Is private equity sponsorship associated with differences in IPO pricing and post-IPO stock performance?

Evidence from U.S. IPOs (1982 - 2021)

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Abstract

English version

This thesis investigates whether private equity (PE) sponsorship is associated with differences in IPO pricing and post-IPO stock performance. While PE investors play a prominent role in corporate restructuring and frequently exit portfolio firms through IPOs, existing evidence on the pricing and aftermarket performance of buyout-backed IPOs remains mixed. This study provides a comprehensive analysis of buyout-backed IPOs in the U.S. between 1982 and 2021. The empirical analysis is based on a sample of 2,974 IPOs, of which 800 are backed by PE sponsors. The empirical framework combines ordinary least squares regressions with inverse probability weighting based on propensity scores to account for observable differences between PE-backed and non-sponsored issuers. IPO pricing is evaluated using first-day returns as a measure of underpricing, while post-IPO performance is assessed using buy-and-hold abnormal returns and cumulative abnormal returns over horizons of up to 36 months. The results indicate that PE-backed IPOs exhibit moderately higher underpricing relative to comparable non-sponsored offerings. After adjusting for observable firm characteristics, PE sponsorship increases first-day returns by approximately two to three percentage points on average. In contrast, the analysis finds no systematic evidence that PE-backed IPOs outperform comparable firms in the long run. Across multiple abnormal return measures and empirical specifications, post-IPO performance is statistically indistinguishable between the two groups. Overall, the findings suggest that while PE sponsorship influences IPO pricing dynamics, the value created during the private ownership phase appears to be incorporated into IPO valuations rather than generating persistent abnormal stock market performance.

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Keywords: Private Equity, Buyout-Backed Firms, Initial Public Offerings (IPO), IPO Pricing Dynamics, Underpricing, First-Day Returns, Post-IPO Performance, Long-Run Stock Performance, Capital Markets

Portuguese version

Esta tese investiga se o apoio de fundos de private equity (PE) está associado a diferenças na fixação do preço das ofertas públicas iniciais (IPOs) e no desempenho das ações após a IPO. Apesar do papel relevante destes investidores na reestruturação empresarial e na saída de investimentos através de IPOs, a evidência existente sobre a fixação de preços e o desempenho pós-IPO de empresas apoiadas por PE permanece contraditória. O estudo analisa IPOs nos Estados Unidos entre 1982 e 2021, com base numa amostra de 2.974 ofertas, das quais 800 são apoiadas por patrocinadores de PE. A análise empírica combina regressões de mínimos quadrados ordinários com ponderação por probabilidade inversa baseada em propensity scores, de forma a controlar as diferenças observáveis entre emitentes patrocinados e não patrocinados. A subvalorização é medida através dos retornos do primeiro dia, enquanto o desempenho pós-IPO é avaliado por meio de retornos anormais de compra e manutenção e retornos anormais acumulados, em horizontes temporais de até 36 meses. Os resultados indicam que IPOs apoiadas por PE apresentam subvalorização moderadamente superior: tendo em conta características observáveis das empresas, o patrocínio de PE aumenta os retornos do primeiro dia em cerca de dois a três pontos percentuais. Contudo, não se encontra evidência de desempenho superior no longo prazo. Em várias medidas e especificações empíricas, o desempenho pós-IPO é estatisticamente indistinguível entre os grupos, sugerindo que o valor criado durante a fase privada é incorporado nas avaliações do IPO.

O patrocínio por private equity está associado a diferenças na formação de preços em IPO e no desempenho bolsista pós-IPO? Evidência de IPO nos Estados Unidos (1982-2021)

Jonas Brandt

Palavras-chave: Private Equity, Empresas apoiadas por operações de buyout, Ofertas Públicas Iniciais (IPO), Formação de preços em IPO, Subavaliação inicial, Rendibilidade no primeiro dia, Desempenho pós-IPO, Desempenho bolsista de longo prazo, Mercados de capitais

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List of Abbreviations

ADR	American Depositary Receipt
ATET	Average Treatment Effect on the Treated
BHAR	Buy-and-Hold Abnormal Return
CAR	Cumulative Abnormal Return
CRSP	Center for Research in Security Prices
CPS	Consumer Products and Services
Energy	Energy and Power
FF3	Fama-French Three-Factor Model
GovAgy	Government Agency
Health	Healthcare
HT	High Technology
IND	Industrials
IPW	Inverse Probability Weighting
IPO	Initial Public Offering
LBO	Leveraged Buyout
Media	Media and Entertainment
MBO	Management Buyout
OLS	Ordinary Least Squares
OTC	Over-the-Counter
PE	Private Equity
REIT	Real Estate Investment Trust
RLBO	Reverse Leveraged Buyout
SDC	Securities Data Company (Refinitiv SDC Platinum database)
SPAC	Special-Purpose Acquisition Company
Staples	Consumer Staples
Telecom	Telecommunications
UIT	Unit Investment Trust
VC	Venture Capital

1 Introduction

Private equity (PE) buyouts have become a prominent feature of modern corporate finance (Acharya et al., 2013; Kaplan & Strömberg, 2009). The economic scale of the PE industry has expanded substantially in recent decades. For example, PE transactions targeting U.S. firms reached a total value of more than $1.1 trillion in 2021, highlighting the growing role of PE investors in corporate restructuring and capital markets (White & Case, 2025). PE investors acquire firms through leveraged transactions, operate them under concentrated ownership and active governance, and ultimately exit their investments through trade sales, secondary buyouts, or initial public offerings (IPOs). Through this process, PE sponsors reshape corporate governance structures, alter capital structures, and influence firm operating policies prior to returning companies to public markets (Kaplan & Strömberg, 2009). Empirical research suggests that buyouts are frequently associated with improvements in operating performance and firm value during the private ownership phase, reflecting intensive monitoring, managerial incentives, and operational restructuring implemented by PE sponsors (Acharya et al., 2013; Guo et al., 2011; Kaplan & Strömberg, 2009).

The modern buyout market emerged in the late 1970s and early 1980s with the development of the leveraged buyout (LBO) model. A landmark transaction frequently cited in this context is the 1982 management buyout (MBO) of Gibson Greetings, financed by Kohlberg Kravis Roberts (KKR). The transaction had a purchase price of approximately $80 million, of which $79 million was financed through debt, illustrating the extreme leverage that came to characterize early buyouts. The deal generated widespread attention when a portion of the company was taken public again shortly thereafter at a valuation substantially exceeding the initial purchase price, helping to popularize the LBO model among investors and financial intermediaries. As Cheffins and Armour (2008) noted, the transaction “turned heads on Wall Street” and contributed to the rapid growth of LBOs during the 1980s.

Since the emergence of LBOs, PE has become an important mechanism for corporate restructuring. After a period of private ownership, buyout sponsors typically realize their investments through exit strategies.

Among these, IPOs are a particularly visible exit mechanism because they return portfolio companies to public markets and reveal the market valuation of firms that have previously operated under concentrated ownership and active sponsor oversight. As such, IPOs provide a natural setting to evaluate whether PE ownership influences firm valuation and subsequent market performance (Cao & Lerner, 2009; Levis, 2011).

The IPO literature has long examined two central dimensions of the going-public process: the pricing of shares at issuance and the subsequent performance of newly listed firms (Ritter & Welch, 2002). A large body of research documents systematic IPO underpricing, whereby shares offered to investors at the issue price generate positive abnormal returns on the first trading day (Ritter, 1991). At the same time, numerous studies report weak long-run stock performance following IPOs, suggesting that newly listed firms often underperform comparable companies in the years after going public (Loughran & Ritter, 1995). These phenomena are typically interpreted through the lenses of information asymmetry, investor sentiment, and market timing.

PE sponsorship may influence both dimensions of the IPO process. On the one hand, the governance structures associated with buyouts may reduce informational frictions at the time of the offering. PE sponsors actively monitor management, restructure operations, and often retain significant equity stakes after the IPO, potentially providing a credible signal of firm quality to outside investors. Empirical studies document that buyouts can generate improvements in operating performance and firm value prior to exit (Acharya et al., 2013; Guo et al., 2011; Kaplan & Strömberg, 2009). If these improvements persist through the IPO, PE-backed firms may enter public markets with stronger fundamentals and lower informational uncertainty than comparable stand-alone firms.

On the other hand, PE sponsors operate within finite fund horizons and must eventually exit portfolio investments. These incentives may interact with IPO pricing and timing decisions. Sponsors may choose to bring firms to market during favourable market conditions or when valuations are particularly attractive (Loughran & Ritter, 1995; Ritter, 1991). In addition, strategic considerations related to investor demand and aftermarket performance may influence the pricing of sponsor-backed offerings. As a result, the net effect of PE sponsorship on IPO pricing and post-IPO stock performance is theoretically ambiguous.

The empirical literature examining sponsor-backed IPOs reflects this ambiguity. Despite this growing literature, existing evidence remains mixed and often focuses on specific sponsor types, markets, or relatively limited sample periods. As a result, it remains unclear whether buyout-backed IPOs systematically differ from comparable non-sponsored offerings in terms of IPO pricing and subsequent stock market performance.

Some studies document favourable performance patterns for PE-backed offerings. For example, Cao and Lerner (2009) find that reverse leveraged buyouts (RLBO) perform as well as or better than other IPOs over several post-IPO horizons, while Levis (2011) reports that PE-backed IPOs in the United Kingdom exhibit stronger operating and market performance than

comparable firms. Other studies find, however, more limited evidence of systematic differences once observable firm characteristics are taken into account. In particular, Michala (2019) shows that buyout-backed IPOs in the United States do not exhibit consistent differences in pricing or aftermarket outcomes relative to comparable stand-alone firms once selection effects are considered.

Against this background, this thesis addresses the following research question: Is private equity sponsorship associated with differences in IPO pricing and post-IPO stock performance? The analysis focuses exclusively on buyout-sponsored firms, excluding venture capital (VC)-backed IPOs in order to isolate the effects associated with mature firms exiting PE ownership rather than early-stage venture financing. The empirical setting consists of U.S. IPOs between 1982 and 2021, a period spanning the modern evolution of the LBO market and subsequent cycles in IPO activity.

This thesis contributes to the literature on PE exits and IPO performance in several ways. First, it provides a comprehensive analysis of buyout-backed IPOs in the United States over the period 1982-2021, covering multiple cycles in both the IPO and PE markets. Second, it jointly examines IPO pricing and post-IPO stock performance, allowing the analysis to capture both short-run price formation and longer-run market outcomes. Third, the empirical design employs multiple abnormal-return measures and econometric approaches to account for observable differences between sponsor-backed and stand-alone issuers, thereby providing a robust assessment of whether PE sponsorship systematically affects IPO outcomes.

The empirical results indicate that buyout-backed IPOs exhibit moderately higher first-day returns than comparable non-sponsored offerings, suggesting greater underpricing at the time of the IPO. However, there is no systematic evidence that PE sponsorship leads to superior long-run abnormal stock performance once observable firm characteristics and risk exposures are taken into account. Across multiple abnormal return measures and empirical specifications, sponsor-backed firms do not consistently outperform comparable non-sponsored IPOs over post-IPO horizons of up to 36 months.

The remainder of this thesis is organised as follows. Section 2 reviews the literature on IPO underpricing and long-run IPO performance and develops the empirical hypotheses that guide the analysis. Section 3 then describes the data sources, sample construction, and empirical methodology used to examine the relationship between PE sponsorship and IPO outcomes. The empirical results are presented in Section 4 together with a series of robustness analyses. Section 5 discusses the findings in the context of the existing literature and outlines their

broader implications. Section 6 highlights the limitations of the study and identifies several directions for future research, and Section 7 concludes.

