

The Evolution of Equity Ownership: Declining IPOs, the Rise of Private Markets, and Economic Dynamism*

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Abstract

Since the early 2000s, many advanced economies have seen a decline in initial public offerings (IPOs) of stock and, consequently, the count of publicly-traded companies. Traditionally, going public was viewed as a pivotal event for firms with productivity-enhancing growth opportunities. The drop in IPOs thus raises pressing questions: Is there a decline in transformative new firms and has the financial system become less supportive of them? A primary barrier to understanding these patterns is the scarcity of data on private firms. To bridge this gap, I compile a comprehensive dataset tracking the financial characteristics and ownership structure for both public and private firms in the United Kingdom (UK) throughout their lifespan. I find that a decreasing population of young firms, a trend underscored in economic dynamism literature, accounts for around 25% of the IPO reduction in the UK since its 2007 peak. Yet, this is just one facet of a broader trend. I confirm anecdotal evidence that an increasing proportion of high-growth young firms are turning to private external funding sources, such as venture capital and other private equity (PE) funds. This implies that the outlook for transformational startups is not as pessimistic as the declining trend in IPOs suggests. Furthermore, I highlight the pronounced role of mergers and acquisitions (M&A), particularly an uptick in cross-border M&A as an ownership transition for private firms. Finally, I show that this more complex view of how equity ownership evolves is integral to understanding trends in economic dynamism.

JEL classification: G15, G23, G32, G34.

Keywords: Equity financing, IPO, listing gap, M&A, private capital, economic dynamism.

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1. Introduction

It is now well-documented that many major economies have witnessed a decline in the number of publicly-traded companies over the last two decades, and evidence shows that the decline has been driven primarily by fewer initial public offerings (IPOs).¹ This trend is concerning given the crucial role that publicly-listed firms play in job creation and economic growth. Historically, public markets have been viewed as a platform for innovative companies to secure financing, roll out productivity-enhancing technologies, and evolve into large stable firms that account for a large share of economic activity. Thus, the downward trend in IPOs prompts critical questions about the vitality of developed economies. For example, is the observed decrease in IPOs a symptom of diminishing economic dynamism?² Likewise, is the decline in the number of public companies not just a loss of new firms but also representative of a contraction in the number of firms with transformative potential? Despite the importance of these issues, their causes and implications remain unclear due to a lack of comprehensive research on both the drivers of firms' decisions to go public and the alternatives to public ownership. In this paper, I conduct a comprehensive examination of ownership structures for both private and public firms in the United Kingdom and carefully examine transitions in ownership structure, including IPOs, to understand what equity ownership can tell us about broader issues of firm growth, capital formation, and economic dynamism.

Figure 1 illustrates the lifecycle for typical firms in the economy. Most firms are small “mom-and-pop” subsistence firms such as single-outlet retail shops that grow slowly, if at all, over their lives (gray line in panel (a)). A small number of independent private firms have significant growth potential. Some of these grow organically into mid-sized companies without significant outside equity investment (orange line in panel (a)). But the most important firms, those with transformative growth opportunities, typically require substantial outside capital during the early parts of their lives to realize their potential (purple line in panel (a)). This capital could come from private investors, public markets, or even other companies that acquire and grow them using the acquiring firms' capital base as depicted in panel (b) of Figure 1. Consequently, unpacking the decline in IPOs requires a nuanced understanding of the role they play in equity ownership structure and the capital formation process. For example, are IPOs primarily growth catalysts for burgeoning firms raising new

¹See Doidge, Karolyi, and Stulz (2017) and Kahle and Stulz (2017) discussions on the decline in listed firms and Ewens and Farre-Mensa (2020) on the IPO decline.

²See Calvino, Criscuolo, and Verlhac (2020) and Decker, Haltiwanger, Jarmin, and Miranda (2014) for discussions on the decline in economic dynamism, as evidenced by reduced young firm activities and lower rates of labor reallocation.

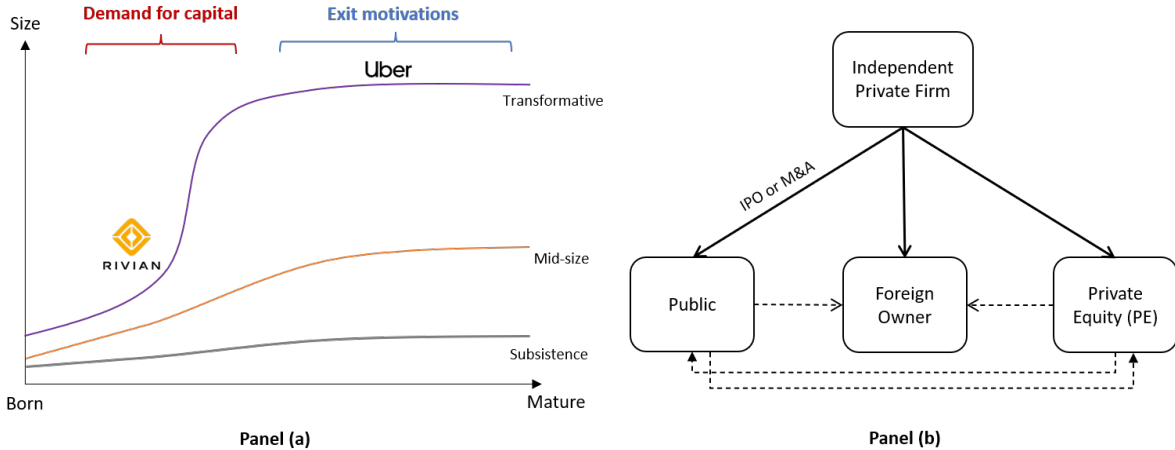


Fig. 1. Motivations and Alternatives of Ownership Transition.

investment capital such as the electric auto-manufacturer Rivian, or do IPOs serve mainly as an exit mechanism for shareholders in “eligible” firms that have become sufficiently attractive to public-market investors to conduct a successful IPO such as Uber (panel (a) of Figure 1)? These two alternatives are of course not mutually exclusive and could change over time, but they do suggest different types of firms could opt for a public listing, along with distinct post-IPO characteristics. Consider if IPOs are largely an exit mechanism, then the decline in IPOs could stem from shifts in exit strategies of owners of private companies or a shrinking pool of eligible private firms. In fact, the literature highlights a puzzling contradiction: the decline in IPOs occurs despite an uptick in the number of eligible firms.³ Conversely, if IPOs are geared towards fostering firm growth, their decline could be a red flag signaling a decline in economic vitality. Fewer firms tapping into public markets for growth capital might indicate fewer emerging startups with transformative potential. As I will demonstrate later, a dominant fraction of going-public transitions is driven by the capital needs of high-growth young firms and going public unleashes a surge in capital expenditure leading to substantial growth in revenue and market share.

Yet, the concern about declining IPOs also hinges on the availability and evolution of alternative financing options. As already illustrated in Figure 1, firms starting as independent private entities have various alternatives to end up as publicly traded, including intermediate investment by private equity funds and acquisition by a domestic or foreign publicly-traded company (M&A)—in addition to a traditional IPO. Each option has its pros and cons contingent on a firm’s specific characteristics and shaped by shareholder preferences and institutional factors. Firms should opt for the ownership structure that best aligns

³See Doidge et al. (2017) and Chemmanur, He, Ren, and Shu (2020) for discussions on diverging trends observed in the number of publicly listed companies and eligible firms classified on size or productivity.

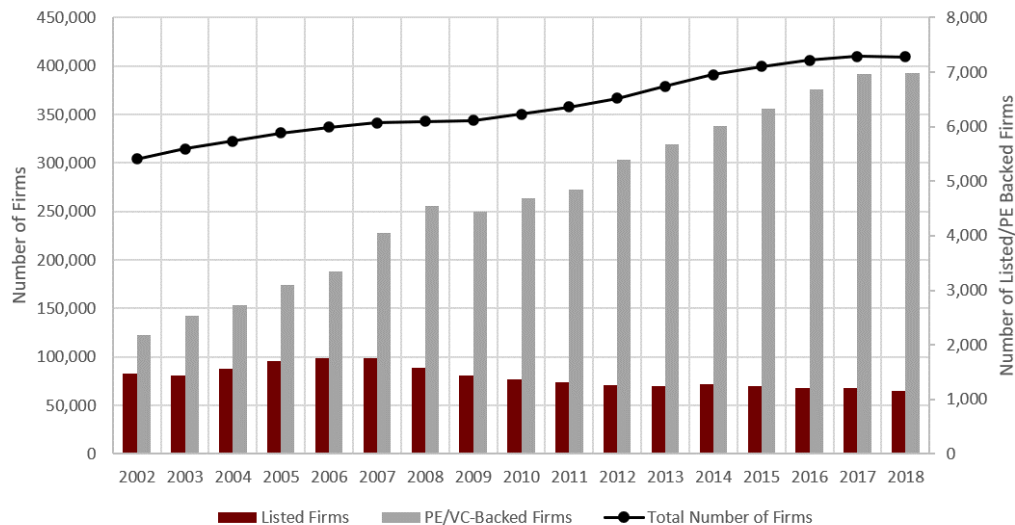


Fig. 2. Evolution of Number of PE/VC Backed Firms.

with their specific capital and operational requirements. Furthermore, firms can in theory navigate between ownership states at different life stages to accommodate their evolving needs, creating a multifaceted system of ownership transitions. Trends in IPOs and other transitions can thus be seen as a shifting equilibrium within this system, molded by the composition of firms with diverse capital demand and operational preferences, as well as by the evolving landscape of these competing ownership structures—especially in regard to capital accessibility and managerial expertise. In fact, the decline in IPOs is accompanied by a surge in private capital supply over the last two decades⁴. Consistent with these trends, Figure 2 shows that the number of UK firms backed by private capital has nearly tripled since 2003 while the number of independent private firms has only grown about 25%.⁵

Understanding the dynamics of equity ownership is crucial not only for decoding financial market trends, but also for understanding the roles that various ownership transitions play in facilitating growth of transformative startups. However, thorough analysis has been challenged by data limitations for private firms; for example, there is no comprehensive database of private firms in the United States. Most existing research has centered on public markets, which, although important, offer a narrow and shrinking view of the broader landscape, especially considering that most firms are private and most transitions do not involve IPOs.⁶ To fill this gap, I assemble a unique panel dataset of UK firms utilizing

⁴See Brown, Dompé, and Kenyon (2022) for growing private capital supply evidenced by the growing number of funds and the increasing amounts of dry powder. See Ewens and Farre-Mensa (2020) for discussions on how the deregulation of securities laws has led to an increased supply of private capital to late-stage startups, resulting in a new equilibrium where fewer startups go public.

⁵A detailed discussion of the UK data is provided in the next section.

⁶Empirical studies on post-IPO behaviors (Arikan and Stulz (2016) and Holmstrom and Tirole (1993))

the Orbis database as well as other sources.⁷ This dataset provides a longitudinal view of the evolving ownership structures and financial performance across both public and private firms. Importantly, the UK serves as a good setting for this study given its status as a major economy with deep public and private capital markets.⁸ This novel dataset lays the groundwork for understanding the dynamics underpinning the equilibrium in the ownership transition system. Specifically, it unlocks the potential of answering why a particular type of firm opts for a specific ownership structure at a certain developmental phase, as well as what unique economic value is added by the chosen investment vehicles.

In this paper, I take a first step toward this broader research agenda by providing an in-depth overview of the ownership transition system. I outline a wide variety of transitions and examine the determinants influencing a firm’s choice of ownership structure. My analysis reveals several key insights. First, the transitions to public listing and private equity (PE) backing are primarily driven by the capital demand arising from growth, especially among young firms. This is evident from their higher revenue growth pre-transition as well as subsequent capital expenditures that fuel further growth in revenue and market share. I document that about 70% of IPOs involve firms under 10 years old, a demographic that is shrinking in the UK (and the US). This decline accounts for roughly 25% of the drop in UK IPOs since their 2007 peak. Yet, this trend is only part of the story for transformational startups; results from the analysis confirm anecdotal evidence that such firms are increasingly financed by PE funds.⁹ In contrast to IPOs and PE transitions, M&A transitions serve more as exit strategies than mechanisms to meet capital demands. This is supported by divergent characteristics observed pre-transition and suggests that acquisitions may provide higher valuations by pricing in potential synergies, especially for firms with an uncertain standalone future. Despite not being predominantly driven by capital needs, acquisitions are still the

show that public markets facilitate the growth of young firms by enabling stocks to be used as currency for acquisitions and compensation. Empirical research is sparse on drivers of going public decision using pre-IPO characteristics: Pagano, Panetta, and Zingales (1998) covers Italian private firms, Aslan and Kumar (2011) looks at UK private firms, Chemmanur, He, and Nandy (2009) examines a US manufacturing firm sample derived from proprietary data. Brau and Fawcett (2006) and Bancel and Mittoo (2009) surveyed CFOs from publicly-listed companies for motivations of going public. See Chemmanur and Fulghieri (1999), Clementi (2002) and Maksimovic and Pichler (2001) for theoretical insights into the drivers of going public.

⁷The UK’s Companies Act mandates that all Incorporated companies register and file annual financial statements with Companies House. Bureau van Dijk collects this data from the Companies House to update the Orbis database.

⁸Currently, the UK ranks as the fifth-largest global economy and London is widely considered the second most important global financial hub after New York. The UK also stands as the second-largest global banking center and location for PE investors behind the US.

⁹Most young companies are financed by venture capital or growth equity funds though increasingly buyout funds such as Vista Equity Partners and Thoma Bravo have moved into high-growth strategies. Despite the diversity of ownership strategies, I look at all private equity owners together in the main analysis. In Section 6, I examine venture capital and buyout investments separately.

most prevalent transitions among high-growth firms. Especially notable is a significant increase in cross-border M&A activity, particularly as exit strategies for PE-backed firms.

I begin my detailed empirical analysis with annual snapshots from 2003 to 2018 capturing ownership structures of all qualifying firms in the UK economy.¹⁰ Using a dataset that combines Orbis ownership information with other sources, I classify firms each year into one of four ownership categories: privately owned, PE-backed, publicly listed, or subsidiary.¹¹ This comprehensive dataset enables both the analysis of firm distribution across different ownership types and the tracking of their migration over time. The UK economy hosts an average of 356,418 privately-owned independent firms annually, growing from 310,622 in 2003 to 401,287 in 2018. An average of 16,642 firms transition out of this state each year with 65% of them being dissolved. Of those remaining, 81% become subsidiaries of other companies, 19% secure PE backing, and about 1% go public. The number of going public transitions plunges from an annual average of 125 pre-2007 to just 26 post-2007, contributing to the reduction in publicly-listed firms. In contrast, the number of PE-backed firms jumps from 2,541 in 2003 to 6,980 in 2018. Each year, about 20% of PE-backed firms transition to another ownership type which is consistent with an average 5-year holding period for private capital funds. Among these, 23% dissolve—much lower than their independently-owned counterparts. Of the remainder, only 2% go public, and the time trend mirrors broader IPO trends with the average annual number of PE-backed IPOs declining from 29 pre-2007 to 11 post-2007. By far the largest number of transitions for PE-backed companies (82%) come from M&A transitions. Notably, 37% of the acquired PE-backed firms are bought by another PE-backed entity (a so-called “secondary” PE sale or in some instances a roll-up transaction by another PE firm). Additionally, cross-border M&A activity within this group grew massively from just 5% in 2003 to 22% in 2018.

To delve deeper into the fundamental role of these transitions, I examine the characteristics of independent firms across ownership types. Unsurprisingly, privately owned firms are the smallest, followed by PE-backed firms, with publicly-listed firms being the largest. A core question is whether this size hierarchy is a product of a size-based selection process or if ownership transitions themselves contribute to firm growth. Leveraging the unique qualities of the dataset in providing comprehensive financial histories before and after each transition, I document that although firms transitioning to public listing or PE-backing start off larger

¹⁰So-called “micro” entities which are mostly subsistence firms are unlikely to undergo ownership transitions and are thus excluded from the dataset. A firm is included if it meets at least one of the following criteria in any financial statement: total assets over £1 million, operating revenue exceeding £250,000, or more than 10 employees. Financial sector firms such as banks and insurance companies are also excluded from this study.

¹¹Other sources include Zephyr, CompuStat Global, SDC, Burgiss, Stepstone, Preqin, and VentureXpert. Details are in Section 2.

than those staying privately owned, the majority of this size difference can be attributed to post-transition growth. In addition, these firms exhibit higher rates of pre-transition revenue growth and capital investment, indicating that they are poised for expansion. In contrast to the “exit motivation” hypothesis where existing shareholders are simply seeking to cash out, I observe a surge in capital expenditure following these transitions which leads to accelerated revenue growth and market share expansion. This underscores the role of both public markets and private capital as primary drivers of growth and why many PE funds retain ownership stakes in public companies for years after an IPO (Jenkinson, Jones, and Rauch (2023)). Conversely, firms undergoing M&A transitions exhibit significantly lower pre-transition capital expenditures compared to other privately owned firms. This suggests that the primary motivation behind most M&A activities is not capital demand, but more likely as an exit strategy for current shareholders (and of course likely to be valuable for acquirers because of strategic objectives).

Examining transitions from PE-backed firms to public listings offers a unique perspective on the multifaceted motivations and outcomes of going public. Given that private capital funds typically operate within a predefined investment horizon, this context offers a nuanced lens through which to examine the dynamics of going public when some shareholders are inevitably planning to exit. This complexity is particularly relevant because the reasons for going public often fall on a spectrum—from being primarily exit-driven to being motivated by capital needs—and this becomes even more intricate when shareholders have divergent objectives. My results reveal that, even in the presence of exit-focused shareholders, the primary motivation for going public is a demand for capital to facilitate growth. This is evidenced by consistent metrics in capital investment and revenue growth, closely paralleling those observed during transitions to public ownership by independent private companies. Another intriguing facet of transitions of PE-back firms involves firms reverting to independent private ownership. Interestingly, these firms exhibit pre-transition characteristics similar to those for M&A transitions, such as significantly lower capital investment compared to their counterparts that remain in their current ownership state. This presents a unique opportunity to examine the post-transition behaviors of firms with these initial characteristics, shedding light on the nature M&A activity which typically lacks such post-transition data (because the firms are fully absorbed by the acquirer). In contrast to firms going public, capital investment and revenue growth of these firms trend down post-transition while market share and size remain static. These findings not only enrich our understanding of transitions to private ownership but also enhance our perspective on what M&A activity entails.

The last two decades have witnessed PE funding emerging as a significant alternative to traditional funding from banks and public equity and debt markets. Yet PE ownership is

inherently transitory, designed to eventually lead to a more permanent ownership structure through a public listing or acquisition. My dataset offers insights into this phenomenon by comparing the trajectories of firms transitioning from PE-backed to those from independently privately-owned. The data show that private capital uniquely enables firms to overcome early capital constraints and mature more before opting for a public listing or acquisition. Specifically, PE-backed firms are three times as large and have about 40% higher market share before making an ownership transition compared to independent privately-owned firms making the same transitions. This suggests that PE-backing functions as an “experimental” state for many firms, allowing them to develop to a more mature stage and make more informed (and presumably value-enhancing) decisions based on a clearer outlook for the firm’s long-run prospects. In a landscape without available private capital, firms would likely need to resort to public markets sooner to alleviate initial capital constraints. If they later discover that they do not have a sustainable standalone future, these firms would then either fail or be acquired. Thus, the rise in private capital allows firms to test and refine strategies that improve their market viability in an ownership setting better aligned with the needs of younger, smaller firms. The result is a potential filtering effect on the public markets, where companies that are not suited for a standalone future are acquired before even going public. This in turn could be a contributing factor to the observed decline in IPO activity. While more research is needed to confirm these hypotheses, I present preliminary results suggesting that companies that do go public via a PE-backed route tend to be of higher quality as demonstrated by stronger post-transition growth in size and market share.

To further clarify the role of ownership transitions, I examine these shifts from the perspective of factors affecting firms’ choices. I propose that ownership transitions occur either because of capital constraints or shareholders contemplating an exit, which could be a self-initiated trade sale (e.g., shopped M&A transition) or an unsolicited buyout offer. Different ownership structures present trade-offs depending on the specific motive and the firm characteristics. Public markets provide the best access to capital but are structured in a way that generally favors larger firms. This predicts that firms with greater capital needs and larger sizes are more likely to go public. Private capital is better suited for small and mid-sized firms with more moderate capital needs, especially given the added value of expertise that often accompanies such investments. Exits, whether initiated by current shareholders or an external party, usually require an offered valuation to exceed the firm’s standalone future value perceived by its current shareholder. Public market investors are return-driven and evaluate companies based on their standalone prospects, making them less likely to offer valuations higher than what the firm would generate on its own. This makes the public market less likely to be a suitable exit, especially for firms with uncertain futures. Strategic

acquisitions, however, may offer higher valuations than the firm's standalone worth, factoring in potential synergies, and making it a more viable exit route. Also, some PE buyout funds specialize in reviving or repositioning firms with unclear futures, making them a better exit option than going public. I validated these hypotheses using a Cox-proportional hazard model, incorporating firm-, industry-, and market-level variables. The findings are consistent with the hypothesis: larger firms with high capital needs are more likely to go public. The effects are significant but less pronounced in transitioning to PE-backing. Firms with low capital needs and growth are more likely to be acquired. These multivariate results align with the univariate observations, confirming that transitions to being publicly listed and PE-backed are primarily to meet capital demand and enable growth, whereas M&A serves primarily as an exit strategy for firms with more mature operations (needing less capital).

