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DOMESTIC VS. CROSS-BORDER PRIVATE EQUITY ACQUISITIONS: EVIDENCE FROM PORTUGAL

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Abstract

In recent years, Private Equity (PE) has witnessed remarkable worldwide growth, prompting researchers to investigate its value creation qualities for investors and portfolio companies alike. Even though PE developed in Portugal as well, limited research has been published with evidence from the country. The present dissertation strives to contribute to the literature on company-level private equity value creation, to shed light on the Portuguese reality, and to gather novel insights into the differences in impact and value creation of domestic vs. foreign PE firms.

To do so, a series of univariate analyses of the pre- and post-transaction evolution of six key dimensions (size, operating performance, investment, cash flow generation, capital structure, and human resources) were performed using a sample of 101 private equity transactions from 2007 to 2020, contemplating 119 Portuguese target (and control) companies and 115 private equity firms.

Results show that the Portuguese PE industry is growing and becoming less dominated by domestic firms. Overall, target companies are larger, more leveraged, and invest less than controls. Post-transaction, they grow in size, workforce, and investment, but display a deterioration of operating performance. Target companies acquired by foreign PE players are much larger, more profitable, and generate more cash flow than those acquired by domestic ones. The latter show a more immediate growth in size, investment, leverage, and workforce size and pay, whereas the former show a more sustained long-term size growth, below-industry increase in investment, and stable capital structure. Operating performance shows an overall deterioration, with significant results for productivity and efficiency in the domestic sample and profitability in the foreign one.

In conclusion, the results point to the role of PE firms as financing instruments for financially constrained companies to unlock growth. This appears to be especially the case for domestic PE firms. Foreign PE firms assume a different position and adopt an alternative strategy, targeting larger companies in faster-growing, more sophisticated markets.

Key Words: Private Equity, Operating Performance, Investment, Portugal

JEL-Codes: G24, G34, G39

Resumo

Recentemente, a atividade de *Private Equity* (PE) testemunhou um crescimento global notável, incentivando a publicação de investigação sobre a sua capacidade de criação de valor para investidores e *targets*. Apesar de a indústria de PE em Portugal ter acompanhado a evolução mundial, a investigação sobre o seu impacto no país é reduzida. A presente dissertação visa contribuir para a literatura nacional, inovando através do estudo das diferenças na criação de valor por parte de empresas de PE nacionais e internacionais.

Para tal, um conjunto de análises univariadas da evolução pré- e pós-transação de seis dimensões-chave (tamanho, desempenho operacional, investimento, fluxo de caixa, estrutura de capital e recursos humanos) foi realizado. Uma amostra de 101 transações de *private equity,* de 2007 a 2020, envolvendo 119 empresas-alvo portuguesas (e de controle) e 115 empresas de *private equity* foi empregada.

Os resultados indicam que a indústria de PE em Portugal está em crescimento e é cada vez menos dominada por PE nacionais. No global, as *targets* são maiores, mais endividadas e investem menos do que as empresas de controlo. Pós-transação, crescem em tamanho, recursos humanos e investimento, mas o desempenho operacional deteriora-se. As *targets* adquiridas por PE internacionais são maiores, mais lucrativas e geram mais fluxo de caixa do que aquelas adquiridas por PE nacionais. As nacionais exibem um crescimento mais imediato em tamanho, investimento, dívida e recursos humanos, enquanto as internacionais exibem um maior crescimento a longo-prazo, um aumento no investimento e uma estrutura de capital estável. O desempenho operacional deteriora-se, com resultados significativos para produtividade e eficiência na amostra nacional e lucratividade na internacional.

Em conclusão, os resultados apontam para o papel das empresas de *private equity* como instrumentos de financiamento para empresas desbloquear o crescimento de empresas financeiramente limitadas. Tal verifica-se mais concretamente nas PE nacionais. As PE internacionais assumem outro papel e adotam uma estratégia alternativa, visando empresas maiores em mercados mais sofisticados e com maior crescimento.

Palavras-Chave: Private Equity, Desempenho Operacional, Investimento, Portugal

Códigos JEL: G24, G34, G39

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[1] In the tables, the comma is used as the decimal separator, due to software configurations used to perform the computations. However, the period is used as the in-text decimal separator and the comma as the in-text thousands separator, in line with traditional English-speaking tradition.

1. Introduction

One of the ways in which the world of investments can be segregated is between traditional and alternative investments. The former generally consist of long-only, publicly traded investments in the money, bond, and stock markets, whereas the latter comprise the investments that do not classify as traditional ones (Baker & Filbeck, 2013).

The major groups of alternative investment categories are hedge funds, natural resources, private markets, real estate, and infrastructure (Baker & Filbeck, 2013). Private market investments are described as those (i) closely negotiated between (ii) qualified investors (or those representing them) and respective counterparties, (iii) meant to be held during the long-term, (iv) characterised by high risk and (v) high expected return, and (vi) carried out with the goal of creating value (Demaria, 2020). The primary investment sub-category within private markets is Private Equity (PE), whose importance has been growing greatly since the 1980s, and remarkably so during the past decade. In fact, according to McKinsey & Company (2023), global private equity assets under management (AUM) and fundraising stood at $7.6 trillion and $655 million, respectively, in 2022.

The growth of private equity has motivated researchers to investigate PE firms' merits, both in creating value for their investors and for the companies in which they invest. These two dimensions are targets of study because (financial) resources are scarce, and so their deployment should be optimal, with the ultimate goal being twofold: maximise returns for the risk-bearing investors and incentivise job creation, economic growth, and improved goods and services for the overall society. Indeed, the literature on private equity is traditionally divided between that investigating fund returns and that studying how private equity firms influence and create value in the companies in which they invest. Foundational and remarkable works on the latter include Kaplan (1989a), Kaplan (1989b), Jensen (1989), Kaplan and Strömberg (2009), Metrick and Yasuda (2011), and Acharya et al. (2013).

Naturally, Portugal was not immune to the trend of private equity growth, and so the Portuguese market also witnessed its PE industry develop, with private equity and venture capital (VC) assets under management increasing from €1.5 billion in 2007 to more than €8 billion in 2022 (CMVM, 2023). However, limited research has been produced investigating the activities of private equity firms in Portugal, with the most renowned work on the topic being that of Mendes and Sousa (2013).

The present dissertation strives to contribute to the collection of literature focusing on the efforts of private equity firms to influence and create value in the companies in which they invest. It proposes to do so by investigating evidence from Portugal, an underdeveloped private equity market when compared to that of the US, the UK, or continental Europe. Even the most recent studies on the topic analyse private equity investments that primarily occurred during or during the aftermath of the Great Financial Crisis (GFC) or the Sovereign Debt Crisis, a constraint that this dissertation proposes to overcome by considering investments closed as recently as 2020.

Nevertheless, this dissertation aims to contribute in a more novel manner, by considering the origin of the private equity firms (Portuguese vs. non-Portuguese) conducting the investments when evaluating their influence and value creation efforts. This approach follows previous suggestions from, for example, Cumming et al. (2007) and Wright et al. (2009) to introduce the domestic/foreign factor into the analysis. In doing so, it seeks to understand if nationality plays a factor in value creation, namely due to better domestic market knowledge, and detail the different contributions and the expected behaviour for both types of private equity players during a time in which both play a part in the Portuguese investing landscape.

This dissertation is structured as follows. In Chapter 2, a literature review on private equity, with a focus on the Portuguese reality, is presented. Chapter 3 explains the methodology and data sample collected to conduct the research. Chapter 4 presents the results of the study through a set of univariate analyses of the pre- and post-investment performance of private equity target companies. Finally, Chapter 5 closes the dissertation with the concluding remarks and study limitations.

2. Literature Review

2.1. Private Equity – Definition

Private equity (PE) is often used as an umbrella term for investments in the private markets, ranging from early-stage venture capital (VC) to growth and turnaround investments for mature and distressed companies (Snow, 2007). In its broadest sense, it conveys "the asset class of equity securities in companies that are not publicly traded on a stock exchange" (Cumming, 2012).

Specifically, Metrick and Yasuda (2011) identify four major sectors of private equity investments – Venture Capital, Buyout, Mezzanine[2], and Distressed[3] –, though they contend that Mezzanine and Distressed can be somewhat included in the Venture Capital and Buyout sectors. Therefore, Venture Capital and Buyout are presented as the core spheres of private equity, consistent with most of the literature on private equity (Cumming et al., 2007; Buchner, 2019; Roggi et al., 2019; Harris, 2023).

However, the literature emphasises a division between Venture Capital and Leveraged Buyouts (LBOs) (Kaplan & Strömberg, 2009). Because of the crucial role of debt in private equity acquisitions, private equity, leveraged buyouts, and buyouts are sporadically used interchangeably. However, other – more un-leveraged – buyouts exist, such as management buyouts (MBOs), management buy-ins (MBIs), investor-led buyouts (IBOs) or distressed private equity (Wright & Robbie, 1996; Cuny & Talmor, 2007; Wood & Wright, 2009).

The differences between Venture Capital and Buyout are noticeable in several dimensions. For example, the organisational economics of venture capital and buyout funds are distinct due to a striking contrast between scalability potential and core skills developed by managers (Metrick & Yasuda, 2010). Also, venture capital creates value by alleviating financial constraints in promising companies while buyout uses leverage, governance, and operating measures to unlock value creation potential at portfolio companies (Bertoni, 2011). Furthermore, in terms of control, buyout activity involves majority stake investments, while

[2] Mezzanine private equity provides hybrid financing between debt and equity.

[3] Distressed private equity provides turnaround financing for distressed companies.

venture capital often consists of minority stake investments in syndicated rounds of financing (Lerner, 1994). Finally, even on an environmental level, a flexible labour market and well-developed debt and public (stock) markets are traits conducing to significantly more buyout activity. However, they are not significant for venture capital, due to the inherent differences between PE and VC (Kelly, 2012).

It is important to establish that this dissertation distinguishes between private equity and venture capital. Private equity follows the definition advanced by Gompers et al. (2016), which states that it consists of equity investments in mature companies that intend to use the money to pursue buyout and growth value creation strategies and thus resemble the buyout sector advanced by Metrick and Yasuda (2011)[4]. Another clear definition that dictates how the term is used in this dissertation is the one advanced by Gompers and Kaplan (2022), which dictates that private equity includes investments in LBOs, growth capital, distressed investments, and mezzanine capital. These definitions are markedly distant from that of venture capital, which can be summed as a short-term financing tool, traditionally for early-stage companies and innovative projects, seeking to exit after a sizeable business dimension is accomplished (Schilit, 1997; Wright & Robbie, 1998; Zider, 1998).

2.2. Private Equity – Market Overview

Private Equity first soared during the 1980s, due to a strong wave of LBOs, primarily in the United States of America. The wave was heavily linked to the junk bond market and ended after junk bonds defaulted, in 1989 (Hurduzeu & Popescu, 2015). Afterwards, a new wave of private equity emerged, even stronger, during the mid-2000s (Blundell-Wignall, 2007; Pinto, 2021), and lasted until 2007, when the Great Financial Crisis (GFC) burst (Cao et al., 2016). These two waves of private equity activity motivated the publication of foundational and fundamental research on private equity's impact and value creation (see section 2.3).

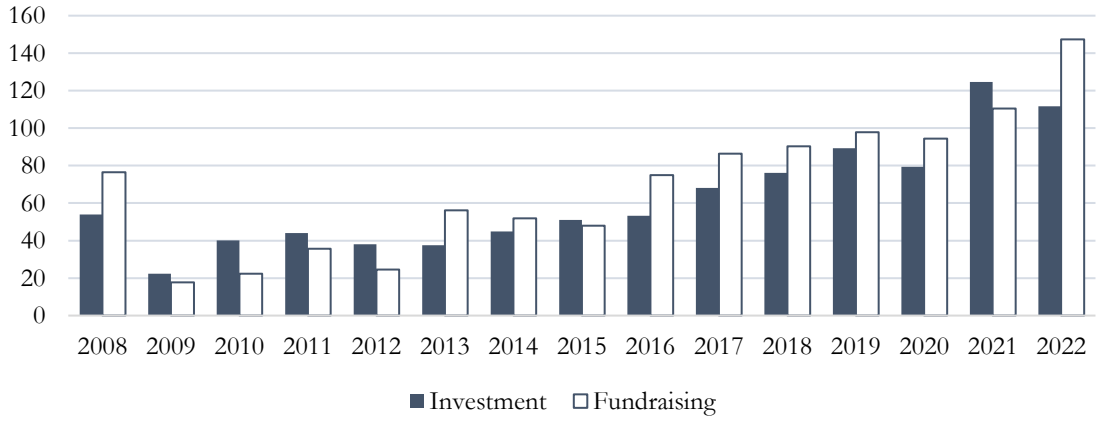
In the past post-GFC decade, private equity has been seriously on the rise again, as have the market's biggest players – Apollo, Blackstone, Carlyle, and KKR (Chen & Wang,

[4] Furthermore, because only majority stake investments are studied in this dissertation (see section 3.2), the buyout sector is undoubtedly the predominant one.

