AN ANALYSIS OF PRIVATE EQUITY INVESTMENTS IN FINTECH COMPANIES

Master Thesis - Financial Economics

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Abstract

Following the shift of responsibility that has put financial technology firms at the forefront of the fight for financial inclusion, this research paper seeks to examine the impact of Private Equity (PE) investment on the performance and growth of fintech companies. We analyse the financial performance and workforce size of 132 PE backed financial technology firms by addressing the impact of investment modality, amount and frequency on their value. In a secondary effort, we compare our findings with those of a similar analysis carried out on a sample of Venture Capital (VC) backed firms. The data is sourced from Preqin and ordinary least squares regressions are employed to observe relationships amongst our variables. Our results point to PE investment having a significant positive impact on both financial performance and workforce size in the firms analysed. Moreover, we observe investment characteristics and operational improvements targeted to differ significantly from those characteristic of PE interventions in other industries, reflecting the uniqueness of the fintech sector. Concerning our comparative analysis, we find Venture Capital to be the overall better performing source of capital, even while controlling for amount invested and investment stage. Our findings can be of use to fintech firms looking for the best avenue for funding but also to private equity firms considering entry investments in the sector. To address the limitations of this study, future research should expand on the investment characteristics analysed, increase the datapoints for analysis or tackle the subject from a qualitative perspective, offering insights into the decision-making process of PE investors.

Keywords: Private Equity (PE), Financial Technology, Fintech, Venture Capital (VC), financial performance, investment performance, growth.

JEL Classification : G11, G21, G24, G34, O16, O33

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Chapter 1 - Introduction

Financial inclusion has, amongst the past 20 years, been one of the major challenges emerging economies have faced. It is broadly defined as access on behalf of enterprises and households to reasonably priced financial services appropriate for their needs (World Bank Group, 2022).

The first tangible step towards financial inclusion was taken in 2011 when supervisors and financial regulatory authorities met in Mexico to sign the Maya declaration, a commitment to establishing an enabling environment for cost-effective access to financial services, implementing sound and proportional regulatory frameworks, prioritizing consumer protection and making evidence-based financial inclusion a policy priority. Since then, the number of countries with Maya declaration commitments has only increased and as of today exceeds seventy. The initiative, undertaken by the Financial Inclusion Alliance (FIA), was met with enthusiasm by other organizations such as the G20 which in 2016 outlined the High-Level Principles for Digital Financial Inclusion, providing a basis for country action plans reflective of context and national circumstances to leverage the potential of digital technologies. In the following years outstanding results were achieved with respect to financial inclusion as, across the world, the number of adults without access to a bank account decreased from 2.5 billion to 1.4 billion (Alliance for Financial Inclusion, 2022). Yet as time went on progress in financial inclusion appears to have slowed down, with some countries even experiencing a reversal effect (World Bank, 2023). Boiling the reasons for such an occurrence down to one would be reductive, it is however reasonable to assume the tense geopolitical environment characterized by the war in Ukraine and conflicts in the middle east led to a shift in the priorities and fund allocations of many governments.

The same time frame that saw governments addressing the issue of financial inclusion also experienced a surge in the number of “fintech” companies. The term, short for financial technology, encompasses firms that leverage technology to offer innovative and accessible financial solutions (Giglio, 2021). Unlike traditional banks, fintechs utilize digital platforms, mobile technology and data analytics to create products tailored to the needs of underserved populations. Mobile money services, digital wallets and online payment systems are examples of innovations which the sector is responsible for and that over time have proven instrumental in the fight for financial inclusion.

With government priorities changing and the value of investments in the sector climbing to 225 billion dollars (Statista, 2023) fintechs now find themselves at the forefront of the battle for financial inclusion. Traditionally, the majority of fintech financing has come on behalf of Venture Capital firms (VC). These firms provide early-stage financing to start ups with high growth potential and have for long been the major player in the fintech space (Cumming & Schwienbacher, 2021). The increasingly important role of fintechs has however attracted the eye of institutional investors in the form of Private Equity groups (PE). These firms are instead known for investing in established operations with proven business models and revenue streams (Badertscher et al, 2009).

A private equity investment is characterized by a holding period of 3 to 7 years, during this time the purchasing entity aims to increase the value of the investment through operational improvements, strategic guidance and financial restructuring (Brown et al., 2020). Ultimately the private equity fund will seek to make an exit, typically through a strategic sale or an IPO. Should this not be the case a continuation fund can be established. While private equity firms have a proven track record when it comes to enhancing the value of their portfolio companies, public opinion is polarized with respect to their social impact (Bernstein et al., 2016). On the one hand are PE backers, arguing that the funds these firms provide lead to substantial growth and competitiveness in companies that would have otherwise struggled. On the other are critics, citing the short investment horizons, aggressive cost cutting and mass layoffs which often characterize PE acquisitions.

The body of literature pertaining the Fintech sector has steadily expanded over the last few years with most of the existing research exploring the drivers of fintech performance and pointing to innovation and technological advances as the main differentiators (Chen et al., 2019) (Li et al.,2023).

Despite the increase in academic attention, few have analysed the impact that funding can have on the performance and growth of fintech firms. Moreover, those who have, predominantly focused on what were then the two only sources of capital: venture capital firms and traditional bank loans (Cumming & Schwienbacher, 2021). Similarly, private equity research, while abundant, has not yielded results consistent across different sectors, highlighting the need for industry specific analysis.

In light of the challenges and opportunities presented by the shifting landscape of financial inclusion it then becomes essential to assess the impact new players, namely private equity

firms, are having on fintech companies. By analysing the relationship between private equity financing and performance in fintech firms, this study seeks to address a gap in the literature and contribute to the outstanding body of knowledge on how financial investments impact fintech development and performance. Having established a gap in the literature our research question is defined as follows: *"How does private equity financing affect the growth and performance of fintech companies?"*.

The data necessary to conduct our analysis will be sourced from Preqin, the leading database for intelligence on Private Equity and Venture capital backed firm performance, a tool used by international organisations such as the OECD (OECD, 2021). We are interested in total amount raised, stage of investment and number of funding rounds concerning PE backed firms operating in the financial technology industry. Having gathered data on the characteristics of various PE investments in the space, our focus shifts to information on the interested fintech firms, inclusive of Revenues, Operating Income, Net Income, EBITDA and Employee Count. To ensure the reliability of the data collected, consistency checks will take place and outlier detection methods will be employed. Once the reliability of our data is certified, multiple regression models will be utilized to assess the impact of PE investment characteristics on firm growth metrics. Separate models will serve to assess the effect of changes in independent variables, while an evaluation of p values and confidence intervals will assess the generalizability of our findings. The final part of our analysis will see a comparison between the results obtained and those of alternative source of funds, specifically venture capital. This analysis will allow us to identify differences in performance metrics and the true value PE investment brings to the fintech space. In our efforts, we expect to find significant evidence of a positive impact of PE investment on the performance and growth of fintech firms, and for it to be showcased not only through increased revenues and income but also through other performance indicators. Moreover, we expect to find evidence supporting PE financing over traditional financing methods that fintech firms have overwhelmingly relied on.

Chapter 2 - Literature Review

This section presents literature on Private Equity investments and the unique dynamics characteristic of the financial technology industry. We open by providing an overview of the inner workings of private equity firms, specific to investment modalities and influence on firm performance across different industries. In a second section we give a clear definition of the fintech industry and explore the characteristics of fintech firms, as well as the strategies employed to drive success in the space. Lastly, we touch on frameworks that help our understanding of how PE investment can influence the performance and growth of fintech companies, concluding with the formulation of hypotheses that enable our analysis.

