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Unlocking the Vault: The impact of Forms of Ownership on Corporate Cash Holdings.

A comparative study between Private Equity backed and Non-Private Equity backed Firms.

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PREFACE AND ACKNOWLEDGEMENTS

The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

ABSTRACT

This study is aims to examine the effect of forms of ownership on corporate cash holdings. Firms are classified into Private Equity and Non- Private Equity backed targets. A sample of about 2,890 observations under 443 unique non-financial firms were selected among the two forms of ownership to determine the variation in their cash holdings. Observations are captured between the period 2003 and 2023 of Private Equity and Non-private Equity acquired firms in the United Kingdom, Denmark, and Finland. The sample of firms employed are matched with the Propensity Score Matching technique to ensure comparability in the firms captured. The study further employs the Fixed effect Model to evaluate its hypothesized statements. Findings of the study shows a negative and significant effect of Private Equity and Non-Private Equity acquisitions on cash holdings. Private Equity backed Firms proved to hold on average less cash than their Non-private equity counterparts. The study further accesses the effect of post acquisition changes in leverage on cash holdings and finds that changes in leverage that occur after acquisition largely affects cash holdings. Primarily the impact of this change in leverage on cash holdings is less severe for private equity backed firms.

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CHAPTER 1: Introduction

1.1 Background

Cash hoarding in U.S. non-bank firms has surged, reaching $6.9 trillion (about $21,000 per person in the US), an amount greater than the GDP of just two countries. Out of every $5 of total assets held by non-banking U.S. firms, cash now represents $1 (Govindarajan et al., 2024). Companies holding high cash reserves despite the risk of rising interest rate, warrants the need for examining cash holding behaviour in the context of forms of ownership.

Various strategic reasons drive companies to maintain cash reserves. Primarily, the reasons span from catering for daily operations to the alleviation of financial risk. (Khatib et al., 2022). Forms of Ownership, be it family or institutional ownership, cause distinct effects on a firm's financial management behavior. Significantly, it shapes the decision-making attitude concerned with managing cash reserves.

Corporate finance theories and past studies have explored motivations guiding cash-holding decisions. For instance, the agency theory suggests that managers may fail to prioritize the interest of shareholders. The magnitude of this problem impacts the level of cash held in reserve. (Jensen & Meckling 1976; Gogineni et al., 2012). According to the Pecking Order theory, firms may maintain cash to fund investment opportunities instead of borrowing (Myers.,1984; Frank et al.,2020). Meanwhile, the tradeoff theory suggests that companies desire to hold an optimal level of cash. Early studies like (Khan et al., 2019) have posited that there is a significant and negative effect of ownership structure on cash holdings. By employing the random effect model, they Classify 80 non-financial firms into diversified and focused structures and investigate the effect of ownership structure on corporate cash holdings for firms listed on the Karachi Stock Exchange over a span of seven years. Their paper observes that, diversified firms hold less amount of cash relative to focused firms. This is attributed to the fact that firms with diversified owners may want to invest excess cash in profitable opportunities instead of leaving it idle while Focused firms may want to hold more cash to maintain liquidity, to invest in potential growth opportunities or to mitigate risk. Their results provide empirical evidence that a company’s ownership structure can significantly impact its cash holding decisions.

1.2 Significance of Studying Cash Holdings

By focusing on public and private firms, we can provide insights into corporate governance and its impact on various aspects of the business economy. For instance, Mortal et al., (2020) have assessed the fact that cash holdings may differ between public and private firms due to a higher opportunity

cost of holding cash in private firms. Opler et al., (1999) analyzes factors that determine cash holdings amongst publicly traded US firms in the period 1971–1994. They observe that firms with robust growth opportunities, higher business risk, and smaller size posses more cash reserves than other firms. In line with Ferreira and Vilela., (2004) , Opler et al., (1999) have also assessed the motives backing cash holding decision in firms. Fundamentally, they find that cash is an essential driving force of companies, thus serves as transactional instrument. Precautionarily, they show firms may buffer up cash to shield themselves against emergencies or to speculate with cash by taking up investment opportunities they deem profitable.

1.3 Goal, Research Questions and Organization of Study

The impact of forms of ownership on Cash holdings in the domain of Private Equity and Non-Private Equity-backed firms have been explored by a few. This has left a gap in understanding the events at play on cash holdings in the two sample groups. Private Equity-backed firms are an interesting area to consider, considering its dominance in acquisitions and role in economic recoveries over the past decades.