2022). There is no single explanation for its growth, but the expansionary monetary policy of central banks, which included unconventional measures, such as quantitative easing (QE), injected liquidity and allowed for a low interest-rate environment that propelled investors to seek yield in alternative investments. The rise in investment capital for private equity and the easier and cheaper access to debt markets shaped a downward pressure on the cost of capital. Paired with low inflation and steady economic growth, the diminished cost of capital drove private equity activity and, with it, boosted transaction prices, creating an ever-greater incentive to execute more deals at even higher valuations. (Aryoubi et al., 2020; Gunter et al., 2023). As shown in Figure 1, in Europe, after a break in 2009, private equity investment and fundraising exhibit a remarkable upward trend in line with the above-mentioned recent dynamics.

Still, McKinsey & Company (2023) warns that the sharp increase in interest rates that central banks implemented to fight decades-high inflation, the plummeting of public market valuations, more constrained access to bank financing and investors' portfolio rebalancing efforts all contributed to a decrease in private equity global deal volume, performance – 2022 being the first year of private equity negative returns since 2008 – and valuations. Thus, there is reason to suspect that private equity activity may be approaching, or even beyond, a turning point for the solid wave of growth of the 2010s/early 2020s.

Figure 1 – Evolution of PE investment and fundraising in Europe (€billion) (2008-2022)



Source: Author analysis; Invest Europe, 2023.

Nevertheless, the increased importance of private equity has led it to become a mainstream path towards risk diversification and return enhancement (European Central Bank, 2007). There are three ways in which investors participate in the private markets: directly, through funds, or through funds of funds. Because investing directly in private companies bears a high level of risk, entails a considerable amount of capital, and requires substantial expertise to navigate the transaction process, a wave of professionalisation emerged in the market to supply an ever more popular demand, which led to the emergence of the figure of the private equity fund and fund manager. In short, investors who are not as sophisticated as others – such as high net worth individuals (HNWI), who are allowed to pursue investments that the average investor is not – pool their resources together in intermediaries that buy into private equity funds that allow them to access private markets (Demaria, 2020).

Most private equity funds work as limited partnerships, in which the limited partners (LPs) are HNWI and institutional investors, and the general partners (GPs) are private equity firms. The former are expected to provide most of the money the fund will invest – GPs usually contribute a modest percentage (1%) of the funds raised by the fund – while the latter are expected to conduct the investment process. Private equity funds usually last ten or more years. They are closed-end investment vehicles, in which the LPs commit enough capital to be called whenever needed to finance successful transactions and to remunerate the GPs[5] (Demaria, 2020).

Because investors must pay heavy upfront fees to and share a sizeable share of their profits with private equity firms, the means by which those considered specialists create sufficient value to deliver attractive risk-adjusted returns is increasingly subject to research.

[5] Private equity firms, the GPs of private equity funds, are predominantly paid in a three-structure system: (i) a fixed percentage of the funds' assets under management (AUM) or of the capital committed by the LPs every year as "management fees", (ii) a percentage of the profits arising from exiting successful investments as "carried interest", and (iii) "transaction fees and monitoring fees", which are less standard and depend directly on the number of completed investments and the number of active investments, respectively.

2.3. Private Equity – Impact and Value Creation

2.3.1. Theoretical Framework

A conceptual framework for value creation in private equity is advanced by Schlegel (2019), in which investments have sources of value creation both at the fund level and at the company level. According to the author, there are three paths towards value creation between the moment of the investment and the moment of the exit: (i) multiple expansion, (ii) EBITDA (Earnings Before Interests, Taxes, Depreciation and Amortisation) expansion, and (iii) debt repayment. A similar structure is put forward by Achleitner et al. (2011), in which changes in valuation multiples and operating performance are also mentioned, but the overall use of leverage is stated as the third lever for value creation instead just debt repayment, which is more in line with the multi-effect of leverage on value creation described in the literature.

An important remark is that the first path (multiple expansion) occurs at the fund level and consists of investing in companies, industries or geographies that later become more attractive, thus commanding a higher relative price independent of the operating performance. The two other paths (operating performance expansion and leverage) occur at the company level and are of the utmost importance for this dissertation. According to Achleitner et al. (2010), leverage accounts for one-third of private equity sponsors' returns, whereas operational and market effects account for the remaining two-thirds.

In this dissertation, to assess private equity value creation, only the company-level performance improvement is studied. This decision follows the tradition of the literature on private equity value creation, which is consistently divided into two realms: (1) studies on the impact of private equity firms on the operational developments of their portfolio companies and (2) works on the returns of private equity funds and respective investors (Acharya et al., 2013).

According to Kaplan and Strömberg (2009), financial, governance, and operational engineering are the three main (non-mutually exclusive) levers to value creation at the company level. The study conducted by Schlegel (2019) proposes a fourth lever – a strategic one – but the literature is centred on the three levers advanced by Kaplan and Strömberg (2009). Also, the strategic lever overlaps considerably with the operational one, and thus

redundancy is avoided by focusing on the aforementioned three main levers. Still, it is worth mentioning a work by Hannus (2015) that also mentions strategy as a lever towards value creation and greatly details the different drivers of value creation.

In a groundbreaking work, Jensen (1989) predicts the end of the publicly-held corporation due to the resolution of the agency problem arising from "the conflict between owners and managers over the control of corporate resources". Through financial engineering, measures such as manager equity ownership and performance-sensitive compensation emerge to improve the operating performance of companies post-LBOs. According to Haque (2023), it is precisely due to lower agency costs that private equity companies can leverage their portfolio companies to levels beyond those considered optimal for non-PE-sponsored companies while preserving a value-maximisation behaviour. In short, the author argues that lower agency costs lead to a reduced tendency to shift risks to debtholders, thus lowering the expected present value of bankruptcy costs and raising the optimal level of debt.

Furthermore, the strict control private equity firms enforce on the boards of directors of their portfolio companies and the adoption of decentralised decision-making organisations with improved reporting mechanisms allow for better operating performance. At the same time, the financial side of leveraging the operations creates tax benefits for the companies and incentives for managers to generate cash to meet high interest and principal repayments, thus having no margin to waste financial resources on unprofitable projects (Jensen, 1986; Guo et al., 2011; Acharya et al., 2013).

Additionally, Guo et al. (2011) mention that private equity firms target underperforming firms with unexplored growth and efficiency routes, and that the transactions are carried out by seasoned professionals who can act as advisors to enhance the strategic planning of the portfolio companies, who may need to make important decisions such as investing, divesting, or restructuring business divisions or pursue a series of acquisitions. Acharya et al. (2013) also find that if GPs are ex-consultants or ex-industry managers, they can outperform in deals focused on internal value creation. In a different study, Biesinger et al. (2020) explain that companies face an improvement in their operating performances and profitability if the PE transactions are executed successfully by being subject to an investment that has an underlying, tailored value creation plan, instead of an "*ex-ante* selection of strategies".

Finally, private equity firms allow companies to pursue growth opportunities that they would otherwise be unable to due to financial constraints, opening yet another path towards value creation and performance improvements (Cohn et al., 2022). Indeed, Jürgens and Braun (2022) explain that PE companies act as liquidity providers during times of economic distress and thus can offer portfolio companies financial resources that place them ahead of the competition regarding investing capacity.

2.3.2. Empirical Evidence

Overall, there is a consensus in the literature that private equity firms can create value for their portfolio companies. Several studies were published during and after the first wave of private equity activity, focusing mostly on LBOs in the US. In contrast, papers researching its second wave are more prone to collect data from Europe, especially from the UK, due to data availability (Mendes & Sousa, 2013).

In a foundational work, Kaplan (1989a) analysed 48 US companies subject to MBOs between 1980 and 1986. The author found a post-buyout increase in operating income (before depreciation) and net cash flow, partly due to a decrease in capital expenditure, concluding that the operational improvements are due to improved financial incentives for management to reduce agency costs.

Nevertheless, Leslie and Oyer (2008) point to the fact that, though top managers at private equity-held companies have stronger compensation than their counterparts at publicly-held companies – with more equity ownership, lower base salaries, higher variable bonuses and pay –, private and publicly-held companies show no significant differences in operational performance. The authors claim that a major difference between the two lies in the level of leverage and that it is due to tax advantages that value is created at PE-owned corporations.

Comparing the trends of the first and second waves of private equity activity, Guo et al. (2011) analysed 192 public-to-private buyouts of US companies from 1990 to 2006. The authors also found that higher debt, both before and after the transactions, translated to higher cash flow generation, confirming the importance of leverage. Additionally, the

sample of second wave transactions registered more conservative prices and less leverage in comparison to first wave ones, as well as similar operating performance.

Indeed, in another important paper that far precedes that of Leslie and Oyer (2008), Kaplan (1989b) estimated the value of tax benefits in 76 MBOs of publicly-held US companies between 1980 and 1986, concluding that fiscal benefits are an important source of value creation for MBOs. In a study about the private equity value creation process in the life insurance industry, Kirti and Sarin (2020) found that a relaxed regulation environment creates opportunities for aggressive tax and capital management, which create value for the target companies of buyouts in the industry, confirming the tax benefits claims of previous authors. On the other hand, in the more regulated banking environment, Graf et al. (2009) found operational engineering to account for up to 87% of the value creation, with financial engineering being much less important.

This trend of operational superiority over leverage in a more regulated environment is supported by a study by Knauer et al. (2014) that analysed German LBOs completed after a 2008 tax law change in Germany to prevent excessive leverage in LBOs. The authors found that LBO tax shields remained an important component of LBO purchase prices and that the tax law change was ineffective in preventing the use of leverage, due to its multitude of benefits for private equity value creation, but that taxes do have a minor effect on corporate financing decisions and that the private equity value creation is mostly due to operating performance improvement.

To attest to the importance of operational level changes, Acharya et al. (2013) examined 395 private equity transactions in Western Europe between 1991 and 2007 and found that increases in sales and EBITDA margin lead to abnormal returns. The authors advanced with an interesting conclusion: the partners (i.e., senior employees overseeing and driving the deal) involved in the deal are crucial, as those with industry or consulting backgrounds can conduct operational improvement that those with a finance (banking or accounting) background cannot.

As for operating performance resilience, Wilson et al. (2012) found that PE-sponsored companies, in the UK, were able to outperform control companies in productivity by 5-15% and profitability by 3-5%, during the GFC (2008-2010). The authors also noted that PE-backed buyout companies displayed positive revenue and employment growth,

during the GFC, while engaging in better working capital management than control companies. Concerning investment, Bernstein et al. (2019) claim that PE-backed companies were able to decrease investment at a smaller scale than comparable companies, during the GFC, showcasing a positive relationship between private equity and investment resilience. Still, in a study of the cash flows of US public-to-private LBOs from 1980 to 2006, Ayash (2020) found that, post-LBO, companies enact immediate reductions in investment to prop up free cash flow.

An interesting, new theory for private equity value creation emerged with a work by Chung (2011). In it, the author analysed 169 UK private-to-private LBOs from 1998 to 2007 and discovered that target companies of PE-backed LBOs saw a significant growth in size, via higher investment (capital expenditure) and acquisitions. The findings are shown to support that private equity financing serve the purpose of changing ownership structure and are instrumental in relieving financial restrictions for companies with potential for growth. This hypothesis is backed by the study of Erel et al. (2015), in which the management behaviour of target companies of acquisitions is shown to change in a way consistent with that expected for financially stronger companies – e.g., lower cash holdings, lower investment to cash flow sensitivity, lower investment to cash flow sensitivity.

Considering more recent studies, Cohn et al. (2022) analysed 240 private equity transactions in the US from 1995 to 2009. The authors likewise found that private equity firms targeted mismanaged yet promising companies with growth opportunities that could not be unlocked due to excessive debt and dependence on external financing. Profitability saw an increase central to the value creation efforts of private equity firms. Financial engineering was mostly absent, as target companies were already too leveraged pre-buyout and thus needed more room for additional debt.

Alternatively, Biesinger (2023) found that the previous academic literature, which is more oriented towards developed markets, can be extended to developing markets, as PE-backed companies in these economies also present a higher use of debt, a lower effective tax rate, and better wages, productivity, and liquidity.

It is curious to note that the study by Biesinger (2023) sheds light on human resources and employment issues, such as wages, which are also subject to investigation in related literature, including a previous study from the same author (Biesinger, 2020). The already

mentioned paper by Kaplan (1989a) showed that buyouts do not lead to large employment cuts, but that employment at PE-backed companies increases less than in control companies.