2 Literature Review

2.1 IPO Underpricing

The systematic underpricing of IPOs is one of the most robust empirical regularities in financial markets. Early evidence documents substantial positive first-day returns across time periods and markets, indicating that IPO shares are frequently offered at prices below the level at which they subsequently trade in secondary markets (Ibbotson, 1975).

A large body of theoretical research attributes IPO underpricing primarily to information asymmetry theories, which emphasize differences in information between issuers and investors. In the winner's curse framework, informed investors selectively participate in attractive offerings, while uninformed investors face a higher probability of receiving allocations in overpriced issues. To ensure participation by uninformed investors and prevent market unravelling, issuers must set the offer price, on average, below the expected secondary-market value (Beatty & Ritter, 1986; Rock, 1986). Underpricing, therefore, emerges as an equilibrium mechanism that compensates investors for informational disadvantages.

While uncertainty-based models explain the existence of underpricing, institutional features of the IPO process also influence price formation. Modern IPOs are typically priced through bookbuilding, in which underwriters collect demand indications from institutional investors before determining the final offer price. In this setting, underpricing can serve as an incentive for investors to truthfully reveal private information during the pricing process (Benveniste & Spindt, 1989). Empirical evidence shows that price revisions during bookbuilding often adjust only partially to strong demand signals, leaving positive returns for investors once trading begins (Hanley, 1993). Institutional investors capture a large share of these profits due to strategic IPO allocations (Hanley & Wilhelm, 1995).

Another important theoretical explanation emphasizes certification theory, which suggests that reputable intermediaries help reduce informational frictions. Booth and Smith (1986) argue that intermediaries with reputational capital have incentives to screen and monitor issuers, thereby reducing informational frictions in capital markets. Extending this logic, Megginson and Weiss (1991) show that VC-backed IPOs exhibit lower underpricing and underwriting spreads relative to comparable firms, suggesting that venture capitalists act as certifiers of firm quality.

PE sponsors share several characteristics with venture capitalists that may allow them to play a similar certification role (Cao & Lerner, 2009; Megginson & Weiss, 1991). PE investors are

repeat participants in capital markets, typically engage in intensive monitoring during private ownership, and often retain equity stakes after the IPO. Through governance improvements, operational restructuring, and financial oversight, PE sponsors may reduce informational uncertainty and enhance the credibility of disclosed information (Guo et al., 2011). If investors interpret sponsor involvement as a credible signal of firm quality, the required discount at issuance should decline. However, VC investments typically involve younger firms with limited operating histories, whereas buyout-oriented PE investors focus on more mature companies. To isolate the governance and restructuring effects associated with buyout sponsorship, the empirical analysis therefore excludes VC-backed IPOs and focuses exclusively on buyout-sponsored firms.

At the same time, alternative theoretical models emphasize strategic considerations in IPO pricing. Signalling theory suggests that high-quality issuers may deliberately underprice their offerings in order to distinguish themselves from lower-quality firms when information asymmetries prevent direct verification of firm type (Allen & Faulhaber, 1989; Grinblatt & Hwang, 1989; Welch, 1989). Because underpricing represents a costly signal, only firms confident in their future prospects can credibly engage in such behaviour.

Beyond signalling considerations, issuer incentives may also affect pricing decisions. Firms may tolerate underpricing in order to generate favourable aftermarket performance, attract institutional investor participation, or maintain relationships with underwriters (Loughran & Ritter, 2002). These considerations may be particularly relevant for PE sponsors, who often retain significant ownership stakes following the IPO and exit their investments gradually through subsequent share sales.

Taken together, the theoretical literature yields competing predictions regarding the effect of PE sponsorship on IPO underpricing. Certification mechanisms suggest that sponsor involvement should reduce informational uncertainty and, therefore, lower underpricing. In contrast, signalling and strategic pricing perspectives imply that sponsors may accept higher underpricing if doing so improves aftermarket performance or facilitates future exit opportunities. The following section reviews the empirical evidence on sponsor-backed IPO pricing outcomes.

2.1.1 Empirical Evidence on PE-Backed IPO Underpricing

Empirical evidence on the pricing of sponsor-backed IPOs is mixed and often sensitive to sponsor type and sample construction. Studies focusing on VC-backed IPOs generally find lower levels of underpricing, consistent with certification effects (Megginson & Weiss, 1991).

However, VC investments typically involve younger firms with limited operating histories, whereas buyout-oriented PE investors focus on more mature companies.

Research examining buyout-backed IPOs yields more heterogeneous results. Levis (2011), analysing UK IPOs, reports lower underpricing among PE-backed firms and suggests that differences in firm characteristics and governance structures may contribute to this pattern. Similarly, Bergström et al. (2006) argue that PE backing may improve information transparency and reduce adverse selection in the IPO process.

In contrast, evidence from U.S. markets is less conclusive. Michala (2019) distinguishes between VC and buyout-sponsorship and finds no consistent differences in underpricing between buyout-backed and stand-alone IPOs once observable firm characteristics are taken into account. These results suggest that certification effects documented in the VC literature may not necessarily extend to buyout-sponsored firms.

Overall, the empirical literature does not provide a uniform conclusion regarding the direction of the underpricing effect for buyout-backed IPOs. Differences in sponsor type, institutional environment, and empirical methodology contribute to heterogeneous findings.

2.1.2 Synthesis and Competing Hypotheses

The theoretical and empirical literature reviewed above yields competing predictions regarding the effect of PE sponsorship on IPO underpricing. If PE sponsors reduce informational frictions through monitoring, governance improvements, and reputational certification, sponsor-backed IPOs should exhibit lower underpricing than comparable non-sponsored offerings. Conversely, if sponsors strategically accept underpricing to support favourable aftermarket performance or facilitate staged exit strategies, sponsor-backed IPOs may exhibit higher first-day returns.

Accordingly, the empirical analysis tests the following competing hypotheses:

H1a (Certification Hypothesis):

Buyout-backed IPOs exhibit lower underpricing than comparable non-sponsored IPOs.

H1b (Strategic Pricing Hypothesis):

Buyout-backed IPOs exhibit higher underpricing than comparable non-sponsored IPOs.

2.2 Long-Run IPO Performance

While early IPO research primarily focused on first-day underpricing, subsequent studies examined the performance of newly listed firms over longer horizons. A substantial body of research examines the long-run stock performance of newly listed firms, and many studies report weak post-IPO performance relative to benchmark portfolios or matched firms.

Ritter (1991) provides one of the earliest systematic analyses of this phenomenon, documenting significant three-year underperformance among U.S. IPOs issued between 1975 and 1984 when returns are measured relative to comparable firms. Loughran and Ritter (1995) extend these findings and show that long-run underperformance is not limited to IPOs but also characterizes seasoned equity offerings. These patterns are frequently interpreted as evidence that firms issue equity during periods of favourable market valuations or heightened investor sentiment.

Subsequent research highlights important heterogeneity in these patterns. Brav and Gompers (1997) show that long-run underperformance is concentrated primarily among small, non-venture-backed IPOs and becomes substantially weaker when returns are adjusted using multifactor asset-pricing models. These findings gave rise to a large literature examining the drivers of post-IPO performance, and the extent to which observed underperformance reflects risk, behavioural factors, or market timing. More broadly, Fama (1998) argues that many long-horizon return anomalies are sensitive to benchmark specification and may reflect methodological issues rather than persistent market inefficiencies. These critiques highlight the importance of careful methodological choices when evaluating long-run IPO performance.

These methodological concerns are particularly relevant in studies of IPO performance. Long-horizon event studies are prone to statistical complications, including skewness in returns, cross-sectional dependence, and benchmark misspecification (Kothari & Warner, 1997). Barber and Lyon (1997) show that buy-and-hold abnormal returns (BHARs) often provide a more economically meaningful measure of long-run investor performance than cumulative abnormal returns (CARs), although both approaches remain sensitive to benchmark selection. As a result, empirical studies typically evaluate long-run IPO performance using multiple abnormal return measures and risk-adjusted benchmarks to ensure that findings are not driven by benchmark specification.

The question of long-run performance is particularly relevant in the context of PE-backed IPOs. Unlike stand-alone firms, PE-backed companies typically undergo a period of concentrated private ownership, whereby LBOs in particular are often accompanied by operational restructuring, governance changes, and improvements in firm performance prior to returning to public markets (Acharya et al., 2013; Guo et al., 2011).

If these improvements persist after the IPO, PE-backed firms may enter public markets with stronger fundamentals than comparable non-sponsored firms. Empirical evidence on the post-IPO performance of buyout-backed firms provides mixed results. Cao and Lerner (2009), for example, find that RLBOs perform as well as or better than other IPOs over several post-IPO horizons. Similarly, Levis (2011) reports relatively strong performance for PE-backed IPOs in the United Kingdom.

However, alternative explanations emphasize the role of IPO timing and valuation dynamics. Because PE funds operate within finite investment horizons, sponsors may choose to exit investments when market valuations are particularly favourable. If IPO timing reflects such windows of opportunity, post-IPO returns may resemble the broader patterns of long-run IPO underperformance documented in the literature. Empirical evidence from the United States provides mixed support for these competing interpretations. Michala (2019), for example, finds little systematic evidence that buyout-backed IPOs differ from comparable stand-alone IPOs once observable firm characteristics are taken into account.

Taken together, the existing literature does not provide a clear prediction regarding the long-run stock performance of PE-backed IPOs relative to non-sponsored firms. While governance improvements during the buyout phase may enhance firm quality, these improvements may already be incorporated into IPO valuations or offset by differences in risk characteristics.

2.2.1 Empirical Evidence on Long-Run Performance of PE-Backed IPOs

Empirical studies examining the long-run performance of PE-backed IPOs reach mixed conclusions. Some research suggests that sponsor involvement may lead to stronger post-IPO outcomes, reflecting operational improvements implemented during the private ownership period.

Cao and Lerner (2009) analyse RLBOs and report that these firms perform as well as or better than comparable IPOs over three- and five-year horizons. Similarly, Levis (2011) finds evidence of stronger operating and market performance for PE-backed IPOs in the United Kingdom.

However, other studies find little evidence of systematic differences once observable firm characteristics are taken into account. Michala (2019) shows that buyout-backed IPOs in the United States do not exhibit consistently different pricing or post-IPO outcomes relative to comparable non-sponsored firms once observable firm characteristics are controlled for.

Overall, the empirical literature suggests that the relationship between PE sponsorship and long-run IPO performance is ambiguous and sensitive to sample selection, empirical methodology, and institutional context.

2.2.2 Synthesis and Competing Hypotheses

The literature on long-run IPO performance, therefore, yields two competing predictions regarding the effect of PE sponsorship.

On the one hand, governance improvements and operational restructuring implemented during the private ownership period may enhance firm quality prior to flotation. If these improvements persist after the IPO, PE-backed firms may exhibit superior long-run stock performance relative to comparable non-sponsored issuers. This reasoning leads to the following hypothesis:

H2a (Performance Enhancement Hypothesis)

Buyout-backed IPOs exhibit higher long-run abnormal stock returns than comparable non-sponsored IPOs once differences in risk exposures and observable firm characteristics are accounted for.

On the other hand, the broader IPO literature suggests that long-run abnormal returns often reflect risk exposures, benchmark misspecification, or the correction of temporary overvaluation rather than persistent differences in firm quality. If the value created during the private ownership phase is fully incorporated into the IPO price, no abnormal performance should remain once returns are appropriately adjusted. This leads to the competing hypothesis:

H2b (Market Efficiency Hypothesis)

Buyout-backed IPOs do not exhibit higher long-run abnormal stock returns than comparable non-sponsored IPOs once differences in risk exposures and observable firm characteristics are accounted for.