To give a nuanced perspective on how forms of ownership affect firm cash holdings levels, this study addresses the following research questions:

1. Do Non-private Equity-backed firms hold more cash than Private Equity-backed firms?

2. Does the impact of Changes in Leverage on cash holdings differ between Private Equity and Non-Private Equity backed firms?

The rest of the study is structured as Section 2 consisting of the Theoretical and empirical background, Section 3 with the Data selection, Section 4 with the Methodology, Section 5 with the Descriptive statistics, Analysis of data and Results Interpretation, Section 6 with Discussion of Results and Implications, and finally, Section 7 with the Concluding Remarks.

CHAPTER 2: Theoretical and Empirical Framework

2.1 Introducing to Corporate Cash Holdings

Corporate Cash holdings can simply be referred to as money kept by an organisation to cater for obligatory settlements. Its management is a crucial element in corporate finance. Cash reserves serve a broad array of purposes and companies adopt various internal strategies aimed at safeguarding and moderating the amount or period of cash disbursement. For instance, creditor payments that are not close to due dates may be deferred to maintain cash reserves at desired levels. The readiness of cash reserves poses a liquidity advantage, however holding to much cash in reserve can be considered costly because its productive use of may be sacrificed. Moreover, strategies like purposefully deferring obligatory payments to maintain control of cash outflows can lead to unfavourable consequences such as fines and sour creditor- debtor relationships. It is particularly important to critically access existing dynamics to help generate policies aimed at maintaining cash on efficient levels .

The decision to hold a certain level hold cash in firms is driven by a series of theories and motives. This study focuses on the theories, which is broadly categorized into those centred around Agency Conflicts, namely the Agency and Stewardship Theory and those that revolve around Capital Structure decisions, such as Trade-off and Pecking Order Theory (Weidemann, 2018).

2.2 Agency Conflict Centred Theories

Theories centred around Agency Conflict mainly addresses issues that may arise between Principals and agents contracted to act on their behalf.

The Agency Theory

The Agency theory assesses the possibility of managers holding on to excess cash for personal gain rather than investing it for shareholder good. Forms of ownership can highly influence these dynamics. This theory is deemed a principal factor to consider in exploring the relationship between the forms of ownership and corporate cash holdings. It provides insights into how ownership structures can alter the behaviour and motive of agents (managers), thereby influencing important policies surrounding monetary management decisions.

In the theory's concept, principals delegate authority to agents to manage the organization with the expectation that, the agents will prioritize their best interests. However, the differences in goals and risk tolerance between shareholders and managers can lead to a conflict of interest problem with a resultant agency costs effect. Jensen and Meckling., (1976) describe this phenomenon as stemming from information asymmetry, where managers, privy to a more detailed information, act in ways that do not align with the best interests of shareholders. In the realm of corporate finance, this misalignment is a prevalent concern. It manifests in decisions that may enrich managers and their corporate image at the shareholder's expense. It subsequently stifles the shareholder desire for maximizing wealth. For

example, managers may forgo positive NPV projects and hoard cash to invest in projects that do net necessarily benefit shareholder but is good for their prestige. Gogineni et al., (2012) aligns with the findings in Jensen and Meckling., (1976) by asserting that the agency problem that is birthed from the agency theory , is characterised by agents (managers) not always acting for the good of their principals(shareholders). Corporate cash holding decisions are as a result severely impacted by the magnitude of this Agency problem.

The Stewardship Theory

The Stewardship Theory is relevant to the discussion of forms of ownership and firm monetary management decisions. It identifies peculiar characteristics of family ownership that can influence a firm's approach to management and its overall performance**.** The **t**heory suggests that family owners are likely to act as stewards of the corporation , who desire to prioritize the welfare and longevity of their company over personal gain.

Moreover, the corporate behaviour in family firms often support passing on of cultural values and objectives across generations. .

The Stewardship Theory offers valuable insights, especially when considering corporate cash holdings. According to Chrisman (2019), family owners' long-term orientation encourages strategies that safeguard resources and increase firm value over time. Contrary to the agency theory, the alignment of managers with the firm's goals in this theory can diminish conflicts of interest and agency costs, thereby fostering effective monetary management practices. Decisions made by stewards are geared towards company sustainability and not at its the expense.