My analysis confirms through multiple means that the primary driver for firms going public is the need for external capital to sustain growth, which cannot be met through internally generated cash flows. The data shows that young firms are particularly active in fixed asset investments, while simultaneously operating with lower revenue and profit margins, thereby making external funding necessary. Consistently, firms under 10 years old constitute 70% of IPOs, a stable trend observed across three 4-year intervals: 2004-2007, 2010-2013, and 2014-2017. However, the percentage of this age group in the overall economy has declined from 60% to below 40% during this period. I demonstrate that this decrease in young firms accounts for 25% of the decline in IPOs.

The outlook for transformational startups is not as pessimistic as the drop in IPOs may suggest. My findings reveal that firms with high capital investment rates are increasingly securing PE funding. Specifically, among firms with an annual investment rate higher than 30%, the proportion obtaining PE funding has risen from 1.6% to 1.9%, offsetting the decline in IPO rates from 0.36% to 0.07%. Furthermore, while firms are generally aging, the number engaging in high-investment activities has not decreased. An increasing number of companies older than 10 years have annual capital investment rates above 30%. However, these older firms generally have better internal cash flow and higher debt capacities, and though they invest at a high rate, their need to go public is low. I also conduct a capital reallocation analysis, analogous to the job reallocation studies in Decker et al. (2014) and Decker, Haltiwanger, Jarmin, and Miranda (2016). Unlike the declining rates and skewness seen in job reallocation, capital reallocation rates have remained relatively stable, fluctuating only cyclically. This suggests that the capital market is not experiencing the same drastic shifts as the labor market.

This research contributes to three veins of literature. First, it offers novel insights into the field of corporate governance by being the first to empirically examine the factors influencing

private firms’ decisions between public and private equity.¹² Building on the framework set forth by Jensen and Meckling (1976), the theoretical literature highlights a key trade-off: public markets provide unparalleled access to capital but come with heightened costs, primarily from agency problems linked to dispersed ownership.¹³ Hence, while both options can alleviate firms’ capital constraints, public markets are more advantageous only when the demand for capital is high enough to outweigh the associated costs. Despite extensive theoretical discussion, empirical studies that focus specifically on the choices of private firms are rare.¹⁴ Existing research largely centers on the decisions of public firms, either to remain public or transition to private equity.¹⁵ While insightful, these studies miss the core trade-offs emphasized in theory. Specifically, the decision to move from public to private is not dictated by capital needs, unlike the choices made by private firms. The scale that firms achieve after going public creates a barrier to reverting to private status. With the large investment required for such a transition, a mere absence of capital need is not sufficient to trigger this change; other compelling considerations are required. This paper is the first to empirically examine the decisions of private firms regarding public versus private equity, supporting the theoretical claim that a higher capital demand is a primary driver for choosing the public market.

Second, this paper adds to the growing discussion concerning the decline in IPOs. Existing literature posits two main explanations: intensified product market competition leading to more M&A activity¹⁶ and a rising supply of private capital.¹⁷ My research deepens the understanding of the latter by delivering the first systematic analysis of the growing prevalence of PE-backed firms over 16 years, especially among high growth young firms, demonstrating a shift in the equity financing landscape. Furthermore, my research sheds light on private

¹²See Shleifer and Vishny (1997) for a comprehensive survey.

¹³See Stulz (2020) and Ewens and Farre-Mensa (2022) for detail reviews. In essence, public markets, while providing unrivaled capital access, incur explicit costs due to regulatory compliance (Ewens, Xiao, and Xu (2021), Stulz (2020)) and listing fees, as well as agency costs (Jensen (1986), Jensen (1989)), complexity in information environments (Bhattacharya and Ritter (1983), Ferreira, Manso, and Silva (2012), Doidge, Kahle, Karolyi, and Stulz (2018)), and reduced management autonomy (Boot, Gopalan, and Thakor (2006), Boot, Gopalan, and Thakor (2008), Rahmandad, Henderson, and Repenning (2018)). These elements render public ownership inefficient for certain firms, where private equity becomes a more suitable alternative (Brown et al. (2022)).

¹⁴Some empirical studies examine drivers of going public decisions for private firms (Aslan and Kumar (2011) Chemmanur et al. (2009)) and choices between going public versus being acquired (Poulsen and Stegemoller (2008), Chemmanur, He, He, and Nandy (2018), Bowen, Frésard, and Hoberg (2023)). However, none of these studies consider PE-backed options as an alternative for growth capital.

¹⁵See Guo, Hotchkiss, and Song (2011), Aslan and Kumar (2011), and Bharath and Dittmar (2010).

¹⁶Gao, Ritter, and Zhu (2013) propose the economic of scope hypothesis posits that the advantages of selling out to a larger organization have increased relative to the benefits of operating as an independent firm. Chemmanur et al. (2020) find empirical evidence supporting intensified product market competition.

¹⁷See Ewens and Farre-Mensa (2022) and Brown et al. (2022) for evolution of private equity market. Ewens and Farre-Mensa (2020) examine the impact of deregulation of securities laws in the US.

equity’s role in the ownership transition system. Beyond merely serving as a substitute for public capital, it exerts a long-term filtering effect on the public market, which could both reduce the number of IPOs and potentially enhance the overall quality of firms going public. Additionally, I identify a decline in entrepreneurial activities as another factor contributing to the drop in IPOs. This is significant because 70% of IPOs in the UK are from firms under 10 years old—the very demographic that is shrinking.

Finally, this paper augments the economic dynamism literature by exploring the impacts of reduced entrepreneurial activities on capital reallocation, which is important but largely unexplored. My findings show that while entrepreneurial activities play a crucial role in capital formation, their decline does not affect the rate of capital reallocation as severely as labor.¹⁸ Moreover, high investment activities are increasingly prevalent among mature firms.

The remainder of the paper is structured as follows: Section 2 outlines the methodology employed to construct the dataset, which tracks both firm ownership transitions and associated financial metrics. Section 3 offers a holistic overview of the evolving landscape of corporate equity ownership. Section 4 provides a univariate analysis examining the characteristics of firms both before and after various ownership transitions. Section 5 delves into a multivariate analysis of the factors influencing firms’ choices of ownership structure. Section 6 explores the relationship between trends in economic dynamism and capital markets, discussing their impact on capital allocation. Finally, Section 7 concludes.

2. Data

This section outlines the creation of the novel firm-level database, weaving together financial characteristics and ownership structures by integrating the Orbis database with other data sources, including CompuStat, SDC, Burgiss, and Stepstone. This dataset tracks both firm financials and ownership states throughout their lifecycle, marking pivotal events like IPOs, PE investments, and M&As as transitions in ownership states. Additionally, I discuss the handling of consolidating firm histories, sample selection criteria, and variable constructions to aid in the subsequent studies.

2.1. Overview

The primary dataset used in this study is the Orbis database provided by Bureau Van Dijk. This database offers comprehensive coverage of UK firms spanning from 2003 to 2018,

¹⁸See extensive discussions on labor market impacts in Decker et al. (2014), Decker et al. (2016), Haltiwanger, Jarmin, Kulick, and Miranda (2017), Pugsley and Şahin (2018), Decker, Haltiwanger, Jarmin, and Miranda (2020).

thanks to the UK Companies Act of 1967. This act mandates UK firms to disclose their financial statements to the Companies House on an annual basis, ensuring extensive coverage of both public and private firms of all sizes.¹⁹ Bureau Van Dijk aggregates and processes this information to form a database encompassing firm financials and other entity level characteristics such as incorporation dates, listing status and industry classification.²⁰ The comprehensive nature of the Orbis Global database has been validated in Kalemli-Ozcan, Sørensen, Villegas-Sánchez, Volosovych, and Yeşiltaş (2023) and it has been used in previous research, such as Aslan and Kumar (2011), Haque (2023).

Moreover, Orbis offers annual shareholder information which, when integrated with other data sources, enables the identification of a firm’s ownership status in any given year throughout its lifecycle.²¹ For example, my dataset can flag a firm as PE-backed from the inception of the PE funds as shareholders until their exit, a capability not previously available in the literature. The longitudinal view of both ownership status and financial metrics allows for pinpointing the ownership changes for a firm, along with the corresponding financial characteristics at the time of transition. This unlocks the potential of examining the factors that influence firms’ choices of ownership states and assessing the impact of these transitions on their growth trajectories.

While Orbis provides comprehensive coverage for other countries that impose similar disclosure mandates, this study starts with focusing on the UK for several reasons. As the world’s fifth-largest economy, the UK boasts a highly developed financial market with London being the second-largest financial hub closely following New York. Additionally, the UK ranks second to the US in active private capital endeavors. Moreover, it mirrors notable financial market trends seen in the US and other developed nations, such as the decline in publicly listed companies coupled with a surge in private equity. These collective factors position the UK as an excellent backdrop for studying the ownership transition system, with insights that could carry broader implications.

2.2. *Ownership States*

I categorize firms into four major ownership states as follows:

1. Private independent firms without PE backing (privately-owned),

¹⁹Small businesses, as defined by the Companies House, are exempt from certain reporting regulations. However, they are still required to file simplified statements, and additional details can be found in the Appendix B.1

²⁰Bureau Van Dijk retrieves UK data from information providers like Vistra, which collects data from the Companies House.

²¹Refer to Section 2.2 for in-depth discussions on the additional data sources and the methodology used to sort firms into four distinct ownership categories.

2. Private independent firms with PE or VC funds as shareholders (PE-backed),
3. Publicly traded firms (publicly-listed),
4. Subsidiaries operating under another non-financial firm (subsidiary).

The term “independent firms” is used to cover both standalone firms and ultimate controlling entities of corporate groups. Both of these two categories enjoy decision-making autonomy and are obligated by law to produce financial statements that represent the entire organization. Each firm’s ownership state is monitored annually and any change in this state is termed an “ownership transition”. For example, if a privately-owned firm undergoes an IPO, its ownership state will transition from privately-owned in the year prior to the IPO to publicly-listed in the IPO year. The classification of ownership states demands intricate processing to obtain their controlling entities, private equity affiliations, and public listing status. Moreover, maintaining a consistent firm identity is crucial to ensure a comprehensive historical record, especially when encountering corporate restructurings and reverse takeovers (RTOs). The subsequent sections will elaborate on how I navigate these complexities.

The Orbis database presents data at the entity level, mixing together both independent firms and corporate groups, consisting of subsidiaries and parent companies with individual records. While this structure is advantageous for tracking acquisitions—enabling us to follow an independent firm as it transitions into a subsidiary—it necessitates further refinement to construct a firm-level dataset that avoids double-counting and assures uniform representation of ultimate controlling entities. To achieve this, I narrow down the entity-level dataset to feature only non-financial independent firms,²² which are characterized as entities without another non-financial firm serving as their ultimate controlling entity.

Independent firms are identified leveraging the Orbis ownership database, which provides data on subsidiary-shareholder relationships along with their ownership percentages for the period from 2003 to 2008. Additionally, the database reports algorithmically generated links that discern both domestic and global controlling entities.²³ Based on this information, I construct an ownership hierarchy for each firm to trace its lineage to the ultimate controlling entity.²⁴ The highest-ranking domestic non-financial entity within this hierarchy is identified as the ultimate controlling entity.²⁵ Entities falling below this ultimate controlling entity in

²²This study focuses on non-financial firms, thereby excluding banks, insurance companies, and investment funds due to their unique balance sheets. However, these financial entities do appear as shareholders of non-financial firms and are utilized in classifying ownership states.

²³By regulation, UK firms are mandated to report the domestic ultimate owners to the Companies House.

²⁴Refer to Appendix B.2.2 for more technical details.

²⁵If only financial entities occupy higher ranks in the ownership chain, they are considered as the ultimate controlling entity, as these are often investment-based relationships rather than parent-subsidiary connections. For instance, Softbank was a controlling shareholder of ARM but is generally considered as an investor rather than a parent company.

the hierarchy are classified as subsidiaries and thus excluded from the firm-level dataset. Should a new entity emerge higher in the ownership hierarchy, the firm originally classified as independent becomes a subsidiary, triggering the recording of an M&A transition. This methodology further enables the categorization of such transitions according to the type of acquiring entity—be it a PE-backed firm, a publicly-listed company, a domestic private firm, or a foreign entity.

Furthermore, an important procedural step is taken to ensure a consistent identity for firms engaged in RTOs or corporate restructuring. For RTOs, the acquiring firm’s financial panel is terminated upon deal completion, and subsequent financial data are integrated into the target firm’s history, recognizing that the “true entity” post-deal is the target firm. Additionally, corporate restructurings—often motivated by reasons like risk management—can create multiple legal entities over time that essentially represent a single firm. This is particularly likely for companies undergoing significant corporate events related to equity financing. For example, some companies establish a new holding company just before going public, which can distort the firm’s observed age at IPO. To address this, manual checks are performed on firms that go public at ages 1 or 2 to identify any pre-existing entities from restructuring events. Additionally, I develop an algorithm to automatically identify such cases and append the histories of newly formed firms to their largest subsidiary existing at the time the new firm was established.²⁶

An independent private firm is classified as PE-backed if it has PE or VC funds among its direct or second-tier shareholders.²⁷ The initial crucial step is to accurately identify PE and VC funds. While Orbis does classify some entities as such, it ambiguously labeled many others as general investment funds. To rectify this, I compile an exhaustive list of PE and VC fund names from reputable sources including Burgiss, Stepstone, Preqin, and VentureXpert. I then employ a name-matching algorithm to identify PE and VC funds from those ambiguously classified in Orbis. This algorithm specifically utilizes the exact names of the funds, as opposed to the names of their general partner firms (GPs).²⁸ This matching process is conducted on a global scale, not limiting itself to UK-based funds but also including those from other countries. This is important given that UK firms frequently secure

²⁶This is an intricate identification process, for more details, please refer to Appendix B.3.1.

²⁷Second-tier shareholders are entities who own shares in a firm’s direct shareholders. Further details and methodology are elaborated in Appendix B.2.4. Importantly, this approach does not require majority ownership for a firm to be considered PE-backed, as many firms receive substantial equity investment without ceding control.

²⁸This approach serves two purposes: First, it enhances the accuracy of identifying PE-backed firms because Orbis lists shareholders with legal entity information, specifying specific investment funds rather than their overarching GPs. For example, a firm’s shareholders often appear as “KKR European Fund III” rather than “KKR”, its general partner. Second, using exact fund names ensures a more conservative and precise matching, as these names are generally more unique than those of GPs.

investment from foreign PE or VC funds. The final dataset is comprehensive, comprising 67,002 unique PE and VC investments collected over a 16-year period. The algorithm’s use of exact fund names also effectively reduces the risk of false positive.²⁹

A firm is classified as publicly-listed from the year it goes public until its delisting year, restricted to firms on major stock exchanges.³⁰ Orbis provides IPO and delisting dates along with the exchanges for firms that have been publicly listed, but with limited coverage. To fill this gap, I integrate deal-level data from Zephyr and SDC Platinum, along with Compustat Global, to precisely identify listing periods. Furthermore, I enrich the dataset with reasons of delisting, captured through subsequent ownership status and corroborated with Zephyr and SDC Platinum deal data.³¹ Delisting reasons are categorized into four groups: being acquired, PE-backed delisting, dissolution, or transition to privately-owned state for other reasons.

2.3. Sample Selection

This study is limited to non-financial firms and employs two distinct filters to create separate sample sets for different analytical emphases. To capture the broader economic landscape while excluding non-operational or stagnant firms, a light filter is used to include firms that, between 2003 and 2018, have at least one financial statement meeting any of these criteria: total assets over £1 million, revenue above £250,000, or staff size exceeding 10. This results in 760,861 unique firms, of which 42,912 have been PE-backed and 2,976 have been publicly listed. Within this subset, 19,957 firms have undergone restructuring or RTO, and nearly 20% (603) of the listed firms have experienced such events at least once. The annual breakdown of firm counts is in Panel (a) of Table 1, and analyses in Sections 3 and 6 are based on this sample.

[Insert Table 1 near here]

For both univariate (Section 4) and multivariate analyses (Section 5), a stringent filter is applied to enhance financial data reliability and to minimize the overrepresentation of ‘mom-and-pop’ shops among privately-owned firms, which could otherwise distort the comparative analysis.³² Specifically, I include firms that have at least one financial statement satisfy two

²⁹For a more detailed discussion, refer to Appendix B.2.4.

³⁰These include the London Stock Exchange - Main Market (LSE), London Stock Exchange - Alternative Investment Market (AIM), NASDAQ, New York Stock Exchange (NYSE), Australian Securities Exchange (ASX), Toronto Stock Exchange (TSX), and Hong Kong Stock Exchange (HKEX).

³¹More details can be found in Appendix B.2.5.

³²According to the Companies Act 2006, firms are classified into four categories—micro, small, medium-sized, and large—based on total assets, turnover, and employee count. Micro and small entities have the

of the following criteria, in alignment with the Companies House medium-firm classification: an operating revenue of £6.5 million, total assets amounting to £3.26 million, or a staff of 50 employees.³³ This results in a dataset comprising 155,846 unique firms, of which 24,991 have been PE-backed and 2,807 have been publicly listed. The annual distribution of these firms is Panel (b) of Table 1. For robustness, a peer-matching approach is used to construct another sample by selecting three privately-owned firms of similar size within the same industry for each PE/VC-backed firm.³⁴

2.4. Variable Construction

Two key variables are used to measure firm size: Market Share and Size (logarithm of total assets). Market Share offers additional insights into a firm’s viability in the product market and is calculated as the fraction of the firm’s operating revenue within its 4-digit Industry Classification Benchmark (ICB) category. I employ various proxies to gauge a firm’s capital demand, namely Fixed Assets Growth, Revenue Growth, and Log CAPEX. Fixed Assets Growth indicates adjustments in productive assets like plants and equipment, while Log CAPEX quantifies the annual increases in fixed assets but focuses solely on new investments. Revenue Growth, the annual percentage change in operating revenue, is expected to correlate with a firm’s product market opportunities and subsequent scaling efforts required. Other metrics—Profit Margin, Leverage, and Current Ratio—are used to assess a firm’s operational and cash flow conditions. Age is calculated as the years elapsed since the date of incorporation.³⁵ All firm-level metrics are winsorized at the 1st and 99th percentiles to minimize the impact of data errors and outliers.

As discussed in Ewens and Farre-Mensa (2022) and Stulz (2020), various industry characteristics are anticipated to affect a firm’s ownership structure choices, including operational risk, market concentration, innovation and investment behavior, and investor interest in public markets. To account for these factors, I construct time-varying industry-level control variables. Operational risk is quantified using the industry mean of firm-level revenue volatility (Industry Risk) at the 6-digit ICB level. Market concentration is measured by the proportion of total industry revenue attributable to the top three firms (Industry Concentration), assessed at the 4-digit ICB level. To evaluate innovation and investment behavior,

option to file simplified financial statements and are exempt from auditing requirements. For a detailed discussion, refer to Appendix B.3.2.

³³These criteria serve as the baseline for all subsequent discussions concerning medium-and large-sized firms in the paper. Due to gaps in employee data, additional procedures were incorporated in the filtering process. See Appendix B.3.2 for further information.

³⁴Implementation details in Appendix B.3.2. Results are discussed in Appendix C.

³⁵For firms with multiple incorporation dates due to restructuring or RTOs, the incorporation date of the earliest entity is used.

I employ data from the UK’s Office for National Statistics, formulating two variables: R&D Expenditure (R&D Exp.) and Intangible Assets Growth, both at the 4-digit ICB level. Lastly, I compute the industry market-to-book ratio (Industry Market to Book) at the 2-digit ICB level using data from Compustat Global, serving as a proxy for financial market conditions. Additional details on the formulation and processing of these variables can be found in Appendix B.3.3.

3. The Evolution of Corporate Equity Ownership

Companies often start as small, privately-held entities, relying on equity financing alongside profit reinvestment and debt financing to fuel their expansion. As they evolve, changes in equity ownership may arise also to facilitate the exit strategies of entrepreneurs or other early-stage investors. Various potential avenues for these changes exist, many of which can be mapped to transitions between different ownership states as outlined in Section 2.2. These include securing VC backing (or selling a controlling stake to a PE sponsor), going public, or being acquired by another company. The changing capital needs and governance preferences at different stages of development propel firms through the complex system of ownership transitions as depicted in Figure 2.2. This section provides a holistic view of the evolving landscape of corporate equity ownership, tracing how firms migrate across ownership states over time, thereby allowing for the examination of several financial market trends within a unified framework that considers all major alternatives.