The preceding discussion highlights two central features of the existing literature. First, theoretical predictions regarding long-run IPO performance are ambiguous. While buyout-sponsorship may enhance firm quality through governance and operational improvements, any such gains may be fully reflected in offer prices or offset by differences in risk exposures. Second, empirical findings are sensitive to benchmark selection, return aggregation methods, and sponsor classification.

3 Data and Methodology

The considerations discussed in the previous section motivate an empirical framework that isolates buyout-backed IPOs from other sponsor types and evaluates post-IPO performance using multiple complementary measures of abnormal returns. By distinguishing buyout-backed offerings from non-sponsored firms and excluding VC-backed IPOs, the analysis targets a setting in which governance and restructuring effects associated with buyout investors are expected to be more prevalent than the certification effects typically attributed to early-stage VC investors.

Furthermore, given the documented sensitivity of long-horizon performance to expected-return models and weighting schemes, post-IPO performance is evaluated using both market-adjusted and factor-adjusted abnormal returns. Risk adjustment based on the Fama and French (1993) three-factor model helps control for differences in systematic risk exposures related to market, size, and book-to-market factors.

Finally, because IPO activity and post-issuance performance vary across issuance cycles and industries, the empirical specification incorporates year and industry fixed effects to mitigate potential confounding effects related to market-wide timing and sectoral composition. Robustness tests based on market regimes further assess whether results are driven by issuance cycles rather than sponsorship status.

Together, this design allows for a clean assessment of whether buyout-sponsorship is associated with persistent post-IPO performance differences beyond what can be explained by risk characteristics, observable firm differences, and market-wide issuance conditions.

3.1 Sample Construction

The IPO dataset is constructed from *Refinitiv SDC Platinum's Global New Issues* database, widely adopted by the academic literature (Corwin & Schultz, 2005; Loughran & Ritter, 2004; Michala, 2019), and includes all common stock IPOs, classified as listings on U.S. stock exchanges, and recorded as primary issuances. The dataset initially contained 1,767 IPOs backed by PE sponsors and 17,727 non-sponsor-backed IPOs, to the extent identifiable from SDC's classifications. In SDC Platinum, sponsor classification is based on two independent indicator variables identifying PE backing and VC backing at the time of the IPO. In this study, PE-backed IPOs are defined strictly as offerings for which the PE indicator is set to true, and the VC indicator is set to false. IPOs with VC backing are excluded from the analysis to avoid conflating buyout-type PE sponsorship with VC financing, which differs substantially in terms of firm maturity, investment horizon, governance structure, and risk profile (Levis, 2011;

Michala, 2019). The detailed SDC backing-type classifications show that the PE-backed IPOs in the sample correspond to LBOs, MBOs, and PE buyouts. Accordingly, throughout this study, the term "PE-backed IPO" refers exclusively to buyout-sponsored issuers.

Similar to the approach employed by Michala (2019), the accounting data of the issuing companies is obtained from Compustat, and corresponds to the last fiscal year ending before the IPO date. These data provide the pre-IPO fundamentals used to construct the matching covariates and control variables, including measures of size, leverage, profitability, liquidity, and valuation (Michala, 2019).

Post-IPO return data are drawn from multiple sources: stock returns originate from CRSP, which provides the basis for buy-and-hold and cumulative abnormal return calculations. Factor returns used to compute risk-adjusted performance measures are obtained from the Kenneth French Data Library, and the value-weighted CRSP market index serves as the benchmark for market-adjusted return computations.

To ensure a consistent sample of U.S. operating-company IPOs, the following exclusions were applied: (1) non-operating entities, such as mutual funds, unit investment trusts (UITs), real estate investment trusts (REITs), special-purpose acquisition companies (SPACs), and investment offices, are excluded because their valuation and return dynamics differ fundamentally from those of operating firms; (2) non-standard or hybrid securities (e.g., pure secondary offerings, units, rights, and preferred shares) are removed to focus on IPOs of standard primary common equity, as these instruments embed different contractual rights and issuance motives that are not directly comparable in terms of underpricing and aftermarket performance; (3) foreign issuers and American depositary receipt (ADR) structures: the sample is restricted to issuers incorporated in the United States and whose primary exchange listing is also located in the United States. This dual restriction limits heterogeneity arising from cross-country differences in disclosure regimes, governance standards, and investor bases that can affect IPO pricing and post-IPO outcomes; (4) IPOs recorded as over-the-counter (OTC) or non-public listings are excluded because such venues differ in listing requirements, liquidity, and trading microstructure relative to major U.S. exchanges; (5) IPOs lacking essential pre-IPO financials, firm characteristics, or identifiers are excluded because these inputs are required to construct the study's covariates and to implement the matching design; (6) observations outside the analysis window (1982-2021) are removed to align the sample with the study period and ensure consistent availability of the required return horizons; and (7) firms that delist before completing the 36-month post-IPO window are excluded because consistent delisting return information is not available for all observations. While this restriction ensures a uniform return

horizon across IPOs, it may introduce survivorship bias, as poorly performing firms are more likely to delist prior to the end of the observation period. The implications of this requirement, including potential survivorship bias, are discussed below, consistent with concerns raised in the long-horizon event study literature (Barber & Lyon, 1997; Kothari & Warner, 1997).

These restrictions are widely used across the academic literature (Corwin & Schultz, 2005; Loughran & Ritter, 2004; Michala, 2019), and for the purpose of this study, ensure the sample contains comparable domestic operating firms issuing standard primary common equity on recognised U.S. exchanges, avoiding structural differences in regulation, disclosure, trading mechanisms, and investor bases.

Imposing a minimum 36-month trading history allows long-run performance to be measured over a uniform horizon, thereby enhancing the comparability of return outcomes across IPOs. However, this restriction introduces the potential for survivorship bias, as firms that delist before completing 756 trading days (~18.4% of IPO observations, of which ~26.9% are PE-backed) are necessarily excluded from the analysis. Importantly, approximately 35.7% of delistings (of which ~10.8% are PE-backed) are attributable to firm performance-related factors, implying that excluded observations may be systematically associated with poorer post-IPO outcomes. The majority of remaining delistings are driven by mergers and acquisitions (~63.4%), while exchange-related events account for a negligible share (~0.9%). Because consistent delisting return information is not available for all observations, incorporating delisting returns or modelling the delisting process explicitly is beyond the scope of this study and is therefore acknowledged as a limitation.

Starting from an initial SDC universe of 19,494 IPO observations, the sequential application of the above restrictions results in a final estimation sample of 2,974 IPOs, of which 800 (26.9%) are backed by PE sponsors, and 2,174 (73.1%) are non-sponsored firms. The unit of analysis is the individual IPO firm, with each observation corresponding to a single IPO event. Table 1 below presents the descriptive statistics of the final sample.

Table 1. Distribution of the IPO Sample by Year and Industry

	Total	Non-backed (0)		PE-backed (1)			Total	Non-backed (0)		PE-backed (1)	
	#	#	%	#	%		#	#	%	#	%
Panel A - Distribution by year											
1982	15	15	0.50	0	0.00	2003	19	6	0.20	13	0.44
1983	107	98	3.30	9	0.30	2004	59	26	0.87	33	1.11
1984	48	45	1.51	3	0.10	2005	84	37	1.24	47	1.58
1985	46	41	1.38	5	0.17	2006	62	28	0.94	34	1.14
1986	138	123	4.14	15	0.50	2007	60	30	1.01	30	1.01
1987	93	81	2.72	12	0.40	2008	11	9	0.30	2	0.07
1988	36	33	1.11	3	0.10	2009	18	8	0.27	10	0.34
1989	27	22	0.74	5	0.17	2010	45	23	0.77	22	0.74
1990	42	31	1.04	11	0.37	2011	30	21	0.71	9	0.30
1991	117	76	2.56	41	1.38	2012	38	17	0.57	21	0.71
1992	145	89	2.99	56	1.88	2013	61	34	1.14	27	0.91
1993	197	161	5.41	36	1.21	2014	79	40	1.34	39	1.31
1994	193	166	5.58	27	0.91	2015	34	15	0.50	19	0.64
1995	160	144	4.84	16	0.54	2016	20	12	0.40	8	0.27
1996	243	220	7.40	23	0.77	2017	52	33	1.11	19	0.64
1997	167	149	5.01	18	0.61	2018	41	29	0.98	12	0.40
1998	106	85	2.86	21	0.71	2019	29	20	0.67	9	0.30
1999	83	59	1.98	24	0.81	2020	44	19	0.64	25	0.84
2000	57	40	1.34	17	0.57	2021	110	56	1.88	54	1.82
2001	28	15	0.50	13	0.44						
2002	30	18	0.61	12	0.40	**Full sample**	**2,974**	**2,174**	**73.10**	**800**	**26.90**
Panel B - Distribution by industry											
CPS	309	222	7.46	87	2.93	Materials	188	130	4.37	58	1.95
Energy	241	177	5.95	64	2.15	Media	172	132	4.44	40	1.34
Finance	289	232	7.80	57	1.92	Real Estate	17	14	0.47	3	0.10
GovAgy	1	1	0.03	0	0.00	Retail	303	196	6.59	107	3.60
Health	305	220	7.40	85	2.86	Staples	157	113	3.80	44	1.48
HT	501	373	12.54	128	4.30	Telecom	110	83	2.79	27	0.91
IND	381	281	9.45	100	3.36	**Full sample**	**2,974**	**2,174**	**73.10**	**800**	**26.90**

*Notes: This table reports descriptive statistics for the IPO sample used in the analysis. Panel A shows the distribution of IPOs by issuance year, while Panel B presents the distribution of IPOs across industry groups. The columns report the total number of IPOs as well as the number and percentage of non-backed and PE-backed firms. t-tests for differences in means are two-sided. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

IPO activity exhibits pronounced cyclical clustering over time. Aggregate issuance peaks during the mid-1990s, particularly between 1993 and 1996, and again during the mid-2000s (2004-2007), followed by renewed strength in 2013-2014 and a marked surge in 2021. Periods of contraction are visible in the early 2000s and during the 2008-2009 financial crisis. PE-backed IPO activity follows a broadly similar cyclical pattern, with limited presence prior to 1990 and substantial increases during the early 1990s, the mid-2000s, and the post-2013 period, culminating in elevated issuance in 2021. While many PE-intensive years coincide with aggregate IPO waves, certain periods, most notably the early 1990s, reflect particularly strong PE exit activity relative to the historical distribution of PE-backed IPOs.

Across industries, IPOs are most concentrated in high technology (HT), industrials (IND), finance, consumer products and services (CPS), healthcare, and retail sectors. PE-backed IPOs are broadly distributed across these major industries, with particularly strong representation in HT, retail, industrials, consumer-oriented, and health-related sectors. In contrast, PE-backed issuances are relatively rare in government-related and real estate sectors. Overall, the industry

distribution suggests that PE-backed firms participate broadly in the IPO market rather than being confined to a narrow sectoral segment.

3.2 Variable Definitions

The dependent variables in this study consist of IPO underpricing and multiple measures of post-IPO abnormal performance, including BHARs and CARs over various horizons. The main explanatory variable is a binary indicator capturing PE sponsorship, with pre-IPO firm fundamentals included to control for observable differences across issuers.