While the agency view may argue that established managers in a firm with strong corporate governance may employ contemporary tools like corporate social responsibility (CSR) to collude with internal stakeholders for higher managerial discretion as well as cash holdings (Cheung, 2016), the stewardship theory would posit that managers of family ownership establishes a strong corporate governance pillar that leads to transparency and efficient cash use. Managerial decisions are important to consider because shareholders have entrusted their wealth to them. Dittmar, Mahrt-Smith and Servaes (2007) from their study into international corporate governance and cash holdings found corporations in countries with poor shareholder protection rights to have cash holdings twice as much as those with good shareholder protection. In the lens of the agency theory, this is an agency problem since managers in corporations with weaker shareholder protection rights hoard cash because they are not effectively monitored. The stewardship domain however offers an expectation that managers balance the benefits of holding cash against it cost. This stewardship idea often results in sustainable business practices and long-term value creation, as family owners view the firm as a generational legacy (Faisal et al., 2020).

2.3 Capital Structure Centred Theories

The trade-off theory

Theories that surround capital structure decisions provide a systematic and an empirical rational behind a firms approach to financing its business activities. Corporate cash holdings are important to consider since cash is the most liquid asset and primary resource of a firm.

From Modigliani and Miller., (1958), the trade-off theory incorporates taxes into the capital structure decision. The liability components of a firms' capital structure decision are entailed of leverage. This leverage component has an advantage is tax deductibility and a disadvantage of bankruptcy cost. In the trade off theory, a firm bargains the advantage of tax- deductibility of debt and the disadvantage of bankruptcy cost to the idea of an optimal capital structure.

The theory relates to the corporate cash holding of an organisation by considering the benefits and the disadvantages. Cash management decisions made by firms are influenced by the ease to which a firm can access external capital markets and other factors. Organisations with better access to capital markets are less inclined to have large cash reserves since they easily raise funds and at lower cost rates, (Tran Q,. 2020).

The pecking order theory

The Pecking Order theory asserts that managers are often privy to more information about an organisation's prospects and abilities than other external stakeholders, and often make financing decisions by prioritising costs considerations.

In this theory, organisations primarily prefer to use internal financing in the form of cash holdings and retained earnings to fund their operations because they deem it cheaper and more convenient (Frank, Goyal, & Shen, 2020). This act is evidential especially in organisations that have sub holdings. The sub companies often lend to each other excess cash reserves that are not in use at more cheaper rates. Debt and Equity financing are then considered respectively as the next best alternatives in the event of insufficient cash reserves.

The pecking order theory is a principal factor in determining the rationale behind an organisation decision to hold cash. Organisations may be hesitant in financing positive NPV projects with debt and equity. This is because, upon debt financing a positive NPV project, a company stands the risk of being exposed to higher costs of debts , hence posing a threat to potential profit. Equity financing also comes with the risks of ownership dilution or sending a wrong signal about a company's real value. Managers for this reason, may prioritize funding their projects with cash reserves.

Like the trade-off theory, the pecking order theory also points out other factors like an ease in capital access that impacts monetary management decisions. However, it is more inclined to the asymmetries of information between managers and stakeholders and its impact. Contrary to the trade-off theory, it posits that organisations select the optimal cash holding level by considering its best options. The

theory's concept suggest that firms may hoard cash primarily to fund investments activities due to some informational advantage they have.

2.4 The Behavior of Private Equity Firms and Non-Private Equity Firms

Private equity backed firms are notorious strategy implementers who aim at improving the value of companies they acquire. The strategies Private Equity acquiror firms employ adds value to targets, the so-called governance, financial and operational engineering (Kaplan & Stromberg., 2009). This sets them apart from Non-private Equity counterparts by their improving of efficiency in the use of resources , especially its cash holdings. Kaufmann, Kolaric and Walter., (2023) posit that after a company goes public, it undertakes strategic growth projects like more acquisitions if it is Private Equity backed relative to if it is Non-private Equity backed. These strategic growth projects often require the use of vast number of resources (cash). Acquisitions are shown to be a primary growth strategy for Private Equity firms and contributes to lower cash holdings, as most of their funds may be channelled towards investments activities.

Do Non-private Equity-backed firms hold more cash than Private Equity-backed firms post acquisition?

The first research question posed, aims to address the differences of cash holding levels between firms acquired by Private Equity owners and those acquired Non-private Equity owners. Existing Literature in the likes of Denis and Sibilkov (2009) attributes high cash holding levels to a sign of financial constraint. Their paper argues that firms that are financially constrained often rely more on internal financing since their access to the external capital market is restricted. Additionally, Erel et al (2015) in their paper; Do acquisitions relieve Firms financial constraints attest to the posits by Denis and Sibilkov (2009). They prove that after acquisition, the average firm experiences a relief in financial constraint. They show that acquisitions add value to the target firm by putting them in a better standing at the external capital market thus reducing their need to hold excess cash.