2.1 Private Equity

The origins of private equity can be traced back to the 1980s, a period characterized by hostile takeovers and the introduction of increasingly complex methods of acquisition financing. Such was the case of leveraged buyouts, whereby an investor would finance the acquisition of a target predominantly through debt (Investopedia, 2024). The advantages of LBOs lie in the little commitment of personal capital involved in the acquisition of a target and the peculiar dynamics that the need to consistently meet interest payments creates (Shah, 2022). For instance, such a context often results in management being unhesitant when addressing firm-level issues, in an effort to drive operational efficiency and profitability in the shortest possible amount of time. While the introduction of LBOs proved very successful from a profitability standpoint, the side-effect was that of drawing mainstream attention to Private Equity, an asset class that up to that point had gone unnoticed by the general public . With a greater amount of notoriety came scrutiny, ultimately turning to criticism when analysing the strategies utilized by PE firms to increase the valuations of their companies, and thus turn a profit (Brown et al., 2020). A PE investment is characterized by a holding period of 3 to 7 years, during this time the firm's objective is increasing the value of the acquired company through streamlining of production processes, improvements in operational efficiencies and reductions in costs aimed at boosting overall efficiency (Valkama et al., 2013). An important component of PE investments is also financial restructuring, whereby the acquiring fund renegotiates the debt previously onboarded by the target to secure better terms and improve the management of cash flows (Wright et al., 2014). Since PE

investments are usually focused on mature companies with a proven track record, a big component of financial restructuring comes in the creation of a tax shield that will allow the portfolio company to reduce tax liabilities, improve existing cash flows and increase investment capacity as well as the ability to repay outstanding debt. Despite the moral implications of augmenting firm value through the creation of tax shields, criticism mainly follows the cost management strategies employed by PE firms. When addressing cost inefficiencies, one of the first areas private equity investors look to is workforce management, often resulting in employee cuts and a reduction of wages (Antoni et al., 2018). Coupled with workforce reductions is the streamlining of suppliers to the few PE funds have long-lasting relationships with, once again with the objective of reducing costs. While the negative impact of supplier consolidation is not tied to the firm in question, it is not hard to see the drawbacks from a social standpoint as fewer suppliers with larger power can lead to higher unemployment rates, diminishing competition and inferior product quality. Strategies employed by PE firms are however specific to the approach taken in the investment, reflecting the goals and circumstances associated to a target. Previously we mentioned buyouts, yet these are only one of the multiple investment modalities PE firms resort to. Growth capital investments, opposite to buyouts, see the Private Equity firm provide funds to companies looking to scale operations, enter markets or make significant changes without sacrificing control. Private Investments into Public Equities (PIPE) on the other hand, consist in the acquisition of a significant amount of shares in a publicly traded company, often at a significant discount. These transactions quickly provide the target firm with significant amounts of capital that can serve to finance growth initiatives, while signalling to the market strong confidence in the firm. The aforementioned signals are usually picked up on by the market, which can drive further stock activity, increasing the value of the shares originally purchased. When undertaking add-on acquisitions, PE firms instead aim to integrate the target into their existing portfolio of companies to benefit from synergies and enhance operational capabilities. Companies acquired with add-on initiatives are usually subject to mergers with previous portfolio constituents, resulting in increased valuations and superior return on investment. Lastly, public to private acquisitions see private equity firms acquiring all the publicly traded stock of a target, effectively delisting the company. The benefits of such a strategy lie in the possibility of significantly restructuring a firm without being subject to the regulatory scrutiny that publicly traded companies are faced with. Interestingly, after having taken a firm private and restructuring, a popular exit modality is that of IPO, such was the case of the renowned hardware manufacturer Dell.

2.2 Fintech industry

Fuelled by the financial crisis of 2008 and outstanding technological developments, the financial technology sector has rapidly expanded over the past decade. An industry that originally acted as the back-end of financial institutions has now evolved to offer a wide range of services including mobile banking, peer-to-peer lending, blockchain technology and cryptocurrencies. Despite clear ties to the financial industry, the two sectors differ in operations, business models, technology adaptation and, importantly, regulatory environment. Not only do these firms capitalize on the erosion of trust in traditional institutions, they benefit from tailoring their operations to areas that have long been underserved by banks and financial intermediaries such as low-income individuals, rural populations and SMEs (PricewaterhouseCoopers, 2021). Their customer centric approach requires substantial amounts of capital to be invested, with the objective of stimulating growth and scaling operations. The importance of scale in the fintech industry lies in the predominantly platform-like nature of most firms operating in the space, whereby externalities lead to significant quality of life improvements to each party involved. For instance, in the case of Paypal, each new user adds value to the existing network. As the number of potential transaction partners increases, a benefit is experienced by other users looking to settle transactions and paypal itself, as these users eventually participate in the network resulting in a higher number of transaction fees. The dynamic nature of the fintech sector is also reflected by the importance that is given to human capital and talent acquisition. For these firms to keep a competitive edge, the workforce must be able to continuously update skillsets, displaying the agility and adaptability necessary to drive technological innovation. Enabling the sector growth that has been observed over the past 10 years are the large amounts of capital invested in firms operating in the space, which since 2010 have exceeded 1 trillion dollars over 35000 deals (Philippon, 2016). While the majority of investment has come on behalf of venture capital funds, as firms reach mature stages, increased involvement on behalf of Private Equity firms has been observed. It would be reasonable to assume that such a situation indicates a maturation of the fintech industry, where early-stage investments of VC players are complemented by the late-stage ones of PE firms. Interestingly, PE investments have also been observed to be taking place in the early stages of some companies' lifecycle, hinting to an overarching idea that processes in early stage fintechs may still be subject to improvements by traditional, more hands-on, investors.

2.3 Theoretical and Empirical Prospectives

The following section is divided into three different subsets and aims to present theories from previous studies that can help us in understanding the impact of Private Equity investment on fintech firms.

2.3.1 Agency Theory

Agency theory was first introduced by Mitnick in 1976 and explores the conflicts of interest that arise amongst principals, shareholders and agents. This theory focuses on the principal-agent problem, emphasising the possible differences in goals, priorities and risk preferences between the two parties. In the context of Private Equity investments, this theory highlights potential issues where managers may not always act in the best interest of shareholders. Previous studies, such as Bratton (2008), underline the relevance of agency theory in understanding the dynamics of private equity investments. For instance, he discusses how PE firms mitigate the principal-agent problem by aligning their goals through mechanisms like high equity stakes for managers and performance-based incentives. This alignment mitigates the principal-agent problem by ensuring that managers' goals are closely aligned with those of the investors. Bratton also notes that PE firms provide active governance, ensuring that managers are held accountable and that company resources are used efficiently, resulting in reduced agency costs.

On the other hand, Wright et al. (2009) provide an overview of the role of private equity in corporate governance, discussing how PE buyouts enhance profitability and organizational efficiency. The study highlights how a governance structure with PE involvement provides incentives to reduce agency problems. Specifically, they discuss the governance mechanisms employed by PE firms, such as high leverage and financial monitoring, which are also employed in the scope of aligning interests of managers and investors, reducing agency costs in the process.

Lastly, Meuleman et al. (2009) integrate agency theory with strategic entrepreneurship to examine the performance of PE-backed buyouts. Specifically, they argue that while agency theory focuses on efficiency and control, strategic entrepreneurship highlights the importance of growth and innovation. Their empirical findings suggest that PE-backed buyouts lead to improvements in profitability, efficiency, and growth.

In the context of the fintech sector these insights are particularly relevant as fintech firms, which operate in rapidly evolving and highly competitive environments, can benefit significantly from the governance and strategic resources provided by PE firms. In particular, the alignment of interests between principal and agent, along with other guidance offered by PE firms such as active governance, can drive fintech managers to pursue both efficiency and innovation. As a result, PE-backed fintech firms are likely to experience enhanced profitability, operational efficiency, and growth, aligning with the empirical findings of Meuleman et al. (2009).

2.3.2 Resource-Based View

Resource-based view (RBV) theory, first introduced by Wernerfelt (1984) and later expanded upon by Barney (1991), builds on the notion that internal resources are a key to competitive advantage. In order for this advantage to be sustainable, resources must be valuable, rare, inimitable, and non-substitutable (VRIN). Lockett et al. (2009) review RBV theory in their study and indeed show that firm-specific resources have an important link to performance.