Ritter and Ibbotson (1995) define underpricing as the change in price measured from the IPO offering price to the first-day market price within a short period of time; for the case of this study, the first-day closing price (Michala, 2019):

$$Underpricing_i = (P_{i,1} - P_{i,0})/P_{i,0}.$$

It captures the initial return earned by investors who purchase shares at the offer price and sell at the end of the first trading day (Loughran & Ritter, 2004). In addition, existing studies use first-day returns as a measure of information asymmetry.

The long-run performance of IPOs is determined via BHARs and CARs, which are computed over the same horizons of 6, 12, 24, and 36 months (Ritter, 1991). BHARs address the investor-oriented question of whether IPO investors earn abnormal returns over time by following a buy-and-hold strategy. Specifically, BHARs measure the extent to which an investor who purchases shares at the IPO and holds them over a fixed horizon realizes returns that differ from those of a comparable benchmark investment. By compounding returns over time, BHARs capture the cumulative economic experience of IPO investors and are therefore well-suited to assess long-run underperformance or outperformance relative to a benchmark.

Two sets of BHARs are computed over horizons of $T \in \{6, 12, 24, 36\}$ months (Levis, 2011):

(i) Market-adjusted BHAR:

$$BHAR_{i,T}^{MKT} = \prod_{t=1}^{T}\left(1 + R_{i,t}\right) - \prod_{t=1}^{T}(1 + R_t^{MKT}),$$

where R_t^{MKT} denotes the return on the value-weighted CRSP market index.

(ii) Factor-adjusted BHAR:

$$BHAR_{i,T}^{FF3} = \prod_{t=1}^{T}\left(1 + R_{i,t}\right) - \prod_{t=1}^{T}(1 + \hat{R}_{i,t}),$$

where $\hat{R}_{i,t}$ denotes the expected return implied by the Fama-French three-factor (FF3) model, based on firm-specific factor loadings estimated over a 24-month window.

Lyon et al. (1999) compute CARs to answer the topic-adjusted question: Do PE-backed firms persistently earn abnormal returns? Although CARs may be biased predictors of buy-and-hold performance (Barber & Lyon, 1997), they are less skewed and statistically more tractable than BHARs (Lyon et al., 1999). Accordingly, this study computes CARs by aggregating IPO-specific abnormal returns over fixed post-IPO horizons. Abnormal returns are defined as the residuals from the FF3 model, allowing performance to be evaluated net of systematic risk exposures. Formally, CARs are defined as:

$$CAR_{i,T}^{FF3} = \sum_{t=1}^{T}(R_{i,t} - \hat{R}_{i,t})$$

where $\hat{R}_{i,t}$ denotes the expected return implied by the FF3 model, based on firm-specific factor loadings estimated over a 24-month window.

In addition to factor-adjusted CARs, market-adjusted BHARs are reported as a baseline benchmark relative to the value-weighted CRSP market index. Market-adjusted CARs are not separately reported because factor-adjusted CARs provide a more comprehensive adjustment for systematic risk exposures and represent the standard specification in long-horizon event studies (Barber & Lyon, 1997; Fama, 1998). Market-adjusted performance is therefore reported only in the buy-and-hold framework, while CARs are presented only in factor-adjusted form.

To account for systematic differences between PE-backed and non-sponsored IPO issuers, a standard set of firm-specific financial characteristics is used both as regression controls and matching covariates (Michala, 2019): (1) natural logarithm of total assets; (2) natural logarithm of IPO gross proceeds; (3) market-to-book ratio; (4) return on assets; (5) liquidity; and (6) leverage. pe_backed is a binary indicator equal to 1 for IPOs classified as PE-backed according to the SDC PE flag (conditional on the VC flag being false), and 0 for IPOs with neither PE nor VC backing. These variables capture key differences in firm size, growth opportunities, profitability, financial flexibility, and capital structure that may influence IPO pricing and post-IPO performance. To mitigate the influence of extreme observations, all continuous variables used in the analysis, including both outcome and control variables, are winsorised at the 1st and 99th percentiles prior to estimation.

3.3 Descriptive Statistics

Table 2. Descriptive Statistics for the IPO Sample

	Total			Non-backed (0)			PE-backed (1)			Mean
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	(0) - (1)
Panel A - Pre-IPO firm characteristics										
ln(Assets)	4.137	3.998	2.208	3.621	3.387	2.130	5.539	5.618	1.766	-1.917***
ROA	-0.030	0.043	0.452	-0.038	0.057	0.506	-0.009	0.018	0.251	-0.029
Liquidity	0.106	0.044	0.154	0.113	0.046	0.162	0.089	0.037	0.130	0.024***
Leverage	0.436	0.373	0.432	0.390	0.315	0.428	0.562	0.526	0.419	-0.172***
MTB	2.739	1.598	6.750	3.357	1.964	6.953	1.063	0.752	5.848	2.294***
ln(Proceeds)	3.588	3.517	1.429	3.260	3.109	1.365	4.479	4.483	1.202	-1.219***
Panel B - Post-IPO performance measures										
Underpricing	0.122	0.059	0.203	0.122	0.057	0.205	0.122	0.063	0.196	0.000
BHAR(MKT) - 6m	0.021	-0.030	0.426	0.020	-0.037	0.444	0.026	0.000	0.375	-0.006
BHAR(MKT) - 12m	-0.006	-0.109	0.638	-0.019	-0.134	0.662	0.030	-0.045	0.567	-0.049*
BHAR(MKT) - 24m	-0.107	-0.309	0.965	-0.139	-0.374	1.014	-0.021	-0.176	0.813	-0.118***
BHAR(MKT) - 36m	-0.228	-0.527	1.266	-0.283	-0.617	1.306	-0.076	-0.351	1.139	-0.208***
CAR(FF3) - 6m	0.042	0.031	0.339	0.050	0.037	0.353	0.023	0.011	0.298	0.027*
CAR(FF3) - 12m	0.039	0.037	0.396	0.043	0.038	0.412	0.030	0.036	0.351	0.013
CAR(FF3) - 24m	0.022	0.009	0.168	0.020	0.006	0.171	0.026	0.016	0.160	-0.006
CAR(FF3) - 36m	0.046	0.001	0.929	0.048	-0.007	0.968	0.042	0.006	0.812	0.007
BHAR(FF3) - 6m	0.062	0.018	0.361	0.073	0.025	0.379	0.032	-0.007	0.306	0.040***
BHAR(FF3) - 12m	0.045	0.002	0.415	0.053	0.009	0.433	0.023	-0.023	0.359	0.030*
BHAR(FF3) - 24m	-0.099	-0.066	0.223	-0.104	-0.068	0.231	-0.085	-0.057	0.200	-0.018**
BHAR(FF3) - 36m	0.250	-0.126	1.487	0.278	-0.126	1.549	0.176	-0.125	1.303	0.102*

*Notes: This table reports descriptive statistics for the IPO sample used in the analysis. Panel A presents summary statistics for pre-IPO firm characteristics, including firm size, profitability, liquidity, leverage, market-to-book ratio, and IPO proceeds. Panel B reports summary statistics for IPO underpricing and post-IPO stock performance measured using market-adjusted and Fama–French three-factor adjusted return measures over 6-, 12-, 24-, and 36-month horizons. For each variable, the table reports the mean, median, and standard deviation for the full sample, non-sponsor-backed firms, and PE-backed firms. The final column reports the difference in means between PE-backed and non-sponsor-backed firms. The test for mean differences is a standard t-test. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

Table 2 shows pronounced differences in pre-IPO characteristics between PE-backed and non-sponsored firms, underscoring the importance of accounting for the non-random selection into PE sponsorship. Relative to their non-sponsored counterparts, PE-backed IPOs are larger, raise more capital, and enter public markets with higher leverage, while simultaneously exhibiting lower liquidity and lower market-to-book ratios. This is consistent with the literature and supported by past studies reporting similar descriptives (Levis, 2011; Michala, 2019). These patterns indicate that PE sponsors tend to bring more mature, but operationally and financially distinct, firms to the public market, consistent with the established view that PE ownership involves active restructuring and value engineering before exit (Guo et al., 2011). Taken together, the economic magnitude and statistical significance of these differences imply that PE-backed and non-sponsored IPOs are not directly comparable in the raw sample, motivating

the use of matching methods to account for selection on observable characteristics in the subsequent analysis (Michala, 2019).

Turning to performance measures, the univariate comparisons show no difference in underpricing between PE-backed and non-sponsor-backed IPOs, suggesting that offer-stage pricing is similar across the two groups in the raw sample. For aftermarket outcomes, results depend on the abnormal-return metric. Market-adjusted BHARs are higher for PE-backed firms at the 12-, 24-, and 36-month horizons (and not significantly different at 6 months), indicating stronger buy-and-hold performance relative to the market benchmark in the longer run. In contrast, FF3-adjusted measures do not show a uniformly positive pattern for PE-backed IPOs: CARs exhibit only a short-horizon difference (6 months) and are otherwise statistically indistinguishable across groups, while FF3-adjusted BHARs indicate PE-backed underperformance at 6, 12, and 36 months, but relative outperformance at 24 months.

Overall, the descriptive evidence implies that conclusions about post-IPO performance are sensitive to the chosen benchmark and aggregation method.

The correlation matrix (see Table A1 in the Appendix) indicates that the firm characteristics included in the analysis exhibit generally modest pairwise correlations, suggesting that multicollinearity is unlikely to pose a concern for the subsequent regression analyses. Consistent with expectations, long-run performance measures cluster strongly: BHAR and CAR measures within the same horizon are highly correlated, reflecting that they capture similar economic information through different methodologies. By contrast, underpricing is only weakly related to the long-run return measures, suggesting that first-day returns and aftermarket performance reflect distinct dimensions of IPO outcomes. Importantly, the firm fundamentals are largely uncorrelated with long-run performance metrics, reinforcing the view that pre-IPO characteristics alone do not systematically explain post-IPO abnormal returns in the full, unmatched sample.

Overall, the descriptive evidence underscores the need to account for systematic differences between PE-backed and non-sponsored issuers. The two groups diverge sharply in key pre-IPO characteristics, meaning that any performance comparison without adjustment would conflate sponsorship effects with underlying firm heterogeneity. This motivates the use of matching and multivariate controls to create a more comparable counterfactual.

3.4 Econometric Framework

This section outlines the empirical framework used to evaluate the effect of PE sponsorship on IPO pricing and post-IPO stock performance. The analysis proceeds in three stages. First, baseline ordinary least squares (OLS) regressions estimate conditional associations between PE sponsorship and IPO outcomes, controlling for observable firm characteristics as well as industry and issuance-year fixed effects. Second, inverse probability weighting (IPW) is employed to estimate the average treatment effect on the treated (ATET), reweighting observations based on estimated propensity scores to construct a control group that is comparable to PE-backed IPOs in terms of observable characteristics. Finally, a series of robustness checks assesses the stability of the results across alternative specifications and subsamples.

3.4.1 OLS Regressions

To establish baseline differences in IPO pricing and aftermarket performance between PE-backed and non-sponsored firms, the analysis begins with a series of OLS regressions estimated on the full pre-matching sample. The empirical specification is given by:

$$Y_i = \alpha + \beta PE_i + \gamma' X_i + \delta_k + \lambda_t + \varepsilon_i$$

where Y_i denotes the outcome variable for firm i. Depending on the specification, Y_i represents IPO underpricing or a long-run abnormal performance measure, specifically market-adjusted BHARs, factor-adjusted CARs, and factor-adjusted BHARs. The key explanatory variable, PE_i, is a binary indicator equal to one if the IPO is backed exclusively by a PE sponsor and zero otherwise. The regression contains pre-IPO firm characteristics denoted by vector X_i, including firm size (log of total assets), profitability (return on assets), liquidity, leverage, market-to-book ratio, and log IPO gross proceeds, as well as industry (δ_k) and IPO-year fixed effects (λ_t) to control for unobserved heterogeneity across sectors and issuance cohorts (Michala, 2019).