Simulating Erel et al 2015, This study examines the impact of Private Equity and Non-private Equity acquisitions on cash holdings. It however differs by testing if the impact of acquisitions on cash holdings varies for Private Equity and their Non-private Equity acquired counterparts.

Does the impact of changes in Leverage on cash holdings differ between Private Equity and Non-Private Equity backed firms?

The second research question is motivated by the findings of prominent studies that Private Equity acquisition introduces corporate value to target firms in the form of governance, financial and operational engineering (Kaplan & Stromberg., 2009). The subject of change in Leverage can not be neglected in the topic of acquisitions . Agliardi et al., (2015) argue that in acquisitions, the acquiror is

most likely to finance diversified deals with debt. High debt capacity results in higher leverage. Secondly, Private Equity acquisitions often undertake their acquisitions through debt funding, and this alters the debt structure of the target firms. This study aims to empirically evaluate if changes in leverage, post acquisition, impacts the cash holdings of target firms. If so, how does the magnitude of this impact vary between Private Equity and Non-Private Equity backed firms.
The findings obtained from this study will contribute further insights into existing literature on the cash holdings dynamics and generate meaningful implications on the impact of forms of ownership, from the perspective of Private Equity and Non-private Equity owners on the targets cash holdings.

By the statements inferred, a justified cause is warranted for the investigation into the distinctive effects of the two forms of ownership on corporate cash holdings, by testing the following hypotheses.

Hypothesis one.
H_o: Post-acquisition, there is no variation in cash holdings between Private Equity firms and Non-Private Equity backed firms
H_1:Post-acquisition, Non- Private Equity backed firms hold more cash relative to Private Equity backed counterparts.
Hypotheses two
H_o: There is no variation in the impact of change in leverage on cash holdings between Private Equity and Non-private Equity backed firms
H_1: Post-acquisition, Non- Private Equity backed firms see more impact of change in leverage on cash holdings than their Private Equity backed counterparts.

The next chapter describes the Data section with detailed insights into the sample selection procedure and its unique characteristics employed for the study.

CHAPTER 3: Data Selection

3.1 Sample and data sources.

Private equity data scarcity is a conventional obstacle in literature. This phenomenon motivated the restriction of this study to European firms. The choice made is to capitalize on the requirements by regulations for European Firms to disclose financial information. The study selects deals from eight prominent European countries namely the United Kingdom, Norway, Sweden, Finland, Denmark, Germany, France, and Spain ranging from the period 2003 to 2023. The notoriety and dynamism in private equity acquisitions of the selected countries makes them an attractive zone to consider for research. The United Kingdom for instance has a resilient private equity market, In the year 2020, a remarkable 1.4 percent of their GDP was associated with Private Equity investments. Moreover, it has a way higher average deal size. (Private equity in the UK - statistics & facts | statista.2024). Secondly the four Nordic countries mentioned are seen to have remarkably grown in private equity deals, with its deal volume rising by 6.2% consecutively and have housed one the largest European private Equity fund (Nordic Capital XI) in the same year(Pitch Book, 2023). The remaining countries, Germany, Spain, and France have a strong presence in the Private Equity market, with many companies often targeted by buyout funds (Woodman 2022).

3.2 Private Equity backed firms Selection.

Data on Private Equity firms are extracted from Orbis M &A, the population of firms was constructed by including Targets with Venture capital of Private equity investments and institutional buyouts. These deal types have substantial risk profiles with substantial risk returns which are incredibly attractive for Private Equity firms.

Completed and confirmed deals resulted in a total of 164,111 deals Financed by Private Equity Firms. Secondly, firms captured in the target group were categorized based on their assets to capture any variations that may occur between heavy asset and light assets companies on cash holdings levels. The sample firm is characterized by minimum operating revenue of fifty million to help capture firms that are more established and to make use their complete accessible financial information.

Finally, the study restricts deals to minimum of 55% signifying firms with substantial control. The extensive period of 20 years captured by the study eliminates the effects of any short-term volatilities in cash holdings that could have been influenced by one off events like the 2008 financial crises and the COVID-19 pandemic. These additional steps taken reduced the sample size to 4, 880 firms.