A large study conducted by Davis et al. (2013) tracked 3,200 US target firms pre- and post-acquisition, with the transactions taking place between 1980 and 2005. The authors found that, post-acquisition, employment at private equity portfolio companies shrank compared to control companies. However, there is a differentiated phenomenon: existing jobs are more at risk, but PE-backed companies create new jobs in greenfield investments. Also, there is a major tendency for job reallocation which, the authors argue, may be due to the creative destruction process operated by PE firms. Finally, the authors conclude that there is an improvement in operating performance, with higher productivity and lower unit labour costs explaining increased profitability.

In a more recent study concerning the economic effect of private equity buyouts, Davis et al. (2021) analysed an even larger sample of 6,000 US target firms of buyouts conducted between 1980 and 2013. In the two years after the buyout and relative to control companies, target companies displayed less employment, higher job reallocation, and higher productivity – measured by revenue per employee –, with 80% being due to revenue growth rather than employment cuts. A 2.5% pre-transaction wage premium is also shown to disappear post-transaction. Once again, the authors present several interesting remarks: first, in an environment of easy and cheap access to debt, private equity companies strive to obtain returns through financial engineering, rather than operational; second, private equity activity is pro-cyclical, and a sort of "PE multiplier effect" should influence policymakers in times of economic shocks.

The literature shows that private equity investments increase sales, operating income, and debt, while cash flow and investment (capital expenditure) research needs to be more conclusive. In stricter terms, the operating performance improves via enhanced productivity, profitability, and efficiency. Employment is not necessarily diminished, but it pales in comparison to non-PE-backed peers, and so do wages.

Finally, the most important studies collect data from either the first, the second, or both first waves of private equity activity, but rare are those that study the wave that commenced post-GFC. This study proposes to add to the literature on private equity value creation specifically by focusing on the post-GFC period, concerning the Portuguese market.

After the recent Davis et al. (2021) comments on how private equity firms focus on financial engineering, rather than operational improvements, in times of easy and cheap access to credit such as those of the 2010s/early 2020s, the results of this study will contribute to the exploration of the veracity of such hypothesis.

2.3.2.1. The Domestic vs. Foreign Discussion

Interestingly, little literature has been found on the difference in the value creation effectiveness between PE firms that invest in domestic companies as compared to those who engage in cross-border deals, despite suggestions to research it both by Wright et al. (2009) – "(…) foreign PE firms compared with their domestic counterparts that yet are not well understood. Future research could usefully examine these governance issues." – and Cumming et al. (2007) – "It would also be interesting to assess whether there are differences in the efficiency effects of domestic and foreign MBOs (…).".

In a study about socially responsible private equity investments in the Netherlands, Cumming and Johan (2006) found that Dutch international institutional investors were more disposed to engage in socially responsible investing, which is surprising considering that the literature claims that investors are more prone to export their social harms.

In an interesting study about the internationalisation of venture capital, Aizenman and Kendal (2012) found that distance, language, and historical proximity foster capital flows between countries. Moreover, human capital, a business-friendly environment, and developed financial markets attract international capital. However, these finding are relative to venture capital and thus do not entirely apply to private equity, though similarities are expected.

Finally, Hammer et al. (2018) examined 946 private equity buyouts from 1997 to 2010 across 26 European nations. By assessing culture's impact on operating performance (size, profitability, efficiency), the authors uncover significant industry-adjusted negative

differentials in asset turnover and sales per employment growth between countries with high and low levels of Performance Orientation[6].

Ultimately, as is clear, the literature needs to be more comprehensive and focus on contrasting the value-creation efforts of domestic vs. cross-border deals. This study strives to contribute significantly to the literature by studying the different performance of post-buyout, PE-backed companies in Portugal according to the origin (Portuguese vs. foreign) of the private equity firms executing the investments.

2.4. Private Equity in Portugal

2.4.1. Market Overview

Two important sources of information for this overview of the Portuguese market are the periodic statistics and the annual reports that CMVM – Comissão do Mercado de Valores Imobiliários, the Portuguese regulatory body of financial markets (equivalent to the US's SEC – Securities and Exchange Commission), publishes describing the evolution of risk capital[7] in Portugal ("Relatório sobre a Atividade de Capital de Risco").

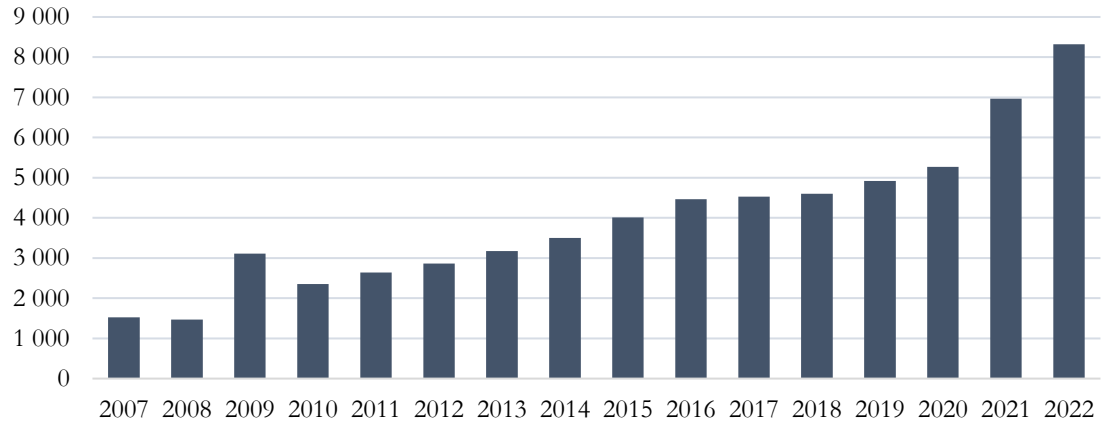
In Figure 2, it is possible to see that risk capital has increased immensely, in Portugal. From 2007 to 2022, risk capital assets under management (AUM) grew nearly six-fold, increasing uninterruptedly from 2010 to 2022. The last two recorded years – 2021 and 2022 – registered some of the highest growth rates (alongside 2009), with risk capital AUM increasing about 60% from 2020 to 2022, in Portugal. However, compared to the European market (see Figure 1), one can conclude that Portugal is still a relatively small market with

[6] GLOBE's Performance Orientation (PO) metric measures a country's cultural inclination. Countries with high Performance Orientation prioritise ambitious goals, competitiveness, and efficiency, while those with low levels tend to favour a more collaborative and less performance-centric society.

[7] The Portuguese term "capital de risco" can be translated to venture capital, yet it includes both venture capital and private equity, according to the definitions presented in section 2.1. Therefore, "capital de risco" is translated to "risk capital", a more literal transaction advanced by Mendes and Sousa (2013) to avoid confusion.

plenty of room for growth. Moreover, according to CMVM (2021), only 65% of risk capital AUM is of the private equity[8] type, with 34% being venture capital[9].

Figure 2 – Evolution of risk capital AUM, in Portugal (€million) (2007-2022)



Source: CMVM, 2023[10].

However, caution is advised when learning about this encouraging growth dynamic in the very recent past. In 2020, the COVID-19 pandemic negatively impacted the worldwide economy, which prompted the EU to affect €672.5 billion "in loans and grants to support reforms and investments undertaken by Member States" (InvestEU, n.d.). In Portugal, the *Recovery and Resilience Facility* amounts to a total of €16.6 billion, of which €1.55 billion are to be employed by *Banco Português de Fomento, S.A.* in capital injections for pandemic-hit companies (CMVM, 2020; European Commission, 2023). In this context, risk capital firms can apply to serve as intermediaries to manage the funds for capital injections, which may well play a significant explanatory role in the growth of risk capital AUM in the post-pandemic years. By the time this dissertation is submitted, 14 risk capital firms have already been granted €500 million to invest in small and medium enterprises (SMEs), with 44 others

[8] For CMVM, private equity includes the buyout, growth, mezzanine, and turnaround investments, and thus follows precisely the definition adopted in this dissertation.

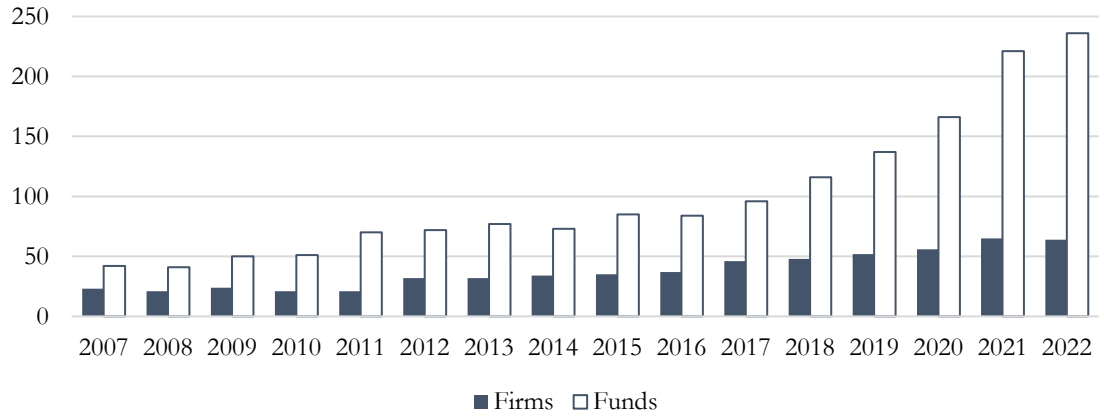
[9] For CMVM, venture capital includes seed, start-up (early-stage), and late-stage venture investments.

[10] Statistical time series named "Venture Capital" (equivalent to "Risk Capital" as defined in this dissertation) published by CMVM at https://www.cmvm.pt/en/statistics/SeriesLongas/Pages/default.aspx (accessed September 15th, 2023).

being considered for an additional, already approved €400 million (Banco Português de Fomento, 2023).

Figure 3 shows the evolution of the number of players and funds in the market. The market has become more competitive, more than doubling the number of risk capital firms from 2007 to 2022. As for the number of funds, the evolution is tremendous, as they have increased more than five-fold, a growth rate in line with that of risk capital AUM. According to CMVM (2021), 52% of Portuguese risk capital funds are of the private equity type, with 44% being venture capital and the remaining 4% being of other types (real estate, infrastructure).

Figure 3 – Evolution of risk capital firms and funds, in Portugal (2007-2022)



Source: CMVM, 2023.

Finally, it is noteworthy that, according to Mendes and Sousa (2013), in the 2000s, the Portuguese private equity market was far from its maturity, individual and domestic private equity firms dominated buyout activity, there was little competition, with only four major private equity firms controlling the market, and the market's main players were banks and bank-affiliated institutions.

2.4.2. Impact and Value Creation

Research on private equity impact and value creation in Portugal is much more limited than that done worldwide, especially in the Western world, as the Portuguese industry

is relatively underdeveloped (Costanza, 2017). Still, noteworthy works studying the value creation of private equity firms at the company level, in Portugal, have been published.

Mendes and Sousa (2013), using a sample of 101 buyouts from 1996 to 2010, show that all metrics of operating performance – return on sales (profitability), return on assets (productivity), and assets turnover (efficiency) – worsen both in unadjusted and industry-adjusted measures, despite an increase in total sales and total assets.

All subsequent studies find a similar poor operating performance post-transaction.

Indeed, Cruz (2017) considered 124 and 667 private equity transactions in Portugal and Spain, respectively, between 2000 and 2016. Profitability, productivity, and cash flow generation deteriorate in both countries, though Spanish companies manage to increase operating revenue and efficiency, unlike Portuguese ones.

Likewise, Almeida (2018) analysed 100 private equity (the author considers both private equity and venture capital, as defined in this dissertation) transactions from 2007 and 2015. Total sales, total assets, and number of employees increase post-transaction, while all measures of operating performance worsen, both in adjusted and industry-adjusted terms.

More recently, Silva (2019) investigated 121 buyouts between 2006 and 2016 and found that turnover, total assets, EBITDA, capital, net debt increase and capital expenditure decrease, both in unadjusted and industry-adjusted terms. The capital structure is also found to be more leveraged than that of peers in the first post-buyout year. Besides spurring growth and relaxing portfolio company financial constraints, no operating performance improvement is observed. However, it is interesting to note that the sub-sample of portfolio companies from which private equity firms had already exited displayed a statistically significant increase in operating performance. Similarly, an earlier study by Oliveira (2013) studies the post-private equity exit performance of 30 companies from 2005 to 2012. Contrary to the study of Silva (2019), EBITDA and operating performance deteriorate despite increases in total sales and assets.