For long-run outcomes, the regression is estimated separately for each post-IPO return horizon (6, 12, 24, and 36 months), while the underlying specification remains unchanged across models. In all regressions, heteroskedasticity-robust standard errors clustered at the IPO-year level are used to account for common time-varying shocks affecting IPO outcomes.

$$UNDERPRICING_i = \beta_0 + \beta_1 PEbacked_i + \beta_2\, ln(Assets)_i + \beta_3 ROA_i + \beta_4 Liquidity_i + \beta_5 Leverage_i + \beta_6 MTB_i + \beta_7\, ln(Proceeds)_i + \sum_k \gamma_k Industry_{ik} + \sum_t \delta_t IPOyear_{it} + \epsilon_i$$

$$BHAR_{i,h}^{MKT} = \beta_{0,h} + \beta_{1,h} PEbacked_i + \beta_{2,h} \ln(Assets)_i + \beta_{3,h} ROA_i + \beta_{4,h} Liquidity_i + \beta_{5,h} Leverage_i + \beta_{6,h} MTB_i + \beta_{7,h} \ln(Proceeds)_i + \sum_k \gamma_{k,h} Industry_{ik} + \sum_t \delta_{t,h} IPOyear_{it} + \epsilon_{i,h}$$

$$CAR_{i,h}^{FF3} = \beta_{0,h} + \beta_{1,h} PEbacked_i + \beta_{2,h} \ln(Assets)_i + \beta_{3,h} ROA_i + \beta_{4,h} Liquidity_i + \beta_{5,h} Leverage_i + \beta_{6,h} MTB_i + \beta_{7,h} \ln(Proceeds)_i + \sum_k \gamma_{k,h} Industry_{ik} + \sum_t \delta_{t,h} IPOyear_{it} + \epsilon_{i,h}$$

$$BHAR_{i,h}^{FF3} = \beta_{0,h} + \beta_{1,h} PEbacked_i + \beta_{2,h} \ln(Assets)_i + \beta_{3,h} ROA_i + \beta_{4,h} Liquidity_i + \beta_{5,h} Leverage_i + \beta_{6,h} MTB_i + \beta_{7,h} \ln(Proceeds)_i + \sum_k \gamma_{k,h} Industry_{ik} + \sum_t \delta_{t,h} IPOyear_{it} + \epsilon_{i,h}$$

The first regression examines offer-stage pricing by relating underpricing to PE sponsorship. The subsequent regressions use long-run abnormal return measures: market-adjusted BHARs, factor-adjusted CARs, and factor-adjusted BHARs (Levis, 2011). These models measure any initial pricing differences and whether those translate into persistent aftermarket performance once risk-adjusted benchmarks are applied. Together, the OLS regressions provide a descriptive benchmark for how PE-backed and non-sponsored IPOs differ along key pricing and performance dimensions before the application of matching methods, which address the substantial pre-IPO characteristic differences documented in the descriptive analysis.

3.4.2 Inverse Probability Weighting (IPW)

The descriptive statistics reveal substantial differences in pre-IPO characteristics between PE-backed and non-sponsored firms. While the OLS regressions control for observable firm characteristics in a linear framework, the results rely on functional form assumptions and extrapolation across potentially imbalanced covariate distributions. To complement regression adjustment and strengthen causal interpretation, I further extend the analysis to include IPW based on estimated propensity scores (Rosenbaum & Rubin, 1983). IPW reweights observations to construct a comparison group that resembles PE-backed IPOs in terms of observable pre-IPO characteristics, thereby reducing reliance on parametric assumptions and improving covariate balance (Imbens & Wooldridge, 2009; Rosenbaum & Rubin, 1983).

Propensity scores are estimated using a logistic regression that models the likelihood of PE backing as a function of the full set of pre-IPO firm characteristics, together with industry and IPO-year fixed effects (Michala, 2019). Observations below the 5th and above the 95th percentile of the estimated propensity score are trimmed to mitigate limited common support.

For each outcome variable, treatment effects are then estimated using IPW, reporting the ATET with heteroskedasticity-robust standard errors clustered at the IPO-year level. Balance diagnostics confirm that covariate distributions between PE-backed IPOs and the reweighted control group are closely aligned after weighting (see Table A2 in the Appendix). Specifically, standardized mean differences across all covariates fall below commonly used thresholds after weighting, indicating satisfactory balance between PE-backed and control IPOs.

This approach ensures that differences in underpricing and abnormal returns between PE-backed and non-sponsored IPOs can be interpreted as conditional on comparable observable characteristics, complementing the OLS results and providing a more credible estimate of the conditional association between PE sponsorship and IPO performance.

4 Empirical Results

This chapter presents the empirical results of the study. Section 4.1 examines IPO underpricing, while Section 4.2 analyses the long-run stock performance of PE-backed IPOs across multiple post-IPO horizons. Section 4.3 summarizes the baseline findings, Section 4.4 presents robustness checks, and Section 4.5 concludes with a summary of the empirical results.

4.1 Underpricing

4.1.1 Baseline OLS Results

Table 3. Baseline OLS Results for IPO Underpricing

PE-backed	0.019*	(0.009)
ln(Assets)	-0.026***	(0.005)
ROA	0.033	(0.022)
Liquidity	0.081**	(0.037)
Leverage	-0.036***	(0.011)
MTB	0.001*	(0.000)
ln(Proceeds)	0.030***	(0.009)
Constant	0.140***	(0.014)
R-squared	0.128	
Statistics		
Observations	2,974	
Clusters (IPO-year)	40	
Industry FE	Yes	
Year FE	Yes	

*Notes: This table reports OLS estimates of IPO underpricing, measured as the first-day return. PE-backed is an indicator variable equal to one for IPOs sponsored by private equity investors. All regressions include industry and IPO-year fixed effects. Standard errors are clustered at the IPO-year level to account for within-year correlation in IPO outcomes and reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.*

Table 3 reports the baseline OLS estimates of the association between PE sponsorship and IPO underpricing. The coefficient on the PE-backed indicator is positive, with an estimated magnitude of 0.019, implying that PE-backed IPOs exhibit, on average, approximately 1.9 percentage points higher underpricing relative to non-sponsored IPOs, conditional on observable firm characteristics and fixed effects. The estimate is statistically significant at the 10% level.

Among the control variables, firm size is strongly negatively associated with underpricing: a one-unit increase in the logarithm of total assets is associated with a 2.6 percentage point reduction in first-day returns. Leverage is likewise negatively and statistically significantly

related to underpricing. In contrast, liquidity and IPO proceeds are positively associated with first-day returns. The market-to-book ratio enters positively but is only weakly significant, while profitability does not display a statistically significant association with underpricing.

In terms of the competing hypotheses developed in Section 2, the positive coefficient on the PE-backed indicator is directionally consistent with the Strategic Pricing Hypothesis (H1b), which predicts higher first-day returns (i.e., greater underpricing) for sponsor-backed offerings. The positive coefficient on the PE-backed indicator is consistent with the Strategic Pricing Hypothesis (H1b), which predicts higher first-day returns (i.e., greater underpricing) for sponsor-backed offerings. However, given the relatively weak statistical significance and the potential influence of observable selection into PE sponsorship, this evidence should be interpreted as preliminary.

4.1.2 IPW Results

Table 5 reports the IPW estimates of the ATET for IPO underpricing. The estimates indicate that PE-backed IPOs exhibit significantly higher underpricing relative to their matched non-PE-backed counterparts. The estimated ATET is 0.024, implying that PE sponsorship increases first-day returns by approximately 2.4 percentage points, on average. This effect is statistically significant at the 5% level. The weighted mean underpricing among non-sponsor-backed IPOs is approximately 10.5%, indicating that the estimated treatment effect represents a non-trivial increase in first-day returns relative to the counterfactual benchmark.

Notably, the magnitude of the IPW estimate is similar to, though slightly larger than, the corresponding OLS point estimate, while exhibiting stronger statistical significance. These findings provide empirical support for the Strategic Pricing Hypothesis (H1b) developed in Section 2. The evidence indicates that, even after adjusting for observable differences between PE-backed and non-sponsored firms, sponsor-backed IPOs exhibit systematically higher first-day returns. This pattern is consistent with models in which sponsors strategically accept greater underpricing, for instance, to signal firm quality, support favourable aftermarket performance, or facilitate staged exit strategies.

4.2 Long-Run Stock Performance

4.2.1 Baseline OLS results

Table 4. Baseline OLS Results for Long-Run Post-IPO Performance

Panel A - Market-adjusted BHARs	**6m**	**SE**	**12m**	**SE**	**24m**	**SE**	**36m**	**SE**
PE-backed	-0.015	(0.019)	0.002	(0.030)	-0.016	(0.055)	0.038	(0.070)
ln(Assets)	0.006	(0.008)	0.027**	(0.013)	0.064***	(0.018)	0.104***	(0.023)
ROA	0.058**	(0.027)	0.020	(0.044)	0.095*	(0.049)	0.131**	(0.052)
Liquidity	-0.009	(0.068)	-0.052	(0.089)	0.050	(0.127)	0.200	(0.160)
Leverage	0.025	(0.032)	-0.024	(0.039)	0.002	(0.054)	-0.020	(0.069)
MTB	0.000	(0.002)	0.001	(0.002)	0.001	(0.003)	0.002	(0.004)
ln(Proceeds)	0.007	(0.009)	-0.005	(0.015)	-0.038	(0.027)	-0.099***	(0.035)
Constant	0.384***	(0.049)	0.447***	(0.078)	0.101	(0.128)	0.071	(0.134)
R-squared	0.056		0.057		0.074		0.087	
Panel B - Factor-adjusted CARs	**6m**	**SE**	**12m**	**SE**	**24m**	**SE**	**36m**	**SE**
PE-backed	-0.018	(0.011)	-0.008	(0.016)	0.006	(0.006)	0.072*	(0.040)
ln(Assets)	-0.011*	(0.006)	-0.004	(0.007)	0.001	(0.003)	-0.025*	(0.012)
ROA	0.035**	(0.022)	0.015	(0.022)	0.024***	(0.009)	0.010	(0.059)
Liquidity	0.005	(0.050)	0.004	(0.063)	-0.009	(0.029)	-0.004	(0.133)
Leverage	0.001	(0.023)	0.005	(0.023)	-0.006	(0.010)	-0.053	(0.063)
MTB	-0.000	(0.001)	-0.000	(0.001)	-0.000	(0.000)	-0.002	(0.003)
ln(Proceeds)	0.012	(0.009)	0.003	(0.010)	-0.002	(0.004)	-0.001	(0.023)
Constant	0.113***	(0.030)	0.034	(0.041)	0.056***	(0.018)	0.070	(0.080)
R-squared	0.029		0.028		0.029		0.028	
Panel C - Factor-adjusted BHARs	**6m**	**SE**	**12m**	**SE**	**24m**	**SE**	**36m**	**SE**
PE-backed	-0.022*	(0.012)	-0.014	(0.016)	-0.003	(0.007)	0.058	(0.069)
ln(Assets)	-0.010	(0.006)	-0.001	(0.007)	0.032***	(0.004)	-0.057**	(0.023)
ROA	0.043*	(0.023)	0.022	(0.024)	0.038***	(0.009)	0.031	(0.091)
Liquidity	-0.012	(0.055)	-0.009	(0.068)	-0.049	(0.034)	0.077	(0.264)
Leverage	0.008	(0.023)	0.003	(0.026)	-0.019*	(0.010)	0.027	(0.096)
MTB	0.000	(0.001)	0.000	(0.001)	-0.000	(0.001)	-0.003	(0.004)
ln(Proceeds)	0.014	(0.009)	0.008	(0.011)	0.002	(0.004)	0.024	(0.032)
Constant	0.116***	(0.036)	0.035	(0.043)	0.030**	(0.014)	0.333***	(0.118)
R-squared	0.033		0.031		0.028		0.037	
Statistics								
Observations	2,974							
Clusters (IPO-year)	40							
Industry FE	Yes							
Year FE	Yes							

*Notes: This table reports OLS estimates of long-run IPO performance. Panel A reports market-adjusted BHARs, Panel B reports FF3-factor-adjusted CARs, and Panel C reports FF3-factor-adjusted BHARs over 6-, 12-, 24-, and 36-month horizons following the IPO. PE-backed is an indicator equal to one for IPOs sponsored by private equity investors. All regressions include industry and IPO-year fixed effects. Standard errors are clustered at the IPO-year level to account for within-year correlation in IPO outcomes and reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.*

4.2.1.1 Market-adjusted BHARs

Table 4 reports the OLS estimates for market-adjusted BHARs. Across all horizons, the estimated coefficients on the PE-backed indicator are small in magnitude and statistically insignificant.