3.4 Non-private Equity backed firms' selection.

To ensure comparability and validity, the study employs a control group of Non-private Equity acquired firms of a similar criteria and motivations as listed in the treatment group above. The collection employs deal of non-private equity firms of total 624,994. The treatment group is replicated by categorizing firms based on their assets and an operating bracket of revenue of fifty million to about thirty-nine billion. Thirty-nine billion operating revenue maximum limit is captured from the maximum operating revenue in the sample of (Treatment group) Private-Equity backed firms selected. This is to ensure that firms in the control group categorically match those in the treatment group. Finally, The Non-Private equity backed sample firms were restricted to acquisition with a minimum of percentage of 55%. This criterion employed resulted in a cut the total number of Non-private equity firms to 7225.

As an ultimate step, the study excludes all Financial Firms and Winsorizes all the variables employed in the data processing stage to control for the effect of extreme outliers. This results in about 30,063 observations of 1,457 unique firms for both samples. The selected treatment and control group were matched to result in 2,890 observations of about 443 unique firms.

3.5 Definition of Variables

Main Variables

To examine the effect of forms of ownership on Corporate Cash holdings. The study employs Cash holdings as the dependent variable. Cash holdings is measured as the sum of Cash and Cash equivalents as a fraction of total assets. (Dittmar and Mahrt-Smith 2007).
The main independent variables are "POSTxBuyout" , "Delt_Lev'' and "Delt_LevxPostxBuyout '.' "POSTx Buyout," interacts the Post Acquisition phase with form of ownership "PE buyout," it takes a value of 1 if a firm is in the post period and acquired by a Private Equity backed firm and zero if otherwise.

Examination of changes that take place in cash holdings when a firm is acquired is relevant to this study. The POST variable is employed in this study to help disintegrate the changes that occur in cash holdings for all sample of firms following an acquisition. Furthermore, Kaplan and Strömberg (2009) and Acharya et al. (2013) have highlighted the role of Private Equity in monetary management decisions. Their findings have purported that that Private Equity backed firms often show peculiar monetary management traits as compared to their Non-Private Equity backed peers. This motivates the study to interact change in Leverage with Post acquisition and isolate its form of ownership effect on Cash holdings.
To assess the second hypothesis , the study analyses the variable change in leverage. It is measured as the difference between the average leverage prior and post deal year.

To further examine how impact of changes in leverage differs for the two sample of firms, the interaction effect of change in leverage, the Post Acquisition period and Ownership form "Delt_LevxPostxBuyout" on cash holdings is analysed.

Control Variables

The study further controls for other corporate factors that could impact a firm's cash holding decisions including:

Firm size, Larger firms are often resilient to insolvency and has been proven to have an inverse relationship with cash holdings, as they often have an easy access to external capital markets (Ferreira & Veila, 2004: Opler et al;1999, Erel et al; 2015). Firm size is measured by the log of f total assets plus one. The plus one factor was included in the measurement to still capture meaningful values for firms in a startup phase with insignificant assets.

Tangibility, it is measured as the log of total fixed assets as a fraction of total assets. To reduce a firm's risk exposure, the precautionary motive of holding cash, causes firms that are more prone to adverse events (smaller firms) to hold more cash than larger firms. (Govindarajan et al., 2024). This establishes inverse relationship of the tangibility of a firm with cash holding levels. Furthermore, a firm may have easy access to capital markets due to the existence of tangible of assets which can for collateral purposes.

Leverage, this variable is measured as loans and long-term debt as a fraction of total assets. For risk management purposes, High leverage should increase cash holdings to serve as a buffer against bankruptcy, however, past empirical tests show that corporate cash levels reduce as Leverage increases (Baskin 1987).

Net working capital (NWC), measured as the fraction of working capital to total assets is expected to have a positive relation with cash. High NWC may indicate a firm's ability to cover short-term liabilities, subsequently translating to higher cash reserves.

Other Factors

Inventory , a high amount of inventory held in stock may lock up revenue, thus cash inflow. This establishes an inverse relationship between inventory and Cash holdings.

Age, the age of a firm is measured as the last fiscal year of a firm less the date of its incorporation. Older firms are expected to have a longer standing and more ease to the capital markets hence, less a need to hold cash. The study also examines the impacts of other variables like Cash flow and EBITDA margin (based on measuring operational performance as indicated by profitability)

CHAPTER 4: Methodology

In the data collection stage, the study employed systemic steps to ensure comparability in the two groups selected (*see Appendix D: Data Selection).* However, the study employs the propensity to score matching technique to introduce randomness and reduce bias in the sample firms.