Because state-affiliated private equity firms are usually absent from the studies of private equity value creation[11], but because the state is a clear influence in the Portuguese private equity industry (Duarte, 2006), Alves (2012) proposes to study the post-buyout performance of companies acquired by firms owned or controlled by the Portuguese state. In it, the author analyses a sample of 91 buyouts between 1999 and 2009 and concludes that they primarily target troubled SMEs, positioning the state-affiliated firms as sources of financing for companies that cannot access purely private equity firms. In terms of performance, an increase in total assets, total sales, capital expenditure and number of employees is verified. However, overall operational performance deteriorates both unadjusted and industry-adjusted terms.

Finally, by investigating 153 transactions between 2001 and 2011, Magalhães (2013) concludes that private equity (and venture capital) firms increased leverage in Portuguese portfolio companies, even during and after the GFC.

The Portuguese literature indicates a post-transaction increase in size (sales and assets) and a decrease in operating performance. Inconclusive evidence has been displayed regarding cash flow generation, size, capital structure and human resources.

[11] A more detailed explanation of the rationale behind the exclusion of government-affiliated entities to assess private equity value creation is present in section 3.2, in which a justification is provided to support the decision to do precisely so in this dissertation.

3. Methodology and Sample Selection

Based on the literature review presented in the previous chapter, the research on private equity firms' impact in the Portuguese market remains relatively limited. Moreover, most previous works share noteworthy limitations, namely an indifference towards the origin of the private equity firms and periods of analysis that mostly span through particularly challenging phases of the Portuguese economy, due to the Great Financial Crisis and the Sovereign Debt Crisis.

Thus, this dissertation aims to further contribute to the literature and to overcome the limitations of previous works, specifically by studying the origin of the private equity firms and a broader period of analysis, and include transactions closed throughout different economic cycles of the Portuguese economy.

Two key research questions guide the present work:

Q1: What is the impact of private equity firms, in the Portuguese market?

Q2: Do domestic private equity firms have a different impact than foreign ones, in the Portuguese market?

The ensuing sections of Chapter 3 present the methodology and the data selected to answer the research questions.

3.1. Methodology

A total of six dimensions are considered to assess the impact of private equity firms' investments: size, operating performance, investment, cash flow generation, capital structure, and human resources. Four variables and six ratios are adopted to evaluate said dimensions (see Table 1[12]).

The operating turnover ("total sales") and the book value of assets ("total assets") are used as proxies for size. Operating performance is divided into three sub-dimensions: profitability, productivity, and efficiency. They are measured, respectively, by the return on

[12] The end-of-period accounting information is the basis for calculating all variables and ratios.

sales (ROS), the return on assets (ROA), and the asset turnover (AT). The return on sales and the return on assets deflate the EBITDA (Earnings before Interests, Taxes, Depreciation and Amortisation) by the total sales and assets, respectively. The asset turnover, on the other hand, is computed by dividing the total sales by the total assets. To assess investment and cash flow generation, the CapEx[13] and the Net Cash Flow[14] are deflated by the total assets, respectively. These dimensions, variables, and ratios have been extensively adopted in the literature on the impact and value creation of PE firms (Kaplan, 1989a; Murray et al., 2006; Guo et al., 2011; Chung et al., 2011; Mendes & Sousa, 2013; Cohn, 2022).

The impact on the capital structure is measured by the debt-to-equity ratio, which is computed by dividing the book value of debt[15] ("total debt") by the book value of equity ("total equity"). As for human resources, the number of employees and the cost of employees per employee are used, respectively, as proxies for the workforce's size and pay. Once again, the adoption of these dimensions, variables, and ratios is based on the previous works studying private equity and capital structure and employment (Achleitner et al., 2011; Davis et al., 2013; Goergen et al., 2014; Biesinger, 2020; Davis et al, 2021).

Table 1 – Study dimensions, variables and ratios, and formulas

Dimensions	Variables and ratios	Formulas
Size	Total Sales Total Assets	- -
Operating Performance (Profitability)	Return on Sales	$\frac{EBITDA}{Total\ Sales}$
Operating Performance (Productivity)	Return on Assets	$\frac{EBITDA}{Total\ Assets}$
Operating Performance (Efficiency)	Asset Turnover	$\frac{Total\ Sales}{Total\ Assets}$
Investment	CapEx-to-Assets	$\frac{CapEx}{Total\ Assets}$
Cash Flow Generation	Cash Flow-to-Assets	$\frac{Net\ Cash\ Flow}{Total\ Assets}$
Capital Structure	Debt-to-Equity	$\frac{Total\ Debt}{Total\ Equity}$
Human Resources	Number of employees Cost of employees per employee	- -

[13] CapEx (Capital Expenditures) = ΔFixed Assets + Depreciation and Amortisation

[14] Net Cash Flow = EBITDA – CapEx – ΔWorking Capital | Working Capital = Stocks + Debtors – Creditors

[15] Debt = Current and non-current interest-bearing liabilities

The selected methodology follows that of Kaplan (1989a) and Mendes and Sousa (2013) and consists of a series of univariate analyses of the variations of each variable and ratio used to measure the study from the year before (year -1) to each of the three years after (years +1, +2, and +3) the transaction. The year of the transaction (year 0) is not contemplated in the analyses as it is too difficult to differentiate pre- and post-performance during said year.

The variables and ratios are studied in a twofold manner. Firstly, the simple, unadjusted variations of the sample companies are computed. Secondly, the difference-in-differences method is employed, and the simple variations are adjusted by benchmarking the sample companies' variations against those of comparable companies (see section 3.3).

The variations of the variables (total sales, total assets, number of employees, cost of employees per employee) from the year before to each of the three years after the transaction are computed as percentage changes according to the formula:

$$\frac{X_i^{t+j} - X_i^{t-1}}{X_i^{t-1}}$$

(Equation 3.1)

X represents the variable (or ratio) under observation, *i* represents the sample company, and *j* takes the values 1 through 3 to account for each of the three years after the transaction. These definitions stand true for the remaining three formulas presented below.

Additionally, to understand the year-on-year (YoY) growth of the variables in the year before the transaction, the following formula is used:

$$\frac{X_i^{t-1} - X_i^{t-2}}{X_i^{t-2}}$$

(Equation 3.2)

The variations of the ratios from the year before to each of the three years after the transaction are computed as percentage point changes according to the formula:

$$\left(X_i^{t+j} - X_i^{t-1}\right) \times 100$$

(Equation 3.3)

Once again, to understand the YoY growth of the ratios in the year before the transaction, the following formula is used:

$$(X_i^{t-1} - X_i^{t-2}) \times 100$$

(Equation 3.4)

As mentioned before, the difference-in-differences method is employed to benchmark the sample companies' variations with those of similar companies. The adjusted results are obtained by subtracting the variations of the variables and ratios of the sample companies to those of the comparable companies. Naturally, the formulas used to compute the variations of the comparable companies are in all similar to those just presented.

To compare between the impact of domestic versus foreign private equity firms, the univariate analyses are repeated twice, once for transactions with Portuguese-only buyers and once for transactions with foreign-only ones. In chapter 4, a series of tables present the median and the number of observations for both unadjusted and adjusted results of each of the samples considered – total sample, domestic-only sample, foreign-only sample.

A careful analysis of the data reveals the existence of average-skewing outliers. Thus, rather than the average, the median variation values serve as basis for the interpretation of the results of the univariate analyses, in line with Kaplan (1989a) and Mendes and Sousa (2013). Furthermore, *winsorization*[16] is carried out to limit outliers and generate more meaningful average values.

Finally, several tests are carried out to verify the statistical significance of the results. A two-sample Student's *t*-test is employed to check if average values of (i) sample and comparable companies and (ii) domestic-only and foreign-only sample companies are statistically different from each other. The Wilcoxon Signed Rank Test is employed to verify if unadjusted and adjusted median variation values are statistically different from zero. The Wilcoxon Rank Sum Test (or Mann-Whitney *U* Test) is employed to verify if median values of (i) sample and comparable companies and (ii) domestic-only and foreign-only sample

[16] *Winsorization* is a statistical technique that replaces outliers above and below a pair of (mirrored) upper and lower thresholds, respectively, by the value of the limit thresholds themselves. The present dissertation set the 90 (10) percentiles as the limit thresholds.

companies are statistically different from each other, as well as if median variation values of domestic-only and foreign-only sample companies are statistically different from each other.

3.2. Sample Selection

A two-step process was employed during the sample selection. First, information on private equity deals was retrieved from the *Zephyr* database and the respective target companies were identified. Second, the accounting information of the target companies was retrieved from the *Sabi* database.

The initial criteria introduced to filter relevant deals from the *Zephyr* database were: (1) only private equity transactions; (2) transactions completed between 2007 and 2021; (3) transactions involving at least one Portuguese target company. A total of 604 suitable deals were retrieved. Afterwards, a set of adjustments were conducted, starting with the exclusion of transactions with incorrect or missing essential information[17]. Furthermore, transactions involving non-financial acquirers[18] and holding target companies[19] were also excluded. Finally, minority stake investments[20] were discarded, as were transactions involving target companies already subject to private equity investments within a three-year period before the year of the transaction. A total of 101 deals, with 119 target companies and 115 private equity acquirers, were included in the final sample. A summary of the sample selection can be observed in Table 2.

[17] "Essential information" includes the availability of accounting information for years -1 and +1.

[18] Only transactions whose acquirer(s)' primary NACE Rev. 2 code started with 64 ("Financial service activities, except insurance and pension funding") or 66 ("Activities auxiliary to financial services and insurance activities") were included. Two exceptions were included as the non-financial acquirers were identified as acquisition vehicles for financial ones. MBOs and MBIs backed by private equity financing were also included.

[19] Holding companies exist to own, influence, and control other companies (Hanafizadeh & Moayer, 2008). They may not engage in normal business or operating activity, and so the accounting information provided by them is unsuitable for the purposes of this dissertation.

[20] Transactions involving minority stake investments were excluded. This decision cut numerous potentially suitable transactions but was crucial. Despite previous works that include minority stake investments (Almeida, 2018), a careful analysis of the transactions revealed that most minority stake investments were truly venture capital (see chapter 2 for PE and VC definitions), and so out-of-scope for this dissertation.

Table 2 – Sample selection summary

	Number of transactions
Initial Sample	
Criteria:	
Type: Private Equity Time period: 2007 - 2021 Geography (target company): Portugal	**604**
Exclusions:	
Incorrect or missing non-accounting information	86
Incorrect or missing accounting information	87
Non-financial acquirors	67
Minority stake stake investments Holding target companies	260
Repeated target companies	3
Final Sample	**101**

Last, the final sample was reviewed to ensure that no private equity acquirer was directly or indirectly linked to a government or public institution. Whereas private investments pursue private returns, public investments focus on social returns, especially in the presence of market failures (Lerner, 1996; Bai et al., 2021). Furthermore, government-dependent investors are more likely than independent ones to align with national policy (Suchard et al., 2021), which was found to favour small and medium enterprises (SMEs), in Portugal (Duarte, 2006). Likewise, companies backed by independent investors see an increase in professionalisation and generally outperform those supported by government-dependent ones (Brander et al., 2010; Luukkonen et al., 2013; Alperovych et al., 2015). The key differences in goals, behaviours, and results between government-dependent and independent investors motivate the elimination of the former to avoid biased observations.

In the *Sabi* database, the accounting information of the 119 target companies was retrieved for the three years before and the three years after the year of the transaction. More precisely, the *Sabi* database was consulted to retrieve the sales, assets, loans, long-term debt, equity, EBITDA, fixed assets, depreciation and amortisation, working capital, number of employees and total cost of employees. As described above, all variables and ratios can be constructed with these accounts.

3.3. Comparable Sample

As mentioned before, a comparable (or control) sample was created by matching each sample company (hereafter also named "target company") to a similar control company that was not subject to an investment by a private equity firm.

The following criteria were employed to match the companies: (i) to ensure that the control company was from the same industry as the target company, the pair should share the first three NACE (Nomenclature of Economic Activities) Rev. 2 primary code digits; (ii) the book value of assets of the control company should be within 80% and 120% of that of the respective target company, in the year -1; and (iii) the selected control company should be the one that, having met the previous two criteria, presented the closest return on assets to that of the respective sample company, in the year -1. In the cases in which the first two criteria yielded no results, the criteria were broadened as such: first, the sector was expanded to include control companies with the same two first NACE Rev. 2 primary code digits as the respective target companies; second, the book value of assets of the control company was to be within 60% and 140% of that of the target company, in the year -1. These two criteria expansions found suitable control companies for all target companies.