At the 6-month horizon, the coefficient on PE sponsorship is -0.015, indicating slightly lower market-adjusted returns for PE-backed IPOs, though the estimate is not statistically significant. The effect remains statistically insignificant at the 12-, 24-, and 36-month horizons. While the

coefficient is positive at the 12- and 36-month horizons, the estimates are economically small and imprecisely estimated, providing no evidence of systematic long-run outperformance.

4.2.1.2 Factor-adjusted CARs

Table 4 reports OLS estimates for FF3-adjusted CARs. Across the 6-, 12-, and 24-month horizons, the coefficients on the PE-backed indicator are statistically insignificant and economically small, indicating no meaningful differences in cumulative risk-adjusted performance between PE-backed and non-sponsored IPOs.

At the 36-month horizon, the estimated coefficient is positive and marginally significant at the 10% level, suggesting approximately 7.2 percentage points higher CARs for PE-backed firms over the 36-month post-IPO horizon. However, this effect is not observed at shorter horizons and therefore does not provide consistent evidence of long-run outperformance.

4.2.1.3 Factor-adjusted BHARs

Table 4 presents OLS results for FF3-adjusted BHARs. At the 6-month horizon, the coefficient on the PE-backed indicator is -0.022 and marginally significant at the 10% level, suggesting modest short-run underperformance of PE-backed IPOs.

At the 12-, 24-, and 36-month horizons, the estimated effects are statistically insignificant and economically small. Although the coefficient becomes positive at the 36-month horizon, the estimate is imprecise and does not provide reliable evidence of long-run outperformance.

4.2.2 IPW Results

Table 5. ATET Estimates of the Effect of PE Backing on IPO Performance (IPW)

	ATET	Robust SE	N
Underpricing	0.024**	(0.010)	2,664
BHAR(MKT) - 6m	-0.025	(0.022)	2,664
BHAR(MKT) - 12m	0.005	(0.032)	2,664
BHAR(MKT) - 24m	0.006	(0.047)	2,664
BHAR(MKT) - 36m	0.060	(0.063)	2,664
CAR(FF3) - 6m	-0.015	(0.017)	2,664
CAR(FF3) - 12m	-0.004	(0.019)	2,664
CAR(FF3) - 24m	0.008	(0.008)	2,664
CAR(FF3) - 36m	0.058	(0.045)	2,664
BHAR(FF3) - 6m	-0.023	(0.018)	2,664
BHAR(FF3) - 12m	-0.009	(0.020)	2,664
BHAR(FF3) - 24m	0.009	(0.010)	2,664
BHAR(FF3) - 36m	0.024	(0.066)	2,664

*Notes: This table reports Average Treatment Effects on the Treated (ATET) estimated using inverse probability weighting (IPW). The treatment indicator equals one for PE-backed IPOs. Propensity scores are estimated using a logit model including firm characteristics, industry fixed effects, and IPO-year fixed effects. Observations below the 5th and above the 95th percentile of the estimated propensity score are trimmed. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.*

Table 5 reports IPW estimates of the ATET for market-adjusted BHARs, FF3-adjusted CARs, and FF3-adjusted BHARs across post-IPO horizons of 6, 12, 24, and 36 months.

For market-adjusted BHARs, the estimated treatment effects are statistically insignificant at all horizons. At the 6-month horizon, the ATET is negative, suggesting approximately 2.5 percentage points lower abnormal returns for PE-backed IPOs relative to comparable non-sponsored firms, but the effect is not statistically significant. At longer horizons, point estimates become positive, but remain imprecisely estimated and statistically indistinguishable from zero. Similar patterns emerge for FF3-adjusted CARs and FF3-adjusted BHARs. Across all horizons, the estimated treatment effects vary in sign and are statistically indistinguishable from zero.

Overall, the IPW results corroborate the OLS findings and provide no systematic evidence that PE-backed IPOs outperform comparable non-sponsored firms in the long run.

4.3 Summary of Baseline Findings

This section synthesises the empirical findings across outcome measures, estimation approaches, and time horizons in order to provide a coherent overview of the results presented in Sections 4.1 and 4.2.

Across measures of initial underpricing and post-IPO stock performance, the results indicate a clear distinction between short-run pricing outcomes at the IPO and subsequent aftermarket performance. While baseline OLS estimates suggest a weak positive association between PE sponsorship and IPO underpricing, no corresponding evidence emerges for differential long-run stock performance of PE-backed firms across any specification.

Comparing market-adjusted and factor-adjusted performance measures, the results are consistent in showing no persistent abnormal returns associated with PE sponsorship. Market-adjusted BHARs display no systematic differences between PE-backed and non-sponsored IPOs at any horizon, while factor-adjusted BHARs and CARs yield, at most, isolated and marginally significant effects that are not robust across horizons or performance metrics.

A comparison between baseline OLS estimates and IPW ATET estimates further highlights the role of observable selection. While the OLS regressions occasionally produce marginally significant coefficients, primarily at shorter horizons, these associations do not survive adjustment for selection using IPW. Across all long-run performance measures, the ATET estimates are statistically insignificant and economically small, indicating no detectable causal effect of PE sponsorship on post-IPO stock performance once observable differences are accounted for.

Finally, considering short-term versus long-term horizons, the results show that any short-run differences, whether in underpricing or early post-IPO performance, do not persist over longer horizons. Neither BHARs nor CARs provide evidence of sustained abnormal performance attributable to PE sponsorship at 12-, 24-, or 36-month horizons.

Taken together, the cross-measure and cross-horizon evidence indicate that apparent associations observed in baseline OLS regressions do not extend consistently across performance measures, time horizons, or identification strategies, and do not persist once selection on observables is addressed.

In terms of the study's hypotheses, the empirical evidence provides support for the Strategic Pricing Hypothesis (H1b), which predicts higher IPO underpricing for sponsor-backed firms. In contrast, the results do not support the Performance Enhancement Hypothesis (H2a) regarding long-run stock performance. Instead, the absence of systematic abnormal return differences between PE-backed and non-sponsored IPOs is more consistent with the Market

Efficiency Hypothesis (H2b), which predicts that any value created during the PE ownership phase is incorporated into IPO pricing and does not translate into persistent post-IPO stock market advantages. These findings highlight that PE sponsorship appears to affect the pricing dynamics at the IPO stage without generating persistent abnormal stock market performance in the years following the offering.

4.4 Robustness Analyses

To assess the stability of the baseline IPW findings, several additional robustness checks are conducted. These tests examine whether the estimated treatment effects are sensitive to (i) the functional form of the propensity-score model, (ii) industry composition, (iii) the exclusion of low-priced IPOs, and (iv) differences across hot and cold issuance periods. In each case, IPW is used to estimate ATET, and inference follows the same significance thresholds as in the baseline analysis.

4.4.1 Alternative Propensity-Score Specification

As a first robustness check, the propensity-score model is re-estimated using a nonlinear specification that includes interaction terms between firm characteristics. This allows for a more flexible modelling of the selection process into PE backing.

Table A3 (see Appendix) reports the corresponding ATET estimates. The positive effect of PE backing on IPO underpricing remains statistically significant at the 1% level. The estimated ATET is 0.029, indicating that PE-backed IPOs exhibit approximately 2.9 percentage points higher first-day returns relative to comparable non-sponsored firms under the nonlinear specification. The magnitude is slightly larger than in the baseline IPW results.

In contrast, none of the long-run performance measures are statistically significant at any horizon. For market-adjusted BHARs, FF3-adjusted CARs, and FF3-adjusted BHARs, the estimated ATETs are economically modest and statistically indistinguishable from zero across the 6-, 12-, 24-, and 36-month horizons.

Overall, the results obtained using the nonlinear propensity-score specification confirm the baseline findings: while PE backing is robustly associated with higher IPO underpricing, there is no systematic evidence of long-run abnormal outperformance.

4.4.2 Industry Subsample Analyses

To assess whether the estimated treatment effects are driven by specific sectors, the IPW analysis is repeated separately within major industry groups. Given the smaller sample sizes

within industry subsamples, the propensity-score model is specified more parsimoniously, excluding nonlinear interaction terms to preserve common support and avoid separation in the logit estimation. Table A4 (see Appendix) reports the corresponding ATET estimates by industry.

For IPO underpricing, none of the industry-specific ATET estimates are statistically significant at conventional levels. Although point estimates are generally positive across sectors, there is no evidence that the baseline underpricing effect is concentrated in any particular industry.

In contrast, the long-run performance measures display substantial heterogeneity across sectors. For market-adjusted BHARs, statistically significant positive effects emerge in industrials at the 24- and 36-month horizons, as well as in telecom at the 36-month horizon. For FF3-adjusted BHARs, significant effects are observed in finance (negative at 6 months and positive at 36 months), HT (negative at six months), telecom (positive at 36 months), and energy (negative at 24 months). Similarly, FF3-adjusted CARs reveal significant effects in CPS (positive at 12 months), finance (positive at 36 months), HT (negative at multiple horizons), retail (positive at 24 months), and telecom (positive at 36 months).

Importantly, these significant coefficients are not consistent across industries or horizons and vary in sign. The evidence, therefore, points to sector-specific dynamics rather than a systematic pattern of long-run outperformance associated with PE backing. Given the number of industry-horizon combinations examined, isolated significant coefficients should be interpreted cautiously.

4.4.3 Excluding Low-Price IPOs

As an additional robustness check, the IPW analysis is re-estimated after excluding IPOs with an initial offer price below $5. This restriction removes penny stocks and micro-cap offerings that may exhibit distinct return dynamics and potentially distort the estimated treatment effects. Table A5 (see Appendix) reports the corresponding ATET estimates. The positive effect of PE backing on IPO underpricing remains statistically significant at the 1% level. The estimated ATET equals 0.025, implying that PE-backed IPOs exhibit approximately 2.5 percentage points higher first-day returns relative to comparable non-sponsored firms within this restricted sample. The magnitude is nearly identical to the baseline IPW estimate.

In contrast, none of the long-run performance measures are statistically significant at any horizon. For market-adjusted BHARs, FF3-adjusted CARs, and FF3-adjusted BHARs, the estimated ATETs are economically modest and statistically indistinguishable from zero across the 6-, 12-, 24-, and 36-month horizons.