Pertaining the fintech sector, RBV helps explain the strategic importance of resources that drive investment decisions. Unlike traditional industries, fintech companies rely heavily on technological innovations and digital capabilities, which are rare and valuable resources. In their study, Bömer et al. (2018) apply the RBV framework in order to investigate the drivers of VC investments in fintech startups and find that countries with strong financial firms and software technology industries attract more investments. This highlights the importance of technological and financial resources, which can significantly enhance the capabilities of fintech companies.

When considering Private Equity (PE) investments, the RBV framework helps understand how PE firms create value. According to Pang (2021), PE firms develop and utilize unique resources and capabilities that drive value creation across all stages of the PE value chain: Fund Raising, Deal Sourcing, Governing/Managing, and Exiting. The study emphasizes that PE firms bring their own valuable resources, such as strong brand reputation, networking competencies, and in-house talent management expertise, which complement the existing resources of the companies they invest in.

The RBV framework therefore suggests that PE firms invest in fintech companies not just for financial returns but also because these firms possess unique and valuable resources, which private equity investors complement with their own leading to substantial value creation for all parties involved.

2.4 Hypothesis Formulation

Having provided an overview of the characteristics of Private Equity investments, the fintech industry, and theories which help our understanding of how the former might influence the latter, we are now able to theorize the relationships that our analysis will either confirm or refute.

Given the importance of capital in the financial technology industry, and the great amounts required to fuel innovation and maintain an edge on competition, we expect that the increased participation of Private Equity firms has a positive influence on the performance metrics of these firms. Specifically, we theorize that PE's track record of enhancing firm value will hold true in the fintech industry and thus formulate our first hypothesis, taking the following form.

Hypothesis 1: Private Equity investment positively influences the performance metrics of sponsored firms operating in the fintech sector.

We've observed PE investment to vary in modality depending on the context surrounding the financing decision. Nevertheless, the majority of PE backed transactions appear to take the form of buyouts as for PE firms to effectively heighten operational efficiencies, significant control over a firm is necessary. Moreover, in order to quickly drive profitability improvements, the ability to make unquestioned judgement calls is of key importance to these institutional investors. Our second hypothesis is thus that, of the different modalities of investment PE firms employ, that to yield the greatest impact to financial performance is buyouts, given the increased operational control these offer compared to the alternatives.

Hypothesis 1a: In fintech firms, buyouts will result in heightened financial performance metrics compared to other types of PE backing.

When discussing the inner workings of Private Equity firms, we've highlighted the importance of operational efficiencies in driving quick improvements to financial performance. As the expertise of PE firms comes in optimizing costs and financial restructuring, with hypothesis 1b we theorize that improvements in the financial performance of fintech firms will be showcased through operating performance metrics as opposed to revenues.

Hypothesis 1b: Private Equity affects the financial performance of fintech firms through improvements in operational metrics as opposed to revenue metrics.

An extensive section of this chapter has been dedicated to discussing the importance of human capital in the fintech sector and the relationship between Private Equity investment and workforce size. To such end, we note that while the workforce is a prioritized asset in the financial technology sector, Private Equity investment often results in personnel cuts across many industries. Given the operational control associated to private equity investments, we expect the latter to prevail over the former and theorize hypothesis 1c.

Hypothesis 1c: PE backing is negatively associated to personnel growth in the fintech industry.

Our second set of hypotheses still concerns the effect of Private Equity investments in the fintech sector but seeks to compare it against that of long-established capital providers in the space, by evaluating it against that of venture capital firms. To such end, given its hands on approach and track record across various industries, we hypothesize that Private Equity investment will lead to superior financial performance compared to its counterpart. This leads to the formulation of hypothesis 2.

Hypothesis 2: Private Equity backed fintech firms exhibit increased financial performance compared to their Venture Capital backed counterparts.

While hypothesis 2 offers significant insights into the overall performance of Private Equity firms in the fintech sector compared to that of Venture capital ones, its shortcomings come in accounting for the specific type of investment taking place. For instance, while Venture Capital firms mostly award growth capital, Private Equity firms can vary in their approach to fintech financing. To address this, we theorize hypothesis 2a, which seeks to compare the

performance of growth capital for both investors. We expect to find that the expertise of Venture Capital firms in growth financing will result in heightened firm performance, compared to that observed in Private Equity financing.

Hypothesis 2a: Growth Capital investments in fintech on behalf of Private Equity firms result in lesser financial performance compared to those of Venture Capital firms.

The last hypothesis of our paper seeks to compare the effect of Private Equity financing on workforce size compared to that of Venture Capital. Specifically, we expect the trend of employee reductions in PE investment to be constant across industries and thus for Venture Capital investment in fintech to result in increases in workforce size higher than those experienced with Private Equity financing. Hypothesis 2b therefore takes the following form.

Hypothesis 2b: Private Equity investment in fintech firms has a lower impact on workforce size compared to Venture Capital Investment.

Chapter 3 – Data

3.1 Data Collection

The data necessary to answer the research question and the respective hypotheses has been collected on the Preqin platform. The database choice stems from its leading position as the provider of information on private equity fund and portfolio company performance (Preqin, 2024). Moreover, information found in Preqin extends to alternative sources of capital provision such as VC firms, enabling a comparative analysis of the two. The data intelligence platform collects its data directly from fund managers and market participants but also from regulatory agencies and public disclosures. Not only is the data collected from reputable sources, it is also checked for reliability and accuracy, further motivating Preqin's choice as the data source for this study. Alternative platforms were considered, these include Orbis, Pitchbook and Crunchbase Pro but the lack of institutional access or appropriate categorization of fintech firms ultimately led to their exclusion.

3.2 Sample

The scope of this study involves the collection of two separate samples, one including PE backed fintech firms and a second including VC backed ones. Pertaining the first sample, the filter function within Preqin is utilized to limit the search scope to companies with available financial information of interest. Specifically, the search is set to display companies with values for "Revenues", "Operating Income", "EBITDA" and "Net Income" between –10000 and 10000 million USD. Similarly, "Total Amount Raised" is set to be greater than 0, reducing the initial search result of 2884 companies to 164. Despite Preqin's leading position as a provider of portfolio company information, only a limited number of PE backed fintech firms appear to have available financial information. This can be attributed to the incentivized and common practice of PE firms only disclosing performance metrics of their companies when favorable (PE Stack, 2022). Mindful of the reduction in sample size that would follow the data cleaning procedures, the decision of imposing no further limits on the sample is made.

Collection of the second sample instead takes place with fewer difficulties, as a direct consequence of Venture Capital's established role in the fintech space. The same constraints

applied to the first sample lead to a search result of 2661 companies, yet Preqin's maximum export of 1000 entries requires further limitations to be put in place. With the objective of balancing the two samples in size without creating biases, the first 1661 search results are disregarded. In turn, leading the original sample to be reduced to 1000 firms.

3.3 Data Preparation

After having successfully extracted the data, our focus shifts to ensuring the samples are ready for analysis. For this to be the case cleaning procedures, aimed at guaranteeing accuracy and reliability of our data, must take place.

Initially the samples are checked for consistency, leading to the discovery of entries with missing variables of interest (Company Stage, Total Amount Raised, Revenues, Ebitda, Operating income, Net Income, Employee count and Funding Rounds) and resulting in their deletion. In a second phase, string variables are converted to numerical and "company stage", categorical in nature, is transformed into dummy variables. Such a conversion is necessary as it allows us to include the variable in our quantitative analysis. By representing the different stages with binary variables, we can obtain insights into how different forms of private equity backing influence growth and financial performance metrics. The following sections will further clarify this need. Descriptive statistics are then computed for both samples, with the objective of providing an overview of our data and highlighting possible outliers that need to be dealt with. These include mean, standard deviation, minimum and maximum values of each variable. As our main dataset also includes the region in which each firm operates, a geographical frequency distribution is also calculated and reported in Appendix A.

