conclude that the most important driver in multiples expansion within PE deals is represented

by the global financial conditions and their impact on prices. Finally, the "Strategic Exit" dummy has a positive coefficient, suggesting that ceteris paribus, a deal exited through the sale to a strategic player will generate an LN multiples expansion which is greater than the one which would have been achieved through the sale to a financial player. Consistently with the existing literature, this phenomenon could be interpreted as strategic players being willing to pay higher prices to acquire targets due to the synergies which they can create with other business units (Morkoetter et al., 2022). However, it is important to note how in this model the variable does not appear to be statistically significant.

3.6.5 Results and discussion – Analysis of mid-cap and large-cap subsamples

In order to further investigate the role played by add-on acquisitions in multiples expansion, the model was then tested on two subsets of the original regression sample composed respectively by targets which classified as mid-cap companies and large cap companies[4]. The mid-cap sub-sample is composed by 265 observations, while the large cap sample is instead composed by 145 observations. Here below are reported the results for these two further specifications.

Table 11: Regression output for the mid-cap sub sample.

	Coefficients	***T-stat***	***P-value***	***Significance F***	***Adjusted R Square***
Intercept	0.03	1.40	16.4%	0.0%	16.4%
Add_on	0.07	2.26	2.5%		
Expansion	0.08	2.72	0.7%		
Delta FCI	0.14	3.09	0.2%		
Strategic Exit	-0.18	-5.19	0.0%		

Table 12: Regression output for the large cap sub sample.

	Coefficients	***T-stat***	***P-value***	***Significance F***	***Adjusted R Square***
Intercept	0.05	1.48	14.1%	0.0%	16.2%
Add_on	0.07	1.73	8.6%		
Expansion	0.01	0.38	70.7%		
Delta FCI	0.17	2.48	1.4%		
Strategic Exit	-0.16	-3.99	0.0%		

[4] As previously mentioned, mid-cap companies are defined as those targets with an enterprise value lower than 500 Million.

From an F-test perspective, both specifications are significant at the 1.0% significance level. Additionally, both models have an R squared around 16.0%. The results provide some interesting points to analyze. Firstly, despite the two model specifications expressing the same coefficient for the "Add_on" dummy, it is evident how the variable for large-cap companies is significant only at the 10.0% significance level, while for mid-cap companies it is significant at the 5.0% significance level. This is consistent with the idea that in terms of multiples expansion add-ons can be much more beneficial for mid-cap companies as they can support targets in removing the size and mid-market discounts which typically penalize their valuations. With regards to H2, considering that the "Add_on" dummy is not significant at the 5.0% significance level, it is therefore possible to state that the impact of add-ons on multiples expansion is greater for mid-cap platforms than for large cap platforms. A second important aspect to notice is that for large cap companies, the "Expansion" dummy does not appear to be significant. In accordance to previous findings emerged in this paper, this phenomenon could be explained by the fact that during the post 2013 expansion period, the increase in deals volume and competition, has been driven majorly by the mid-market. It appears therefore plausible that the most consistent increase in market multiples as a result of increased GP competition has taken place in the mid-market arena. However, it is important to note how these findings only represent preliminary considerations and they should be further investigated. A third interesting point to note is that in both model specifications the "Delta FCI" variable is significant and has a relevant magnitude, reinforcing the idea that the major driver of multiples expansion is represented by the macro financial conditions. Finally, regarding the "Strategic Exit" dummy, it is important to note how the variable has a negative coefficient and is statistically significant in both these model specifications. These findings however conflict with the model run on the whole regression sample, in which the variable is not significant. Furthermore, they are also in conflict with previous literature.