Overall, excluding low-priced IPOs does not alter the main conclusions. The association between PE backing and higher IPO underpricing remains robust, while there is no evidence of systematic long-run abnormal outperformance.

4.4.4 Hot vs. Cold Issuance Period

As a final robustness check, the IPW analysis is conducted separately for hot and cold IPO issuance periods. This allows for an examination of whether the estimated treatment effects differ across market environments characterized by varying issuance activity.

Table A6 (see Appendix) reports the corresponding ATET estimates. For IPO underpricing, the positive effect of PE backing is statistically significant only during cold issuance periods. The estimated ATET equals 0.032 and is significant at the 5% level, indicating that PE-backed IPOs exhibit approximately 3.2 percentage points higher first-day returns relative to comparable non-sponsored firms during cold markets. In contrast, the underpricing effect is not statistically significant during hot issuance periods.

For long-run performance, market-adjusted BHARs display one statistically significant result. During hot issuance periods, the 36-month ATET equals 0.196 and is significant at the 5% level. No other horizons are statistically significant in either hot or cold periods. For FF3-adjusted CARs and FF3-adjusted BHARs, none of the estimated treatment effects are statistically significant across horizons in either market regime.

Overall, the results indicate that the underpricing effect is concentrated in colder issuance environments, while evidence of long-run abnormal performance remains limited and does not display a consistent pattern across market conditions.

4.5 Summary of Empirical Findings

Taken together, the robustness analyses support the central pattern documented in the baseline IPW results. Across alternative propensity-score specifications and sample restrictions, PE backing remains robustly associated with higher IPO underpricing, with economically meaningful magnitudes that are stable across implementations. By contrast, the evidence for long-run abnormal performance remains limited. The nonlinear propensity-score specification and the offer-price restriction yield no statistically significant effects for market-adjusted BHARs, FF3-adjusted CARs, or FF3-adjusted BHARs across post-IPO horizons. The industry subsample analysis highlights heterogeneous effects in a subset of industries and horizons, but these results are not consistent in sign or persistence and should therefore be interpreted cautiously. Finally, splitting the sample by issuance conditions indicates that the underpricing

effect is concentrated in colder issuance periods, while long-run market-adjusted outperformance appears only as an isolated 36-month effect during hot periods. Overall, the robustness checks reinforce the conclusion that PE sponsorship is reliably linked to higher first-day returns, whereas systematic long-run outperformance is not supported by the data.

5 Discussion

5.1 IPO Underpricing

The empirical analysis indicates that IPOs backed by PE sponsors exhibit moderately higher levels of first-day underpricing than comparable non-sponsored offerings. In the preferred IPW specification, the estimated ATET suggests that PE-backed IPOs experience approximately 2.4 percentage points higher first-day returns relative to otherwise similar firms. Given a counterfactual mean underpricing of roughly 10.5% for non-sponsored IPOs, this implies average first-day returns of approximately 12.9% for PE-backed offerings.

These findings provide empirical support for the Strategic Pricing Hypothesis (H1b) developed in Section 2, which predicts that sponsors may tolerate higher underpricing to facilitate successful offerings and favourable aftermarket performance. PE investors frequently retain substantial ownership stakes following the IPO and typically exit their investments gradually through secondary share sales. Under these circumstances, moderate underpricing may improve investor demand, generate positive market sentiment, and support favourable trading conditions for subsequent share disposals.

At the same time, the results do not provide strong support for the Certification Hypothesis (H1a). Although PE sponsors are sophisticated investors who actively monitor portfolio firms prior to exit, their involvement does not appear to eliminate valuation uncertainty in the IPO setting. Buyout-backed firms often emerge from complex financial restructurings and frequently exhibit relatively high leverage following LBO transactions. These characteristics may offset some of the informational advantages associated with sponsor oversight, leaving residual uncertainty regarding firm valuation at the time of the offering.

Importantly, the estimated effect remains moderate in economic magnitude. While statistically significant, the increase of approximately 2.4 percentage points represents only a modest fraction of the overall level of IPO underpricing observed in the sample. This suggests that PE sponsorship influences certain aspects of the price-formation process but does not fundamentally alter the institutional mechanisms that generate positive first-day returns in IPO markets.

5.2 Long-Run Stock Performance

In contrast to the results for IPO underpricing, the empirical analysis provides no systematic evidence that PE-backed IPOs exhibit different long-run stock performance relative to comparable non-sponsored firms. Across all return measures employed in the analysis, including market-adjusted BHARs, FF3-adjusted CARs, and BHARs, the estimated effects of PE sponsorship are economically small and statistically insignificant across post-IPO horizons of up to 36 months.

These findings are broadly consistent with the Market Efficiency Hypothesis (H2b) developed in Section 2. While PE sponsors frequently implement operational improvements, governance changes, and financial restructuring during the private ownership phase, the results suggest that these improvements are largely incorporated into the IPO valuation. Consequently, public market investors do not appear to earn persistent abnormal returns from investing in buyout-backed IPOs.

The absence of systematic long-run abnormal returns also aligns with the broader literature on IPO performance. Prior studies document that apparent long-run return anomalies often weaken once returns are evaluated using appropriate benchmarks and risk adjustments. In this context, the consistent absence of abnormal performance across multiple return measures in the present study strengthens the interpretation that PE sponsorship does not generate persistent stock-market advantages after listing.

Overall, the results suggest that the value created during the PE ownership period is primarily realized prior to the IPO and reflected in the offer price. Once firms enter public markets, their subsequent stock performance appears broadly comparable to that of otherwise similar non-sponsored firms.

5.3 Reconciling Short-Run and Long-Run Findings

The empirical results of this thesis reveal an interesting combination of short-run and long-run outcomes. On the one hand, the analysis shows that PE-backed IPOs exhibit moderately higher levels of underpricing relative to comparable non-sponsored firms. On the other hand, the long-run performance analysis does not reveal any systematic differences in abnormal stock returns between PE-backed and non-sponsored IPOs. Reconciling these two findings is important for understanding the role of PE sponsors in the IPO process and the mechanisms through which value is created and realized in public markets.

This distinction helps explain why higher initial returns do not necessarily translate into superior long-run performance. Underpricing primarily reflects the allocation and pricing of

shares during the offering process, rather than the intrinsic value of the issuing firm. Consequently, short-run price adjustments following the IPO may occur without implying persistent mispricing in the secondary market.

The absence of long-run abnormal returns for PE-backed IPOs is consistent with the view that financial markets are able to incorporate information about firm quality and expected performance at the time of the offering (Fama, 1998). Fama (1998) argues that many long-run return anomalies disappear once appropriate risk adjustments are applied, suggesting that persistent abnormal returns are difficult to exploit in well-functioning markets. From this perspective, the market price established at the time of the IPO may already reflect the value created by PE sponsors during the pre-IPO ownership period.

This interpretation is also consistent with the economic role of PE investors. During the buyout period, PE sponsors typically engage in operational restructuring, governance improvements, and financial discipline aimed at increasing firm value. Kaplan and Strömberg (2009) describe PE as a governance mechanism that can enhance firm performance through improved monitoring and stronger managerial incentives. If these value-enhancing changes are successfully implemented prior to the IPO, the resulting improvements in firm quality should already be incorporated into the IPO valuation.

Under this interpretation, the benefits associated with PE ownership appear to be largely realized before firms return to public markets. Public investors, therefore, acquire firms that have already undergone substantial restructuring and performance improvements. Consequently, the scope for abnormal returns following the IPO is limited, as the value created during PE ownership appears to be largely capitalized into the offer price.

6 Limitations and Future Research

6.1 Limitations

While the empirical design and robustness analyses provide a comprehensive assessment of the relationship between PE sponsorship and IPO outcomes, several limitations should be acknowledged when interpreting the results.

First, the analysis of long-run performance requires that firms remain publicly listed for at least 36 months following the IPO. As discussed in Section 3, IPOs that delist before completing the 36-month observation window are excluded from the performance analysis. Because firms experiencing poor performance are more likely to delist early, this restriction introduces potential survivorship bias, as poorly performing firms are more likely to delist before the end of the observation window. Consequently, estimated long-run abnormal returns may be biased upward relative to the full IPO population. If early delistings are systematically associated with negative post-IPO outcomes, the exclusion of these observations may lead to an upward bias in estimated long-run returns. Although the descriptive evidence suggests that many early delistings occur due to mergers and acquisitions rather than poor performance, the possibility that excluded firms exhibit systematically different return dynamics cannot be fully ruled out.

Second, the identification strategy relies on observable firm characteristics when constructing the comparison group of non-sponsored IPOs. The IPW approach substantially improves covariate balance between PE-backed and non-sponsored firms, as well as reduces bias arising from observable differences. However, as in most observational studies, the analysis cannot fully eliminate the possibility that unobserved factors influence both the likelihood of PE sponsorship and subsequent IPO outcomes. For example, sponsor selection may depend on managerial quality, internal governance structures, or proprietary operational improvements that are not directly observable in the available data.

Third, the analysis focuses exclusively on buyout-backed IPOs and excludes VC-backed firms. While this restriction is intentional and allows the study to isolate the effects associated with mature firms exiting PE ownership, it also limits the generalizability of the results. VC-backed IPOs differ substantially from buyout-backed firms in terms of firm maturity, growth opportunities, and informational uncertainty. Consequently, the conclusions of this study apply specifically to buyout-sponsored IPOs rather than to sponsor-backed offerings more broadly.

Finally, the study evaluates post-IPO stock performance using abnormal return measures derived from market-adjusted benchmarks and the FF3 model. Although these approaches are widely used in the long-horizon event-study literature, conclusions regarding abnormal performance can be sensitive to benchmark specification and return aggregation methods.

While the use of multiple performance measures mitigates this concern, alternative asset-pricing models or benchmark constructions could yield somewhat different estimates of long-run abnormal returns.

Taken together, these limitations highlight that the results should be interpreted as evidence of conditional associations rather than definitive causal estimates of the effect of PE sponsorship on IPO outcomes.

6.2 Future Research

The limitations outlined above suggest several directions for future research on PE exits and IPO performance.

First, future studies could further investigate the role of early delistings in shaping post-IPO performance outcomes. Incorporating delisting returns or explicitly modelling the delisting process would allow researchers to account for firms that exit public markets before completing standard performance horizons. Such approaches could help determine whether survivorship bias influences estimates of long-run IPO performance.

Second, additional research could examine the role of unobservable firm characteristics in the selection of companies into PE ownership. While matching and weighting methods address observable differences between PE-backed and non-sponsored firms, future work could employ alternative identification strategies, such as instrumental-variable approaches or natural experiments, to better isolate the causal impact of PE sponsorship.

Third, future research could explore heterogeneity across different types of PE sponsors. Buyout funds vary substantially in terms of size, investment strategy, governance involvement, and exit timing. Examining whether IPO outcomes differ across sponsor characteristics, such as fund reputation, experience, or holding period, could provide deeper insight into how PE ownership influences firm performance.

Finally, further work could investigate how market conditions affect the timing and performance of PE exits through IPOs. The analysis in this study indicates that underpricing effects may vary across issuance environments. A more detailed examination of how sponsor behaviour interacts with IPO market cycles, investor sentiment, and macroeconomic conditions could provide a richer understanding of the dynamics surrounding PE-backed public offerings.

7 Conclusion

This thesis examines whether PE sponsorship systematically affects IPO pricing and post-IPO stock performance. Using a sample of U.S. IPOs between 1982 and 2021, the analysis compares buyout-backed IPOs with otherwise comparable non-sponsored offerings. The empirical framework combines OLS regressions with IPW to account for observable differences between sponsor-backed and non-sponsored firms. Post-IPO performance is evaluated using multiple abnormal return measures, including BHARs and CARs, based on both market-adjusted and factor-adjusted benchmarks.