I begin by outlining the changes in the composition of independent firms across three ownership states: privately-owned, PE-backed and publicly-listed, as detailed in Panel (a) of Table 1. Spanning from 2003 to 2018, the data uncovers several noteworthy trends. First, independent firms showed a consistent rise, growing from 314,608 in 2003 to 409,427 in 2018, with two years of small decreases following the 2008 Global Financial Crisis (GFC). Conversely, the number of publicly-listed firms reached its peak of 1,765 in 2006, dropping over 34% to 1,160 by 2018.³⁶ The number of PE-backed firms started with 2,541 in 2006, slightly higher than the publicly-listed counterparts, the gap widened as this population nearly tripled over the sample period. Switching the focus to medium- and large-sized firms in Panel (b) of Table 1, I examine the trends specifically among “exit-eligible” firms. The trends mirror the conclusion of Doidge et al. (2017) for the US, that the decline in publicly-listed firms is not because of fewer eligible firms but rather to a reduced propensity to be

³⁶Ibikunle, Khakimova, and Rzayev (2020) present consistent trend in the UK but without limit to non-financial firms. For a broader context on the decline in publicly-listed firms in other developed economies, see Doidge et al. (2017) and Brown et al. (2022).

listed. Specifically, the number of independent firms within this subgroup grew by 47% from 42,596 in 2003 to 61,852 in 2018. The proportion of these firms that are publicly listed declined sharply from a peak of 3.15% in 2006 to 1.68% in 2018. In contrast, the proportion of PE-backed firms increased from 2.47% in 2003 to 4.18% in 2018, surpassing the publicly listed firms in 2007.

Beneath the observed trends in these ownership states lies a complex web of underlying dynamics. Each year, firms within a given state may transition to another state or cease to exist, while new firms may emerge or enter from other states. These transitions fluctuate over time and fundamentally shape the observed population trends within each state. The interconnected nature of these states – where one serves as a destination for firms leaving another – makes the transition dynamics in one state create a ripple effect on the population of others. For example, the public market is a potential destination for privately-owned or PE-backed firms contemplating a transition.³⁷ If fewer firms in these preparatory states seek to transition, or if those considering transitions opt for other routes, this will naturally result in fewer new listings. With delistings remaining constant, the overall number of publicly-listed firms will decrease. To provide a more nuanced understanding of the financial market trends previously discussed, I examine the transition dynamics across each ownership state.

[Insert Figure 3 near here]

Figure 3 displays the transition dynamics of privately-owned firms. The black line shows a steady increase in these firms from 310,525 to 389,594, constituting 98% of independent firms. The bars indicate the yearly transitions out of this state, color-coded by the destination. On average, 16,642 firms (4.8%) transition out annually, with the transition rate higher at 5.5% pre-GFC, falling to 4.3% afterward. Given the consistent increase in the total number of firms, the reduced transition rate not only implies fewer exits but also indicates fewer new entries. This slower churning of firms leads to an aging firm population (discussed further in Section 6). A majority of these transitions are dissolutions occurring at an average annual rate of 3.1%. This rate spiked to over 4% in 2008 and 2009 reflecting the economic turmoil during the GFC. Of the remaining transitions, acquisitions dominate (81%), driven predominantly by private firms. Notably, M&A activity was more vibrant up to 2007 but declined post-GFC, showing signs of recovery after 2012. The rest of the transitions are to PE-backed or going public. For more clarity, Panel (b) of Figure 3 zooms into these two transitions, as a percentage of total non-dissolution transitions. Here, the fraction of transitioning to PE-backed has risen from around 12% in 2003 to about 20% recently, while the

³⁷IPOs may also arise from spin-offs from existing public companies, but these represent a minor fraction of transitions in the UK data, which is not considered in this paper

proportion opting for public listings fell from as high as nearly 3% in 2005 to under 0.5% in recent years.

[Insert Figure 4 near here]

The rise of privately-owned firms transitioning to PE-backed fuels the uninterrupted growth in PE-backed firms, as depicted in Panel (a) of Figure 4. The red bars highlight a 38% increase in the annual inflow of new PE-backed firms, with spikes in 2008 and 2009. The fixed investment horizon of 3-7 years for PE and VC funds contributes to the dynamic nature of this state, reflected by an average 20% annual exit rate – much higher than among privately-owned firms. This rate, however, has declined from around 24% to 18% recently, indicating longer holding periods. Despite this downtrend in exit rates, the sheer increase in the population of PE-backed firms leads to more annual exits. Panel (b) breaks down these exits, color-coded by type. IPOs, though traditionally viewed as successful exits for PE and VC investment, constitute only 2% of all exits on average. In line with the broader trend of fewer IPOs, the annual number of PE-backed IPOs has fallen from 29 pre-2007 to 11 post-2007. Unlike privately-owned firms, where dissolution dominates, acquisition serves as the main exit route for PE-backed firms, with dissolution accounting for 23% of total exits. Further decomposition of acquisitions by type of acquirer reveals that, although the percentage of M&As among all exits has remained relatively stable, the composition has shifted significantly. Early in the sample period, domestic M&As were the norm; however, there has been a noticeable rise in cross-border M&As as well as acquisitions by other PE-backed firms, which include roll-up transactions and so-called “secondary” PE sales. Finally, the remaining 12% of transitions involve firms reverting back to privately-owned status.

[Insert Figure 5 near here]

The reduced inclination of both privately-owned and PE-backed firms to go public after 2007 has led to a significant decline in new listings, as depicted in Panel (a) of Figure 5. This downturn has resulted in new listings being eclipsed by delistings over an extended period, despite a lower post-GFC delisting rate, as shown in Panel (b) of Figure 5. These observations indicate that the decline in publicly-listed firms is primarily driven by a reduction in new listings rather than an increase in delistings, echoing patterns observed in the US.³⁸ Delisting rates have remained relatively stable, averaging 9% annually. This stability contrasts with the more dynamic nature of PE-backed firms; the publicly-listed state is inherently more persistent as investors can exit through the liquid secondary market without altering the company’s ownership structure. Delisting rates spiked at 13% during the

³⁸See Ewens et al. (2021) and Stulz (2020).

GFC but subsequently stabilized at around 7%. Panel (c) of Figure 5 categorizes delistings by their post-delisting statuses. On average, approximately 55% of delistings stem from strategic acquisitions or PE buyouts, while the remainder are due to dissolution or other factors.³⁹ Cyclical fluctuations are evident in the composition of delistings, with over half of the heightened delistings during the GFC resulting from dissolution or other causes. The purple bars in the Figure reveal an upward trend in PE-backed delistings (take-privates), increasing from 14% in 2003 to 34% in 2019. Conversely, M&A-induced delistings have shown downward over time as well as a growing footprint of cross-border M&As, a trend also seen in PE-backed states.

This section offers a comprehensive overview of the ever-changing landscape of corporate equity ownership in the UK, framed within a unified system of ownership transitions. Several noteworthy trends emerge within this context. First, the UK has seen a decline in the number of publicly-listed firms since 2006. The data indicate that this decline is largely attributed to a decrease in new listings, which in turn originates from a reduced propensity among privately-owned and PE-backed firms to go public. Second, the burgeoning supply of private capital has introduced an important new dynamic to the system, with PE-backed options increasingly becoming the go-to choice for firms contemplating a transition, whether originating from private or public ownership. The PE-backed firms also account for a growing proportion of active transitions. Third, I document that M&A activities represent the majority of non-dissolution transitions across all three primary ownership states. Additionally, there is a rising trend of cross-border M&A activities involving both PE-backed and publicly-listed companies.

4. Graphical and Univariate Analysis

The various ownership transitions discussed in Section 3 differ considerably across multiple dimensions, as elaborated in Appendix A. Each resulting “destination state”—the condition a firm finds itself in after a transition—comes with its own unique capital and organizational framework, offering specific benefits and drawbacks for a firm’s future development. Furthermore, the valuation of a firm and the financial payoff to current shareholders also depend on this “destination state”. Such valuation is determined by the specific risk and liquidity preferences of shareholders in that state, as well as whether the firm is valued on a standalone basis or in conjunction with potential synergies. The financial payoff to the

³⁹These include voluntary and cause-based delistings, where no strategic acquirer or PE sponsor is involved. Voluntary delisting occurs when a company chooses to remove itself from public listing, whereas cause-based delisting happens when a firm fails to meet ongoing listing requirements.

current shareholders can range from a fixed one-time payment upon transition to a stream of future earnings contingent on the firm’s performance. The fluid landscape of equity ownership emerges from a complex interplay between the availability of different “destination states” and the composition of firms with diverse capital and governance needs. In this section, I focus on the primary role that distinct ownership transitions assume in a firm’s lifecycle by examining how firms differ—both cross-sectionally among those opting for different transitions and longitudinally before and after these transitions take place.

4.1. Portrait of Firms in the Primary States

For context, I first present the characteristics of firms in the three primary states of independent firms. Table 2 shows the summary statistics for firms in these ownership states.⁴⁰ Publicly-listed firms are the largest in both market share and total assets, followed by PE-backed firms, and then privately-owned firms.⁴¹ Publicly-listed firms also exhibit the highest levels of fixed asset investment and revenue growth; PE-backed firms are next, outpacing privately-owned firms. This hierarchy reflects the roles that public market and private capital fulfill in financing business growth to achieve optimal scale.

[Insert Table 2 near here]

The data also reveals that PE-backed firms are the youngest among the three categories, underscoring the prevalent role of PE financing in early-stage firms. Publicly-listed firms share the same median age as privately-owned firms, but a significantly higher mean age, skewed by the presence of some long-standing public companies. Both PE-backed and publicly-listed firms show negative mean profit margins driven by loss-making small companies (both median and revenue-weighted averages are positive). This pattern aligns with the notion that many firms in these two states are in their growth phase, generating limited revenue while facing high expenses, precisely why they seek external equity financing. In contrast, privately-owned firms exhibit positive profit margins on both mean and median terms. PE-backed firms have the highest leverage ratios (both mean and median) and exhibit a positively-skewed distribution. This pattern aligns with the typical PE strategy of using leverage to amplify returns. Publicly-listed firms have a mean leverage ratio that is 1% higher than privately-owned firms and a median that is 9% higher. This indicates that

⁴⁰The sample for this analysis employs stricter filters, as detailed in Section 2.3, to mitigate the overrepresentation of “mom-and-pop” shops among privately-owned firms and improve the reliability of financial data.

⁴¹Throughout the analysis in this section and Section 5, I group all types of private equity owners without distinguishing between venture capital and buyout investments. Recognizing that investment philosophies may differ between these two categories, I examine them separately in Appendix C.

firms opt for public listing not just for access to equity financing, but also to leverage better access to debt financing to fuel growth⁴², countering the view that companies go public to swap debt financing with equity financing.

In sum, firms that are publicly-listed or PE-backed exhibit characteristics consistent with these companies being in a phase of rapid growth with negative internally generated cash flows, thus prompting them to seek external equity financing. While these comparisons provide valuable insights into how firms differ across states, they fall short of clarifying the motivations behind transitions between these states. Specifically, it remains unclear whether firms are larger in the publicly-listed and PE-backed states due to selection based on size, or if transitioning into these states actually spurs their growth. Moreover, the data are complicated by the presence of firms that have remained static in their current state for extended periods; their present characteristics could vary significantly from those at the time of their transition. For example, average growth rates in states commonly targeted for growth-driven firms could be artificially low if companies stay in that state even after their growth rates diminish upon reaching optimal scale. To probe these questions further, I now examine the characteristics of firms transitioning between states.

4.2. Transitions from Privately-Owned State

This section examines the characteristics of firms as they transition from privately-owned state to other ownership states, including PE-backed, publicly-listed, and subsidiary states. Table 3 shows the characteristics of privately-owned firms one year before they transition. For ease of comparison, the first column lists the characteristics of firms that remain privately-owned. The ex-post columns feature the characteristics of firms in either PE/VC-backed or publicly-listed state, aligning with the statistics in Table 2. Firms that are acquired are excluded from the ex-post columns, as their financial data is no longer uniformly available following the acquisition. Thus, comparisons for acquired firms are only possible in the cross-section for the ex-ante characteristics.

Firms transitioning to publicly-listed or PE-backed states have larger average total assets and market share than those remaining private. Specifically, average total assets are 20% and 58% larger for firms moving to PE-backed and publicly-listed states, respectively. The disparity in market share is even more pronounced: 71% higher for PE-backed and four times greater for publicly-listed transitions. However, these transitioning firms' ex-ante sizes are significantly smaller than the average sizes in their respective ex-post states. For instance, firms in PE-backed state have total assets that are double the ex-ante sizes of transitioning

⁴²Discussed in more detail in Appendix A.1.

firms, while publicly-listed firms are ten times larger. These findings suggest that the size differences discussed in Section 4.1 are not merely a result of size-based selection. Rather, they indicate that firms experience considerable growth post-transition, implying that a primary motivation for these transitions is the injection of outside capital.

[Insert Table 3 near here]

In addition, firms moving to PE-backed or publicly-listed states significantly outpace their staying privately-owned counterparts in fixed asset investment and revenue growth before transitioning. Specifically, average revenue growth for firms transitioning to PE-backed state is double that of firms staying private, while for those going public, it is more than triple. The difference is even more striking in fixed asset growth: 2.5 times higher for PE-backed and five times greater for publicly-listed transitions. These results suggest firms transitioning to these states are dominated by those with greater growth potential (higher revenue growth and market share) and have substantial capital needs (higher fixed asset growth), although whether this is due to their own inclinations or investor selection is an open question. Regardless, these observations further underscore that such transitions are less about ownership transfer and more about meeting higher capital demands to fuel growth. Moreover, firms making these transitions tend to be younger and exhibit negative profit margins prior to the transition, which further suggests that these transitioning firms are generally in their early developmental phases that lack the financial maturity to generate sufficient internal funding. Meanwhile, their rapid investment and growth exert considerable cash pressure, making external financing essential.

The transitioning firms exhibit intriguing patterns when comparing their ex-ante fixed asset investment and revenue growth to the averages in the respective ex-post states. Contrary to size variables where ex-post state sizes dwarf their pre-transition sizes, both fixed asset investment and revenue growth rates are notably lower in the ex-post state than the pre-transition statistics. Clementi (2002) posits an inverted-U shaped productivity shock around IPO timing. According to this theory, IPOs are motivated by a large positive shock in productivity requiring public capital to help firms reach an efficient scale under the increased productivity. Consistent with this, my data show that firms go public during a phase featuring rapid growth and investment, likely in response to a positive productivity shock, but these rates slow down after a certain period, perhaps when the firm has reached its optimal scale, resulting in lower average in the ex-post state compared to ex-ante rates. This novel evidence indicates that these predictions also apply to firms securing private equity financing, indicating similar motives exist for firms becoming PE-backed as for going public.

[Insert Figure 6 near here]

Figure 6 validates the conjectures by visualizing firm characteristics around transitions spanning a 7-year window, from three years pre-transition to four years post-transition, and aligning the metrics relative to the time of transitions. The black lines depict the trajectories around the transition from privately-owned to publicly-listed. In alignment with Table 3, these transitioning firms are already larger in size and exhibit elevated levels of fixed asset investment and revenue growth, even three years prior to the transition. Panel (a) reveals that despite elevated levels of fixed asset investment, no marked surge is apparent prior to going public, potentially due to constraints on internal financing. A significant investment surge occurs immediately after transitioning, sustained for two years, indicating that firms are actively allocating their newly acquired capital into fixed assets. Simultaneously, as shown in Panel (b), there is an increase in revenue growth, implying that firms not only invest heavily post-transition but also excel at capitalizing on those investments for market growth. Both the pace of fixed asset investment and revenue growth drop below their pre-transition levels after the four-year mark, at a time when the firms reach a substantially larger size and market presence as shown in Panel (c) and Panel (d). These dynamics align seamlessly with the theoretical predictions discussed earlier, underscoring the central role of capital demand in driving IPOs.

These observations also highlight the fact that, although the primary motivation for firms going public is to finance growth, they seldom revert to private status once their capital needs are met, as evidenced by a slowdown in fixed asset investment. This one-side tendency suggests that the factors driving a firm's transition from private to public are not simply reversed when transitioning back from public to private. After a period of rapid growth, these firms typically attain a considerably larger size. As such, any move to revert to private ownership would necessitate a large sum of money, making it challenging to secure such capital from private investors. This implies that motivations to go private again must extend beyond a mere absence of capital needs. The asymmetry in these transitions emphasizes the importance of this paper, which focuses on an empirical analysis of the factors affecting the choice between public and private ownership from the perspective of private firms. This is an area that has been sparsely covered in existing literature, largely due to data limitations.

The orange lines capture the dynamics of firms as they transition from privately-owned to PE-backed state. These lines broadly mimic the patterns seen in firms going public, albeit at a lesser magnitude. This difference provides valuable insights into the role of private capital in a firm's lifecycle. As Clementi (2002) argues, a sufficiently large positive productivity shock is needed to justify the fixed costs associated with going public, thus it is not optimal for firms to make this transition prematurely. Private capital fills this gap by offering growth

capital at a comparatively lower fixed cost, making it easier for firms to justify taking this step during stages of moderate productivity growth.⁴³ Consistent with this, the data show that firms choosing to go public are, on average, larger and have higher growth rates compared to those that opt for PE-backed investment. Despite these differences in magnitude, the similar dynamics suggest that firms transitioning to the PE-backed state also primarily consist of firms with high growth potential, necessitating capital investment to realize this potential. This holds true even with a subset of these firms that are acquired by PE buyout funds, which traditionally have not follow a growth-oriented investment philosophy, thereby exerting downward pressure on the averages.

It is also interesting to examine the ex-ante characteristics of firms that are acquired. While these firms on average have a larger market share and higher revenue growth compared to those that remain privately-owned, the magnitude of these differences is not as pronounced as in firms transitioning to PE-backed or publicly-listed states. A significant point of divergence lies in fixed asset investment; prior to acquisition, these firms invest considerably less in fixed assets than their peers that continue as privately-owned entities. This pattern holds for both fixed asset growth rate and log CAPEX. Furthermore, unlike firms moving to PE-backed or publicly-listed states, those that are acquired tend to have positive profit margins, suggesting fewer cash constraints. They also have an age profile closer to the average age of privately-owned firms, indicating that acquisitions tend to occur at a broader range of a firm’s lifecycle rather than being concentrated among younger firms. Collectively, these findings imply that acquisitions are less about meeting capital needs and more often influenced by other considerations, such as founder and early-investor exit strategy or the strategic objectives of the acquiring companies. While some acquirers provide substantial capital for growth (e.g., Meta investing in Instagram), the primary drivers for acquisitions appear to lie elsewhere.

4.3. Transitions from PE-Backed State

Focusing on transitions originating from the PE-backed state offers a unique advantage: it reduces distortions arising from the overrepresentation of firms that are irrelevant for any ownership transition—a condition especially common among privately-owned firms. The time-bound nature of private equity investments, ranging from roughly 3 to 7 years, designates the PE-backed state as transitory. From the moment a firm becomes PE-backed, it

⁴³Although private equity financing may come with higher marginal costs for larger amounts, it holds an advantage at smaller scales. Unlike going public, private equity financing does not incur fixed costs such as underwriting fees, listing fees, or regulatory compliance costs. Additionally, venture capital or private equity firms often bring managerial expertise and networking supports that are especially beneficial for small young firms. For a more detailed discussion, refer to Appendix A.3

is inherently oriented towards a transition, making it an ideal environment to investigate the determinants behind various ownership changes. Moreover, the presence of private capital funds as shareholders with an intent to exit provides a unique lens through which to examine these transitions, especially in scenarios where shareholders might have divergent objectives. Table 4 shows the characteristics of PE-backed firms one year before they transition to another state. For comparison, the first column shows the characteristics of firms that remain PE-backed, while the last two columns feature the firms transitioning from the privately-owned state, aligning with the statistics in Table 3.

[Insert Table 4 near here]

Section 4.2 underscores that the primary role of going public is to meet a firm's capital needs and stimulate growth. Examining this in the context of PE-backed IPOs adds another layer of complexity, as PE shareholders are inherently oriented towards exiting. In fact, the motivations for going public can be multifaceted, spanning a continuum between raising capital and facilitating a planned exit for shareholders. This makes it particularly relevant to explore how going public shapes firms, especially when exit-focused shareholders, like PE funds, are involved. Table 4 shows that firms transitioning to publicly-listed state are significantly larger and exhibit growth rates that far outpace average PE-backed firms, which themselves are already larger and growing faster than typical privately-owned firms. This indicates that, within the realm of PE-backed firms, those that go public are the ones with substantial growth potential and robust market presence. Additionally, these transitioning firms are significantly younger with lower profit margins, suggesting that they are in an early growth phase without sufficient internal funding for growth. These observations closely align with earlier findings regarding the transition from private to public ownership, emphasizing that the primary driver for going public is to fulfill the capital demands of high-potential firms. The evidence is more compelling given that these comparisons are made to a highly relevant control group, in which all firms have been pre-selected by PE funds with institutional interests and are inherently oriented towards a transition.