4.1 PROPENSITY SCORE MATCH

This procedure results in Private Equity-acquired firms matched with Non-private Equity-acquired firms of similar characteristics (covariates). The technique runs a probit regression model which results in the generation of propensity to score (PS) values. The PS values serve as an indicator of the probability that firms will be Private Equity acquired based some selected covariates (observed characteristics).

psmatch2 D_PE_buyout $PS_vars2 if t < 0, n (10) common

The `psmatch2` command above, generates a probit regression of a binary treatment term (D_PE_buyout). The treatment term takes a value of 1 if a firm is Private Equity acquired and zero if otherwise. The covariates employed as represented by `$PS_vars` include Operational efficiency (Cash _Frac_wi), Firm size (Log_TOAS_wi) log, Inventory (log), Tangibility (*TFA_frac_wi*), log age, an interaction between age and firm size/ tangibility, and profitability (EBITDA_margin).

The matching is restricted to a period only before the acquisition took place to ensure that no acquisition effects are captured in the matching process. Further, the matching process matches each treated unit to about ten control units within a common support region to generate similar propensity scores for balance.

The p-value of the chi-square obtained from the study indicates an overall significance at 1%. Among the employed covariates, Firm size, Inventory, tangibility, and the constant proved to be significant influencers on the probability of being acquired by a private equity firm.

see Appendix A: Probit regression model obtained from the Matching regression model.

4.2 PROPENSITY SCORE TEST RESULTS

After the matching procedure, the study drops all unmatched firms and conducts a propensity to score balanced test to access the success of the matching model.

The propensity to score test displays high p-values of majority of the covariates employed and most of variance of covariates close to one (see Appendix E). This is an empirical implication that the match between Private Equity and Non-private Equity backed firms was a near success.

Figure 2 and 3 displays the kernel density plots of the propensity scores for Private equity backed firms (blue line -treatment group) and Non-private Equity backed firms (red line-control group) before and after matching. The aim of these figures is to give a visual representation the balance and success matching, ex-ante, and post.

PRE AND POST MATCH PROPENSITY TO SCORE KERNEL PLOTS

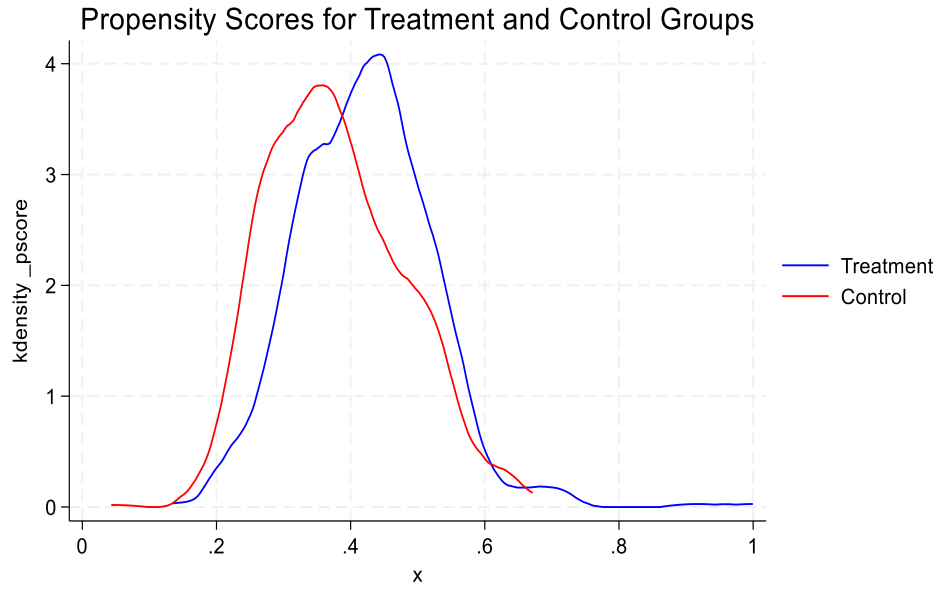

Figure 1PREMATCH PROPENSITY TO SCORE KERNEL PLOT

The pre match kernel density plot shows a bimodal and fairly symmetric distribution of the propensity scores for each group. The X-axis represents the propensity scores, and Y-axis represents the kernel density of these scores with the treatment group. The peak of both plots is with that of the control group (3.8) slightly above the treatment group (4.2). Variability between both curves is moderate showing a right skewed treatment group and a left skewed the control group. The plot of the treatment and control group seams to possess quite a low degree variation, thus establishing the confidence that matching may completely account for any existing differences between the two groups of firms.