3.4 Variables

The variables of interest to this study are the previously mentioned ones of Company Stage, Total Amount Raised, Funding Rounds, Company Stage, Revenues, Ebitda, Operating income, Net Income and Employee count. The following section will serve to classify the role of each in our research and their relevance to this study.

3.4.1 Independent

The independent variables of this study are those we theorize to have an effect on the profitability metrics of the firms in question, and to vary in their impact on the basis of the sample analyzed. Through their employment we are able to gage the effect that different aspects of PE funding have on fintech firms, highlighting potential differences with Venture Capital backing.

3.4.1.1 Company Stage

The first variable of interest is that of "Company stage". It is of crucial importance to our study as it characterizes the type of funding received by the fintech firm while conveying information about the risk profile and decisions surrounding the investment. Being a categorical variable, it outlines the type of investment taking place and in our dataset uptakes values of growth capital, private investment in public equity (PIPE), buyout, add-on and public to private.

PE interventions can vary greatly depending on the frame in which the funding takes place. For instance, at the growth capital stage, fintechs may need substantial strategic guidance and operational support, with the objective of expanding their presence in markets (Avon River ventures, 2024). On the other hand, in the case of buyouts the focus may shift to optimizing financial performance and restructuring for improved profitability (Investopedia, 2024). Similarly, add-on firms may enjoy the synergies of integration with other portfolio companies while public to private targets the benefits of mature operations not being subject to extreme scrutiny. These differences are of key importance when evaluating the impact PE investment can have an important impact on the performance metrics of the sample, leading to the inclusion of "company stage" in our study.

3.4.1.2 Founding Rounds

This variable represents the number of funding rounds the firm has secured. Its role in our study is that of a measure of investor confidence, which can offer insights into the lens through which investment is taking place, as well as its frequency on a firm level. As the size of investment can vary greatly between Venture Capital and Private Equity firms, this variable will also allow us to understand whether financial metrics of fintech firms benefit

from repeated capital infusions and to what extent that differs depending on the source of capital. Additionally, the inclusion of such a variable enables the findings to point to the optimal modality of capital injection in the financial technology space, be it repeated ones to fuel growth or fewer with a focus on significant investments at key stages.

3.4.1.3 Total Amount Raised

In our study, employment of the Total amount raised variable will instead serve to understand the impact that the scale of financial resources available has on the performance of fintech companies, being the ultimate measure of financial backing that the firm has secured from the investor. Private Equity firms often provide larger capital in later stages of a company's lifecycle (Gridline, 2021); by including the total amount raised we can gain insights into whether the trend holds true in the fintech space and the extent to which that benefits the firm in question. Inclusion of the total amount raised is also valuable in the frame of understanding the implications of large-scale investments in the fintech industry. Firms with great financial resources available can invest aggressively in talent acquisition, technology and market expansion. Given the importance of such factors in the fintech space, total amount raised is chosen as the third independent variable of this study.

3.4.2 Dependent

The choice of dependent variables for this paper reflects its intention of assessing which characteristics of PE investment influence growth and profitability of a fintech firm. These range from traditional metrics of financial performance to proxies for company growth and are discussed in the following section.

3.4.2.1 Revenues

Given the scope of this study, including revenues amongst the financial metrics chosen is essential for multiple reasons. Importantly, PE firms are often blamed for employing numerous cost-cutting techniques in their efforts of improving the profitability of portfolio companies (Brown et al., 2020). By analyzing the relationship between the independent variables of this study and revenues, we can ascertain whether such a practice also applies to investments in the fintech industry or if profitability is enhanced through a focus on revenue generation. Moreover, revenues can also act as a proxy for market expansion and convey a lot

more information on the strategic direction of a company than a sheer increase in the number of sales (Majumdar, 2013). In the comparative section of our analysis this aspect will play an increasingly important role as it will allow us to understand which source of capital can be most effective in increasing market demand.

3.4.2.2 EBITDA

EBITDA, by measuring earnings before interest, taxes, depreciation, and amortization, is able to focus on the cash aspect of a company's operating performance. Its choice as a dependent variable in this study stems from its history as a comparable for firms operating in different industries and with different capital structures. By excluding taxes, amortization and depreciation, EBITDA also serves as a measure of a firm's profitability that is not influenced by accounting choices or tax environment. In the fintech environment, where companies often need significant capital investments, such a measure can help understand whether the funds are actually being used to enhance operational efficiency. Most importantly, EBITDA sheds light on a company's ability to generate cash flow from its core operations (Castordoc, n.d), allowing us to assess whether PE investment drives success through development of core operation cash flows or simply through financial restructuring.

3.4.2.3 Operating Income

Operating income is instead employed as a dependent variable due to its ability of offering a comprehensive view of a company's operations. Contrary to EBITDA, operating income is capable of accounting for a firm's overall operating expenses and can thus paint a picture of a firm's operating efficiency and cost management strategy. As it includes depreciation and amortization, this measure can reflect the effect of capital investments and garner insights into the utilization of assets, which can be important in the context of evaluating a firm's long term operating sustainability (Rigits, n.d.). Moreover, by including operating income we can understand how well the scaling of operations which PE firms often employ drives profitability in the fintech industry, while accounting for the cost of assets.

3.4.2.4 Net Income

The choice of Net income as the last financial metric employed in this study lies in its ability to paint the picture of a firm's overall profitability after accounting for all expenses. Due to

its comprehensive nature and use alongside more specific financial measures, net income allows us to gain insights into the utilization of tax strategies and the impact of one-time expenses, shedding light on the effectiveness of strategies PE firms use to leverage profitability. Further supporting the importance of Net income is its use in numerous financial ratios which are utilized as references by investors, making it a key metric to assess the overall success of PE backed fintech firms.

3.4.2.5 Employee Count

Finally, employee count is utilized as a dependent variable to measure the relationship between PE investment characteristics and the growth of a fintech company that transcends financial value. This measure can serve as an indicator of a firm's expansionary efforts and, in the context of our analysis, allows us to understand which characteristics of PE investment drive talent acquisition in the fintech industry. By examining the impact of the independent variables on workforce size, we can discern how different aspects of PE investment, namely company stage, total amount of capital raised and number of funding rounds, affect the need for expanding human resources. Such an analysis should yield results on whether capital inflows correspond to increased hiring, providing a further aspect to evaluate how private equity financing influences fintech growth strategy and verifying the validity of "head-cutting" claims associated to PE investment.

3.5 Descriptive Statistics

Table I: Descriptive Statistics of PE backed sample

	Observations	Mean	S.d.	Min	Max
Total Amount Raised	132	118.830	224.433	0.100	1400
Funding rounds	132	3.930	2.710	1	13
Revenues	132	383.246	951.368	0.110	6872.140
Operating Income	132	91.654	324.463	-244.080	2529.400
Net Income	132	61.775	259.419	-369.110	1907.190
EBITDA	132	117.440	364.888	-74.600	2745.300
Employee count	132	2642.770	8230.240	1	86037

Table II: Descriptive Statistics of VC backed sample

	Observations	Mean	S.d.	Min	Max
Total Amount Raised	735	136.752	478.057	0.100	6008.2
Funding rounds	735	4.050	3.650	1	35
Revenues	735	123.479	965.990	0.000	21915.620
Operating Income	735	-14.854	260.992	-5704.210	2002.880
Net Income	735	-17.780	265.290	-5971.880	1630.140
EBITDA	735	-11.895	956.990	-5063.500	2000.730
Employee count	735	475.570	1819.480	1	27347

Table I and II provide valuable information on the samples utilized in this paper, inclusive of mean, standard deviation, minimum and maximum values for each of the variables employed. Pertaining our private equity backed sample we observe positive mean values for all the financial performance metrics selected, indicating that PE backed fintech firms tend, on average, to perform well in the financial department. The same can't be said for the VC backed sample where mean values for Operating Income, Net Income and EBITDA all assume a negative connotation. Such a finding is likely due to Venture Capital investments taking place mostly in the initial stages of a company, where the focus is not on profitability but on product development and market penetration. Private Equity firms instead prioritize profitability, with the objective of making a firm look as appealing as possible in the scope of an exit or strategic sale. According to the statistics, PE backed firms are also larger in size as indicated by the mean employee count of 2642.77 compared to VC's 475.57. Nevertheless, by observing the mean values for total amount raised we instead find that, in our samples, the average investment for a VC fund exceeds that of Private Equity by north of 17 million dollars. We expect such a finding to be tied to the greater number of funding rounds which are also observed in the VC sample. All the variables analyzed display high levels of variability, indicated by the high standard deviations relative to their mean. To address the issue the elected approach is that of performing logarithmic transformations of the variables in question, to ensure the significance and reliability of our results.