[Insert Figure 7 near here]

Figure 7 reinforces these findings. The black line in Panel (a) shows an inverted-U shaped pattern for fixed assets investment, mirroring the dynamic observed in firms transitioning from the privately-owned state. Panel (b) reveals a slightly different trajectory of revenue growth with higher rates pre-transition, highlighting how PE-backed firms leverage private capital to fuel early growth. Despite substantial pre-transition market share, these firms see significant post-transition growth in size and market share, as shown in Panel (c) and Panel

(d). These dynamics closely parallel those seen in firms transitioning from private-owned to public, emphasizing that fulfilling capital needs and promoting growth remain key drivers for going public, even when exit-focused shareholders are involved. The robust post-transition growth may help explain why many PE funds retain ownership stakes in these firms for many years after an IPO (Jenkinson et al. (2023)).

Next, I examine the transition of firms from PE-backed to privately-owned. Unlike other types of transitions, where the “destination states” could potentially offer improved capital access, this particular transition is already recognized for transitioning from a state with better capital access to one with less. This provides a benchmark for evaluating other transitions: similarities in dynamics with this transition would weaken the argument that capital needs are the primary driver, while contrasting patterns would strengthen it. As shown in Table 4, firms that revert to the privately-owned state have ex-ante characteristics starkly different from those going public. Specifically, these firms are considerably smaller in both size and market share, and also display a significantly lower revenue growth rate compared to average PE-backed firms. Most notably, the average fixed asset investment among these transitioning firms is not only smaller but is actually negative. These observations imply that these firms face limited growth opportunities requiring significant investment, thus lowering their need for external financing. This finding aligns with the initial notion that this transition represents a move from a state with superior capital access to one with more limited options.

The green line in Figure 7 reinforces these findings, showing that during the transition to the privately-owned state, both fixed asset investment and revenue growth rate stay stagnant, hovering near zero. Consequently, there is negligible growth in either market share or total assets. This behavior sharply contrasts with the dynamics observed in firms that go public or secure private capital financing which are primarily driven by capital demands. In contrast, PE-backed firms acquired by strategic buyers exhibit comparable pre-transition characteristics to those reverting to privately-owned state, except with a slightly larger size. While post-transition data for acquired firms is lacking, the similarities in pre-transition features lend credence to our earlier assertion that acquisitions are less about fulfilling capital needs and more frequently motivated by other considerations.

Over the two last decades, private capital has emerged as a substantial alternative to conventional financing avenues like bank loans and public equity. This dynamic prompts the question of what role PE-backed investment serves in a firm’s development is making it an increasingly preferred option. To address this, I compare the ex-ante characteristics of firms transitioning from PE-backed to privately-owned. Results presented in the last two columns of Table 4 reveal that PE-backed firms are more mature when making transition decisions.

Specifically, their pre-transition size is over threefold larger and their market share is 40% higher. The branching point occurs at this more mature stage, with subsequent decisions driven by the updated growth potential and capital needs: firms with better growth prospects go public, while others may either be acquired or revert to being privately-owned.

When these findings are integrated with the initial characteristics observed upon entering the PE-backed state, a compelling narrative emerges: firms enter this transitory phase at an early stage, yet exhibit superior growth potential compared to the average privately-owned firms. This phase is utilized to leverage private capital for business concept validation and market viability assessment. As these firms mature, their choice of a permanent ownership state is guided by a refined grasp of their long-term prospects. This aligns with the discussions in Section 4.2, where private capital fills the gap of alleviating the capital constraints arising from moderate productivity increases insufficient to offset the fixed cost of going public, as discussed in Clementi (2002). Furthermore, the critical juncture—deciding whether to go public—occurs after PE-backed firms have acquired better foresight about their long-term sustainability. This positions the PE-backed state as a natural filtering mechanism for the public market. Some firms, initially contemplating an IPO, recognize during the PE-backed state that they lack a sustainable future, and consequently either fail or are acquired before reaching the publicly-listed state. This filtering effect could contribute to the decline in IPOs. However, those that do proceed to public listing are likely of higher quality, which is supported by Figure 7 showing that firms with PE-backed IPOs tend to develop into larger entities with a substantially higher market presence after going public.

In summary, this section examines the dynamics of firms during various types of ownership transitions, leveraging a unique longitudinal dataset for multidimensional comparisons. My analysis reveals that the primary driver of going public, even in the presence of exit-focused shareholders, is to facilitate capital demand and spur growth. The firm dynamics around transition align with the theoretical predictions made in Clementi (2002). My findings further support the theory in that a sufficiently large positive productivity shock is critical for justifying the fixed costs associated with going public. Private capital serves to bridge the gap at smaller scales during early stages, as demonstrated by comparisons between firms opting to go public and those obtaining private capital financing, as well as between firms going public from privately-owned state and those from PE-backed state. These comparisons also imply that PE-backed state functions as a filtering mechanism for the public market, potentially contributing to the decline in IPOs. Unlike these transitions, which are primarily motivated by capital demand, the driving forces behind other transitions—including acquisitions or reverting to privately-owned from a PE-backed state—are not predominantly oriented around capital requirements.

5. Multivariate Analysis

Section 4 establishes that transitioning to publicly-listed or PE-backed primarily serves to secure capital for growth, whereas other types of transitions are typically motivated by other considerations. This section expands on these findings by exploring how current shareholders make these transition decisions, guided by their objective to maximize the value of their stake in the firm. I introduce a “Hidden Utility Framework” to formalize the trade-offs involved in choosing a transition pathway. These trade-offs are contingent on a firm’s unique characteristics, leading to strategic choices ranging from relinquishing control for immediate higher valuation to retaining an equity stake while securing growth capital via the most beneficial route for long-term value. The framework yields specific hypotheses about how the likelihood of opting for each transition pathway varies among firms with different characteristics. These hypotheses are then empirically tested using a Cox Proportional-Hazards Model in a multivariate setting, incorporating essential industry-level and market variables.

5.1. *The Hidden Utility Framework and Hypotheses*

Each transition pathway differs in term of the valuation and payoff structure during the transaction, as well as the capital and organizational framework offered by the resulting state. These features are not only different from one another but also are differently valued by shareholders depending on what they want from the transition as well as the specific capital and governance needs of the firm. For example, although the public market generally offers the deepest capital market, firms will not find this equally valuable. Firms with high capital demands find it particularly beneficial, whereas firms with more limited capital needs (or growth opportunities) may not prioritize it as highly. In theory, existing shareholders will steer the firm towards the ownership state that best aligns with its specific needs for capital and governance at the specific developmental stage, while all at the lowest cost, which in turn maximizes their own value. Consequently, transitions occur when the firm’s current state no longer offers the best value. To capture this decision-making process, I propose a *Hidden Utility Framework* that describes how shareholders assess a non-observable utility for each ownership state, with the state offering the highest utility becoming the evident choice.

Let $U_{s,i,t}$ denote the total utility that shareholders of firm i assigned to state s , based on the information available at time t . As outlined in Appendix A, this utility can be broken down into four main components, expressed as:

$$U_{s,i,t} = U_{s,i,t}^C + U_{s,i,t}^V + U_{s,i,t}^O + U_{s,i,t}^F. \quad (1)$$

In this equation, the superscripts C , V , O , and F represent the four critical factors that influence the choice of ownership state: access to external capital (C), valuation of the firm (V), operational efficiency and fixed costs (O), and the value of future exit (F).⁴⁴ The equity ownership state, denoted by s , can assume values from $\{prvt, pe, pblc, sbdr\}$, where $prvt$ represents privately-owned, pe represents PE-backed, $pblc$ represents publicly-listed, and $sbdr$ represents becoming a subsidiary through strategic acquisition. For firms in an initial state $s' \in \{prvt, pe, pblc\}$ at time $t - 1$,⁴⁵ the ownership state s^* is selected for the period t if $U_{s^*,i,t} > U_{s,i,t}$ for all $s \neq s^*$.⁴⁶ Hence, a transition in ownership state happens if $s' \neq s^*$.

Public markets generally offer the most scalable access to external capital due to their broad and diverse investor base. This advantage becomes especially significant at large sums, as the marginal cost tends to be lower. Private capital, on the other hand, can address moderate capital needs but may face limitations and escalating marginal costs as the financial needs grow. Strategic acquirers can offer capital, but their capability to do so depends on their own access to capital and internal competition among divisions. Privately-owned firms are the most constrained in this regard, primarily relying on owners' funds or internally generated capital. However, the utility a firm gains from access to external capital is bounded by its specific needs. For instance, if a firm is currently at a stage where its capital requirements exceed the capacity of privately-owned state but can be easily met by lower-tier options like venture capital, then $U_{pe,i,t}^C > U_{prvt,i,t}^C$. The public market, although capable of offering more, does not provide additional utility in that regard. Hence, $U_{pblc,i,t}^C = U_{pe,i,t}^C$. On the other hand, if capital needs are hard to meet affordably elsewhere, then $U_{pblc,i,t} > U_{s,i,t}$ for all $s \neq pblc$, giving going public a significant edge among all choices.

The component $U_{s,i,t}^V$ is directly tied to the valuation that firm i could potentially attain if transitioning to state s . This valuation, while fluctuating with market conditions, is essentially the present value of the firm's projected future cash flows, discounted by the expected rate of return demanded by external investors or strategic acquirers. Importantly, shareholders in different "destination states" have distinct expectations for returns and divergent projections for future cash flows. The building blocks of the expected return are the risk-free

⁴⁴A detailed discussion of each factor can be found in Appendix A, with specific sections devoted to access to external capital (Appendix A.1), valuation of the firm (Appendix A.2), operational efficiency and fixed costs (Appendix A.3), and the value of future exit (Appendix A.4.)

⁴⁵Subsidiaries ($sbdr$) are assumed not to be able to make decisions about their own ownership state anymore. In this research, the subsidiary state is considered an absorbing state. Once a firm becomes a subsidiary, it is no longer in the set of independent firms and further potential changes such as spin-offs and carve-outs are not tracked.

⁴⁶This inequality accounts for the costs of a transition captured in $U_{s,i,t}^O$ and embeds the feasibility of a transition, including the availability of a potential buyer or investor, in $U_{s,i,t}^V$. A firm with no buyers or investors would have a valuation close to zero, making $U_{s,i,t}^V$ highly negative.

return, a risk premium, and a liquidity premium. Public markets generally offer advantages in terms of risk and liquidity premiums due to their infrastructure, which facilitates risk diversification and liquid share trading. However, these benefits are not universally applicable and are subject to firm-specific factors. For instance, firms with volatile profit streams will benefit more from the lower risk premiums in public markets. On the other hand, smaller firms, often with low stock liquidity, may still face higher liquidity premiums even in the public market.

Projecting future cash flows often requires specialized expertise, especially for early-stage firms with limited balance sheet assets and sparse track records.⁴⁷ Public investors, who usually diversify their portfolios, often lack the specialized knowledge needed to accurately assess the future prospects of these firms, especially those with unconventional business models. This knowledge gap can lead to higher perception of risk and potential undervaluation. In contrast, PE general partners and strategic acquirers, who have industry-specific knowledge and substantial ownership stakes, are better positioned for a more equitable assessment. Moreover, public market valuations are generally based on standalone future cash flows and are often discounted at a higher required rate of return compared to internal rate, leading to lower valuations than in privately-owned state ($U_{pblc,i,t}^V < U_{prvt,i,t}^V$). Strategic acquirers, however, factor in potential synergies, leading to valuations that likely exceed privately-owned values ($U_{sldr,i,t}^V > U_{prvt,i,t}^V$), a critical consideration for current owners contemplating a sale. Additionally, PE investors, especially buyout funds, may project higher future cash flows due to their expertise in positioning firms with highly uncertain futures.

The component $U_{s,i,t}^O$ relates to the costs and benefits associated with transitioning to or operating in a specific ownership state s , including considerations of corporate governance. $U_{pblc,i,t}^O$ is generally the lowest among ownership states due to not only higher explicit costs, such as listing fees and regulatory compliance, but also governance challenges like agency problems and short-termism. Conversely, $U_{prvt,i,t}^O$ is typically higher because these issues are less prevalent. Therefore, to rationalize going public, a firm must have capital constraints significant enough to produce a substantial gap between the firm's optimal and actual scale; this would make $U_{pblc,i,t}^C$ sufficiently high to counterbalance the negatives of $U_{pblc,i,t}^O$. On the other hand, $U_{pe,i,t}^O$ is generally less disadvantageous compared to $U_{pblc,i,t}^O$. Though it has its own set of costs, these are often mitigated by benefits from PE funds, such as networking and managerial expertise. This lowers the scale gap needed to justify a transition, making it a feasible option for firms with moderate capital requirements. Being acquired also has its merits, like resource access from the parent company, but these come at the expense of

⁴⁷Intangible assets in development, which have not yet generated revenue, are not reflected on the balance sheet.

potentially better exit opportunities in the future, a trade-off that becomes more difficult to justify for high-growth firms, as detailed next.

The component $U_{s,i,t}^F$ represents the utility firm i derives from the potential future financial payoff when selecting state s . The utility depends on what each destination state offers as well as the firm’s future outlook. If a firm moves to the state $s = sbdr$, control rights pass to the acquiring entity, and future exit value becomes irrelevant, setting $U_{sbdr,i,t}^F = 0$. In contrast, other ownership states offer the flexibility for the current owner to hold onto their state, with the possibility of a future exit. In these states, $U_{s,i,t}^F \neq 0$. The value of this utility, however, depends on the firm’s prospects for survival and growth. For a firm with strong potential, $U_{s,i,t}^F$ becomes considerable, driven by a robust stream of future profits and heightened expectations of a lucrative exit down the line. This substantial $U_{s,i,t}^F$ makes it less likely to be outweighed by an acquiring firm’s purchase price that could result in a $U_{sbdr,i,t}^V$ large enough to offset the loss of $U_{s,i,t}^F$. On the flip side, for firms with less promising futures, $U_{s,i,t}^F$ may be minimal, making an immediate sale more advantageous.

[Insert Figure 8 near here]

Figure 8 visualizes the hidden utility framework, depicting how shareholders’ perceived utility shifts across four ownership states based on a firm’s future outlook. In this framework, ownership transitions are triggered by either capital constraints or exit considerations, which could manifest as a self initiated trade sale (e.g., shopped M&A transition) or an unsolicited buyout offer. For firms with limited growth yet stable operations, $U_{prvt,i,t}$ tends to exceed other states due to lower transitioning and governance costs (i.e. higher $U_{prvt,i,t}^O$) and a generally lower return on internal versus external capital (i.e. higher $U_{prvt,i,t}^V$). As growth potential rises, the capital available under the privately-owned state may become inadequate, rendering states—more appealing. The decision to go public hinges on the scale of capital required and the firm’s attractiveness to public market investors. On the other end of the spectrum, firms with poor future prospects typically have minimal capital needs and limited future exit value (i.e. $U_{s,i,t}^C$ and $U_{s,i,t}^F$ are low across all states s). For these firms, ownership transitions are primarily driven by exit motivations. The standalone valuation for such firms is generally low (i.e. $U_{prvt,i,t}^V$ and $U_{pblc,i,t}^V$ are low), making acquisitions or PE buyouts favorable options due to the higher $U_{s,i,t}^V$ derived from potential synergies or turnaround scenarios. These suggest the following testable hypotheses:

Hypothesis 1. *Going public is generally more advantageous for firms with high capital demands, whereas it is less beneficial for firms that are solely pursuing a financial exit. Consequently, the difference in the propensity to go public between high-capital-demand and*

low-capital-demand firms is expected to be positive. Additionally, larger firms are more likely to go public compared to smaller ones due to higher values of $U_{pblc,i,t}^V$ and $U_{pblc,i,t}^O$.

Hypothesis 2. *Transitioning to a PE-backed state is primarily a better option for firms seeking growth capital that have moderate capital demands and smaller sizes, while it also offers more favorable terms for financial exits compared to the public market. This leads to the prediction that the difference in propensity to transition to a PE-backed state between high-capital-demand and low-capital-demand firms will be positive but smaller than the difference observed for transitioning to a publicly-listed state.*

Hypothesis 3. *Becoming a subsidiary is a more preferable choice for firms with uncertain futures thus driven by exit motives, as opposed to firms with high potential seeking growth capital. This predicts that the difference in propensity to become a subsidiary between high-growth-potential and low-growth-potential firms will exhibit a negative sign. This is in contrast to the transitions described in 1 and 2.*

5.2. Cox Proportional-Hazards Model

I test these hypotheses using a Cox proportional-hazards model that incorporates important industry-level and market variables which could influence transition decisions by affecting $U_{s,i,t}^V$. The model is specified as

$$h_{i,j}(t) = h^0(t) \exp(Y_{i,j}(t)) \quad (2)$$

where $Y_{i,j}(t)$ is defined as:

$$Y_{i,j}(t) = \mu_j + \beta'_i X_i(t-1) + \gamma'_j M_j(t-1). \quad (3)$$

In this model, i indexes the firm and j indexes the industry. $X_i(t)$ denotes firm-level characteristics at time t , serving as proxies for firm size, capital demands and operational features. Here, μ_j is the industry fixed effect. $M_j(t)$ encapsulates time-varying variables at the industry level, including cash flow risks, competitive landscape, investment in R&D and other intangible assets, and the Market-to-Book Ratio measuring the public market's valuation of the industry.

[Insert Table 5 near here]

The estimated parameters β_i and γ_i quantify the variation in hazard rates for specific transitions between firms with different characteristics. These figures tie to the hypotheses

on firm decision-making. The first three columns of Table 5 present estimates for transitions originating from the privately-owned state. Aligned with Hypothesis 1, high capital demands, as indicated by elevated fixed asset investment and low profit margins, lead to a 15% increase in the hazard rate of going public for each one standard deviation (1σ) change. Younger firms have a 40% higher hazard rate when their Log Age is one standard deviation smaller. Affirming the notion that larger firms are more favorably positioned in public markets, a 1σ increase in Log Total Assets boosts the hazard rate by 87%. Additionally, a 1σ rise in the Market-to Book Ratio or Industry Risk elevates the hazard rate by 20%. These findings are consistent with the discussion of $U_{pblc,i,t}^V$ which underscores the advantage of risk diversification in public markets, particularly for firms in industries with volatile cash flows.

In line with Hypothesis 2, results reveal that variables serving as proxies for capital demand, age, and size exert the same directional impact on the hazard rate for transitioning to PE-backed state as they do for going public but with a smaller magnitude. For example, a 1σ rise in fixed asset growth leads to a 5% increase in the hazard rate, while a rise in Log Total Assets boosts the hazard rate by 36%. These results align with the notion that smaller firms with moderate capital needs find it more viable to transition to PE-backed status than to go public. Additionally, these results are consistent with PE buyout funds offering (on average) better value ($U_{s,i,t}^V$) relative to public markets for financial exits. Correspondingly, consistent with Hypothesis 3, these variables show an opposite directional impact on the hazard rate of transitioning to the subsidiary state. For example, a 1σ increase in fixed asset growth reduces the hazard rate by 9%, while profit margins exert a positive impact. These outcomes are in line with the perspective that transitions to the subsidiary state are more dominated by exit considerations, as opposed to capital demands. Interestingly, industry-level variables exhibit divergent impacts on the hazard of transitioning to either PE-backed or subsidiary states. Specifically, transitioning to the PE-backed state is more likely in industries with lower cash flow risk and higher market concentration, while the opposite is true for transitioning to the subsidiary state. Additionally, the Market-to-Book Ratio influences these transitions differently: it increases the hazard rate of transitioning to the PE-backed state but has a negative impact on transitioning to the subsidiary state.

I confirm these findings using a multinomial logistic model which focuses on firms that actually undergo a transition. The transition to the subsidiary state serves as the base case. Instead of using firm characteristics lagged by one year as explanatory variables, this analysis employs the average characteristics over the three years leading up to the transition. The results, presented in the last two columns of Table 5, corroborate the results from the Cox proportional-hazards model. Notably, variables representing capital demand, age and size are significant and directionally consistent in influencing the odds of forms going public or

transitioning to the PE-backed state, while the impact is smaller for PE-backed transition compared to going public.