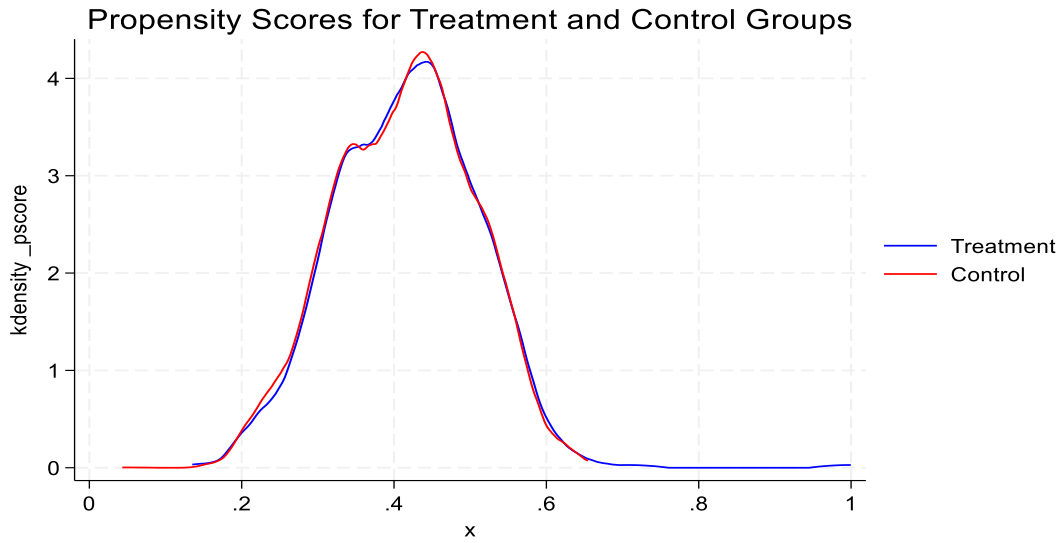

Figure 2 POST MATCH PROPENSITY TO SCORE KERNEL PLOT

The post-match kernel density plot shows a bimodal graph of a symmetric distribution slightly skewed to the left. As seen above, the two curves overlap completely indicating a successful matching procedure. Then two graphs have an almost similar peak level of about 4.2., hence affirming the success of the matching procedure.