Furthermore, the comparable sample was stressed against two other criteria: (i) the comparable sample companies were to have available information on total sales, total assets, and EBITDA for years -2 through +3[21] and (ii) the comparable sample companies were not to have been a target of a private equity or M&A deal in the five years before and three years after the fiscal year of the transaction.

Finally, with all previously explained steps correctly conducted, a last discretionary adjustment was made to the comparable sample. The application of the comparable sample selection rules paired a racing track operator with a football club. Because the nature of a football club is ill-suited to establish a comparison, the best alternative option was selected to compare the racing track operator to.

[21] Two types of exceptions to this criterion persisted. Some companies whose transactions took place in 2007 and 2019-2020 onwards needed to have available information for 2005 and 2022, respectively. Therefore, the former did not present data for year -2, just as the latter did for years +2 (for 2020 transactions) and +3 (for 2019 transactions).

3.4. Sample Description

The yearly distribution of the private equity transactions is shown in Figure 4. Interestingly, during the Great Financial Crisis, Portugal presented a relatively stable private equity activity, curiously peaking in 2008, a year of profound lousy memory for the finance industry. However, private equity activity was nearly interrupted during the onset of the Sovereign Debt Crisis. In 2011, the Portuguese government received external financial aid through an Economic Adjustment Programme provided by the then-named Troika (composed of the European Commission, the European Central Bank, and the International Monetary Fund), which partially explain the slowdown in PE activity in said year (Pessanha & Jerónimo, 2013). Furthermore, it is also interesting to note that private equity activity in Portugal recovered to 2008 levels a year after the end of the Economic Adjustment Programme, in 2015. A consistent upward trend has taken place since 2017, reaching a high of 14 deals completed in 2019, displaying a recent expansion of the private equity market, in Portugal. Finally, in 2020, a new break in private equity activity is evident, possibly due to the uncertainty caused by the COVID-19 pandemic (CMVM, 2020)[22].

The segregation of the PE transactions by the origin of their acquirers is also conducive to interesting remarks. From 2007 to 2014, domestic PE players dominated buyouts in Portugal, with little to no activity from international PE firms. The underdevelopment of the Portuguese private equity market (Mendes & Sousa, 2013) allied to the uncertainty brought on by two consecutive crises – Great Financial Crisis and Sovereign Debt Crisis – is certain to have kept international players away from investing in Portugal and accentuated the dominance of domestic distressed and turnaround funds as the most prominent in the country (Duarte et al., 2022). However, from 2015 onwards, foreign PE firms have increased their activity in Portugal, in fact superseding that of domestic companies, as clearly visible in the years of 2018 and 2019, as shown in Figure 4. The better economic context, the deleveraging of Portuguese groups, the real estate expansion in the country's most notorious cities, and the surge in tourism have been advanced as possible reasons for the attraction of foreign PE investments to Portugal (Duarte et al., 2022).

[22] Though a break in risk capital activity, especially in the first semester of 2020, is reported, one cannot exclude the possibility of the notorious 2020 break in activity being partially explained by this dissertation's exclusion of transactions non-complying with its essential information availability criteria.

Figure 4 – Number of sample transactions per year (2007-2020)

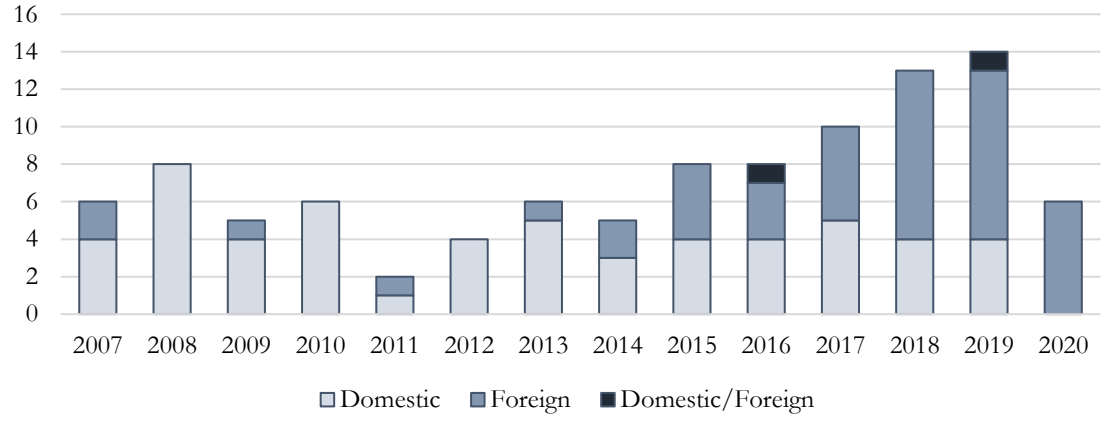


Table 3 summarises the origin of the private equity firms and segregates the sample based on syndication. The origin of the private equity firms is quite balanced, though domestic-only transactions (55%) are more common than foreign-only ones (43%). Few transactions were syndicated (14%), a trend in line with Mendes and Sousa (2013) – had minority stakes been included, as they were by Almeida (2018), the figure would most likely be larger, as syndication is a common strategy for the VC industry (Lerner, 1994).

Table 3 – Number of sample transactions per origin of private equity firm(s)

	Number of transactions
Domestic-only	
Syndicated	6
Non-syndicated	50
Total	56
Foreign-only	
Syndicated	6
Non-syndicated	37
Total	43
Domestic and foreign	
Syndicated	2
Non-syndicated	0
Total	2
Total	**101**
Total Syndicated	14
Total Non-syndicated	87

Table 4 shows the most participating private equity firms. The eight most involved ones accounted for ~37% of all private equity acquirers, showcasing a relatively large concentration. By far, Explorer Investments – SCR, S.A. was the most active player in the market, being involved in almost twice as many investments as ECS – SCR, S.A., the second-most active player. Finally, it is noteworthy that only domestic players appear in the list of the most active private equity firms, displaying a Portuguese dominance consistent with the findings of previous studies; however, bank-affiliated firms are no longer more important than independent ones (Mendes & Sousa, 2013; Almeida, 2018).

Table 4 – Number of sample transactions per private equity firm

Private Equity firm	Number of transactions
Explorer Investments - SCR, S.A.	12
ECS - SCR, S.A.	7
Oxy Capital - SCR, S.A.	6
Vallis Capital Partners, S.A.	5
Atena Equity Partners - SCR, S.A.	4
HCapital Partners - SCR, S.A.	3
Inter-Risco - SCR, S.A.	3
Menlo Capital - SCR, S.A.	3
Others	72
Total	**115**

Table 5 displays the industry classification of the target companies. *Manufacturing* was, by far, the most targeted industry (~38%). In comparison, only ~10% of target companies operated in the second-most targeted industry, *Transportation and Storage*. *Manufacturing* was also the industry most targeted by both domestic and foreign PE firms, but its relative weight was stronger for the former (~45%) than for the latter (28%). Both national and international PE firms presented a balanced multi-industry focus[23].

[23] The relative high number of *Transportation and Storage* target companies for foreign PE investments is inflated by the investment of Ardian Infrastructure in Ascendi Group, which involved numerous subsidiaries.

Table 5 – Number of target companies per industry[24]

Industry	Number of target companies		
	Total	**Domestic**	**Foreign**
Manufacturing	45	30	14
Transportation and Storage	12	3	9
Electricity, Gas, Steam and Air Conditioning Supply	9	4	5
Financial and Insurance Activities	7	5	2
Information and Communication	7	3	4
Wholesale and Retail Trade	7	4	3
Accomodation and Food Service Activities	6	3	2
Professional, Scientific, and Technical Activities	6	3	3
Human Health and Social Work Activities	6	5	1
Others	14	7	7
Total	**119**	**67**	**50**

3.4.1. Descriptive Statistics

Tables 6 and 7 show the characteristics of the companies of the four samples considered in this presentation: the target and the comparable samples, and the domestic and the foreign sub-samples. Panels A and C and panels B and D show the characteristics of the variables and of the ratios, respectively, in year -1.

Total Sample

Several noteworthy remarks can be made by analysing Table 6. In previous works (Almeida, 2018), target companies are younger, invest more, and generate less cash flow than their industry counterparts. These characteristics are in line with what one ought to expect from venture capital, as start-ups and early-stage companies are obviously younger and need to burn more cash than more mature ones. In Panel A, it is possible to verify that none of these characteristics persist, once again illustrating the importance of clearly defining private equity separately from venture capital.

Overall, statistically significant differences are found in size, investment, capital structure, and operating performance. Target companies are larger than their industry counterparts – higher total sales and larger workforce – invest less and are more leveraged –

[24] The number of target companies of domestic and foreign investments do not add up to the number of total target companies because two transactions involved both domestic and foreign PE firms (see Table 3).

higher debt and debt-to-equity ratio –, indicating that private equity activity in Portugal does indeed operate the function of liquidity provider for companies with growth potential but with limited financing ability, as advanced by Mendes and Sousa (2013).

Finally, target companies are less profitable (ROS) but more efficient (AT), which is consistent with the observation that PE players, preferring to operate under a leaner asset base, prioritise companies with higher operational efficiency when pursuing acquisitions.

Domestic and Foreign Samples

In Table 7, a first characterisation of the differences between domestic and foreign PE investment in Portugal is shown, and the conclusions are stark and remarkably significant. First, foreign PE firms acquire much larger companies (on average, assets differ by €70 million), which is understandable if one considers that Portugal is of modest dimension and international players may overlook businesses below a certain size threshold, especially for cross-border deals.

Foreign PE firms also target more profitable (i.e., EBITDA and ROS) companies with better cash flow generation (i.e., Cash Flow and Cash Flow/Assets). Though domestic PE firms invest in companies with less debt, the debt-to-equity ratio is smaller, though non-significant, for targets of cross-border deals, thus indicating that international players invest in less leveraged companies, and that the difference in totals debt is due to size constraints.

Finally, companies targeted by foreign PE firms are less efficient, invest less, and pay the employees better, possibly indicating a more skilled and value-adding workforce, and thus that international players opt for more specialised industries. However, the lower pay of target companies of domestic PE firms is also in line with the fact that the predominant Portuguese PE funds focus on distressed and turnaround situations, in which it is more likely that workforce pay is depressed.

Table 6 – Characteristics of target and control samples in year -1

Table 6 shows both the target and the comparable samples' characteristics in year -1 and the difference of the average and the median of the two. The *t*-test and the Wilcoxon Rank Sum Test (Mann-Whitney *U* Test) were employed to test whether the average values and the median values, respectively, of the target sample are significantly different than those of the comparable one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. Values shown (expect for age) are post-*winsorization* at the 90 (10) percentiles (see Annexes for the characteristics of the pre-*winsorization* samples). Characteristics signalled with (a) are shown in thousands of euros and "p.p." denotes percentage points.

	Target Sample					Comparable Sample					Difference	
Panel A	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**
Age (years)	24	16	144	1	119	27	19	145	2	116	-3	-3
Total Sales (a)	23 258	11 639	87 644	200	119	17 870	6 256	70 641	71	116	5 388	5 383 **
Total Assets (a)	49 860	16 181	209 621	1 590	119	42 863	16 027	186 548	1 329	116	6 997	154
EBITDA (a)	3 206	1 776	11 185	-296	116	3 150	1 393	12 318	-120	116	56	383
CapEx (a)	757	411	4 458	-2 768	111	2 233	274	12 103	-1 484	113	-1 475 ***	137
Cash Flow (a)	2 213	748	13 162	-4 308	111	2 249	357	17 302	-5 357	113	-35	391
Debt (a)	15 012	2 466	70 381	0	115	6 613	1 413	30 974	0	116	8 399 ***	1 053 *
Number of employees	112	66	343	2	117	87	44	266	0	116	25 *	23 *
Cost of employees per employee (a)	27	24	50	14	108	26	21	55	12	101	0	3
Panel B												
ROS (%)	17,85	13,63	47,07	-5,80	108	24,51	18,40	69,20	0,20	108	-6,66 p.p. **	-4,76 p.p.
ROA (%)	10,41	9,03	26,20	-5,85	116	9,39	8,54	23,17	-2,73	116	1,02 p.p.	0,49 p.p.
AT (%)	89,28	82,41	187,96	9,98	111	75,73	61,28	192,58	7,13	108	13,55 p.p. *	21,13 p.p. **
CapEx/Assets (%)	5,81	3,60	22,88	-4,74	111	7,25	3,03	26,57	-8,33	113	-1,44 p.p.	0,57 p.p.
Cash Flow/Assets (%)	0,33	5,64	23,58	-42,71	111	2,99	3,99	29,37	-23,01	113	-2,66 p.p.	1,66 p.p.
Debt-to-Equity (%)	149,72	70,70	588,74	0,00	101	70,84	41,15	189,13	0,00	109	78,88 p.p. ***	29,55 p.p.