[Insert Table 6 near here]

PE-backed firms are deliberately selected into this state by private capital funds for their potential to yield high returns upon subsequent state transitions. This selection mechanism creates a group of firms that share similar starting points in terms of potential, while their trajectory may diverge over time. These unique characteristics make PE-backed firms an ideal subject for *de facto* peer analysis aimed at understanding the factors that drive different state transitions. Table 5 presents estimates for transitions originating from the PE-backed state. In line with observations in Table 6, the variables representing capital demand and size exert a significant positive impact on the hazard rate for going public while age exerts a significant negative impact. For example, a 1σ rise in fixed assets growth predicts a 13% higher hazard rate for going public, while the increase in Log Total Assets doubles the hazard rate. As with transitions from privately-owned states, both Market-to-Book Ratio and industry cashflow risk increase the hazard rate of going public by around 30% per one standard deviation change. These findings further validate Hypothesis 1 within a sample of highly relevant firms, underscoring that transitioning to a publicly listed state is particularly advantageous for firms with larger sizes and higher capital demands.

A consistent pattern also holds for transitions to the subsidiary state; higher capital demand significantly reduces the hazard rate, supporting Hypothesis 3. For transitions from the PE-backed state to the privately-owned state, the coefficient shows an opposite sign compared to its reverse direction. Specifically, indicators of high capital demand—such as younger age, substantial investment in fixed assets, and low profit margins—lower the hazard rate for this transition. This observation is consistent with the understanding that the PE-backed state has better access to capital than the privately-owned state, supporting Hypothesis 1. The multinomial logit model validates these findings using the transition to the subsidiary state as the base case. Moreover, the model provides insights into the comparisons between transitioning to a privately-owned state versus a subsidiary state. Although neither transition is primarily driven by capital demand, older age and lower profit margins increase the odds of reverting to the privately-owned state against being acquired. As the former is likely an undesirable outcome for PE investors, the higher odds among older firms consistent with the observation of “winners exit early” documented in Lopez-de Silanes, Phalippou, and Gottschalg (2015).

In this section, I introduce a “Hidden Utility Framework” to articulate the heterogeneity in trade-offs faced by firms with different characteristics when choosing a transition pathway.

This framework yields specific hypotheses about how the likelihood of opting for particular transition pathways may differ among firms with varying attributes. The estimated Cox proportional-hazard model and the multinomial logistic model show consistent results with the predictions outlined in the hypotheses. These findings underscore the importance of capital demand in driving transitions to publicly-listed or PE-backed states, while suggesting differing roles of public and private capital in facilitating firms at distinct developmental stages. On the other hand, transition to the privately-owned state or being acquired is primarily motivated by exit considerations. Additionally, the results reveal evidence of market timing behavior in firms’ decisions to go public, as well as the benefits offered by public markets in risk diversification.

6. Economic Dynamism

Findings from earlier sections establish that the primary role of going public is to fulfill a firm’s capital needs and unleash its growth potential. Seen through a macroeconomic lens, this is an integral part of a broader market mechanism that reallocates production factors—namely labor and capital—towards more efficient uses. This reallocation process defines the lifecycle of firms, influencing their formation, growth, contraction, and eventual dissolution. Financial tools, like IPOs or private capital investments, come into play when firms encounter growth opportunities but are constrained by capital limitations, acting as conduits that facilitate capital allocation. While earlier sections focus on the changing landscape of these financial conduits and their interplay, it is crucial to recognize that trends in ownership transitions can also be shaped by shifts in capital reallocation dynamics. In this section, I delve into these evolving dynamics in the UK economy and offer insights into what prevailing trends in financial markets, including the decline in IPOs, imply about broader economic trends.

6.1. *Young Firm Population and Declining IPOs*

As discussed already, most major economies have seen a decline in publicly-listed companies over the last 25 years. Existing literature finds it particularly puzzling given the uptick in the number of “eligible” firms based on size (e.g. Doidge et al. (2017)) or productivity (e.g. Chemmanur et al. (2020)). However, the findings in Section 4 show that transitioning to publicly-listed is not merely a size-based selection process. Instead, the central motivation for a dominant fraction of IPOs is the demand for external capital. Therefore, the subset of firms with higher demand for external capital is more relevant for understanding the IPO

trends than merely looking at the population of “eligible” firms. For example, even if a family-owned business is large enough to meet listing requirements but has stable cash flow and no growth ambitions, it is unlikely to go public.

[Insert Figure 9 near here]

Figure 9 depicts the mean, 10th, and 90th percentiles of fixed asset growth rates for firms of different ages, conditional on their survival. This analysis parallels the job creation by age analysis discussed in Decker et al. (2014). A similar trend to that of job creation is observed: fixed asset growth rates decline monotonically as firms age, underscoring that firms experience rapid growth and require significant capital investment in their early years. Importantly, the black line in Figure 9 shows that these periods of elevated capital investment coincide with phases of lower revenue, making them more inclined to seek external financing options, such as going public or securing private capital investments. In fact, the findings in Section 5 indicate that a 1 σ decrease in Log Age increases the hazard rate by 40% and 30% for going public and transitioning to a PE-backed state, respectively.

[Insert Figure 10 near here]

Panel (a) of Figure 10 shows the secular trend in the demographics of firms in the UK economy. Despite an increase in the overall number of firms, the number of young firms⁴⁸ has declined 20% from its peak and the proportion of young firms relative to the total has decreased from around 60% to 40%. Panel (b) further elucidates that this decline in young firms is a lagged consequence of a decreasing number of startups. The net increase in the total number of firms is actually characterized by a lower churn rate of firms—the decline in the number of new firms is offset by an even larger reduction in number of firms exiting, as detailed in Section 4.2. This has resulted in an increasingly older population of firms.

[Insert Figure 11 near here]

Considering the prominence of young firms among IPOs, the demographic shift toward fewer young firms places downward pressure on IPO occurrences. As noted already, about 70% of IPOs in the UK involve firms that are younger than 10 years old. Panel (a) of Figure 11 demonstrates that this ratio has remained stable across three distinct time periods: 2004-2007, 2010-2013, and 2014-2017. To measure the effect of the decline in young firms on IPO activities, I apply this 70% to the declining number of young firms to estimate the expected number of IPOs. The stacked bar in Panel (b) of Figure 11 shows the actual number of

⁴⁸Young firms are defined as firms with age less than 10 years.

IPOs (blue area) in each period versus the expected number of IPOs (blue area and orange area). The grey areas in the chart pinpoint the portion of the overall reduction in IPOs that can be explained by the decreasing number of young firms and shows that this accounts for roughly 25% of the total observed decrease in IPOs.

6.2. *Dynamics in Capital Formation and Alternative Financing Pathways*

A primary implication of the results shown in Figure 11 is that a significant fraction of the decline in IPOs remains unaccounted for. Naturally, this raises questions about the underlying economic dynamics. Could this gap suggest a worrying shortage of transformational startups amidst the already shrinking young firm populations? As highlighted in Schoar (2010), most startups are subsistence-oriented, whereas a small yet critical segment constitutes transformational new firms that represent the engine of future economic growth. Unlike subsistence startups, which often lack the ambition or potential to expand beyond their internally generated revenue stream, these transformational startups often experience an escalating demand for external capital as they scale. The unexplained decline in IPOs could thus reflect a more profound concern—fewer transformational and more subsistence startups within the decreasing pool of young firms. Alternatively, this unexplained drop could result from these transformational startups increasingly opting for alternative financing routes, such as private capital.

[Insert Table 7 near here]

[Insert Figure 12 near here]

Table 7 sheds light on the ownership transitions of young firms that exhibit a high rate of growth in fixed assets, serving as an indicator of both growth potential and the demand for external capital.⁴⁹ Interestingly, even with a dwindling population of young firms overall, those with significant investments in fixed assets experienced a recovery between 2014 and 2017, following a slump from 2010 to 2013. The percentage of such high-growth firms choosing to go public via IPOs has markedly declined in the periods following the Global Financial Crisis (GFC), plummeting from 0.36% to 0.07%. This decline, however, has been completely offset by an increase in PE-backed transitions which increased from 1.63% pre-GFC to 1.93% post-GFC. Moreover, Figure 12 reveals an increasing proportion of IPOs are backed by private equity, which implies that firms are increasingly utilizing private capital

⁴⁹A high fixed assets growth rate is defined as a rate exceeding 30%, calculated using the average of the initial and final values as the denominator.

funding as a preliminary step before going public consistent with a stronger filtering effect as discussed in Section 4. These observations imply that the landscape for transformational startups is not be as bleak as dwindling IPO numbers suggest; rather, alternative financing options are a growing share of transitions.

The final row of the table presents the percentage of young firms within this high investment category that get acquired, offering additional insights into the findings of previous sections. Although a significant majority of acquired firms do not exhibit high capital demand, the sheer volume of M&A makes this avenue still noteworthy for young firms experiencing rapid fixed asset investment. In fact, the percentage of high-growth firms being acquired exceeds the combined percentages of those opting for other forms of external financing. Previous studies, such as Gao et al. (2013) and Chemmanur et al. (2020), have posited that the decline in IPOs may be partly due to a substitution effect wherein M&A serves as an alternative means of securing external capital. However, UK data reveals a co-movement between M&A activities and IPOs among these young firms. Both IPOs and M&A activity peaked during the 2004-2007 period, reached their lowest levels between 2010 and 2013, and subsequently recovered from 2014 to 2017. This pattern suggests that the substitution effect of M&A is not the primary driver behind the decline of IPOs in the UK economy, rather, these two transition pathways appear to cater to different types of firms as discussed earlier in the paper.

[Insert Figure 13 near here]

Figure 13 depicts the annual count of firms in this high investment category, color-coded by age group. Despite an aging firm population, the count of those making substantial investments rose until 2016, except for a dip during the GFC. While younger firms have struggled to return to pre-GFC levels in this high-investment category, the count of mature firms has markedly increased. These trends align existing literature, which argues that larger, more established firms benefit more from globalization and advancements in information and communication technologies.⁵⁰ Such advantages equip mature firms with more flexibility to adapt to productivity shocks through reallocating internal resources. Conversely, younger firms confront a more challenging landscape, diminishing their chance of leapfrogging industry leaders. These insights dovetail with the broader aging trend among firms: fewer newcomers are entering the market, but existing, older firms are enjoying longer lifespans. It's important to note that while the number of high-investment firms is increasing, the age composition of these firms has significant implications for IPO activity. Mature firms, differ

⁵⁰See Gao et al. (2013), Crouzet and Eberly (2018), Calvino et al. (2020), Autor, Dorn, Katz, Patterson, and Van Reenen (2020)

from young firms more relying on external capital, in that they are more likely to possess sufficient internal cash flows to finance their investments.

6.3. *Capital Reallocation and Economic Dynamism*

Economic dynamism refers to an economy’s ability to capitalize on growth opportunities through the efficient reallocation of both labor and capital towards innovative and transformative endeavors. A key indicator of such dynamism is the “churning rate” of firms that measures the rate at which firms enter and exit the market. While the churning process itself does not directly add value, the process of more productive new firms displacing less efficient ones serves as an important mechanism for efficient reallocation. Moreover, new firms play a pivotal role in job creation (Decker et al. (2014)) and capital formation (Section 6.1). A decline in the churning rate can therefore signify a decrease in economic vitality. Existing literature has expressed concern over this trend, noting not only a decrease in job reallocation rates but also a less positively skewed distribution of job adjustments.⁵¹

Yet, there is an important missing piece of this puzzle—the potential offsetting effects associated with *capital* reallocation. As demonstrated in Dao, Das, and Koczan (2020) and Autor et al. (2020), advanced economies are shifting towards a larger capital share in GDP, a change primarily driven by technological progress. This actually represents a different form of resource reallocation that involves capital substituting for labor (e.g., through automation in the production of goods and services). Consequently, firms may be more inclined to adjust their capital investments rather than labor in response to changes in productivity.

[Insert Figure 14 near here]

[Insert Figure 15 near here]

Figure 14 investigates this hypothesis by charting the evolution of capital reallocation rates within the UK economy, analogous to the labor reallocation rate discussed in Calvino et al. (2020). Unlike the pervasive trend of declining labor reallocation, the figure reveals that capital reallocation rates in the UK recovered since 2012 from the decline post-Global Financial Crisis, before dropping again in 2016. The orange line, representing the mean fixed asset investment rate, confirms that this recovery is not driven by a high rate of capital destruction. Figure 15 portrays how the 10th and 90th percentiles of fixed asset investment have evolved over time in the UK. Contrary to trends in the labor market, the 90th percentile

⁵¹This is particularly troubling because transformational firms, typically located at the extreme right tail of this distribution, can have a disproportionate impact on economic progress.

of fixed asset investment has remained stable. These findings suggest that the decline in the churning rate of firms has not significantly impacted capital reallocation. This is consistent with Figure 13, which shows an increasing trend of established firms making significant investments.

In summary, this section adopts a more macroeconomic perspective to analyze trends in ownership transitions, capital formation, and economic dynamism. The findings indicate that the declining young firm population in the UK is a contributor to the decrease in IPOs. However, this should not be interpreted as a blanket pessimistic outlook on capital formation or economic vitality. In fact, the landscape of capital formation has fundamentally shifted so that there are an increasing number of mature firms making substantial investments and these firms do not rely as heavily on external capital as do younger firms. Moreover, young firms engaged in high-investment activities are increasingly turning to private capital for financing, which induces both a substitution effect and a filtering mechanism, contributing to the decline in IPOs. Finally, this analysis provides an overview of the capital reallocation rate in the UK economy. Contrary to the trend observed in the labor market, capital reallocation does not strictly decline but instead fluctuates over time. This suggests that the decrease in firm turnover does not similarly impact capital reallocation as it does labor reallocation.

7. Conclusion

The decline in the number of publicly listed companies is a complex phenomenon with multiple contributing factors. This paper explores various dimensions of this decline, from the decreasing frequency of IPOs to the increasing role of alternative financing options from private funds. One of the key findings is that the decline in young, high-growth firms opting for IPOs accounts for a significant portion of the overall reduction in publicly listed companies. These firms are increasingly turning to private capital, which offers more flexibility and better alignment with their growth trajectories. This shift is not necessarily indicative of reduced transformational startups but rather suggests an evolving landscape of equity financing. Additionally, cross-border M&A deals become more prevalent among PE-backed firms. This further diversifies the exit strategies available to companies, making the traditional path of going public less prevalent than before. While the decline in publicly listed companies may raise concerns, it also reflects broader shifts in the financial ecosystem. Understanding these nuances is crucial for formulating policies that support both economic dynamism and the interests of investors.

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Year	Panel (a): All Independent Firms					Panel (b): Medium and Large Firms				
	Total Number of Firms	Listed Firms	PE -Backed Firms	% Listed Firms	%PE -Backed Firms	Total Number of Firms	Listed Firms	PE -Backed Firms	% Listed Firms	%PE -Backed Firms
2003	314,608	1,445	2,541	0.46%	0.81%	42,596	1,186	1,052	2.78%	2.47%
2004	322,347	1,560	2,728	0.48%	0.85%	42,963	1,251	1,083	2.91%	2.52%
2005	330,872	1,700	3,090	0.51%	0.93%	43,758	1,345	1,171	3.07%	2.68%
2006	337,195	1,765	3,343	0.52%	0.99%	44,902	1,416	1,244	3.15%	2.77%
2007	341,255	1,755	4,057	0.51%	1.19%	46,303	1,426	1,473	3.08%	3.18%
2008	343,109	1,585	4,549	0.46%	1.33%	47,296	1,322	1,685	2.80%	3.56%
2009	344,082	1,434	4,445	0.42%	1.29%	52,969	1,203	1,706	2.27%	3.22%
2010	350,326	1,363	4,681	0.39%	1.34%	58,325	1,138	1,886	1.95%	3.23%
2011	357,912	1,316	4,854	0.37%	1.36%	59,304	1,116	1,929	1.88%	3.25%
2012	366,618	1,256	5,395	0.34%	1.47%	60,370	1,065	2,047	1.76%	3.39%
2013	379,019	1,250	5,671	0.33%	1.50%	61,275	1,059	2,167	1.73%	3.54%
2014	390,903	1,273	6,017	0.33%	1.54%	62,368	1,101	2,277	1.77%	3.65%
2015	399,463	1,237	6,333	0.31%	1.59%	63,671	1,074	2,397	1.69%	3.76%
2016	406,265	1,214	6,677	0.30%	1.64%	63,560	1,063	2,569	1.67%	4.04%
2017	410,135	1,201	6,972	0.29%	1.70%	62,324	1,060	2,629	1.70%	4.22%
2018	409,427	1,160	6,980	0.28%	1.70%	61,852	1,037	2,584	1.68%	4.18%

Table 1: Number of Independent Firms, Listed Firms and PE-Backed Firms

Panel (a) displays the number of independent firms, publicly listed firms, and PE-backed firms from 2003 to 2008 in the UK economy. It also shows the percentages of publicly listed and PE-backed firms as a percentage of the total independent firms. Panel (b) presents the same data but focuses on medium and large independent firms with operating revenue of £6.5 million or total assets amounting to £3.26 million for at least one year. Over the sample period, independent firms showed a consistent rise with two years of small decrease following 2008 Global Financial Crisis. Conversely, the number of public-listed firms reached its peak in 2006, dropping over 34% by 2018. The number of PE-backed firms nearly tripled over the same period.

	Mean			Median		
	Private	PE-Backed	Publicly Listed	Private	PE-Backed	Publicly Listed
Log Total Assets	15.2	16.1***	18.0***	15.4	16.0	17.8
Market Share	0.015%	0.032%***	0.117%***	0.003%	0.005%	0.026%
Revenue Growth	7.3%	8.1%***	8.3%***	5.2%	6.6%	6.7%
Fixed Assets Growth	5.9%	6.2%	11.1%***	0.0%	0.0%	3.7%
Log Capex	5.3	5.6***	9.2***	0.0	0.0	12.8
Age	19	14***	25***	14	10	14
Profit Margin	0.5%	-5.2%***	-5.4%***	2.9%	0.1%	2.5%
Weighted Profit Margin	6.0%	2.5%	8.8%			
Leverage	17.0%	30.8%***	18.6%***	3.0%	12.0%	12.0%
Current Ratio	2.42	2.42	2.49***	1.34	1.28	1.47
No. of Firms	105,543	12,000	2,807	105,543	12,000	2,807

Table 2: Firm Characteristics in Primary States

This table shows the mean and median characteristics of firms in the three primary ownership states of independent firms: the privately-owned state, the PE-backed state, and the publicly-listed state. The definition of the firm characteristics can be found in Section 2 and Appendix B.3.3. Statistical significance is computed against the firms in the privately-owned state, with significance levels denoted by ***, **, and * at the 1, 5, and 10 percent levels, respectively.

	Stay	Ex-ante Characteristics			Ex-post	
	Private	Acquired	PE-Backed	Public	PE-Backed	Public
Log Total Assets	15.2	15.1***	15.4***	15.7***	16.1***	18.0***
Market Share	0.015%	0.017%***	0.026%***	0.064%***	0.032%***	0.117%***
Revenue Growth	7.3%	7.8%*	14.5%***	22.2%***	8.1%***	8.3%***
Fixed Assets Growth	5.9%	2.6%***	15.3%***	29.8%***	6.2%***	11.1%***
Log Capex	5.3	4.9***	6.0***	8.7***	5.6***	9.2
Age	19	18***	12***	10***	14***	25***
Profit Margin	0.5%	0.7%	-5.1%***	-7.5%***	-5.2%	-5.4%***
Leverage	17.4%	18.4%***	25.5%***	20.4%***	30.8%***	18.6%*
Current Ratio	2.42	2.33***	2.18***	2.23*	2.42***	2.49**
No. of Firms	105,543	27,925	7,021	783	12,000	2,807

Table 3: Firm Characteristics at Transitions From Privately Owned

The three columns under Ex-ante Characteristics show the characteristics of privately-owned firms one year before they transition to the acquired state, the PE-backed state, and the public state, respectively. For ease of comparison, the first column lists the characteristics of firms that remain privately-owned. The ex-post columns feature the characteristics of firms in either PE/VC-backed or publicly-listed state, aligning with the statistics in Table 2. Firms that are acquired are excluded from the ex-post columns, as their financial data is no longer uniformly available following the acquisition and comparisons for acquired firms are only possible in the cross-section for the ex-ante characteristics. In the ex-ante characteristics columns, statistical significance is assessed against firms that remain in the privately-owned state. In the 'PE-backed' column for ex-post characteristics, statistical significance is determined by comparing firms transitioning to the PE-backed state with those that remain in the PE-backed state. Similarly, for ex-post characteristics in the 'Public' column, statistical significance is evaluated by comparing firms transitioning to the publicly-listed state with those staying in the publicly-listed state. The definition of the firm characteristics can be found in Section 2 and Appendix B.3.3.