3.6.6 Positioning of inferential statistics findings with respect to existing literature

Despite the increasing importance of buy and build strategies for the PE industry, in the current state of the arts there has been limited research performed assessing their role in value creation and specifically in multiples expansion, with benchmark studies being represented by Hammer et al. (2013) and Acharya et al. (2013). The results of the regression model showcased in this paper can

be seen as complementary to the existing literature in multiple ways. Firstly, and most importantly, the model exploits a more up to date dataset with respect to research performed by Hammer et.al and by Acharya et al., providing insights on the current state of the market for add-on acquisitions and their role in multiples expansion after the so called "Renaissance of Private Equity". Secondly, it complements the analysis of Acharya et.al by investigating multiples expansion through a worldwide sample rather than a database restrained to Western European deals. Finally, the analysis assesses separately the role of add-on acquisitions in multiples expansion for large cap companies and mid-cap companies, an approach which has not been used neither by Hammer et.al and Acharya et.al in their 2013 studies. The results obtained are in line with the findings of both papers in showing that add-on acquisitions have a positive and statistically significant effect on multiples expansion. However, they contradict Hammer et al.'s findings that add-ons are cumulatively more "profitable" for large cap companies, by showing that in this specific subsample the add_on dummy was not statistically significant at the 5.0% significance level, shedding some doubt on add-ons' contribution to multiples expansion in large-cap deals. While a possible explanation for this discrepancy is that add-ons have a stronger impact on the deleveraging and the EBITDA growth of large-cap assets, the most likely cause is that Hammer et al.'s dataset only considers platform acquisitions up to 2010. Indeed, as the PE market has become increasingly competitive and with increasingly higher valuations, add-on acquisitions have become especially important for mid-cap companies, allowing them to overcome the size discount which penalizes their valuations in many ways. Due to the structural limitations of this paper's dataset, it was not possible to perform an analysis on the role of add-on acquisitions in multiples expansion for large-cap and small-cap firms before and after the 2008-2012 negative economic cycle. This field of investigation therefore remains open for further clarification. Finally, in addition to the literature on add-on acquisitions, the regression model has contributed to the general corporate finance valuation literature by confirming that even for PE backed companies, the most important driver of multiples expansion or contraction is represented by the macro financial and economic conditions, in line with previous literature which highlights how valuation multiples are closely related to business cycles (Hester, 2009).

4. Conclusions

Through thorough research and analysis, this paper has shown how in more recent years the PE industry and in particular the LBO industry have witnessed an outstanding growth with respect to their pre-crisis levels. As a sub-section of PE deals, the volume of add-on acquisitions performed has increased at an even faster pace, with a CAGR of 13.2% in the period 2006-2016 which is significantly higher than the growth rate of platform deals over the same interval, and a 14.2% CAGR in the period 2019-2021. The increased volume of add-on activity was majorly driven by mid-market operations, and it can be attributed to the increased maturity of worldwide PE markets and the consequential increase in asset prices. In this context, add-on acquisitions are a particularly important value creation tool as they can be performed through a high level of leverage and they typically generate efficiency improvements through size effects, the elimination of excess capacity, the restructuring of targets and generic M&A synergies. Furthermore, add-ons provide the opportunity to obtain multiples expansion by increasing the growth rate of the platform company, by reducing cost of capital through increased stability and business diversification, and by acquiring undervalued assets or assets subject to a mid-market discount. By focusing explicitly on the period from 2013 onwards, which became known as the Renaissance of Private Equity, the paper showed how the strong increase in add-on activity brought along with it some structural changes within the industry. Most importantly, an increased focus on the ICT industries and in the financial services industry. Furthermore, the sample highlighted how over time there has been a slight increase in the market share represented by add-ons performed in the USA and in cross-border consolidation processes. Another core finding of the study, was the identification of significant differences between mid-market add-ons and large cap add-ons. Above all, mid-cap platforms cumulatively perform more add-ons but with a lower EV. Additionally, large cap platforms are more focused on performing add-ons in the ICT industries, the life sciences and the financial services industries. Finally, large cap platforms appear to be keener towards performing cross-border consolidation processes which according to the literature should deliver the highest IRR. In addition to the above findings, this paper has also demonstrated empirically the positive impact of performing add-on acquisitions on multiples expansion even after controlling for financial cycle conditions, providing therefore further evidence in favor of the performance of add-ons by GPs. Contemporarily, it has also shown how the element with the largest impact on the multiples expansion achieved by PE firms is the is the improvement of macro financial conditions.