Table 7 – Characteristics of domestic and foreign samples in year -1

Table 7 shows both the domestic and the foreign samples' characteristics in year -1 and the difference of the average and the median of the two. The *t*-test and the Wilcoxon Rank Sum Test (Mann-Whitney *U* Test) were employed to test whether the average values and the median values, respectively, of the domestic sample are significantly different than those of the foreign one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. Values shown (except for age) are post-*winsorization* at the 90 (10) percentiles (see Annexes for the characteristics of the pre-*winsorization* samples). Characteristics signalled with (a) are shown in thousands of euros and "p.p." denotes percentage points.

	Domestic Sample					Foreign Sample					Difference	
Panel C	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**
Age (years)	21	16	97	2	64	27	19	144	1	53	-6	-3
Total Sales (a)	16 480	8 799	63 512	305	64	29 700	17 469	93 411	797	53	-13 220 ***	-8 670 ***
Total Assets (a)	28 483	12 248	130 789	1 440	64	99 561	33 018	463 610	4 034	53	-71 078 ***	-20 770 ***
EBITDA (a)	1 513	672	6 127	-1 070	62	6 441	3 369	21 575	18	52	-4 928 ***	-2 698 ***
CapEx (a)	909	500	3 462	-369	59	471	391	3 633	-3 258	50	438	109
Cash Flow (a)	-1 037	168	3 217	-11 358	59	9 644	2 676	52 359	-1 729	50	-10 681 ***	-2 508 ***
Debt (a)	9 117	2 170	47 111	0	61	34 929	3 049	185 856	0	52	-25 812 ***	-879
Number of employees	107	66	336	8	62	117	75	345	1	53	-11	-9
Cost of employees per employee (a)	22	21	33	13	58	35	27	78	17	48	-13 ***	-6 ***
Panel D												
ROS (%)	11,89	11,41	33,40	-10,11	58	29,91	17,55	78,00	5,90	48	-18,02 p.p. ***	-6,14 p.p. ***
ROA (%)	9,85	10,03	26,00	-6,78	62	12,15	9,19	29,01	1,15	52	-2,30 p.p.	0,84 p.p.
AT (%)	105,40	86,87	211,06	31,78	60	77,39	75,40	163,02	9,83	49	28,01 p.p. **	11,47 p.p. **
CapEx/Assets (%)	6,01	3,80	21,96	-2,43	64	3,57	1,60	15,96	-5,06	53	2,43 p.p. *	2,20 p.p.
Cash Flow/Assets (%)	-2,83	1,94	18,83	-47,44	64	7,12	6,42	24,62	-12,78	53	-9,94 p.p. ***	-4,48 p.p. **
Debt-to-Equity (%)	151,02	67,92	583,59	0,00	52	134,57	45,59	548,09	0,00	48	16,45 p.p.	22,33 p.p.

4. Domestic vs. Cross-Border Private Equity Acquisitions: Evidence from Portugal

4.1. Pre-Transaction Performance

Total Sample

According to Table 8, target companies were increasing pre-transaction, more in terms of sales (5.85% at 1% significance) than of assets (0.07% at 10% significance), but less so than their industry controls, even though adjusted results show no significance, as do operating performance measures.

Inconclusive values for investment and capital structure are verified whereas the adjusted cash flow generation evolution is shown to be negative (-5.66% at 5% significance), indicating liquidity concerns that support the hypothesis that PE firms play an important role of financier for struggling target companies. Finally, the workforce is shown to have been increasing pre-transaction, though non-significant results were found for adjusted workforce size and adjusted and unadjusted workforce pay.

Domestic and Foreign Samples

Table 8 demonstrates an unadjusted increase in size, except in the total assets of the foreign sample companies (curiously the only non-significant value), which nevertheless pales in comparison to the controls (again, non-significant values). The operating performance of the domestic sample is inconclusive, as is that of the foreign sample, expect for the unadjusted growth in asset turnover, which is positive (0.67 p.p. at 5% significance). There is also a negative differential between the asset turnover of the domestic and the foreign samples (-1.44 p.p. at 10% significance), indicating a better pre-transaction efficiency evolution of targets of international PE players. The operating performance results indicate that foreign PE firms are more prone to invest in growing and competitive industries, in which there is more room and market pressure for operational improvements.

Investments and capital structure too display inconclusive results, whereas unadjusted and adjusted cash flow generation is negative for domestic sample target

companies (-5.23 p.p. at 1% significance and -6.52 at 5% significance, respectively), providing stronger evidence that Portuguese PE players serve as liquidity providers for financially constrained companies. Indeed, there is a stark difference between the pre-transaction cash flow generation evolution of domestic and foreign samples, in favour of the latter (-6.44 p.p. at 10% significance). Finally, the number of employees of the foreign sample companies is shown to increase (1.14% at 5% significance), whereas the cost of employees per employee increases, in unadjusted terms, in the domestic one (2.89 % at 10% significance).

Table 8 – Pre-Transaction Performance

Table 8 shows the pre-transaction (years -2 to -1) performance of the target, domestic, and foreign companies. The reported median values are shown both unadjusted and adjusted, and the Wilcoxon Signed Rank Test was employed to test whether they are significantly different than zero. The Wilcoxon Rank Sum Test was employed to test whether the median values of the domestic sample are significantly different than those of the foreign one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. (a) and (b) denote percentage and percentage point changes, respectively, and "p.p." denotes percentage points.

		Total Sample		**Domestic Sample**		**Foreign Sample**		**Domestic vs. Foreign Difference**	
		Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Total Sales	(a)	5,84 ***	-5,50	6,32 ***	-6,52	5,63 ***	-4,63	0,68 p.p.	-1,88 p.p.
	N	107	98	57	50	49	47		
Total Assets	(a)	0,07 *	-2,09	5,65 **	-3,43	-1,48	-2,02	7,13 p.p.	-1,41 p.p.
	N	114	109	61	57	51	50		
ROS	(b)	-0,02	-0,21	-0,06	-1,29	0,41	0,79	-0,47 p.p.	-2,08 p.p.
	N	104	98	55	50	48	47		
ROA	(b)	-0,01	-0,42	-0,92	-0,12	0,33	-0,30	-1,25 p.p.	0,18 p.p.
	N	111	109	59	57	50	50		
AT	(b)	0,60	0,69	-0,77	1,96	0,67 **	-0,45	-1,44 p.p. *	2,40 p.p.
	N	107	98	57	50	49	47		
CapEx/Assets	(b)	0,14	0,68	0,72	0,24	0,06	1,42	0,66 p.p.	-1,18 p.p.
	N	107	99	56	50	50	48		
Cash Flow/Assets	(b)	-1,30	-5,66 **	-5,23 ***	-6,52 **	1,23	-1,48	-6,46 p.p. *	-5,03 p.p.
	N	107	99	56	50	50	48		
Debt-to-Equity	(b)	-0,63	0,37	-1,22	-6,20	-0,22	1,52	-1,01 p.p.	-7,73 p.p.
	N	92	88	47	45	44	42		
Number of employees	(a)	1,05 ***	-0,36	0,00	-5,07	1,14 **	1,70	-1,14 p.p.	-6,77 p.p.
	N	101	92	55	51	44	39		
Cost of employees per employee	(a)	0,91	-1,21	2,89 *	-0,05	0,14	-2,72	2,74 p.p.	2,67 p.p.
	N	99	89	54	50	43	38		

4.2. Post-Transaction Performance

4.2.1. Size

Total Sample

According to Table 9, companies acquired by private equity firms grow immediately and continuously after the transaction, both in total sales and total assets. For total sales, significant positive unadjusted variations are present in the three years of the analysis (3.99% at 5% significance in year +1, 5.25% at 5% significance in year +2, and 12.05% at 1% significance in year +3), whereas adjusted variations are non-significant. As for total assets, the scenario is positive all around. Significant unadjusted (12.16% in year +1, 26.96% in year +2, and 41.01% in year +3, all at 1% significance) and adjusted (7.96% in year +1, 4.40% in year +2, and 10.35% in year +3, all at 5% significance) growth is noted in the entire period of analysis, at an even higher pace than that of sales.

The positive results are consistent with those of Chung (2011), Mendes and Sousa (2013), Biesinger (2020), and Cohn et al. (2022). However, the magnitude of the results is more in line with the one presented in Mendes and Sousa (2013), which is expected given the similar geographic focus of the works[25]. As for other studies on PE value creation in Portugal, the results are in line with those of Silva (2019), are higher than those of Cruz (2017) and lower than those of Almeida (2018).

Ultimately, it is possible to conclude that private equity firms strengthen the size growth of portfolio companies, particularly in terms of assets. The evidence backs the hypothesis of PE as a vehicle for financially constrained companies to unlock growth.

Domestic and Foreign Samples

Both domestic sample and foreign sample companies display sales growth throughout the considered period of analysis. For domestic sample companies, in year +3,

[25] The growth rates of sales and assets are lower in Mendes and Sousa (2013) than in Chung (2011) and Cohn et al. (2022), which suggests that the unlocked growth opportunities are nevertheless constrained by the Portuguese market size.

the median unadjusted sales growth amounts to 8.88% (at 10% significance), whereas for foreign sample companies, the median sales growth is 7.18% (at 5% significance) and 18.33% (at 1% significance), in years +2 and +3, respectively. Still, adjusted variations are non-significant, as are the unadjusted and adjusted differences between domestic and foreign samples. The non-significant year +3 results point to the presence of foreign sample companies in faster-growing markets, as they grow more but still do not overperform industry controls as much as domestic sample companies.

The unadjusted variations of total assets are even more positive than those of total sales and are significant (at 1% significance) for all years. Again, there is strong evidence that domestic PE serves to provide needed financing to companies with growth potential. Nonetheless, only foreign sample companies present an overperformance relative to industry controls, with an adjusted variation of 19.41% (at 5% significance) in year +3. Again, panel B exhibits non-significant variations. Nevertheless, they indicate that the impact of domestic PE players is more immediate in total assets growth than that of foreign ones.

Table 9 – Post-transaction Performance: Size

Table 9 shows the post-transaction (years -1 to +1, +2, and +3) performance of the target, domestic, and foreign companies, in terms of size (Total Sales and Total Assets). The reported median values are shown both unadjusted and adjusted, and the Wilcoxon Signed Rank Test was employed to test whether they are significantly different than zero. The Wilcoxon Rank Sum Test was employed to test whether the median values of the domestic sample are significantly different than those of the foreign one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. Variations are in percentage changes and "p.p." denotes percentage points.

	Total Sales			Total Assets		
Panel A	**-1 to +1**	**-1 to +2**	**-1 to +3**	**-1 to +1**	**-1 to +2**	**-1 to +3**
Total Sample						
Unadjusted	3,99 **	5,25 **	12,05 ***	12,16 ***	26,96 ***	41,01 ***
N	110	101	73	118	110	80
Adjusted	0,91	-2,20	18,44	7,96 **	4,40 **	10,35 **
N	103	90	66	115	106	78
Domestic Sample						
Unadjusted	2,75	3,42	8,88 *	19,24 ***	29,87 ***	41,01 ***
N	60	55	49	64	60	54
Adjusted	-4,22	-3,28	18,44	7,94	1,73	-4,90
N	56	49	46	62	58	53
Foreign Sample						
Unadjusted	4,08	7,18 **	18,33 ***	6,34 ***	15,33 ***	46,26 ***
N	48	44	24	52	48	26
Adjusted	1,93	-0,42	14,06	5,02	4,11	19,41 **
N	45	40	20	51	46	25
Panel B						
Domestic vs. Foreign Difference						
Unadjusted	-1,33 p.p.	-3,76 p.p.	-9,44 p.p.	12,90 p.p.	14,54 p.p.	-5,26 p.p.
Adjusted	-6,15 p.p.	-2,86 p.p.	4,38 p.p.	2,92 p.p.	-2,38 p.p.	-24,31 p.p.

4.2.2. Operating Performance

Total Sample

Globally, as shown in table 10, all operating performance metrics worsen post-transaction, with statistically significance declines in unadjusted second- and third-year profitability (-2.80 p.p. and -0.75 p.p., respectively, both at 5% significance) and in unadjusted first-, second-, and third-year efficiency (-1.38 p.p. at 10% significance, -4.62 p.p. at 5% significance, and -4.81 p.p. at 10% significance, respectively). The downward trend of

performance is deepened by the overall even worse adjusted results, suggesting that the worsening performance is not motivated by industry conditions. However, it is important to note that the evidence is inconclusive as adjusted variations are non-significant for the entire period of analysis.