	Stay	Ex-ante Transt. from PE-Backed			Ex-ante Transt. from Private	
	PE- Backed	Private	Acquired	Public	Acquired	Public
Log Total Assets	16.1	15.9	16.2***	17.1***	15.1***	15.7***
Market Share	0.032%	0.031%	0.032%	0.089%***	0.017%***	0.064%**
Revenue Growth	8.1%	4.2%***	2.0%***	15.8%**	7.8%***	22.2%
Fixed Assets Growth	6.2%	-2.4%***	-0.5%***	20.8%***	2.6%***	29.8%
Log Capex	5.6	4.5***	5.3**	9.2***	4.9***	8.7
Age	14	17***	16***	12***	18***	10
Profit Margin	-5.2%	-1.8%***	0.7%***	-13.7%***	0.7%	-7.5%***
Leverage	30.8%	29.9%***	25.7%***	33.0%	18.4%***	20.4%***
Current Ratio	2.42	2.47	2.22***	2.19	2.33***	2.23
No. of Firms	12,000	1,026	5,102	267	27,925	783

Table 4: Firm Characteristics at Transitions From PE-backed

The three columns under Ex-ante Characteristics show the characteristics of PE-backed firms one year before they transition to the privately-owned state, the acquired state, and the public state, respectively. For comparison, the first column shows the characteristics of firms that remain PE-backed, while the last two columns feature the firms transitioning from the privately-owned state to the same destination state, aligning with the statistics in Table 3. In the 'Ex-ante Transt. from PE-Backed' columns, statistical significance is assessed against firms that remain in the PE-backed state. In the 'Acquired' column under 'Transt. from Private', statistical significance is determined by comparing firms transitioning from the PE-backed state to the acquired state with those transitioning from the privately-owned state to the acquired state. Similarly, in the 'Public' column under 'Transt. from Private', statistical significance is evaluated by comparing firms transitioning to the publicly-listed state from the PE-backed state with those transitioning to the publicly-listed state from the privately-owned state. The definition of the firm characteristics can be found in Section 2 and Appendix B.3.3.

	Cox-Proportional Hazard Model			Multinomial Logit	
	PE-Backed	Public	Acquired	PE-Backed	Public
Log Age	0.69***	0.59***	0.72***	1	0.823***
Fixed Assets Growth	1.05***	1.15***	0.91***	1.13***	1.25***
Revenue Growth	1.06***	1.04	0.98***	1.07***	1.06
Profit Margin	0.93***	0.86***	1.08***	0.88***	0.83***
Log Total Assets	1.36***	1.87***	0.98**	1.23***	1.64***
Market Share	1	1.04***	1.02***	1.05*	1.13***
Leverage	1.18***	0.94	1.04***	1.15***	0.91*
Current Ratio	0.94***	1.05	0.98***	1	1.09
Industry Risk	0.90***	1.21**	1.11***	0.82***	1.15
R&D Exp.	1.01	1	1	1	1
Intangible Assets Growth	1.02	1.02	1.02***	1	1.01
Industry Concentration	1.14***	0.99	0.94***	1.25***	1.08
Industry Market to Book	1.08***	1.21***	0.98**	1.20***	1.34***
No. of Observation	811,896	811,896	811,896	35,503	35,503
No. of Subjects	96,047	96,047	96,047	35,503	35,503
No. of Events	4,893	549	29,730	4,974	550
Pseudo-R2	0.022	0.0595	0.0045	0.0616	0.0616

Table 5: Estimates of Coefficients: Transition From Private

The first three columns from the left present estimated hazard ratios from Cox-proportional hazard models for transitions from the privately-owned state to the PE-backed state, the public state, and the acquired state, respectively. The sample contains 96,047 independent firms and 811,896 firm-years. For each type of transition, firms exit the sample because they transit to the corresponding states through either an investment from PE funds, a listing, or an M&A. Among the 96,047 independent firms, 4,893 transition to the PE-backed state, 549 transition to the public state, and 29,730 transition to the acquired state. The two columns from the right report the estimated coefficients from multinomial logistic regressions focusing on firms that actually undergo a transition from the privately-owned state to the other states. The transition to the acquired state serves as the base case. Instead of using firm characteristics lagged by one year as explanatory variables, this analysis employs the average characteristics over the three years leading up to the transition. This sample contains 35,503 independent firms in the privately-owned state. Statistical significance at the 1, 5, and 10 percent levels is denoted by ***, **, and *, respectively. All explanatory variables are standardized and appendix B.3.3 contains detailed variable definitions.

	Cox-Proportional Hazard Model			Multinomial Logit	
	Private	Public	Acquired	Private	Public
Log Age	1.25***	0.81**	1.07***	1.12***	0.72***
Fixed Assets Growth	0.91***	1.13*	0.91***	1.01	1.24***
Revenue Growth	0.92***	1.01	0.90***	1.02	1.15*
Profit Margin	1.06**	0.70***	1.21***	0.90***	0.56***
Log Total Assets	1.04	2.16***	1.07***	0.98	1.96***
Market Share	1.03	1.11**	0.96**	1.07*	1.23***
Leverage	0.94**	0.84**	0.89***	1.03	0.9
Current Ratio	0.97	0.96	0.91***	1.06**	1.13*
Industry Risk	1.03	1.28**	1	1.01	1.34
R&D Exp.	0.97	1.06*	0.96*	0.99	1.11*
Intangible Assets Growth	1.01	1	1.03**	0.97	0.97
Industry Concentration	0.97	0.78	0.94***	1.04	0.75
Industry Market to Book	1.14***	1.31***	0.99	1.13***	1.34***
No. of Observation	42,580	42,580	42,580	6,760	6,760
No. of Subjects	10,946	10,946	10,946	6,760	6,760
No. of Events	2,054	243	4,451	2,058	243
Pseudo-R2	0.0133	0.0874	0.00772	0.0734	0.0734

Table 6: Regression: Transition from PE-backed

The first three columns from the left present the estimated hazard ratios from Cox proportional hazard regressions for transitions from the PE-backed state to the privately-owned state, the public state, and the acquired state, respectively. The time variable is the number of years until a firm exits the sample. The sample contains 10,946 independent firms and 42,580 firm-years. For each type of transition, firms exit the sample because they transit to the corresponding states through either an investment from PE funds, a listing, or an M&A. Among the 10,946 independent firms, 2,054 transition to the privately-owned state, 243 transition to the public state, and 4,451 transition to the acquired state. The last two columns from the right report the estimated coefficients from multinomial logistic regressions focusing on firms that actually undergo a transition from the PE-backed state to the other states. The transition to the acquired state serves as the base case. Instead of using firm characteristics lagged by one year as explanatory variables, this analysis employs the average characteristics over the three years leading up to the transition. This sample contains 6,760 independent firms in the PE-backed state. Statistical significance at the 1, 5, and 10 percent levels is denoted by ***, **, and *, respectively. All explanatory variables are standardized and appendix B.3.3 contains detailed variable definitions.

	2004-2007	2010-2013	2014-2017
Number of Firms	31,385	26,378	32,904
Percentage of Transitioning to PE-Backed	1.63%	1.92%	1.93%
Percentage of Going Public	0.36%	0.07%	0.07%
Total Percentage	1.99%	2.00%	2.00%
Percentage of Being Acquired	8.7%	4.2%	4.4%

Table 7: External Financing of High Investment Young Firm

This table reports the number of privately-owned independent firms under age 10 that fall into the high fixed asset investment category during the periods from 2004 to 2007, from 2010 to 2013, and from 2014 to 2017, along with the percentages of those firms transition to the PE-backed state and the publicly listed state. A high fixed assets growth rate is defined as a rate exceeding 30%, calculated using the average of the initial and final values as the denominator. The percentage of such high-growth firms choosing to go public via IPOs has markedly declined in the periods following the Global Financial Crisis (GFC), plummeting from 0.36% to 0.07%. This decline, however, has been completely offset by an increase in PE-backed transitions, which rose from 1.63% pre-GFC to 1.93% post-GFC.

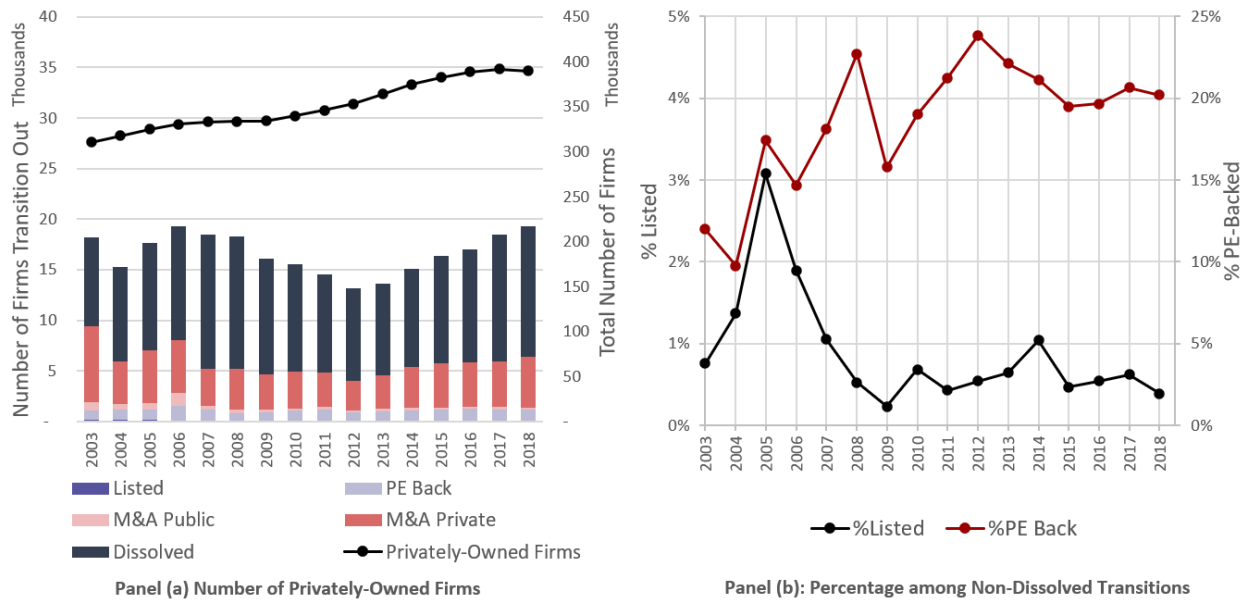


Fig. 3. The Transition Dynamics of Privately Owned Firms.

In Panel (a), the black line represents the number of privately-owned firms, while the bars show the annual transitions out of this state, with colors indicating the destination. Panel (b) displays the percentage of transitions to private equity-backed firms versus those going public, out of the total non-dissolution transitions.

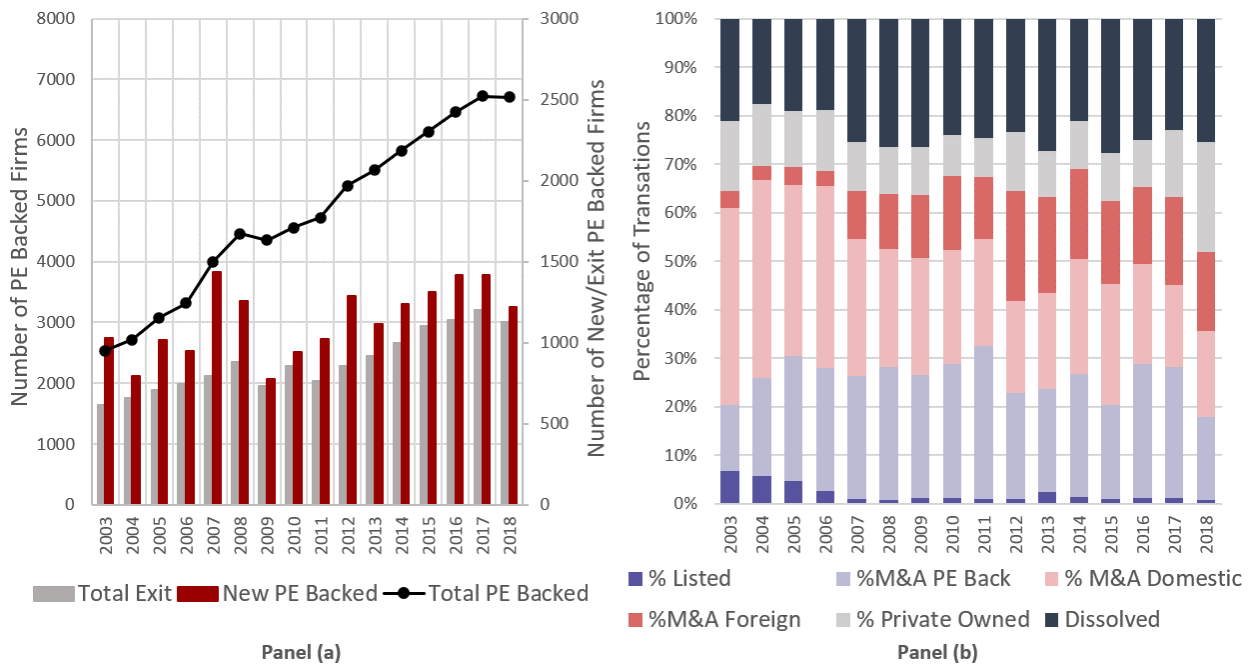
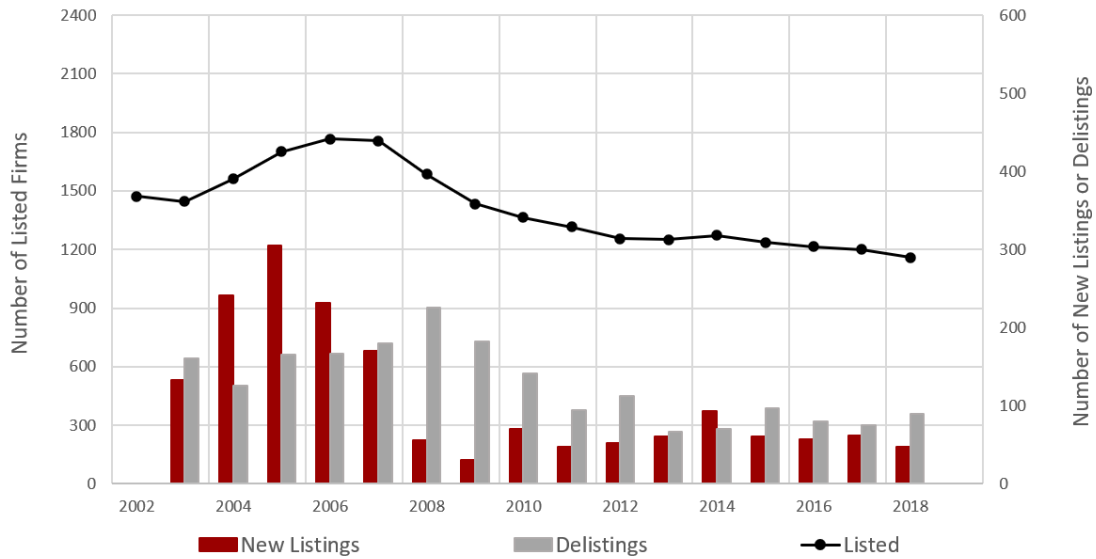
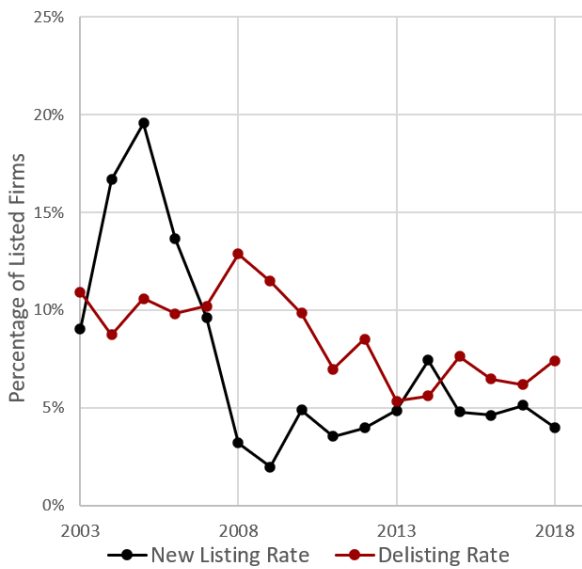


Fig. 4. The Transition Dynamics of PE-Backed Firms.

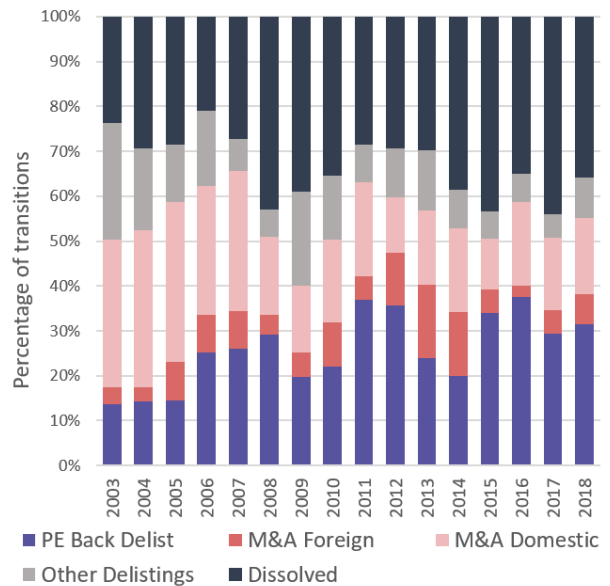
In Panel (a), the black line represents the number of PE-backed firms per year. The red bars indicate the annual inflow of new PE-backed firms, while the gray bars show the annual exit transitions out of this state. Panel (b) breaks down these exits, color-coded by type.



Panel (a) Dynamics of Publicly-listed Firms



Panel (b)



Panel (c)

Fig. 5. The Transition Dynamics of Publicly-listed Firms.

In Panel (a), the black line represents the number of publicly listed firms per year. The red bars show the number of new listings, while the gray bars indicate the number of delistings. Panel (b) presents the percentages of new listings and delisted firms out of the total number of listed firms per year. Panel (c) categorizes delistings by their post-delisting status as a percentage.

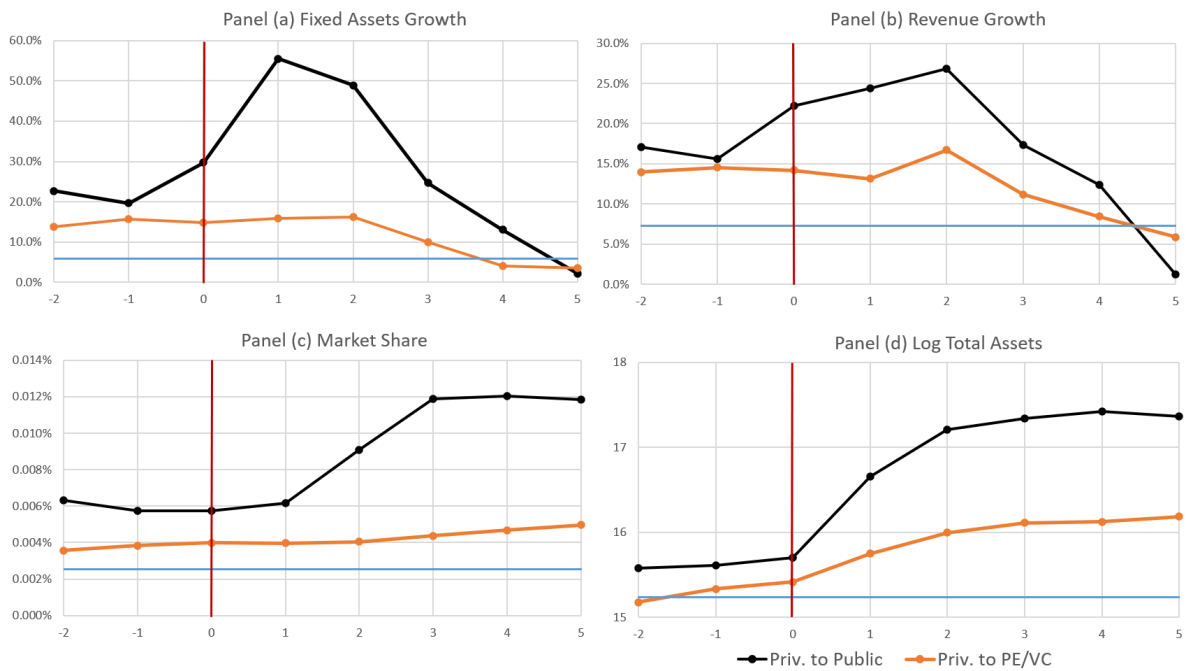


Fig. 6. Characteristics of Privately Owned Firms around Transitions

This figure illustrates the characteristics of firms around transitions over an eight-year window, spanning three years before the transition to five years after, with metrics aligned relative to the transition timing. Black lines trace the shift from private to public ownership, orange lines depict the move to private equity-backed status, and blue lines represent the average metrics for firms remaining privately owned. Panels (a) to (d) display the characteristics of Fixed Assets Growth, Revenue Growth, Market Share, and Log of Total Assets, respectively.