5. Future research and limitations

Through its analysis, this paper has also identified three major themes which remain open for future discussion. Firstly, the debate on how add-on acquisitions fit in the broader project visioned by GPs. Indeed, the extracted sample shows how most add-ons will be performed within different industries (58.4%) and the same country (69.0%). These findings are in contradiction with the empirical evidence which shows that deals with add-ons performed abroad and within the same industry will ultimately generate a higher IRR. Despite a partial explanation being provided by the higher transaction costs involved in cross-border transactions, it would be of both theoretical and practical relevance to understand what is preventing GPs from implementing more consistently add-ons in different industries and countries. Secondly, from a geographical distribution perspective, the paper has highlighted how the volumes of add-ons performed in Asia and Eastern Europe have been, on average, declining from 2013 onwards. In a macro context characterized by a strong growth of both LBOs and add-on activity, it would be of practical and theoretical relevance to understand what are the core drivers pushing GPs away from these markets. Finally, this paper has focused on studying whether the expansion of the PE industry started in 2013 has caused structural changes in the add-ons market with respect to prior features. However, due to restrictions in the collected data, this paper has not been able to isolate the impact of the great financial crisis and the Eurozone crisis. Consequentially, future literature could contribute to the understanding of the add-ons market by comparing the market features before the crisis and during the crisis. Concluding with the limitations of this paper, the most relevant restraint is represented by the completeness of the database used. Indeed, raw data was extracted from Merger market: a database which is more oriented towards professionals rather than academics. Despite the mitigation offered by the large volume of observations considered, it is therefore possible that the sub-sample of add-ons matchable with buyers, which is the cornerstone of this research, is not fully representative of the whole market. A final limitation of this paper derives from the characteristics of the exits database. Indeed, Mergermarket only tracks those exits which have been performed in the form of a buyer-seller deal, excluding therefore all those companies which were exited by PE funds through an IPO, implying therefore that the constructed database cannot be considered as complete.

Bibliography

Acharya V. et al. (2013) “Corporate Governance and Value Creation: Evidence from Private Equity”. The Review of Financial Studies, vol.26, p.368-402

Akcigit, U. (2017). “Economic growth: The past, the present, and the future.” Journal of Political Economy, vol.125.

Akcigit, U. et al. (2019). “Synergizing ventures”. National Bureau of Economic Research.

Andrade, G. et al. (2004). Investigating the economic role of mergers. Journal of Corporate Finance, vol.10, p.1-36.

Argawal, K. (2022). How Interest Rates Affect Private Equity. Investopedia. Available at https://www.investopedia.com/articles/investing/070715/how-interest-rates-affect-private-equity.asp. [last access 23/01/2023].

Baker, W. et al. (2019). “Pricing: The next frontier of value creation in private equity”. Available at: https://www.mckinsey.com/business-functions/growth-marketing-and-sales/our-insights/pricing-the-next-frontier-of-value-creation-in-private-equity. [last access 23/01/2023].

Borell, M. et al. (2013). “Sources of value creation through private equity backed mergers and acquisitions: the case of buy-and-build strategies”. Centre for European Economic Research, paper n. 13-094.

Brigl, M. et al. (2016). “How Private Equity Firms Fuel Next Level Value Cretion”. Available at: https://www.bcg.com/it-it/publications/2016/private-equity-power-of-buy-build. [last access 23/01/2023].

Carnelli, A. et al. (2021). First in the Queue: The Role of Access Privileges in Private Equity Performance.

CFI Team (2022). “Turnaround Recovery Strategies”. Available at: https://corporatefinanceinstitute.com/resources/knowledge/strategy/turnaround-recovery-strategies/. [last access 23/01/2023].

CFI Team (2022). “Types of Synergies”. Available at: https://corporatefinanceinstitute.com/resources/knowledge/valuation/types-of-synergies/. [last access 23/01/2023].