Chapter 4 – Research Methodology

The following chapter describes the methodologies used to test the hypotheses formulated in the literature review section of this study, as well as the cleaning procedures and robustness tests put into place to guarantee the validity of the findings.

4.1 Empirical Methods

4.1.1 Statistical method

The empirical method chosen to analyze the data is that of ordinary least squares (OLS) linear regressions. Such a method is chosen due to its ability to effectively quantify linear relationships between the independent variables, namely total amount raised, number of funding rounds and company stage, and the dependent performance metrics employed in this paper. OLS regression is a fundamental statistical technique utilized in various fields including finance, economics and social sciences due to its simplicity and the clarity it provides in the interpretation of results. Through OLS regressions, we are minimizing the sum of squared differences between the values observed and those predicted by the linear model, which ensures the best-fitting line is found for the given datapoints (Burton, 2021).

4.1.2 Regressions of PE backed sample

The first regression performed is that of the logarithmic transformation of revenues onto the logarithmically transformed independent variables and the dummy variables associated to company stage. It assumes the following specification:

$$\text{Log\_Revenues}_{it} = \alpha + \beta_1 \text{Log\_TotalAmountRaised}_{it} + \beta_2 \text{Log\_NumberFundingRounds}_{it} + \beta_3 \text{Stage1}_{it} + \beta_4 \text{Stage2}_{it} + \beta_5 \text{Stage3}_{it} + \beta_6 \text{Stage4}_{it} + \beta_7 \text{Stage5}_{it} + \epsilon_{it}$$

In the above equation Log_Revenues_{it} represents the revenues of fintech firm i at time t, α the intercept, ϵ_{it} the error term and β_1 through β_7 the coefficient for the respective variables. Stage1 through Stage5 are instead the dummy variables reflective of company stage representing respectively growth capital, private investment in public equity, buyout, add-on

and public to private. The specification of each of the following regressions for the PE backed sample stays constant with the change happening in the dependent variable that is being regressed. The remaining regressions assume the following specifications.

Regression of Operating Income on independent variables

$$Log\_OperatingIncome_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \beta_7 Stage5_{it} + \epsilon_{it}$$

Regression of Net Income on independent variables

$$Log\_NetIncome_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \beta_7 Stage5_{it} + \epsilon_{it}$$

Regression of EBITDA on independent variables

$$Log\_EBITDA_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \beta_7 Stage5_{it} + \epsilon_{it}$$

The final regression of the sample concerns the employee count, which due to the absence of high variance does not require a logarithmic transformation and assumes the following specification:

$$EmployeeCount_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \beta_7 Stage5_{it} + \epsilon_{it}$$

4.1.3 Regressions of VC backed sample

The second set of regressions concerns the sample of Venture Capital backed fintech companies which, while similar in specification, sports differences from the previous sample in the Company Stage Variable. This comes as, while in the PE backed sample each value the variable could assume offered unique information and different significantly from the others, the same does not apply to the different stages observed in the VC sample. For instance, Series E and Series F financing are classified as different stages despite both being dedicated to increasing the scale of operations in the later stages. The elected approach is that of encoding in the same value financing types with little differences and creating dummy

variables off the new macro-categories. Appendix B illustrates the encoding process and the macro-categories associated; the process was guided by the objective of creating categories most resembling those observed in the main sample so as to enable a comparison. The regression specifications thus take the following form.

Regression of Revenues on independent variables

$$Log\_Revenues_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \epsilon_{it}$$

Regression of Operating Income on independent variables

$$Log\_OperatingIncome_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \epsilon_{it}$$

Regression of Net Income on independent variables

$$Log\_NetIncome_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \epsilon_{it}$$

Regression of EBITDA on independent variables

$$Log\_EBITDA_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \epsilon_{it}$$

Regression of Employee Count on independent variables

$$EmployeeCount_{it} = \alpha + \beta_1 Log\_TotalAmountRaised_{it} + \beta_2 Log\_NumberFundingRounds_{it} + \beta_3 Stage1_{it} + \beta_4 Stage2_{it} + \beta_5 Stage3_{it} + \beta_6 Stage4_{it} + \epsilon_{it}$$

4.2 Robustness Tests

Net of the great variance that is observed in some variables and showcased by the calculation of descriptive statistics reported in tables I and II, robustness checks are deemed necessary and put into place.

4.2.1 Multicollinearity

Multicollinearity issues arise in an analysis when two or more predictor variables are highly correlated or, in other words, experience a strong linear relationship. High levels of correlation between predictor variables are undesirable as they influence a regression's ability to correctly estimate coefficients. Moreover, in the presence of multicollinearity, it becomes difficult to assess the impact of each predictor variable on the dependent variable as the predictors are not sufficiently independent of each other. To test for multicollinearity in our variables we employ Variance Inflation Factors (VIF), which indicate the degree to which the variance of a regression coefficient is influenced by the presence of multicollinearity. The threshold commonly set for the interpretation of VIF values is 10, whereby a level exceeding said number indicates high multicollinearity issues (DATAtab, n.d.). In general, values under 5 indicate no reason for concern while a value of 1 implies no multicollinearity at all.

4.2.2 Autocorrelation

Another important assumption of OLS regressions is that of no autocorrelation. The expression denotes a situation where the error term in one period is related to the error term in the next period. While autocorrelation does not influence the coefficient estimates it inflates their standard error, in turn leading to misrepresentations of their significance, poorer models and less reliable estimates. To check for autocorrelation issues we conduct Durbin-Watson tests. With a value of 0 indicating high positive autocorrelation and 4 indicating high negative correlation, 2 is the ideal coefficient as it indicates a complete lack thereof. Literature points to values between 1,5 and 2,5 as the range where no significant autocorrelation is observed (CFI, 2024) and thus consist in the threshold applied to our analysis.

4.2.3 Fixed Effects

Our third and final approach is that of including fixed effects in our regression model pertaining the "Revenues" dependent variable. By doing so, we are able to gage whether other independent variables that we have elected to exclude from our main regression model hold explanatory power over the predicted outcome. Should we find that is not the case and that, even with the inclusion of fixed effects, our standardized coefficients are consistent, we will have further proof of the accuracy of our model and the validity of our findings. The

fixed effects we elect to include in our analysis are those of industry, year of foundation and region. To include them in our analysis we take the approach of producing dummy variables for each, which will be included in our analysis to observe their impact on revenues. Given the great number of values which “foundation year” and “industry” uptake in our data, we elect to partition the variables into bigger groups. Concerning foundation year, we create dummy variables for each decade starting from 1990 and reaching 2020. Industries observed in our sample are instead partitioned between “Financial Services”, “Software” and “Rest”. Such an approach allows us to still be able to present the data in a concise table and avoid any issues of multicollinearity between our dummy variables.