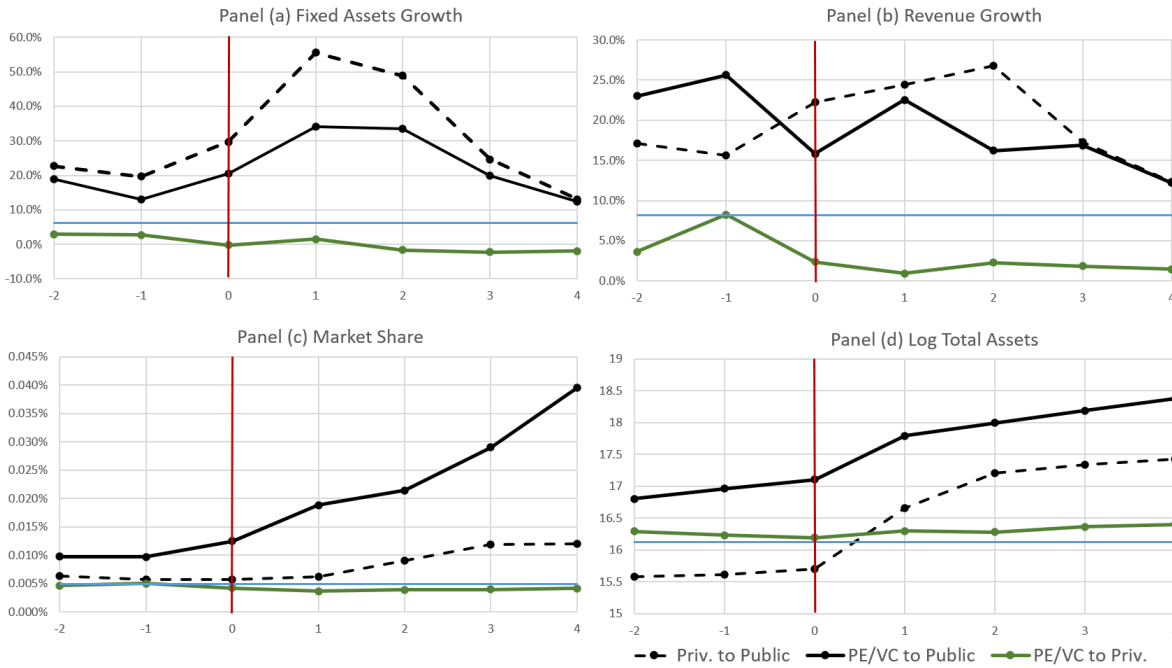


Fig. 7. Characteristics of PE/VC Backed Firms around Transitions

This figure illustrates the characteristics of firms around transitions over an eight-year window, spanning from three years before to five years after the transition, with metrics aligned with the timing of the transition. Black solid lines trace the shift from PE-backed to public ownership, black dotted lines depict the move from privately-owned to public status, green lines show the transition from PE-backed to privately-owned, and blue lines represent the average metrics for firms that remain PE-backed. Panels (a) to (d) display the characteristics of Fixed Assets Growth, Revenue Growth, Market Share, and the Log of Total Assets, respectively.

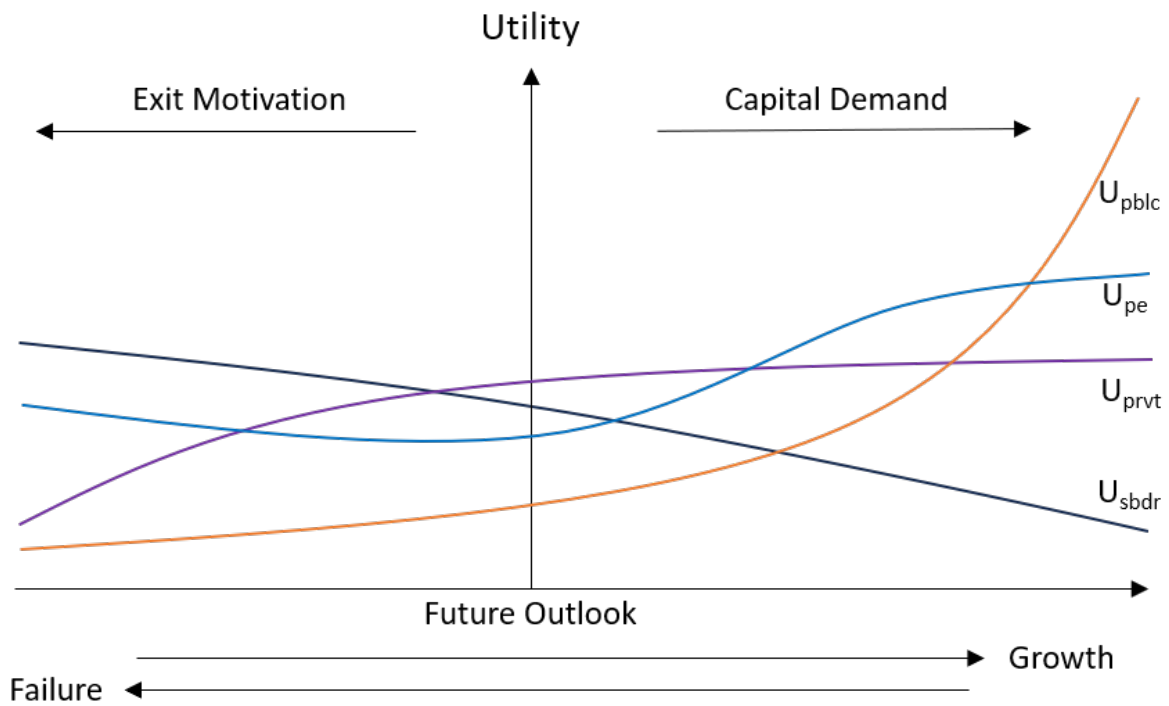


Fig. 8. Hidden Utility Framework

This figure visualizes the hidden utility framework, illustrating the shift in shareholders' perceived utility across four ownership states based on a firm's specific characteristics and future outlook: *prvt* for privately-owned, *pe* for PE-backed, *pblc* for publicly-listed, and *sbdr* for becoming a subsidiary through strategic acquisition.

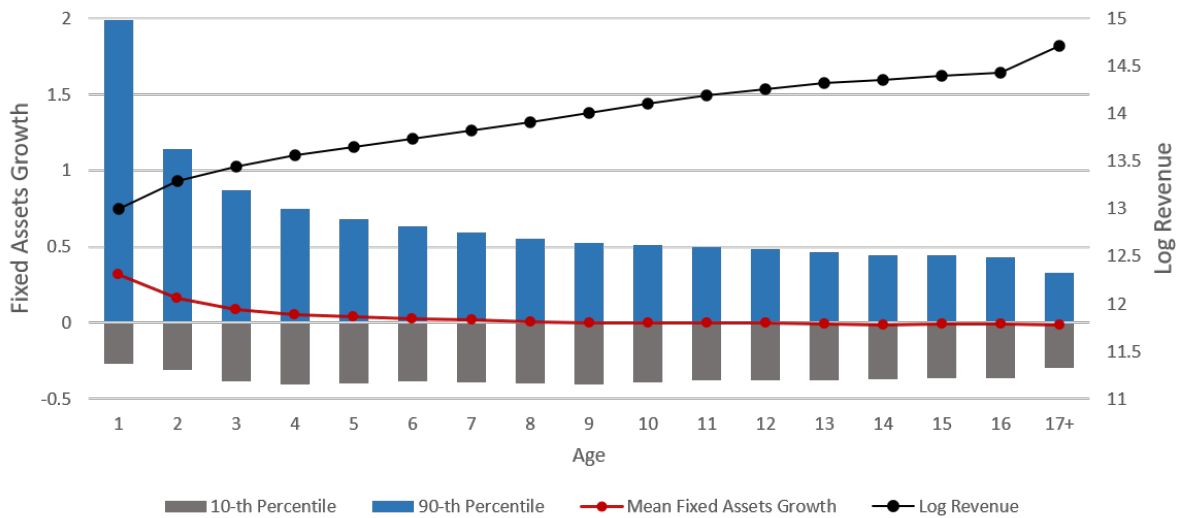


Fig. 9. Capital Investment by Firm Age

The red line, gray bar, and blue bar represent the mean, 10th, and 90th percentiles of fixed asset growth rates for firms of different ages, conditional on their survival, respectively. The black line shows the mean log of revenue for firms of different ages.

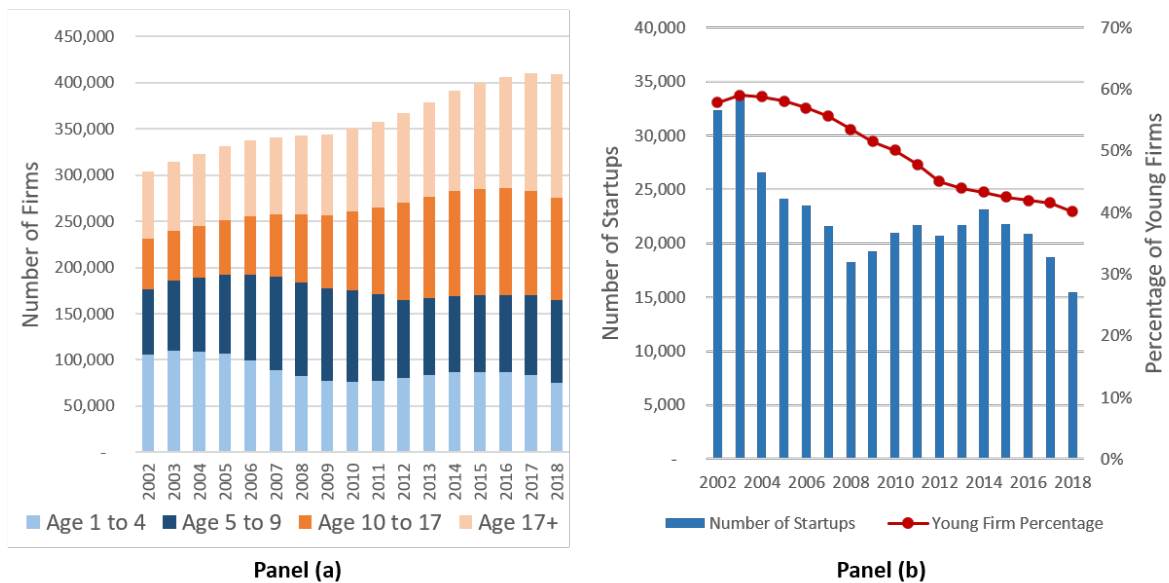


Fig. 10. Population and Percentage of Young Firms by Year

Panel (a) displays the number of independent firms in each age group for each year. Panel (b) presents the number of startups each year with blue bars, while the red line indicates the percentage of young firms relative to all independent firms annually.

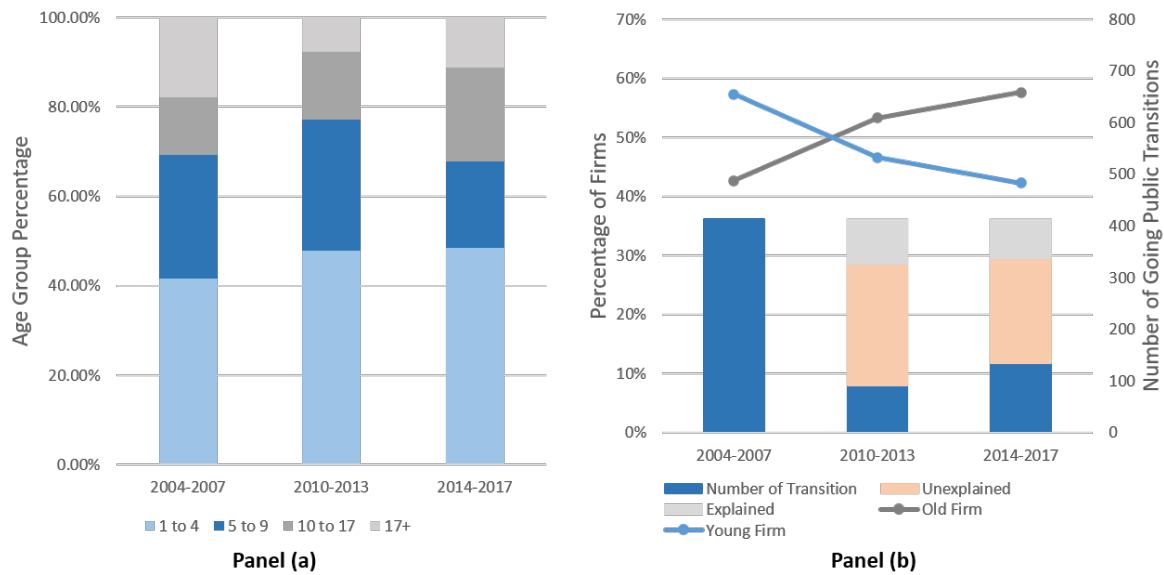


Fig. 11. Young Firm Activity and Number of New Listings

Panel (a) displays the percentage of IPO firms in each age group over three distinct periods. In panel (b), the blue line represents the number of young firms (aged less than 10), while the gray line represents the number of old firms (aged 10 or older). Additionally, the stacked bar chart in Panel (b) illustrates the actual number of IPOs (blue area) in each period compared to the expected number of IPOs (blue and orange areas). The grey areas in the chart highlight the portion of the overall reduction in IPOs attributable to the declining number of young firms.

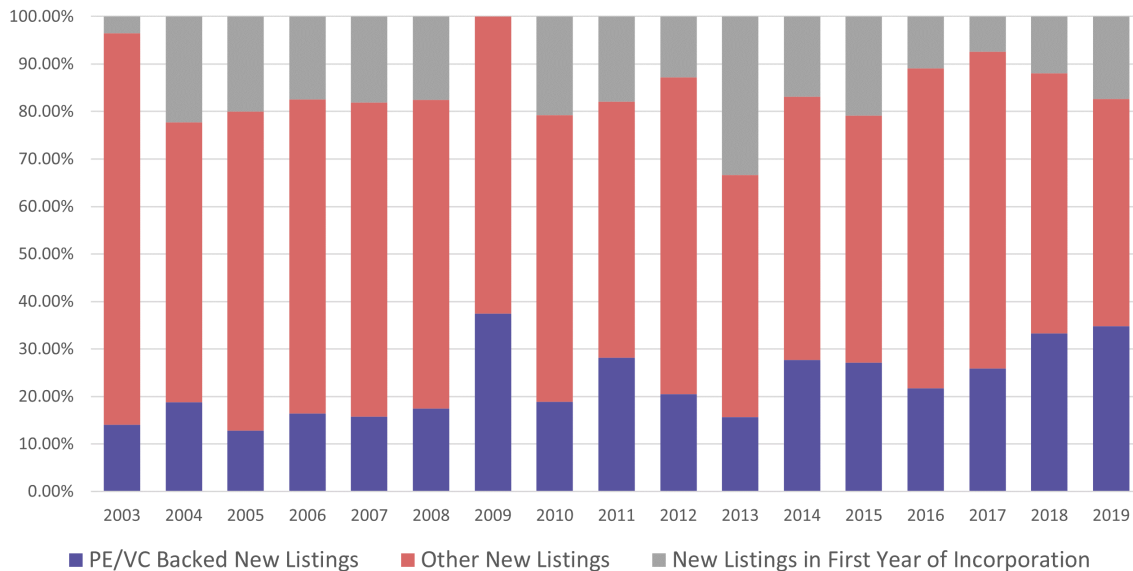


Fig. 12. PE/VC-Backed IPO

The blue bars represent the percentages of new listings transitioning from the PE/VC-backed state each year, while the gray bars depict the percentage of new listings in their first year of incorporation. The red bars indicate other types of transitions.

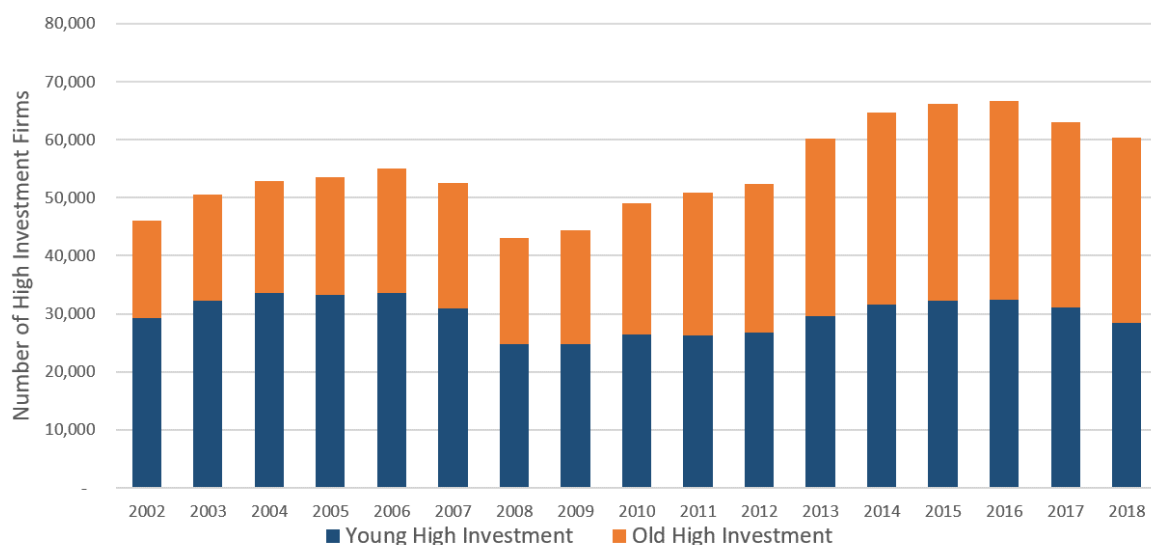


Fig. 13. Firm Age Distribution by Year

This figure illustrates the annual count of firms in the high investment category, color-coded by age group. High fixed asset growth, defined as a rate exceeding 30%, is calculated using the average of initial and final values as the denominator. Blue bars represent young firms (aged less than 10), while orange bars represent old firms (aged 10 or older).

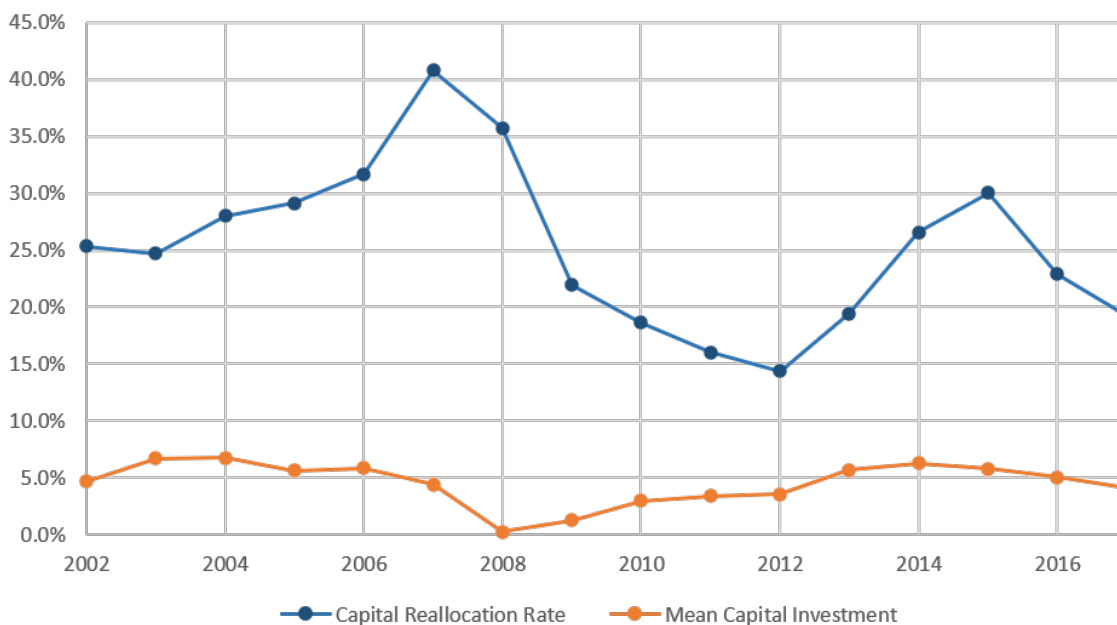


Fig. 14. Trend in Capital Reallocation Rate

The blue line represents the annual capital reallocation rates. These rates are calculated as the absolute value of the difference in fixed assets compared to the previous year, divided by the average fixed assets for the current year and the previous year. The orange line represents the mean fixed assets growth rate.