Cochrane, T. et al. (2019). How Will Financial Services Private Equity Investments Fare in the Next Recession?. Available at: https://www.bain.com/insights/how-will-financial-services-private-equity-investments-fare-in-the-next-recession/. [last access 23/01/2023].

Cohen, A. et al. (2022). "Private Equity: 2021 Year in Review and 2022 Outlook". Available at: https://corpgov.law.harvard.edu/2022/02/09/private-equity-2021-year-in-review-and-2022-outlook/. [last access 23/01/2023].

Cole, M. (2018). "Co-investment: no two are the same". Available at: https://www.privatefundscfo.com/co-investment-no-two/. [last access 23/01/2023].

Costabile, S. et al. (2022). "The Potential of Middle-Market Businesses for Private Equity Firms". Available at: https://www.pinebridge.com/en/insights/the-potential-of-middle-market-businesses-for-private-equity-firms. [last access 23/01/2023].

Damodaran, A. (2022). "Valuation Package". NYU Stern School of Business Lecture Notes. Available at: https://pages.stern.nyu.edu/~adamodar/pdfiles/eqnotes/valpacket2spr22.pdf. [last access 23/01/2023].

Divestopedia, (2022). "Transformational Deal". Available at: https://www.divestopedia.com/definition/5129/transformational-deal. [last access 23/01/2023].

Esposito, G. et al. (2019). "Il private equity nei progetti di turnaround". Amministrazione & Finanza, p.64-71.

Financier Worldwide Magazine (2021). "Boom-time: riding the seventh great "M&A wave". Available at: https://www.financierworldwide.com/boom-time-riding-the-seventh-great-ma-wave#.Y3v0fy2B01I. [last access 23/01/2023].

Generational Equity (2021). "The Popularity of Add Ons in Mergers and Acquisitions". Available at: https://www.genequityco.com/insights/the-popularity-of-add-ons-in-mergers-and-acquisitions, [last access 23/01/2023].

Generational Equity (2021). "What is a Platform Acquisition". Available at: https://www.genequityco.com/insights/what-is-a-platform-acquisition. [last access 23/01/2023].

Goldstein, M. (2022). "The Five Stages of VC Funding Explained". Available at: https://www.coxblue.com/vc-funding-stages-explained/. [last access 23/01/2023].

Gompers, P. et al. (2022). "The Venture capital cycle". The MIT Press.

Gompers, P. et al. (2001). “The venture capital revolution”. Journal of Economic Perspectives, vol.15, p. 145-168.

Greenfield, M. (2015). “Private equity firms increase focus on add-ons”. Available at: https://www.pehub.com/private-equity-firms-increase-focus-on-add-ons/. [last access 23/01/2023].

Hammer, B. (2017) et al. “Inorganic growth strategies and the evolution of private equity business model”. Journal of Corporate Finance, vol.35, p.31-63.

Hammer, B. et al. (2013). “Buy and Build strategies in Private Equity, boost or transformation?”

Hammer, B. et al. (2022). “Pricing and Value Creation in Private Equity-backed Buy-and-Build Strategies”. Journal of Corporate Finance, vol.77.

Henry, P. et al. (2020). “The growing private equity market”. Available at: https://www2.deloitte.com/us/en/insights/industry/financial-services/private-equity-industry-forecast.html. [last access 23/01/2023].

Hester, W. (2009). “Market Valuations During U.S. Recessions”. Hussman Funds. Available at: https://www.hussmanfunds.com/rsi/valuerecessions.htm. [last access 23/01/2023].

Hodgson, L. (2022). “The problem with PE's pyramid scheme comparisons”. Available at: https://pitchbook.com/news/articles/private-equity-ponzi-pyramid-scheme. [last access 23/01/2023].

Hoffmann, N. (2012). “Mergers and Acquisitions Strategy for Consolidations: Roll Up, Roll Out and Innovate for Superior Growth and Returns”.

IMF, (2017), “Global Financial Stability Report: Getting the Policy Mix Right”, available at: https://www.imf.org/en/Publications/GFSR/Issues/2017/03/30/global-financial-stability-report-april-2017. [last access 23/01/2023].