Chapter 5 – Results

The following section reports the findings of our analysis on the effects of PE financing on the performance and growth metrics employed in this study, as well as subsections dedicated to validating each of the hypotheses formulated. We open by presenting the results of our regressions on the PE backed sample along with the fixed effects model and go on to assess the hypothesis specific to said sample. In the second part of this chapter the results of our control sample regressions are reported along with the validation of hypotheses which require confronting the PE backed group with the VC backed one. Finally, we conclude with a discussion on the insights offered by our analysis that transcend the formulated hypotheses.

5.1 Initial Analysis

Table III: Regression Results of PE backed sample

	Revenues	Operating Income	Net Income	EBITDA	Employee Count
Total Amount Raised	0.438***	0.367***	0.388***	0.412***	0.394***
Number of funding rounds	-0.114	0.015	-0.099	0.000	0.233**
Stage 1	0.354***	0.323***	0.388***	0.341***	0.109
Stage 2	0.269***	0.191**	0.217**	0.208**	0.108
Stage 3	0.286***	0.018	0.153	0.110	0.122
Stage 4	-0.071	-0.165	-0.084	-0.119	-0.062
Stage 5	0.440	0.063	0.106	0.063	-0.048*
Mean VIF	1.427	1.497	1.559	1.507	1.427
Durbin-Watson	1.646	2.001	1.885	2.074	1.776
Observations	132	132	132	132	132
R^2	0.385	0.357	0.320	0.378	0.389

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Description

The above table reports the values for the OLS regressions performed on the PE backed sample, along with the robustness tests put in place to ensure the reliability of the findings. Pertaining the latter, all values are observed to be in line with the thresholds indicated by the literature. The Durbin-Watson coefficients observed fall in the 1.646 to 2.074 range, indicating no autocorrelation in the sample. Similarly, VIF values don't exceed 1.559, well below the threshold of 10 considered the limit for acceptability. Having confirmed the reliability of our models we can then move to evaluating their performance. R^2 values, also known as coefficients of determination, are a statistical measure utilized to assess the fit of a model or, in other words, how well the predictor variables explain changes in the dependent variable. The threshold commonly applied in the field of finance and economics for R^2 values to be considered satisfactory is of 0.1 (Ozili, 2022), which indicates that the model is capable of explaining 10% of the variance in the dependent variable. In our case, R squared values range from 0.357 to 0.389, indicating that our models are a good fit for the data while not incurring any overfitting risks. Pertaining the standardized coefficients, most of the relationships analysed sport satisfactory p values, indicating statistical significance and suggesting that the values observed are not likely to be tied to random fluctuations in the sample.

Robustness – Fixed Effects

Our last robustness analysis is that concerning the fixed effects regression outlined in the previous chapter. Table IV reports the results of our analysis, allowing us to compare values for correlation coefficients, VIF, Durbin-Watson coefficient and R squared. By evaluating the results of our analysis against those of our original one, we observe that the overwhelming majority of coefficients are consistent in direction and relative magnitude, indicating that the addition of new variables does not significantly affect the relationships analysed in this paper. By observing R squared values we instead note that the fixed effects model bests our original one in explanatory power by 10.3%. Nevertheless, such a finding does not change the interpretation of the relationships identified in our original analysis and should be expected following the addition of a significant amount of variables to our model. By examining our results we also observe that the dummy variables for "Financial Services", "Europe" and "2000-2010" are missing from our table. This is due to an issue known as "Dummy Variable Trap", whereby if a set of dummy variables includes all categories, without leaving one out as

a reference, the statistical analysis will automatically exclude one to avoid perfect multicollinearity (Mohanan, 2023). Given the statistical insignificance of most dummy variables employed the robustness regression, this is not deemed a problem. Overall, our fixed effects model confirms the validity and robustness of our original results, allowing us to move on to the evaluation of our hypotheses.

Table IV: Fixed Effects Regression Results

Variable	Standardized Coefficients	VIF
Total Amount Raised	0.392***	1.794
Funding Rounds	-0.151*	2.193
Software	0.013	1.531
Rest	0.001	1.541
Africa	-0.065	1.163
Asia	0.119	1.822
Australasia	-0.111*	1.103
Latin America & Caribbean	-0.082	1.170
North America	0.229	1.984
To 1990	0.144	1.231
1990-2000	0.172**	1.324
2010-2020	-0.202**	1.459
Stage 1	0.245***	1.791
Stage 2	0.206**	2.174
Stage 3	0.166	1.822
Stage 4	-0.062	1.585
Stage 5	0.113	1.920
Durbin-Watson	1.685	
Observations	116	
R^2	0.488	

5.1.1 Hypothesis testing

Hypothesis 1

The first hypothesis of this study asserts that Private Equity financing has a positive impact on the financial performance metrics of sponsored fintech firms. For this to be the case, and for us to reject the null hypothesis, the regression coefficients correlating total amount raised and the financial metrics employed must uptake positive and statistically significant values. Our analysis indicates that a unit increase in the financing obtained consistently results in an increase in the metrics analysed. Specifically, a 0.438 unit increase in revenues, a 0.367 unit

increase in operating income, a 0.388 unit increase in net income and a 0.412 increase in ebitda. The correlation coefficients observed, being all significant at the 1% level, outline that increases in PE financing lead to substantial increases in the financial performance metrics analysed. Our initial findings are thus sufficient to reject the null hypothesis and confirm that PE financing positively affects the financial performance of fintech firms.

Hypothesis 1a

Our second hypothesis theorizes that, the increased operational control buyouts offer a private equity firm over the fintech firm acquired, would result in heightened performance metrics compared to other types of PE backing. Of the different regression coefficients calculated for the "buyout" variable, reported in the table III as Stage 3, only that concerning "revenues" is significant at the 10% level or less, enabling us to reject the null hypothesis and make a comparison with significant coefficients of other investment modalities. To such end we observe that a unit increase in the total amount raised corresponds to a 0.286 increase in revenues, while the same increase in total amount raised results in a 0.354 increase when examining Growth Capital (Stage 1). Our finding supports the conclusion that the increased operational control associated to buyouts does not garner in the firm sponsored superior financial performance compared to other types of PE backing. Interestingly, if we were to forgo the requirement of statistical significance and compared the coefficients reflective of our sample, we would come to the same conclusion as for every performance metric analysed there is at least one financing method superior to "buyout". Moreover, according to the results of our analysis, it is Growth capital injections that appear to bring the greatest increase in financial performance per dollar of capital issued. Net of these findings we reject hypothesis 1a.

Hypothesis 1b

With hypothesis 1b we attempt to draw conclusions on the strategies through which PE firms enhance the financial performance of fintech firms. In line with previous literature, we expect the performance metrics of PE backed fintechs to be reflective of the strategic expertise PE investors equip portfolio companies with. Specifically, we expect such expertise to be displayed by increases in Operational Income as opposed to Revenues. To test the hypothesis, we analyse the standardized regression coefficients correlating total amount raised to the previously described financial metrics. Our findings indicate that while PE investment is positively associated to both, its influence is primarily on revenues as per dollar of capital

invested a 0.438 unit increase in revenues is observed, against the smaller 0.367 we find in operating income. As both coefficients are significant at the 1% level, these findings conflict with those of similar analyses performed in different industries. Leading to the question of whether they follow revenues sporting a higher absolute value compared to operating income. Employment of standardized coefficients however tackles the issue as the variables are given a mean of 0 and standard deviation of 1, enabling a comparison of the two despite one uptaking higher values than the other. Our analysis is thus sufficient to draw conclusions, leading to the rejection of hypothesis 1b.

Hypothesis 1c

Our last hypothesis not requiring comparisons to VC is that Private Equity investment results in personnel reductions. In other words, we expect that total amount raised will be negatively correlated to employee count. We once again make use standardized coefficients to support our conclusions and find that, net of the logarithmic transformation of total amount raised, a 10000 dollar increase in amount raised is matched by a 0.394 increase in employee count across the firms analysed. Once again, our findings contrast the classic idea of PE investment influence outlined in the outstanding body of literature. Such a finding sparks the idea that the unique dynamics of the fintech sector discussed in chapter 2 lead PE firms to increasingly value human resources and turn us to the rejection of hypothesis 1c.