The results in line with the literature, which indicate poor post-transaction operating performance across all presented metrics (Chung, 2011; Guo et al., 2011; Mendes & Sousa, 2013; Biesinger et al., 2020). Still, they are contrary to two works, quite distant in time from one another, that indicate an improvement in operating performance (Kaplan, 1989a; Cohn et al., 2022). Considering previous studies focusing on the Portuguese market, a similar poor operating performance is noted in all sub-dimensions, attesting to the apparent lack of operating performance improvement for target companies of PE investments (Mendes & Sousa, 2013; Cruz, 2018; Almeida, 2018; Silva, 2019). Overall, the evidence for the Portuguese market is consistent across the most recent academic investigations and in line with several international works.

Domestic and Foreign Samples

A decrease in operating performance is observed in all operating performance measures of domestic sample companies, except for unadjusted and adjusted first-year profitability variations (0.25 p.p. and 0.56 p.p., respectively). Of these, only the unadjusted second-year productivity variation (-4.16 p.p.) and the adjusted first-year efficiency variation (-6.86 p.p.) are significant at 10% significance. As for foreign sample companies, there is an overall deterioration of unadjusted operating performance, significant for first- and second-year profitability (-2.69 p.p. at 5% significance and -3.32 p.p. at 10% significance, respectively). Adjusted operating performance also display a decline for all indicators, except for first- and second- year productivity (0.00 p.p. and 0.15 p.p., respectively), though none of them is significant.

Finally, by the third post-transaction year, apart from unadjusted efficiency, all operating performance metrics, even if not statistically significant, are worse in domestic sample companies than in foreign sample ones.

Table 10 – Post-transaction Performance: Operating performance

Table 10 shows the post-transaction (years -1 to +1, +2, and +3) operating performance (ROS, ROA, and AT) of the target, domestic, and foreign companies. The reported median values are shown both unadjusted and adjusted, and the Wilcoxon Signed Rank Test was employed to test whether they are significantly different than zero. The Wilcoxon Rank Sum Test was employed to test whether the median values of the domestic sample are significantly different than those of the foreign one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. Variations are in percentage point changes and "p.p." denotes percentage points.

	ROS			ROA			AT		
Panel A	**-1 to +1**	**-1 to +2**	**-1 to +3**	**-1 to +1**	**-1 to +2**	**-1 to +3**	**-1 to +1**	**-1 to +2**	**-1 to +3**
Total Sample									
Unadjusted	-1,15	-2,80 **	-0,75 **	-0,52	-1,62	-0,99	-1,38 *	-4,62 **	-4,81 *
N	107	98	71	115	107	78	110	101	73
Adjusted	-0,86	-3,35	-2,38	-0,10	-2,58	-1,37	-6,70	-4,96	-4,37
N	103	90	66	115	106	78	103	90	66
Domestic Sample									
Unadjusted	0,25	-1,58	-2,57	-0,71	-4,16 *	-1,04	-1,42	-6,29	-1,39
N	58	53	48	62	58	53	60	55	49
Adjusted	0,56	-3,41	-2,66	-0,93	-4,94	-1,48	-6,86 *	-9,93	-7,55
N	56	49	46	62	58	53	56	49	46
Foreign Sample									
Unadjusted	-2,69 **	-3,32 *	0,72	-0,39	-0,26	0,05	-0,94	-3,83	-9,01
N	47	43	23	51	47	25	48	44	24
Adjusted	-4,49	-2,31	-1,04	0,00	0,15	-0,27	-1,94	-3,38	-1,05
N	45	40	20	51	46	25	45	40	20
Panel B									
Domestic vs. Foreign Difference									
Unadjusted	2,95 p.p.	1,75 p.p.	-3,29 p.p.	-0,31 p.p.	-3,91 p.p.	-1,09 p.p.	-0,48 p.p.	-2,46 p.p.	7,62 p.p.
Adjusted	5,05 p.p.	-1,10 p.p.	-1,62 p.p.	-0,93 p.p.	-5,09 p.p.	-1,21 p.p.	-4,92 p.p.	-6,55 p.p.	-6,49 p.p.

4.2.3. Investment and Cash Flow Generation

Total Sample

Overall, according to table 11, unadjusted and adjusted investment increases in the first post-transaction year (1.97 p.p. at 10% significance and 2.72 p.p. at 10% significance, respectively), supporting the view of PE as growth enabler for financially constrained companies. The evidence on investment follows that of the literature on post-transaction performance in private-to-private deals. Indeed, by studying public-to-private transactions, both Kaplan (1989a) and Ayash (2020) find a decrease in post-transaction investment, which is also found in the public-to-private sample of Chung (2011). However, the private-to-private sample of Chung (2011) and Cohn et al. (2022) indicate a growth in investment

consistent with the previously mentioned theory of PE as a financing tool to unlock growth. As for Portuguese works, Mendes and Sousa (2013) found an increase in capital expenditure only in the third post-transaction year, whereas the results of Cruz (2017) and Almeida (2018) are perfectly in line with the ones presented in this dissertation (immediate post-transaction growth followed by a divestment period). It is curious that, though the author performs a robustness check (via investment sensitivity to cash flow) that confirms the hypothesis of financial constraints in PE target companies, Silva (2019) finds an immediate and continuous post-transaction decline in investment.

In terms of cash flow generation, no statistically significant variations are found for the total sample. As previously mentioned, this inconclusiveness is shared in most of the literature on the topic.

Domestic and Foreign Samples

Domestic sample companies immediately see an adjusted increase in investment, (4.65 p.p. at 1% significance), which indicates that PE portfolio companies, in Portugal, out-invest their competitors, precisely supporting the hypothesis of domestic PE players serving as liquidity providers for companies whose lack of financial resources limits potential growth. Foreign sample companies also invest more in the first post-transaction year (1.97 p.p. at 10% significance), in adjusted terms, though inconclusive evidence is found for the adjusted variations, denoting that, as advanced above, international PE players target companies in more growing markets, and thus a significant increase in investment is still not enough to outperform competitors. Panel B indicates that, immediately after the transactions, in year +1, domestic sample companies invest much more, relative to their competitors, than do foreign sample ones (4.67 p.p. difference at 10% significance), supporting the different aims of domestic and foreign PE players, with the former being enablers of overdue investment.

Though non-significant, the cash flow generation variations of domestic sample companies negatively mirror the investment ones, as cash flow declines in the years that see an increase in investment, and vice-versa. Foreign sample companies, on the other hand, exhibit a continuously worsening unadjusted cash flow generation (-3.40 p.p. at 10% significance in year +2). Finally, panel B indicates that no significant difference is found

between cash flow generation post-transaction evolution of domestic and foreign sample companies.

Table 11 – Post-Transaction Performance: Investment and Cash Flow Generation

Table 11 shows the post-transaction (years -1 to +1, +2, and +3) performance of the target, domestic, and foreign companies, in terms of investment and cash flow generation (CapEx/Assets and Cash Flow/Assets, respectively). The reported median values are shown both unadjusted and adjusted, and the Wilcoxon Signed Rank Test was employed to test whether they are significantly different than zero. The Wilcoxon Rank Sum Test was employed to test whether the median values of the domestic sample are significantly different than those of the foreign one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. Variations are in percentage point changes and "p.p." denotes percentage points.

	CapEx/Assets			Cash Flow/Assets		
Panel A	**-1 to +1**	**-1 to +2**	**-1 to +3**	**-1 to +1**	**-1 to +2**	**-1 to +3**
Total Sample						
Unadjusted	1,97 *	-0,13	-0,38	-1,01	-0,64	-1,70
N	109	103	77	109	103	77
Adjusted	2,72 *	2,99	1,72	-0,33	0,06	-2,13
N	107	100	75	107	100	75
Domestic Sample						
Unadjusted	2,39	-0,62	-2,23	-1,01	4,59	0,53
N	58	57	53	58	57	53
Adjusted	4,65 ***	4,13	2,64	-2,06	-0,10	-1,74
N	56	55	51	56	55	51
Foreign Sample						
Unadjusted	1,97 *	-0,08	1,00	-1,96	-3,40 *	-5,70
N	49	44	24	49	44	24
Adjusted	-0,02	-0,27	-1,12	1,87	1,36	-4,15
N	49	43	24	49	43	24
Panel B						
Domestic vs. Foreign Difference						
Unadjusted	0,42 p.p.	-0,54 p.p.	-3,23 p.p.	0,95 p.p.	7,99 p.p.	6,23 p.p.
Adjusted	4,67 p.p. *	4,40 p.p.	3,76 p.p.	-3,93 p.p.	-1,45 p.p.	2,41 p.p.

4.2.4. Capital Structure

Total Sample

As per Table 12, the capital structure of target companies displays not only minor post-transaction variations, but also non-significant ones. This is contrary to the overall

significant post-transaction increase in leverage found in the literature (Ayash, 2020; Biesinger, 2020), particularly that focused on Portugal (Magalhães, 2013; Silva, 2019).

Domestic and Foreign Samples

In no other dimension is the difference between domestic and foreign samples clearer than in capital structure. It is also remarkable that such difference takes place in a variable in which the total sample variations are the most insignificant (both in magnitude and from the statistical point of view), showcasing the relevance of the domestic/foreign segregation carried out in this dissertation.

The debt-to-equity ratio of domestic sample companies immediately increases post-transaction, by 27.12 p.p. (5% significance) unadjusted and 25.72 p.p. (10% significance) adjusted. A non-significant deleveraging process is shown to ensue, though not resuming pre-transaction leverage levels. Foreign sample companies, in contrast, show little to no median variations in capital structure, even if industry peers are increasing leverage, which results in negative adjusted results for years +1 (-15.65 p.p. at 10% significance) and +2 (-6.95 p.p. at 10% significance).

The differences between the unadjusted and adjusted median variations for the domestic and foreign samples, present in Panel B, clearly indicate that the capital structure of target companies of domestic PE players becomes more leveraged, both in absolute terms and compared to their industries, than those of international firms. This trend indicates that Portuguese PE firms are more comfortable in accessing debt markets to fund the growth opportunities that their portfolio companies have access to, or that foreign PE players are more comfortable putting up equity in their investments.

Table 12 – Post-Transaction Performance: Capital Structure

Table 12 shows the post-transaction (years -1 to +1, +2, and +3) performance of the target, domestic, and foreign companies, in terms of capital structure (Debt-to-Equity). The reported median values are shown both unadjusted and adjusted and the Wilcoxon Signed Rank Test was employed to test whether they are significantly different than zero. The Wilcoxon Rank Sum Test was employed to test whether the median values of the domestic sample are significantly different than those of the foreign one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. Variations are in percentage point changes and "p.p." denotes percentage points.

		Debt-to-Equity		
Panel A		**-1 to +1**	**-1 to +2**	**-1 to +3**
Total Sample				
Unadjusted		0,29	0,37	1,69
	N	96	89	64
Adjusted		0,00	-3,86	1,23
	N	89	83	58
Domestic Sample				
Unadjusted		27,12 **	16,94	17,91
	N	49	47	41
Adjusted		25,72 *	16,86	25,12
	N	46	45	39
Foreign Sample				
Unadjusted		-0,50	0,00	0,00
	N	46	41	23
Adjusted		-15,65 *	-6,95 *	0,18
	N	42	37	19

Panel B

Domestic vs. Foreign Difference			
Unadjusted	27,62 p.p. **	16,94 p.p. *	17,91 p.p.
Adjusted	41,37 p.p. ***	23,81 p.p.	24,93 p.p.

4.2.5. Human Resources

Total Sample

According to Table 13, the unadjusted variation of the number of employees and cost of employees per employee, post-transaction, is rather positive, with positive variations at 1% significance throughout the entire period of analysis. The adjusted results, even if not statistically significant, indicate that the workforce growth of the target companies

outperformed that of their competitors, which is not the case with the pay of the workforce, which underperformed them in year -1.

The clear increase in workforce size and pay are not consistent with international literature (Kaplan, 1989a; Davis et al., 2013; Goergen et al., 2013; Davis et al., 2021), though they are present in Biesinger (2020), a work that affirms the thesis of PE as enablers of growth for constrained companies, which is consistent with an immediate growth in workforce size to accompany the immediate post-transaction company growth.

Domestic and Foreign Samples

The domestic sample companies exhibit a strong increase in the number of employees, especially in year +1 (9.54% at 1% significance), but also in years +2 and +3 (10.7% and 13.79%, respectively, both at 5% significance). The steep increase in year +1 is in line with the hypothesis of immediate post-transaction exploration of growth routes, which naturally affects the size of the workforce. In adjusted terms, the variations are non-significant. Foreign sample companies show a non-significant overall positive trend, both unadjusted and adjusted.