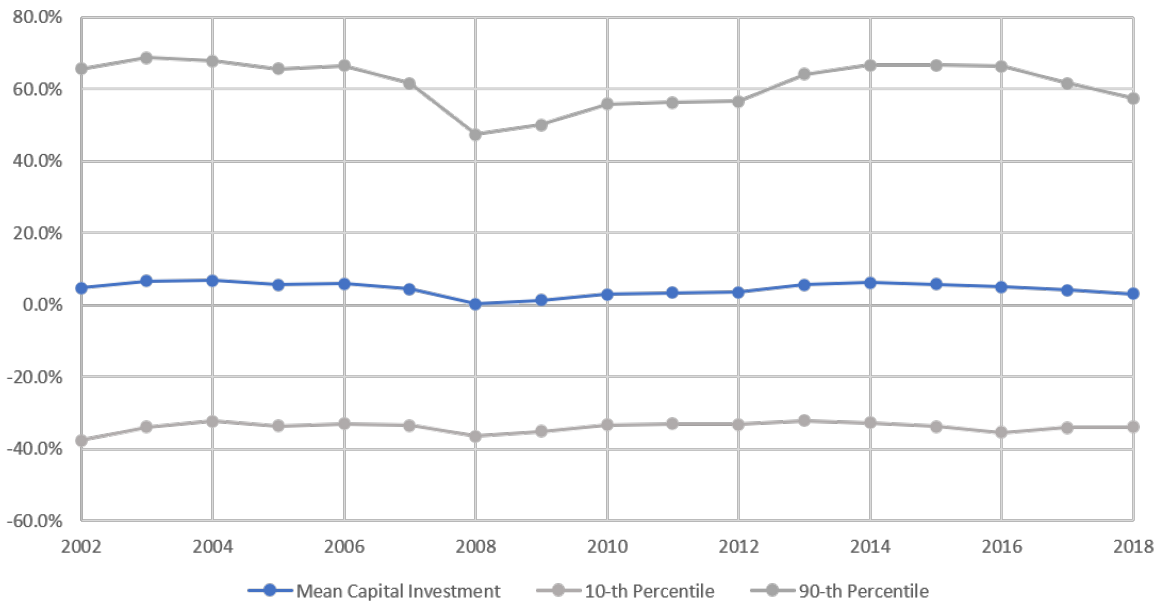


Fig. 15. Skewness of Fixed Asset Investment

The two gray lines represent the 10th and 90th percentiles of annual fixed asset growth rates, while the blue line shows the mean fixed asset growth rate for each year.

Appendix A. Trade-off among the Transition Pathways

Prior research extensively discusses the pros and cons of going public or securing private capital funding, as well as the synergies created by M&A activities. Here, I leverage these insights to propose a comprehensive framework for analyzing how firms weigh the trade-offs among the four equity ownership states mentioned in Section 2.2. I categorize the primary factors influencing firms' decisions into four groups: access to capital, valuation of the firm, cost of entering and operating under a specific equity ownership state, and implications for future exit opportunities.

A.1. Access to External Capital

An ownership transition can occur when a firm's capital needs change. In these cases, the firm may find its internal capital generation no longer sufficient to pursue its strategic goals, necessitating an infusion of external capital. For such transitions, the potential pathway's ability to provide sufficient capital for an interim growth period becomes a key factor.

Public markets offer firms the opportunity to amass substantial capital from a broad and diverse pool of investors. The marginal cost of raising a large amount of capital is potentially low compared to other strategies, such as private capital and the M&A market. Moreover, being publicly listed provides firms with the advantage of accessing the public capital market for future capital needs through seasoned offerings, thereby potentially reducing the future costs of capital procurement. The liquid secondary market for investors to trade the share means the capital obtained by the firm has no maturity date. The liquidity of shares offers additional benefits for financing growth, such as using shares for acquisitions and employee compensation. Furthermore, publicly-listed firms often have better access to debt financing, particularly long-term debt. This is due to the transparency resulting from disclosure and reporting regulations, and the increased diversity of capital raising options, which can serve as a bargaining chip in negotiations for bank funding.⁵²

In contrast, raising an equivalent amount of capital from private equity or venture capital can be more challenging. At times, a firm's capital needs may be too large to be met by a single PE/VC fund, limiting the amount available or causing the marginal cost to escalate quickly. This is particularly relevant for industries that attract less PE/VC interest. In many instances, a firm may need to raise capital from multiple funds, which can be more costly due

⁵²Brav (2009), Saunders and Steffen (2011) find that UK private firms pay loan spreads that are between 26 and 60 basis points higher than matched public firms. They highlighted lenders' higher cost of information production and private firms' lower bargaining power as key channels driving the higher borrowing costs. A spread of a similar level is found in the US by Kovner and Wei (2012) and Badertscher, Givoly, Katz, and Lee (2019),

to the duplication of information production and the need for coordinating among funds. In the case of acquisitions, the amount of capital is constrained by the acquirer's access to capital and their strategic plan for the target firm. The firm being acquired may have to compete with other divisions of the acquirer for capital (Stein (1997) for a theoretical analysis). This suggests that private firms in need of a larger amount of capital are more likely to opt for going public rather than being acquired or PE-backed.

However, the advantages of access to capital in the public market are contingent on a firm's capital needs. For firms requiring less capital, the benefits of the public market compared to other options may be less pronounced, especially when considering the costs of operating as a public firm, which we will discuss in a later section. The trade-off in this dimension has also evolved with the increased availability of PE/VC funding. With the growth in PE/VC funding in the last two decades, their ability to facilitate large amounts of capital is less of a concern, thereby diminishing the relative advantage of going public.

A.2. Firm Valuation

Financial investors and strategic acquirers require an expected return when acquiring equity ownership in a firm, serving as compensation for the financial risk they undertake and the alternative gains they forgo. This expected return dictates the valuation the buyer offers for the firm, with which it is inversely related. From the firm's perspective, this expected return from the investor is actually the firm's own cost of equity, a component of its total cost of capital. This is also directly related to the financial payoff for shareholders in the transition, should they decide to sell part or all of their stakes. Therefore, valuation plays a critical role when considering various pathways for ownership transitions.

The cost of equity, driven by capital demand and supply dynamics, hinges heavily on investor confidence in both realizing returns and liquidating their position when needed. Public markets, governed by laws and regulations, mandate firms to uphold a level of transparency, thereby ensuring that all potential investors have equal access to information. Furthermore, governance requirements imposed by stock exchanges affirm that management actions should align with shareholders' best interests, bolstering investor confidence and enhancing the capital supply. The secondary market, when well-structured, allows for easy diversification of idiosyncratic risks and offers a liquid medium for share trading. Conversely, private firms are not subject to the same disclosure and governance requirements. Investors are often compelled to invest substantial resources in assessing a firm before deciding to invest, resulting in increased costs of information production. In the absence of a liquid secondary market and the inability to diversify idiosyncratic risk, the expected returns include higher risk and

liquidity premiums. Under these circumstances, the cost of public equity is predicted to be lower than that of private equity, assuming all other variables are equal.

Yet, the valuation advantages of different ownership transition paths can be complex, varying according to the nature of the firm. While high liquidity reduces costs of equity in the public market, this advantage lessens for firms with small size due to their low stock liquidity in general. Public markets excel at handling firms with high-risk profiles but stable and known probability distributions of future cash flows⁵³. In such situations, the probability of success along with the resulting profits can be reasonably anticipated, enabling investors to spread their risk by holding small stakes in numerous similar firms. Despite the high idiosyncratic risk, a single success within this diverse portfolio can ensure a positive return, thereby stimulating the supply of capital and lowering the risk premium.

In contrast, public markets struggle to accurately value firms with uncertain futures⁵⁴ and substantial intangible assets. Gauging the strategic pathways and growth prospects of these firms requires an in-depth understanding of the business and the industry. Furthermore, intangible assets are not reflected on the audited financial report until they start to generate revenue, necessitating specialized knowledge to accurately assess their potential value-creation capacity. Public market investors, who diversify their portfolios by spreading their investments across various sectors, may lack the incentive to delve into the complexities of each individual business. This inherent understanding gap among a broad base of public investors often leads to a higher cost of equity, as they factor in the perceived risk of the true share value being potentially less than initially presumed. This translates into a lower valuation, presenting challenges for such firms seeking to go public under acceptable terms. On the flip side, private equity investors and strategic acquirers, armed with specialized industry knowledge, are typically at an advantage. Their sizable investments and more concentrated ownership in the firm drive them to undertake rigorous due diligence processes, which in turn enable them to better understand the business and accurately evaluate its future prospects. As a result, they are more likely to offer a fairer valuation than what the public market might propose.

This valuation advantage is further accentuated by the nuanced differences in the information environment. Public companies are obliged to disclose the same information to all potential investors. This necessitates a delicate balance between the potential benefits of higher valuation through transparency and the risks of providing competitors access to strategic information (Bhattacharya, 1983)⁵⁵. Such restrained disclosure complicates the

⁵³For instance, sectors like mining and drug development typically exhibit these characteristics

⁵⁴Firms operating in emerging sectors with unproven business models, like OpenAI before the success of ChatGPT, fall under this category

⁵⁵Ewens et al. (2021) demonstrates this dichotomy using Google's S-1 filing, illustrating that while public

understanding of unproven business models and unverified intangible assets for public investors, especially those lacking specialized knowledge. In contrast, private firms have more flexibility in terms of disclosing information to selected investors (Maksimovic, 2001). While public firms disclose more information overall, shareholders in private firms often gain access to proprietary information that remains off-limits to public firm investors, enabling a deeper understanding of businesses for a more adequate valuation.

Thus far, my examination suggests that both strategic acquisition and PE-backed carry comparable advantages and challenges in terms of valuation. Yet, for some firms, the acquisition might offer a higher valuation, yielding increased financial returns for the owner that other standalone options might not match. This elevated valuation is primarily attributable to two elements: the anticipated synergy generated between the acquirer and target firms⁵⁶ and the target's capacity to create value beyond its standalone potential⁵⁷. From the acquirer's perspective, target firms can offer strategic advantages such as swift access to vital new technologies and markets, which might be more time-consuming and costly to develop in-house. The resources of the parent firm can assist the target more effectively in monetizing their potential and enhancing resilience against product market competition. These potentially elevate the target's value beyond what it could attain as a standalone entity. Stulz (2020) illustrates this phenomenon using the example of Instagram's acquisition by Facebook.

To summarize, my comparison of the valuation-related advantages and disadvantages of the three main ownership transition pathways—going public, securing PE-backing, and strategic acquisition—highlights unique strengths and limitations for each. Public markets are proficient at providing cost-effective equity financing to high-risk companies with a known distribution of future outcomes. On the other hand, firms with uncertain futures might receive a more accurate valuation from PE funds or strategic acquisitions, given their specialized understanding of the industry. This suggests that early-stage companies, especially those with a high proportion of intangible assets, might benefit more from PE-backed or strategic acquisition. Oftentimes, these firms lack a track record and have yet to prove the long-term viability of their offerings, and as a result, public markets, limited by a lack of specialized understanding, may not offer a fair valuation. As emphasized in Ibikunle et al. (2020) and Stulz (2020), the ongoing shift of company assets towards intangibles (Kahle and

firms meet legal disclosure requirements, they are usually reluctant to disclose their full strategic intentions and strengths.

⁵⁶Bowen et al. (2023) discussed that startups innovating in stable technology areas likely offer significant synergies to potential buyers.

⁵⁷Gao et al. (2013) argues some small firms can create greater operating profits by selling out in a trade sale rather than operating as an independent firm relying on organic (internal) growth

Stulz 2018) could be a key factor driving the noticeable divergence between the growth of PE-backed firms and the number of listed firms.

Moreover, the relative valuation advantage of different exit pathways does not only differ cross-sectionally but also over time. With an increasing pool of unallocated capital (also known as “dry powder”) in the private capital industry⁵⁸, private capital funds compete to invest in promising businesses. This competition can lead to more affordable capital-raising options for cash-hungry yet promising early-stage companies, diminishing the traditional valuation benefits offered by public markets. The valuation dynamics in the IPO market are also evolving. According to Helwege and Liang (2004), Ivanov and Lewis (2008), and Lowry (2003), the cost of issuing equity is influenced by investor sentiment. During periods of heightened optimism, investors are more likely to overpay for firms, thereby reducing the cost of equity associated with going public.

A.3. Costs and Benefits of Operating in Each State

In addition to the cost of equity highlighted in Section A.2, firms contemplating transition of ownership need to evaluate various other costs and benefits associated with different ownership states. These encompass explicit costs, such as underwriting fees for public listings, as well as implicit costs like operational inefficiencies and agency conflicts that may impede the firm’s growth. Importantly, these costs and benefits can vary substantially across different ownership states. In this section, I will delve into an analysis of these costs and benefits for varying ownership states, emphasizing the unique influence they may exert on firms based on their individual characteristics.

Transitioning to a publicly listed firm comes with significant upfront and recurring costs. During the IPO process, underwriting fees typically account for around 7% of gross IPO proceeds, although this percentage can be lower for larger IPOs (Ewens and Farre-Mensa (2022)). Once listed, there are recurring expenses such as listing fees charged by the exchange and costs associated with regulatory compliance and reporting requirements. As discussed in Doidge et al. (2017), many of these costs have a fixed component and only slightly increase with firm size, leading to a disproportionate financial burden for smaller firms. Consequently, relative to larger firms, the path to go public listing tends to be more costly for smaller ones. The situation is particularly pronounced in the UK, where the Companies Act mandates financial disclosures from all incorporated firms, excluding small firms from providing income statements. This adds a further reporting cost for smaller firms that go public. In contrast, firms opting for PE-backed or acquisition do not encounter such explicit ongoing expenses.

⁵⁸cite BVCA report, US deregulations. 47.59 billion pounds raised by PE funds in 2019, with the largest share of 18.8 billion pounds coming from North America

That said, they may face search costs, information production costs and other transaction costs, which can affect the valuation and indirectly be borne by the target firm. While quantifying these costs may be challenging, the rise of the internet and the expansion of the private capital market likely have reduced some of these costs over time.

Agency conflicts present implicit costs that can hinder a firm's development, with these costs being notably higher for publicly listed firms. As posited by Jensen and Meckling (1976), agency problem emerges when management and shareholders' interests do not align precisely. Such misalignment can prompt management to exploit free cashflows for personal gains, such as expanding the assets under their control. Publicly listed firms are especially susceptible to agency costs, mainly due to the atomistic nature of their shareholders. With most shareholders generally lacking substantial stakes, it is challenging to organize effective monitoring of management activities (Brav, Jiang Kim 2010, Gantchev 2013), leading to higher agency costs. These agency issues become particularly acute in firms abundant in free cash flows but limited in growth opportunities, which opens the door to self-serving management behavior. Furthermore, an increased information asymmetry between shareholders and managers further complicates investor oversight and control, intensifying potential agency conflicts.

In contrast, privately owned firms, often face lower agency costs due to their more concentrated ownership structure that typically involves direct owner participation in management. In VC-backed firms, entrepreneurs often hold large company shares, blurring the lines between ownership and management. For PE-backed firms, the funds use strategies like providing significant company stakes to management and active board involvement to align interests and reduce conflicts. Additionally, as addressed in Section A.2, the specialized industry knowledge and access to proprietary information⁵⁹ further reduce the agency costs arising from information asymmetry.

Short-termism is another implicit cost that could jeopardize a firm's long-term viability. When a firm's common stock is publicly traded, the stock price serves as a form of voting machine, enabling investors to indirectly influence management actions through their trading activities. While stock prices can provide management with valuable insights for decision-making⁶⁰, they also introduce an inherent bias towards short-termism. This bias stems from the information deficit among public investors, preventing them from adequately assessing the strategic trajectories set by management, coupled with the pressure on fund managers to deliver short-term performance. Such a predisposition creates a paradox where actions that

⁵⁹Bernstein Giroud and Townsend 2016, note that VCs and other private investors often have nearly unrestricted access to their portfolio companies

⁶⁰Bennett, Stulz, Wang 2019 show firms with more informational stock prices tend to be more productive

benefit long-term growth can invoke unfavorable short-term market reactions, subsequently driving management to prioritize short-term outcomes over potentially greater long-term value creation. This issue is particularly detrimental for underperforming firms in need of transforming strategies and structural changes. Initiatives aimed at securing long-term gains may trigger negative short-term market responses. In contrast, private firms are insulated from the pressure of short-term share price fluctuation. PE and VC firms, with their longer investment horizons, concentrate more on the company's long-term value. Dell's transition to private ownership in 2013, as discussed in Brown et al. (2022), is a prime example illustrating how becoming a private firm, removed from the pressure of short-term market reactions, is better situated to engage in long-term strategic planning and value creation.

In addition to the previously discussed considerations, there are unique advantages of being either a PE-backed firm or being acquired. PE and VC funds contribute more than just capital—they also provide valuable resources such as technical expertise, managerial advice, networking opportunities, and access to established distribution channels. These resources can significantly improve a firm's operational efficiency and broaden its market reach. In case where a firm is acquired by an established company, beyond the injection of development capital, the parent company often possess the essential know-how and infrastructure, such as distribution channels and supply chain networks, which can be leveraged by the target firm to scale rapidly and more cost-effectively. The acquired firm can potentially utilize excess capacity within the parent company, making growth less financially burdensome. Furthermore, acquisition can lead to product synergies that bolster the combined market strength of both firms and enhance their competitive positioning. Despite potential challenges, such as loss of autonomy and increased pressure for returns, these benefits are particularly crucial for small and young firms operating in more competitive industries. These companies may lack the necessary resources to develop these capabilities on their own, making the support from PE/VC funds or acquiring companies instrumental for their survival and growth.

To summarize, my comparison in this section reveals that being a publicly listed firm generally incurs higher transaction and operational costs, the effects of which vary depending on the characteristics of the firm and its market environment. Specifically, explicit costs, such as underwriting fees and regulatory compliance costs can be disproportionately burdensome for smaller firms. In contrast, these smaller firms could derive substantial benefits from the expertise and resources offered by private capital funds or acquiring companies, especially in highly competitive industries. Costs arise from agency conflict tend to pose a significant problem for companies with abundant free cash flow but limited growth opportunities, as well as those with high levels of information asymmetry. Further, firms are underperforming and require structural changes may find the short-term pressures associated with being publicly

listed particularly challenging. Overall, the benefits and costs associated with operating under different ownership states vary significantly, which could play important role in shaping the firms' decision in ownership transition.

A.4. Future Exit Opportunities

As the owners and early investors map out their firm's ownership transition, the projected financial payoff from the transition is a key element of their decision-making. This consideration extends beyond the immediate valuation outlined in Section A.2. It requires a comprehensive understanding of the unique timelines intrinsic to each potential transition pathway, which influences when and how financial returns materialize. The choices span from a gradual exit, building towards future financial gains, to a full transfer of control, offering an upfront payoff. This decision-making involves a strategic trade-off: weighing the current valuation against future prospects. The optimal balance can vary significantly based on the firm's unique characteristics, thereby influencing the choice of the most rewarding transition path.

For firms going public, owners have the choice of not cashing out their stake all at once or entirely. Primary shares are issued to garner necessary capital for their growth plans, while the owners can maintain a significant portion of their stake to leverage potential future valuation increases. The liquid nature of the secondary market affords them the flexibility to gradually offload their stake when conditions are most favorable. A similar situation prevails for firms opting for PE-backed, where ownership is diluted but not liquidated all at once. A substantial portion of the financial payoff is realized in the future during subsequent exits. Despite being less flexible than the public market, the expectation is that post-funding growth will enhance the firm's value, thereby presenting opportunities for more lucrative future exits. In contrast, firms choosing acquisition experience a fundamentally different dynamic. Since the acquiring firm assumes control, and often integrates the firm into their own operations, prospects for future exits are markedly constrained. Therefore, the financial payoff is determined and received upfront, precluding potential future financial gains from the growth of the firm.

Recognizing these differences, it is fair to infer that a pivotal deciding factor when firm owners choose between standalone pathways such as public listing or PE/VC backing, versus an acquisition, hinges on the prospective scenarios of future exit value. With their insider knowledge about the long-term potential of their firm, they could lean towards standalone strategies if they are confident that post-injection growth will substantially enhance the firm's worth, and the risk-adjusted present value of a future exit significantly outweighs potential

earnings from an acquisition. This decision takes into consideration both the present and future valuations. The comparison of immediate valuations of each exit route is discussed in Section A.2, whereas the future exit value primarily depends on the firm's growth trajectory and its likelihood of successfully surviving as an independent firm in various competition landscapes.

As discussed in Bowen et al. (2023), firms engaged in more disruptive innovations often possess higher standalone values due to their potential to replace existing technologies and carve out a substantial independent market presence. For such firms, standalone strategies are more appealing, enabling them to leverage growth capital for development and postpone exit until their full potential is realized, thus potentially achieving a higher valuation. Conversely, firms operating in sectors where speed to market and economies of scale dominate may find slower organic growth as an independent company can risk underachievement and reducing future value. In these situations, immediate acquisition by a larger firm might offer a more favorable payoff. The industry environment also plays a crucial role in shaping these choices. In highly competitive landscapes, constrained growth prospects and elevated failure risks decrease the risk-adjusted present value. In such scenarios, acquisition can help mitigate uncertainties tied to standalone development.