5.2 Comparative Analysis

Table V: Regression results of VC backed Sample

	Revenues	Operating Income	Net Income	EBITDA	Employee Count
Total Amount Raised	0.557***	0.420***	0.453***	0.420***	0.577***
Number of funding rounds	-0.065*	-0.081	-0.094*	-0.078	0.105***
Stage 1	0.032	-0.052	-0.065	0.060	0.109
Stage 2	-0.056**	-0.820**	0.098**	-0.079**	0.023
Stage 3	0.408***	0.428***	0.395***	0.420***	0.100***
Stage 4	0.094***	-0.059	-0.066	-0.049	-0.035
Mean VIF	1.895	1.606	1.576	1.685	1.895

Durbin-Watson	1.910	2.077	2.109	1.949	1.926
Observations	735	735	735	735	735
R^2	0.591	0.442	0.442	0.450	0.508

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Description

Table V reports the results of OLS regressions performed on the sample of Venture Capital backed fintech firms, along with robustness tests and performance of each model. Concerning the validity of the results, we again observe satisfactory values for both Durbin-Watson coefficients and Variance Inflation Factors, certifying the regression results. The explanatory power of the models appears to be superior to that observed in the Private Equity Backed sample as R^2 values range from 0.422 to 0.590, indicating that our worst model is still able to explain 42.2% of the variance in the independent variables. The superior performance of the model is also showcased by a greater number of standardized coefficients sporting satisfactory p values, indicating the statistical significance of the findings.

5.2.1 Hypothesis Testing

Hypothesis 2

Our investigation into the differences of PE and VC financing on fintech firms begins with the formulation of hypothesis 2, which theorizes that PE backed fintech firms experience heightened financial performance compared to their VC backed peers. To assess said hypothesis we compare the correlation coefficients outlining the relationship between total amount raised and the financial metrics employed in this paper. We find that Venture Capital appears to outperform Private Equity financing for all the metrics analysed. As a matter of fact, a unit increase in total amount raised is met by a 0.438 increase in revenues in the PE sample and one of 0.557 in the Venture Capital backed one. The trend holds true as operating income is shown to increase by 0.367 in the first sample and by 0.420 in the second. Similarly, net income increases by 0.388 for PE backed firms and by 0.453 for VC ones while EBITDA increases by 0.412 and 0.420 respectively. These results, being backed by

coefficients significant at the 1% level, point to VC financing having a greater and generalizable impact on fintech firms and are cause for rejection of hypothesis 2.

Hypothesis 2a

With hypothesis 2a we theorize that the impact of growth capital on financial performance is less pronounced in Private Equity backed fintech firms than in their Venture Capital backed counterpart. We evaluate our hypothesis by comparing the standardized correlation coefficients of "Stage 1" in the PE backed sample with those of "Stage 1" in the VC backed one. Our analysis indicates that growth capital financing appears to have a strong effect on the financial performance of Private Equity backed fintechs as the coefficients' uptake positive values of 0.354, 0.323, 0.388 and 0.341, while the effect on VC backed firms is less pronounced and even negative for some metrics (0.032, -0.052, -0.065 and 0.060). Unfortunately, while the coefficients relative to growth financing are all statistically significant at the 10% level in the first sample (our minimum requirement), the same can't be said for those observed in the VC backed one. Such a situation questions whether the observations pertaining our second sample can be generalized beyond our analysis. It is indeed possible that the coefficients relative to growth capital observed in venture capital backed fintechs may simply be a consequence of the noise in our sample, thus leaving the hypothesis neither accepted nor rejected.

Hypothesis 2b

According to our last hypothesis we expect to find that Private Equity investment in fintech firms has a lesser impact on employee count than that associated to Venture Capital backing. To test our hypothesis, we analyse the standardized coefficients correlating number of funding rounds and employee count in both samples. Our findings are that while in the PE backed sample an investment round is associated to 0.223 increase in employee count, for VC backed fintechs the same unit of investment results in an increase of 0.105 to the measure. The coefficients being significant at the 1% level certifies the affidability of our observations. As our hypothesis was initially formulated on the assumption that private equity financing would have a negative influence on employee count, which was disproven by hypothesis 1c, it focused on the magnitude of the effect rather than the direction. Nevertheless, the findings, along with their statistical significance, indicate that PE investment has a higher impact on employee count, pointing us to the rejection of our last hypothesis.

5.3 Additional Insights and findings

Our analysis also yields findings beyond the scope of our hypotheses which allow us to dive deeper into the relationship between PE financing and fintech performance and growth. For instance, we are able to assess the impact of different forms of PE financing on the metrics analysed. To such end we find that growth capital investments are those observed to have the greatest overall impact on financial performance, followed by private investments in public equity (PIPE) and buyouts. Our results pertaining the impact of add-on acquisitions and public to private transactions require of us to lift the pre-requisite of statistical significance in order to come to conclusions. Under such an assumption we observe that public to private transactions result in the lowest increase to financial performance, whilst add-on acquisitions have a negative effect on firm financials. Under the same conditions we also observe buyouts to be the financing modality leading to the biggest increase in employee count. To note is that insignificant coefficients translate to the inability of extending the findings beyond the sample. Interestingly, we also observe that the number of funding rounds is negatively associated to the majority of performance metrics employed with the exception of operating income, although never to a generalizable extent. Reinstating the requirement of significance, we note that public to private transactions have a negative influence on employee count, in chapter 6 of this study we will compare our findings with the expectations of outstanding literature. Concerning the VC backed sample we find that mature capital is consistently the best-performing financing modality, followed by growth stage, Series A/Round 1 and acquisition/add-on in that order. Once again, we observe that the number of funding rounds is negatively associated to performance metrics, although this time to a statistically significant degree in the case of revenues and net income.

Chapter 6 – Discussion

With this paper we make an inquiry into the effects of Private Equity financing on the growth and performance of firms operating in the financial technology sector. To hypothesize the relationships tested in the previous chapter we conducted an examination of previous literature, with the objective of theorizing how private equity firms affect performance in the fintech sector, as well as the intricacies unique to the fintech industry itself. Our literature review included important frameworks that can be employed in the frame of understanding how PE investment impacts fintech firms. The following chapter will offer a comprehensive overview of our findings and seek to rationalize them.

Effect of PE financing on financial performance in fintech

Our initial efforts were devoted to understanding if the positive effect PE investment has on the financial performance of portfolio companies extends to firms in the fintech sector and, indeed, we found that to be the case. In our analysis we've observed that firms raising large amounts of capital from Private Equity investors are those to experience the highest levels of financial performance, as the total amount raised variable was shown to positively correlate to all the financial metrics studied. Specifically, Revenues are shown to have the largest increase per dollar of capital invested, followed by EBITDA, Net Income and Operating Income. Interestingly, despite being unable to extend these findings beyond our sample, we've found that the number of funding rounds has an overall negative impact on the performance of PE backed fintech firms. While such a finding is hard to elaborate, one possible explanation could be that repeated funding rounds might lead to a dilution of equity and increased pressure on management, hindering performance in the process. Since in LBOs pressure on management is found to have a positive impact, it is also possible that the unique dynamics of the fintech sector debilitate pressure's influence in driving operational efficiencies. Within our sample, larger and less frequent capital injections are therefore shown to be the optimal modality of boosting financial performance through PE investment.

In chapter 3, when justifying our choice of dependent variables, we mentioned the possibility of extrapolating information about the strategies employed by private equity firms. The next section will address our findings in that regard.

Revenue growth vs Cost Management

Previous literature identifies aggressive cost management as the main strategy employed by PE firms to boost financial performance, yet according to our results the trend does not hold in the financial technology industry. Our analysis of regression coefficients points to a significant emphasis on revenue growth over cost management, outlined by higher coefficients for Revenues compared to Net Income and Operating income. Such an observation suggests that Private Equity investments in the sector may be catered towards market expansion, the launch of new products and increases in the scale of operations aimed at capturing a larger share of the market. The smaller influence of private equity investment on income metrics demonstrates that while portfolio firms employ cost management strategies, these are likely not the main focus.