Invest Europe (2021). “Private Equity Activity 2021”. Available at https://www.investeurope.eu/media/5184/invest-europe-activity-data-report-2021.pdf

Joenväärä, J. (2022). “Prolonged private equity holding periods: six years is the new normal”. The Journal of Alternative Investments, vol.25.

Kaplan, S. et al. (2009). “Leveraged buyouts and private equity”. Journal of Economic Perspectives, vol.23, p. 121-146.

Lee, J. (2009). “Does Size Matter in Firm Performance? Evidence from US Public Firms”. Journal of the Economics of Business, vol.16, p.189-203.

Lenglet, R. (2022). “Leverage Buy-Out (LBO) in detail: definition and acquisition methods”. Available at: https://agicap.com/en/article/leverage-buy-out-definition-method/. [last access 23/01/2023]

MacArthur, H. et al. (2019). “Buy-and-Build: A Powerful PE Strategy, but Hard to Pull Off”. Available at: https://www.bain.com/insights/buy-and-build-global-private-equity-report-2019/. [last access 23/01/2023].

Madison, S. (2022). “Pandemic Acceleration of Consolidation of the Health Care Industry”. Available at: https://healthcarelawmatters.foxrothschild.com/2022/07/articles/health-care-providers/medical-practices/pandemic-acceleration-of-consolidation-of-the-health-care-industry/. [last access 23/01/2023].

McKinsey (2017). “The six types of succesfull acquisitions”. Available at: https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-six-types-of-successful-acquisitions. [last access 23/01/2023].

McKinsey (2021). “Winning at private-equity integrations”. Available at: https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/winning-at-private-equity-integrations. [last access 23/01/2023].

Morkötter, S. et al. (2016). “Do Private Equity Funds Always Pay Less? A Synergy-Related Explanation Based on Add-on Acquisitions”. University of St.Gallen Working Paper.

Phalippou, L. (2020). “An inconvenient fact: Private Equity Returns & The Billionaire Factory”. University of Oxford Working Paper.

Porter, M. (2008) “The five competitive forces that shape strategy”, Harvard Business Review.

Radler, J. (2022). “What is Private Equity? A Brief History”. Available at: https://www.financialpoise.com/what-is-private-equity-a-brief-history/. [last access 23/01/2023].

Romain, A. et al. (2004). “The economic impact of venture capital”, Deutsche Bundesbank, n.18/2004.

Rose, L. (2021). “2021 Continuing Upward Trend of Add-On Acquisitions”. Available at: https://rosebiz.com/2021-continuing-upward-trend-of-add-on-acquisitions/. [last access 23/01/2023].

Smith, C. (2021). “Private equity’s growing appetite for tech”. Available at: https://www.privateequityinternational.com/private-equitys-growing-appetite-for-tech/. [last access 23/01/2023].

Seretakis, A. (2015), “Private Equity in the United States and Europe: Market and Regulatory Developments”. Oxford University Press.

Stromberg, P. (2009). “The Economic and Social Impact of Private Equity in Europe: Summary of Research Findings”. Stockholm School of Economics.

Titanbay, (2018). “Private Equity in the consumer space”. Available at: https://www.titanbay.com/post/private-equity-in-consumer-goods. [last access 23/01/2023].

Venero Capital Advisors (2018). “Understanding the difference between Growth Equity and Venture Capital”. Available at: https://pulse.venerocapital.com/understanding-the-difference-between-growth-equity-and-venture-capital-a4a6adc22902. [last access 23/01/2023].

Wolpert, P. et al. (2020). “Add-On Acquisitions in Lower Middle Market Private Equity”. Available at: https://velawoodlaw.com/add-on-acquisitions-in-lower-middle-market-private-equity/. [last access 23/01/2023].

Xu, X., (2004), A comparative study of venture capital performance in the US and Europe. The Journal of Entrepreneurial Finance, vol.9, p.61-76.