As for cost of employees per employee, there is a significant unadjusted increase in workforce pay in domestic sample companies (3.70% in year +2 and 6.72% in year +3). The adjusted variations are non-significant. Still, it is in the foreign sample companies that a major unadjusted increase in pay is evident, with significant (at 1% significance) increases in years +1 (6.53%), +2 (11.62%), and +3 (16.58%). It is rather curious that these unadjusted increases in pay still are not enough for positive adjusted variations, which are negative (and non-significant) during the entire period of analysis. This supports the thesis already advanced in sub-section 3.4.1, which states that companies targeted by international PE players are in more advanced, in-demand industries in which a lower supply of specialised workers lead to higher pay. Though non-significant, the mentioned hypothesis is evident in the difference of variations in years +2 (-7.92 p.p.) and +3 (-9.86 p.p.): though foreign PE firms increase pay more, they still lag behind domestic PE players when compared to control companies (6.09 p.p. in year +2 and 9.98 p.p. in year +3).

Table 13 – Post-Transaction Performance: Human Resources

Table 13 shows the post-transaction (years -1 to +1, +2, and +3) performance of the target, domestic, and foreign companies, in terms of human resources (Number of employees and Cost of employees per employee). The reported median values are shown both unadjusted and adjusted, and the Wilcoxon Signed Rank Test was employed to test whether they are significantly different than zero. The Wilcoxon Rank Sum Test was employed to test whether the median values of the domestic sample are significantly different than those of the foreign one. *, **, *** signal significance at 10%, 5%, and 1%, respectively. Variations are in percentage changes and "p.p." denotes percentage points.

	Number of employees			Cost of employees per employee		
Panel A	**-1 to +1**	**-1 to +2**	**-1 to +3**	**-1 to +1**	**-1 to +2**	**-1 to +3**
Total Sample						
Unadjusted	2,96 ***	5,86 ***	12,07 ***	4,14 ***	5,23 ***	8,36 ***
N	104	97	71	103	96	70
Adjusted	3,81	2,42	2,23	-3,12	1,05	5,00
N	94	85	62	92	84	61
Domestic Sample						
Unadjusted	9,54 ***	10,47 **	13,79 **	2,88	3,70 *	6,72 **
N	58	53	48	57	52	47
Adjusted	3,92	-1,21	3,18	-3,12	3,11	7,80
N	54	49	45	54	49	45
Foreign Sample						
Unadjusted	0,00	4,09	4,88	6,53 ***	11,62 ***	16,58 ***
N	44	42	23	44	42	23
Adjusted	3,78	3,21	1,28	-2,32	-2,97	-2,18
N	38	35	17	37	34	16
Panel B						
Domestic vs. Foreign Difference						
Unadjusted	9,54 p.p.	6,37 p.p.	8,91 p.p.	-3,65 p.p.	-7,92 p.p.	-9,86 p.p.
Adjusted	0,14 p.p.	-4,42 p.p.	1,90 p.p.	-0,80 p.p.	6,09 p.p.	9,98 p.p.

5. Conclusion

The present dissertation aims to study the impact and value creation effectiveness of private equity firms, in the Portuguese market. Furthermore, it strives to understand if it is different according to the origin (Portuguese vs. non-Portuguese) of the private equity firms executing the investments.

To do so, a sample of 101 private equity transactions from 2007 to 2020, contemplating 119 Portuguese target (and control) companies and 115 private equity firms was compiled. A first analysis of the data showed a growing private equity market dominated by domestic firms, though increasingly less so. Target companies were shown to be larger, more leveraged, and investing less than control ones, providing a first support for the thesis that private equity firms serve as a financing tool to unlock growth potential at financially limited companies. Target companies of foreign PE firms were shown to be much larger, more profitable, and generating more cash flow than domestic ones, which also targeted companies with deteriorating pre-transaction cash flow generation performance.

As for the total sample, the post-transaction performance denotes a deterioration. After the entry of the PE firms, target companies are shown to increase in size (sales, assets), which is consistent with the international (Chung, 2011; Biesinger, 2020; Cohn et al., 2022) and national (Mendes & Sousa, 2013; Silva, 2019) literature. The workforce is also shown to increase, which is contrary to most of the literature (Kaplan, 1989a; Davis et al., 2013; Goergen et al., 2013; Davis et al., 2021), but is in line with Biesinger (2020), a work that supports the thesis of PE firms as financing tools for growth. This thesis is also supported by a post-transaction growth in investment, which follows the literature (Chung, 2011; Mendes & Sousa, 2013; Cohn et al., 2022). Furthermore, the increase in investment denotes an immediate effect in the Portuguese-focused literature (Cruz, 2017; Almeida, 2018), with the exception being Silva (2019), which nevertheless confirms the hypothesis of financial constraints in PE target companies. Finally, operating performance deteriorates all-around (significant results for profitability and efficiency), which also is in line with the literature (Chung, 2011; Guo et al., 2011; Mendes & Sousa, 2013; Biesinger, 2020).

Advancing to the domestic vs. foreign analysis, the results show a more immediate growth in size in target companies of domestic PE firms, whereas those of foreign ones present higher long-term growth and overperformance compared to control companies.

Moreover, workforce size and pay of target companies immediately increase, but only for those owned by domestic PE firms. Investment also increases immediately for companies controlled by domestic PE firms, both in unadjusted and adjusted terms, whereas target companies of foreign PE firms display an increase in investment that still does not overperform that of control companies. Nowhere is the difference in results clearer than in capital structure, with national PE firms immediately substantially increasing the leverage of their portfolio companies, both in unadjusted and adjusted terms, contrary to international PE firms, which present significant negative adjusted results. This indicates that domestic PE firms opt to access debt markets or that foreign ones prefer using equity to fund or select target companies that can self-fund operations. Lastly, operating performance shows an overall deterioration, with significant results for productivity and efficiency in the domestic sample and profitability in the foreign one.

Ultimately, the results point to the role of PE firms as financial enablers for companies with potential growth pathways but without the means to exploit them. This appears to be especially the case for domestic PE firms, whose funds are predominantly of the distressed and turnaround types. Foreign PE firms adopt a different strategy, targeting larger companies in faster-growing, more advanced markets.

Naturally, this study faced several limitations, namely the lack of statistically significant results, the limited sample size, the simplistic methodology for the selection of the comparable sample, the exclusion of potentially suitable deals due to information limitations, and the lack of more detailed data on the transactions and on the private equity activity, in Portugal. Further research could be pursued in any of the following topics: (1) study the relationship between impact and value creation according to the fund strategy of the acquirer PE firms; (2) benchmark the performance of PE target companies to a comparable sample constructed based on the determinants of target selection for PE firms (e.g., propensity score matching); and (3) include minority stake PE investments in the sample and assess how the impact of PE firms is different when control is (non-)present.

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Annexes

Sabi

Sabi is a database commercialised by *Bureau van Dijk* with accounting information, up to 25 years ago, for 900 thousand Portuguese and 2,900 thousand Spanish companies. The use of *Sabi* to retrieve the financial information of the target companies introduced potential biases in the sample, namely: (1) *Sabi* does not have information on all Portuguese companies, as attested by the fact that target companies identified in *Zephyr* were missing from *Sabi*, which led to the exclusion of observations; (2) important information was missing from both ends of the coverage period (2006, 2021, and 2022), skewing the results to be less representative of the transactions executed near the beginning and end of the period of analysis.

Zephyr

Zephyr is a database commercialised by *Bureau van Dijk* for corporate finance research, with information on M&A, IPO, private equity, and venture capital deals and rumours. It is updated hourly and contains information on more than 8,000 deals involving Portuguese acquirers, targets, or vendors, as early as 1997. Hence, despite the potential bias due to missing or incorrect information, *Zephyr* was considered a well-suited instrument to conduct the sample selection, as described in section 3.2. Recently, *Bureau van Dijk* has announced that *Zephyr* will soon be retired and replaced by the *Orbis M&A* database.

Table 14 – Unadjusted characteristics of target and control samples in year -1

Table 14 shows both the target and the comparable samples' characteristics in year -1 and the difference of the average and the median of the two. Values shown are pre-*winsorization*. Characteristics signalled with (a) are shown in thousands of euros and "p.p." denotes percentage points.

Compared to table 6, it is clear that the presence of outliers distorts the average values.

	Target Sample					Comparable Sample					Difference	
Panel A	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**
Age (years)	24	16	144	1	119	27	19	145	2	116	-3	-3
Total Sales (a)	37 793	11 639	947 143	-31 779	119	31 505	6 256	893 539	-155	116	6 288	5 383
Total Assets (a)	510 317	16 181	46 843 311	3	119	63 173	16 027	648 354	3	116	447 145	154
EBITDA (a)	5 664	1 776	139 998	-35 131	116	4 842	1 393	55 321	-10 045	116	823	383
CapEx (a)	3 261	411	162 538	-61 417	111	709	274	72 058	-101 252	113	2 552	137
Cash Flow (a)	2 259	748	190 368	-150 740	111	5 363	357	156 007	-44 780	113	-3 104	391
Debt (a)	39 054	2 466	755 787	0	115	13 879	1 413	271 757	0	116	25 175	1 053
Number of employees	178	66	5 258	0	117	139	44	2 501	0	116	39	23
Cost of employees per employee (a)	29	24	201	0	108	28	21	151	0	101	1	3
Panel B												
ROS (%)	-94,41	13,63	92,40	-7917,28	108	706,50	18,40	73594,20	-463,73	108	-800,91 p.p.	-4,76 p.p.
ROA (%)	-35,99	9,03	48,75	-5128,24	116	7,83	8,54	43,51	-96,44	116	-43,82 p.p.	0,49 p.p.
AT (%)	96,80	82,41	457,18	0,01	111	89,55	61,28	1009,82	0,01	108	7,25 p.p.	21,13 p.p.
CapEx/Assets (%)	-163,08	3,60	77,69	-14742,20	111	6,88	3,03	102,93	-86,19	113	-169,95 p.p.	0,57 p.p.
Cash Flow/Assets (%)	121,43	5,64	14642,20	-1040,48	111	1,43	3,99	85,81	-106,34	113	120,00 p.p.	1,66 p.p.
Debt-to-Equity (%)	3532,82	70,70	316883,28	0,00	101	93,07	41,15	1125,30	0,00	109	3439,75 p.p.	29,55 p.p.

Table 15 – Unadjusted characteristics of domestic and foreign samples in year -1

Table 15 shows both the target and the comparable samples' characteristics in year -1 and the difference of the average and the median of the two. Values shown are pre-*winsorization*. Characteristics signalled with (a) are shown in thousands of euros and "p.p." denotes percentage points.

Compared to table 7, it is clear that the presence of outliers distorts the average values.

	Domestic Sample					Foreign Sample					Difference	
Panel C	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**	**Max**	**Min**	**N**	**Average**	**Median**
Age (years)	21	16	97	2	64	27	19	144	1	53	-6	-3
Total Sales (a)	37 530	8 799	947 143	-2 129	64	39 012	17 469	331 013	-31 779	53	-38 512	-8 670
Total Assets (a)	838 665	12 248	46 843 311	3	64	131 668	33 018	965 404	152	53	-131 500	-20 770
EBITDA (a)	1 052	672	15 382	-26 281	62	11 305	3 369	139 998	-35 131	52	-9 135	-2 698
CapEx (a)	6 930	500	162 538	-20 496	59	-1 679	391	13 044	-61 417	50	1 745	109
Cash Flow (a)	-6 841	168	15 638	-150 740	59	13 726	2 676	190 368	-11 669	50	-13 705	-2 508
Debt (a)	13 824	2 170	182 545	0	61	69 240	3 049	755 787	0	52	-55 416	-879
Number of employees	220	66	5 258	0	62	131	75	664	0	53	89	-9
Cost of employees per employee (a)	23	21	78	2	58	38	27	201	0	48	-15	-6
Panel D												
ROS (%)	-166,78	11,41	45,52	-7917,28	58	28,26	17,55	92,40	-115,66	48	-195,03 p.p.	-6,14 p.p.
ROA (%)	-73,68	10,03	48,75	-5128,24	62	9,75	9,19	41,39	-102,29	52	-83,43 p.p.	0,84 p.p.
AT (%)	114,13	86,87	457,18	0,01	60	78,64	75,40	197,27	3,70	49	35,49 p.p.	11,47 p.p.
CapEx/Assets (%)	-286,52	3,80	77,69	-14742,20	64	2,87	1,60	31,35	-56,81	53	-289,38 p.p.	2,20 p.p.
Cash Flow/Assets (%)	209,42	1,94	14642,20	-1040,48	64	4,57	6,42	74,61	-111,18	53	204,85 p.p.	-4,48 p.p.
Debt-to-Equity (%)	306,04	67,92	6596,78	0,00	52	7010,23	45,59	316883,28	0,00	48	-6704,19 p.p.	22,33 p.p.