The empirical results indicate that PE sponsorship is associated with moderately higher IPO underpricing. After adjusting for observable firm characteristics, PE-backed IPOs exhibit approximately two to three percentage points higher first-day returns relative to comparable non-sponsored offerings. This finding is consistent with models of strategic IPO pricing, suggesting that PE sponsors may accept moderate underpricing in order to facilitate successful offerings and support a smooth transition to public markets.

In contrast, the analysis finds no systematic evidence that PE sponsorship leads to superior long-run stock performance. Across multiple abnormal return measures and post-IPO horizons of up to 36 months, PE-backed IPOs do not consistently outperform comparable non-sponsored firms once observable differences and systematic risk exposures are taken into account. These results suggest that any value created during the PE ownership period is largely incorporated into the IPO price rather than generating persistent abnormal returns in public markets.

Overall, the findings indicate that PE sponsorship influences pricing dynamics at the time of the IPO but does not lead to sustained stock market outperformance after listing. While buyout-backed firms may enter public markets with operational improvements achieved during the private ownership phase, public market valuations appear to incorporate these improvements at the time of the offering. As a result, the benefits associated with PE ownership are largely realized before firms return to public markets rather than accruing to investors in the years following the IPO. These findings also have implications for market participants. For investors, the results suggest that the presence of PE sponsors does not necessarily signal superior long-run stock market performance relative to comparable non-sponsored firms. While sponsor-backed offerings may exhibit somewhat higher first-day returns, the evidence does not indicate persistent outperformance in the years following the IPO. For corporate boards and PE sponsors, the results highlight the importance of operational and governance improvements during the private ownership phase, as the value created prior to the IPO appears to be largely reflected in the offering price rather than in subsequent stock market performance.

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Appendix

Table A1. Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	PE-backed	1.000										
(2)	ln(Assets)	0.385	1.000									
(3)	ROA	0.029	0.230	1.000								
(4)	Liquidity	-0.070	-0.213	-0.180	1.000							
(5)	Leverage	0.177	-0.038	-0.374	-0.129	1.000						
(6)	MTB	-0.151	-0.228	0.141	0.028	-0.180	1.000					
(7)	ln(Proceeds)	0.378	0.793	0.038	-0.054	0.054	-0.164	1.000				
(8)	Underpricing	-0.001	-0.096	0.011	0.135	-0.081	0.078	0.039	1.000			
(9)	BHAR(MKT) – 36m	0.073	0.135	0.093	-0.015	-0.004	-0.023	0.067	-0.075	1.000		
(10)	CAR(FF3) – 36m	-0.003	-0.047	-0.013	0.022	-0.035	0.000	-0.034	0.039	-0.037	1.000	
(11)	BHAR(FF3) – 36m	-0.030	-0.087	-0.022	0.024	0.014	0.012	-0.065	0.020	-0.014	0.765	1.000

Notes: This table reports Pearson pairwise correlations among the main variables used in the analysis.

Table A2. Covariate Balance Diagnostics

	Standardised Differences		Variance Ratio	
	Raw	Weighted	Raw	Weighted
ln(Assets)	0.791	0.069	0.788	1.029
ln(Proceeds)	0.772	0.041	0.849	1.016
MTB	-0.248	0.026	0.841	1.181
ROA	0.038	0.016	0.351	0.769
Liquidity	-0.104	-0.055	0.725	0.803
Leverage	0.284	-0.01	0.918	0.944

Notes: This table reports covariate balance diagnostics for the inverse probability weighting (IPW) specification. Standardized mean differences and variance ratios are reported before and after weighting. The propensity score is estimated using firm characteristics together with industry and IPO-year fixed effects. Observations below the 5th and above the 95th percentile of the estimated propensity score distribution are trimmed. The final sample contains 2,664 IPOs, of which 671 are PE-backed and 1,993 are non-sponsored.

Table A3. ATET Estimates of the Effect of PE Backing on IPO Performance (IPW, Nonlinear Propensity Score Specification)

	ATET	Robust SE	N
Underpricing	0.029***	(0.010)	2,663
BHAR(MKT) - 6m	-0.031	(0.023)	2,663
BHAR(MKT) - 12m	-0.003	(0.033)	2,663
BHAR(MKT) - 24m	-0.004	(0.049)	2,663
BHAR(MKT) - 36m	0.057	(0.065)	2,663
CAR(FF3) - 6m	-0.021	(0.017)	2,663
CAR(FF3) - 12m	-0.006	(0.020)	2,663
CAR(FF3) - 24m	0.011	(0.009)	2,663
CAR(FF3) - 36m	0.070	(0.047)	2,663
BHAR(FF3) - 6m	-0.030	(0.019)	2,663
BHAR(FF3) - 12m	-0.013	(0.020)	2,663
BHAR(FF3) - 24m	0.011	(0.010)	2,663
BHAR(FF3) - 36m	0.033	(0.070)	2,663

*Notes: This table reports average treatment effects on the treated (ATET) estimated using inverse probability weighting (IPW) based on a nonlinear propensity-score specification that includes interaction terms between firm characteristics. The treatment indicator equals one for PE-backed IPOs. Propensity scores are estimated using a logit model including firm characteristics, industry fixed effects, IPO-year fixed effects, and interaction terms. Observations with estimated propensity scores below the 5th percentile and above the 95th percentile are trimmed. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

Table A4. ATET Estimates of the Effect of PE Backing on IPO Performance (IPW, by Industry)

	CPS	Energy	Finance	Health	HT	IND	Materials	Media	Retail	Staples	Telecom
Underpricing	0.036	0.007	0.020	0.029	-0.032	0.015	-0.007	-0.007	0.039	0.012	0.023
BHAR(MKT) - 6m	0.016	0.012	-0.018	-0.095	-0.069	-0.021	-0.011	0.047	0.064	-0.090	0.011
BHAR(MKT) - 12m	0.083	-0.050	0.006	-0.058	0.004	0.068	-0.028	0.143	0.138	-0.037	-0.265
BHAR(MKT) - 24m	-0.099	-0.068	0.055	0.081	-0.016	0.365***	0.070	0.181	-0.078	-0.082	0.155
BHAR(MKT) - 36m	0.089	0.148	0.248	0.173	-0.094	0.419**	0.028	0.310	-0.212	-0.206	0.652**
CAR(FF3) - 6m	0.057	0.033	-0.037	-0.003	-0.123**	-0.064	-0.021	-0.001	-0.008	-0.055	0.004
CAR(FF3) - 12m	0.149***	-0.015	-0.011	-0.050	-0.061	0.071	-0.054	0.013	0.085	-0.058	-0.055
CAR(FF3) - 24m	0.025	0.009	0.013	0.020	-0.046*	0.015	0.013	-0.005	0.045*	0.002	-0.053
CAR(FF3) - 36m	0.207	0.139	0.250**	0.056	-0.257*	0.013	-0.047	0.073	-0.019	0.000	0.667*
BHAR(FF3) - 6m	0.041	0.027	-0.034***	-0.028	-0.133**	-0.061	-0.014	-0.029	-0.027	-0.114	-0.002
BHAR(FF3) - 12m	0.147***	-0.069	-0.042	-0.033	-0.063	0.067	-0.031	-0.013	0.077	-0.095	-0.104
BHAR(FF3) - 24m	0.011	-0.056*	0.027	0.003	-0.019	0.024	-0.012	0.001	0.052	0.008	-0.077
BHAR(FF3) - 36m	0.299	0.025	0.390*	-0.017	0.313	-0.064	0.024	0.005	-0.011	-0.113	0.550*
Observations	278	217	260	274	451	342	170	155	273	143	99

*Notes: This table reports inverse probability weighted (IPW) estimates of the average treatment effect on the treated (ATET) of PE backing on IPO underpricing and long-run performance by industry. Propensity scores are estimated using a logit model including firm characteristics. Observations are trimmed at the 5th and 95th percentiles of the estimated propensity score distribution. The IPW estimation is performed separately within each industry group. Statistical significance is based on heteroskedasticity-robust standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Industry groups with insufficient observations (Government Agencies and Real Estate) are excluded from the analysis.*

Table A5. ATET Estimates of the Effect of PE Backing on IPO Performance (IPW, Offer Price ≥ $5)

	ATET	Robust SE	N
Underpricing	0.025***	(0.010)	2,563
BHAR(MKT) - 6m	-0.024	(0.022)	2,563
BHAR(MKT) - 12m	-0.004	(0.032)	2,563
BHAR(MKT) - 24m	-0.008	(0.047)	2,563
BHAR(MKT) - 36m	0.059	(0.064)	2,563
CAR(FF3) - 6m	-0.018	(0.017)	2,563
CAR(FF3) - 12m	-0.010	(0.019)	2,563
CAR(FF3) - 24m	0.009	(0.008)	2,563
CAR(FF3) - 36m	0.043	(0.045)	2,563
BHAR(FF3) - 6m	-0.027	(0.018)	2,563
BHAR(FF3) - 12m	-0.012	(0.020)	2,563
BHAR(FF3) - 24m	0.010	(0.010)	2,563
BHAR(FF3) - 36m	0.018	(0.067)	2,563

*Notes: This table reports average treatment effects on the treated (ATET) estimated using inverse probability weighting (IPW). The treatment indicator equals one for PE-backed IPOs. Propensity scores are estimated using a logit model including firm characteristics, industry fixed effects, and IPO-year fixed effects. Observations with estimated propensity scores below the 5th percentile and above the 95th percentile are trimmed. The sample excludes IPOs with an offer price below $5. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

Table A6. ATET Estimates of the Effect of PE Backing on IPO Performance (IPW, Hot vs. Cold Issuance Periods)

	Hot Periods		Cold Periods	
	ATET	Robust SE	ATET	Robust SE
Underpricing	-0.012	(0.011)	0.032**	(0.015)
BHAR(MKT) - 6m	-0.036	(0.027)	0.016	(0.029)
BHAR(MKT) - 12m	-0.015	(0.040)	0.061	(0.045)
BHAR(MKT) - 24m	0.047	(0.063)	0.062	(0.062)
BHAR(MKT) - 36m	0.196**	(0.084)	0.120	(0.079)
CAR(FF3) - 6m	-0.020	(0.023)	-0.019	(0.023)
CAR(FF3) - 12m	-0.034	(0.025)	0.002	(0.030)
CAR(FF3) - 24m	0.017	(0.011)	0.000	(0.013)
CAR(FF3) - 36m	0.080	(0.055)	0.106	(0.066)
BHAR(FF3) - 6m	-0.025	(0.024)	-0.033	(0.024)
BHAR(FF3) - 12m	-0.042	(0.027)	-0.020	(0.031)
BHAR(FF3) - 24m	-0.018	(0.014)	0.014	(0.014)
BHAR(FF3) - 36m	0.070	(0.086)	0.080	(0.108)
Oberservations	Total	Non-backed	PE-backed	
Hot periods	1,451	1,120	331	
Cold periods	1,226	882	344	

*Notes: This table reports average treatment effects on the treated (ATET) estimated using inverse probability weighting (IPW) separately for hot and cold IPO issuance periods. Hot issuance periods are defined at the annual level based on the number of IPOs. A year is classified as hot if annual IPO counts exceed the five-year trailing mean plus one trailing standard deviation. Propensity scores are estimated using a logit model including firm characteristics, industry fixed effects, and IPO-year fixed effects. Observations with estimated propensity scores below the 5th percentile and above the 95th percentile are trimmed. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*