Our regression results also suggest an increased focus on increasing operational efficiencies as opposed to cost cutting that is further underlined by the positive correlation of total amount invested with employee count. Rather than reducing headcount like in other industries, PE firms seem to recognize the value of skilled employees in maintaining a competitive advantage and driving innovation in the context of a fintech firm. Further supporting our conclusions about a focus on operational efficiencies is the EBITDA coefficient, indicating that the funding received is employed for operational improvements and that financial performance is not increased merely by financial restructuring or strategic choices of tax environment.

Overall, our data shows that PE involvement appears to follow an approach specific to the fintech sector, differing significantly from that observed in other industries and highlighting the expertise necessary to succeed in the fintech industry.

Best Performing financing method

An extensive part of our analysis was also dedicated to identifying the best performing financing modality in the context of the fintech sector. While originally theorizing buyouts to perform best due to the increased control they offer the PE firm, growth capital was found to be the optimal modality of financing, suggesting that fintech firms benefit most from PE investment when management is given freedom in its operational choices. Such an

observation aligns with the overarching trend of successful PE investment characteristics being unique to the fintech industry and significantly different from the ones observed in other sectors.

Private Equity vs Venture Capital

When comparing the effects of Private Equity and Venture capital investments on fintech firms, our results are consistent with those observed until this point. Once again, we find evidence of benefits tied to operational experience in the fintech sector, this time exemplified by the heightened performance associated to VC backed fintechs compared to their PE backed counterparts. The higher performance metrics observed in our control sample may also be tied to VC investors focusing on early firm financing, which can translate to investing in firms increasingly responsible for disruptive technologies. Another aspect which might explain this finding is the tolerance for losses that characterizes Venture Capital firms. For instance, while a PE backed firm might be pushed to approaching the market with a product that could still benefit from research and development, the loss tolerance of VC firms might translate in portfolio companies as better product launches and increased market share. Such an explanation is further backed by our analysis on the impact of VC and PE funding on employee count, whereby a dollar of venture capital financing is associated to higher levels of employee acquisition.

Application of Theoretical Frameworks

The first theory we deemed helpful in understanding the impact of Private Equity investment on fintech firms was Agency Theory. According to our results the alignment of goals and reduction of agency costs that PE firms employ translates in the fintech industry into a positive impact on financial performance. Our results however differ from what the theory would cause us to expect in that active government mechanisms are related to lesser financial performance. If sticking to the theory, we would expect to observe buyouts as be the best performing financing modality, yet our results don't align with this expectation. Overall, while agency theory is helpful in understanding of how PE financing affects fintech firms it does not account for the impact that strict oversight has on the performance of firms operating in the space. Fairing better in our analysis is instead resource-based view (RBV), according to which a sustainable competitive advantage is achieved through valuable and

inimitable resources. Supporting this theory are our findings of a significant positive correlation between total amount raised and revenues, and the magnitude of this correlation compared to that of income metrics. These observations lead to the conclusion that PE financing results in fintech firms acquiring unique resources such as technologies and talented individuals, aligning with what the theory would cause us to expect and being displayed by the different effects on the performance metrics analysed. Lastly, our analysis reflects the insights provided by Meuleman et al. (2019) in that the value creation driven by PE firms takes place both through enhancements of efficiency and innovation. Our results concerning growth financing are to be considered evidence of this, as the financing modality most conform with the principles of strategic entrepreneurship is that found to have the best impact on financial performance.

Chapter 7 – Conclusion

Overview of the findings

As financial technology firms take on the growing responsibility of increasing financial inclusion, the objective of this paper was to analyse the impact that Private Equity financing, a relatively uncommon source of capital in the sector, has on the performance and growth of these firms. By conducting an analysis of amounts invested, number of funding rounds, company stage, financial performance metrics and employee count we were able to draw conclusions on the effects of private equity funding. A comparative analysis instead served to underline differences between the performance of PE and VC capital in the sector. To such end, we found PE investment has a positive influence on the financial performance of fintech firms, a result consistent with the effects of PE funding observed in other industries. Where our observations differ from outstanding literature is in the impact of PE funding on workforce size, as well as the areas PE firms focus on to enhance operational efficiency. Specifically, we find evidence of larger PE financing translating to increases in workforce size and of efforts directed primarily towards revenue generation as opposed to cost management. Concerning the comparison with Venture Capital funding, we observe that performance improvements in VC backed firms are generally higher per dollar of capital invested. Through a comparison of different types of PE financing in fintech firms we instead find that the best performing financing modality is growth capital, reflecting the needs of fintech firms to scale operations and expand their presence in markets.

Past literature

In the context of outstanding literature our findings are observed to be consistent with Resource Based View, whereby the capital provided by PE firms is directed towards the development of unique technologies aimed at increasing revenues. Similarly, the suggestions of strategic entrepreneurship theory align with our findings as the dual focus on growth and operational improvements outlined translates into our analysis as a substantial impact of growth capital investments. Lastly, we find partial support for the conclusions of Agency theory through a positive impact of PE financing on income metrics.

Overall, our research points to Private Equity investment being a valid source of funding for fintech firms and to the strategies employed by PE firms aligning with the unique dynamics of the fintech sector.

Limitations

Despite its efforts of ensuring valid and accurate findings through robustness tests and statistical techniques this study is subject to limitations which must be noted.
The first set of limitations is associated to the economic aspect of this research, and the database choice that follows. Pertaining the effect of PE financing, our analysis relies on a relatively small sample size compared to the one that would be employed in similar analysis of a different industry. Despite Preqin's role as a provider of private equity intelligence, only a limited number of private equity backed fintech firms appear to report financial performance information to the platform, which is reflected in our analysis by a limited sample size. It is reasonable to assume that alternative databases to which institutional access is not provided, such as Pitchbook or CrunchbasePro, would address the issue by offering access to a broader range of PE backed fintech firms with financial information readily available. The same logic applies to the choice of variables which is restricted to those found in the Preqin platform. While several approaches are employed to mitigate the issue, the risk of observed relationships not extending to a broader sample is present and must be acknowledged. This study is also subject to limitations concerning its choice of method for statistical analysis. Ordinary least squares regressions do in fact rely on a correct specification of the model, whereby omission of relevant variables or inclusion of irrelevant ones can lead to biased estimates. Concerning the first point, there are likely more investment characteristics which affect the financial performance of fintech firms that this analysis does not account for. Fortunately, the variables included in our model are all relevant to financial performance and growth, making inclusion of irrelevant variables not a concern.

Directions for research and final remarks

Future research should thus focus on expanding the sample size and including further factors which may influence the impact of PE financing on fintech firms. Alternatively, qualitative studies exploring the strategic decision making of PE investors could offer important information on the approach and strategies employed by these firms to drive value creation.

With this paper we make a contribution to the outstanding body of literature on how financial investments influence firms operating in the fintech sector, while bringing to light differences with the traditional approach employed by PE firms in other industries.

Our findings can be useful in the context of a fintech firm exploring avenues for financing, but also for private equity players looking to obtain a stake in the financial technology industry.

Understanding the interplay of private equity financing and fintech performance can be helpful in tailoring investment strategies and fostering the productivity of fintech firms, which has been shown to tackle the issue of financial inclusion and contribute to the broader improvement of society.

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Appendix A

Table VI: Geographical frequency distribution of main sample

Region	**Number**
Africa	6
Asia	28
Australasia	4
Europe	61
Latin America & Caribbean	9
North America	24
Total	132

Appendix B

Table VII: Encoding of variables VC for dummies

Type of Financing	Company Stage
Series B, C, D, E, F, G, I	Stage 1
Series A Round 1	Stage 2
Mature	Stage 3
Acquired Add-on	Stage 4