CHAPTER 4: Methodology

PROPENSITY TO SCORE GRAPH

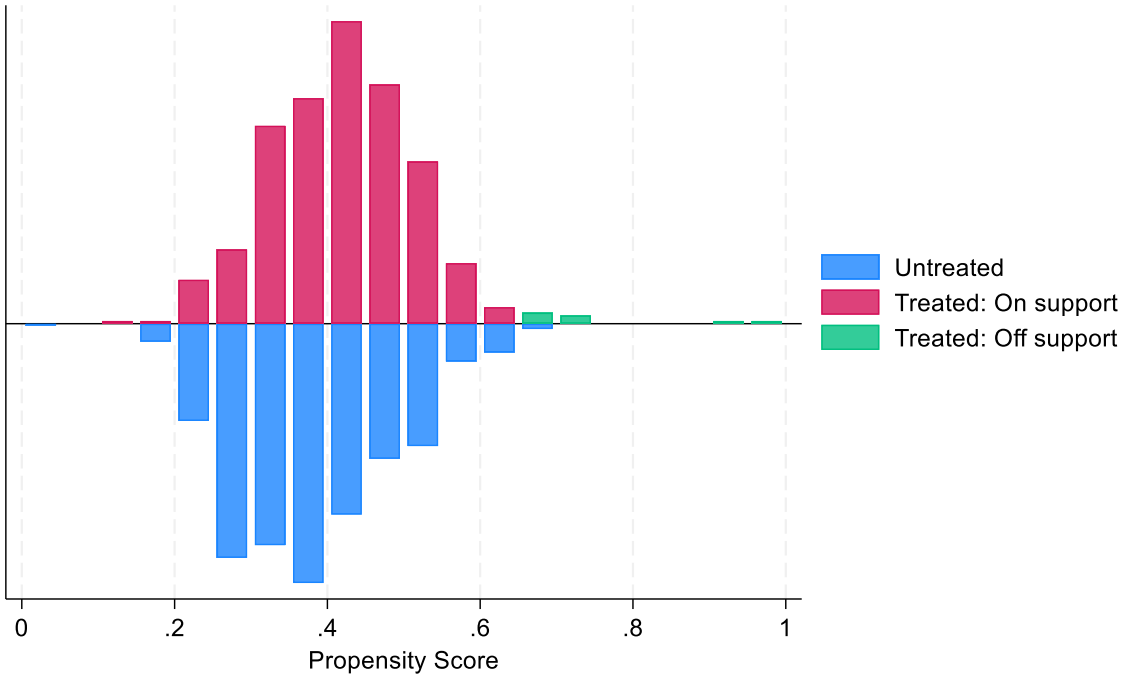

Figure 3 PROPENSITY TO SCORE GRAPH

The figure 3 above shows the propensity to score graph obtain after the matching procedure. The x-axis represents the p scores and the y-axis represent the distribution. From the graph the red bars represent the treated-on support group. They represent Private Equity backed (treated) firms whose propensity scores are captured within the sample of scores that have corresponding matches in the Non – private Equity backed firms (untreated group). The figures show an even distribution of firms from the treatment group being match with their control counterparts, The bar Treated: Off support as shown in green bars implies firms that were not matched, and this amount is negligible.

4.3 Model Evaluation and Selection.

In this section, the study embarks on a crucial stage where the optimal model for analysing the effects of forms of ownership on cash holdings is evaluated and selected. The model employed is important to ensure accuracy and reliability in the findings of this study.

The study compares the Pooled Ordinary least squares (OLS), Fixed effects (FE) and the random effects (RE) model by providing a detailed but brief description of the assumptions.

The Pooled Ordinary Least Square Model (OLS)

Of the three models to be considered, the Pooled OLS model is of the peculiar nature of assuming homogeneity across all entities and the time considered. The nature of the pooled OLS causes it to treat data as a large cross-sectional sample.

CHAPTER 4: Methodology

The Random Effect Model (RE)

To examine and make use of any a variation that exist both within and between entity, the Random effect model is of the assumption that, effects specific to entities are not correlated. When is assumption is affirmed, the RE model is preferable because it yields a high explanatory power.

The Fixed Effect Model (FE)

Contrary to the Random effect model, the fixed effect model controls for the effect of any time constant variances that are correlated with the independent variables. The model eliminates any biases that may arise due to any unchanging characteristics of the observations under study.

To select the most appropriate model, a diagnostic test called the Breusch and Pagan Lagrangian multiplier (BPLM) and the Hausman test are undertaken (Khan et al., 2019). This helps to empirically compare the three models and chose between them for the most optimal one.

Table 1 MODEL EVALUATION AND SELECTION

WHY	**ASSESS TYPE**	**ASSESS STATS/ CH12**	**P- value**	**IMPLICATION**
POOLED OLS VRS RE	BPLM	chibar2(01) = 1674.23	0.0000	RE
RE VRS FE	HAUSMAN TEST	chi2(6) = 38.14	0.0000	RE
HETEROSKEDASTICITY	BREUSCH PAGAN	chi2(6) = 348.35	0.0000	YES
	WHITE TEST	chi2(24) = 1099.72	0.0000	YES

4.3.1 Breusch and Pagan Lagrangian multiplier test

TESTING BETWEEN POOLED OLS AND THE RANDOM EFFECT (RE) MODEL

A null and alternative hypothesis is generated to help choose between the two Pooled OLS and the Random Effect model.

H_o: Pooled OLS model is optimal for this study's data analysis

H_1: Random Effect model is optimal for this study's data analysis.

From the Breusch and Pagan Lagrangian multiplier results as displayed in Tabel 1, the test shows a p-value of 0.000, which is less than 0.05. This warrants the rejection of the null hypothesis and thus accepting the Random effect model as the most suitable for this study's data analysis.

4.3.2 The Hausman Test

TESTING BETWEEN THE RANDOM EFFECTS AND THE FIXED EFFECT MODEL

To decide between the RE and The FE model, the Hausman test employs the null and alternative hypothesis stating.

H_o: RE Model is optimal for this study's data analysis
H_1: FE model is optimal for this study's data analysis.

The results shown by the P- value suggests that this study should employ the FE model over the RE model. The rejection of the null hypothesis is an indication that the unique errors of the data set are correlated with its regressors, thus affirming the need to employ the Fixed Effects model to control for the presence of any unobserved heterogeneity.

4.3.2 ASSESSING FOR HETEROSKEDASTICITY

To assess for issue heteroskedasticity in the data set. This study formulates and assess the null and Hypothesis:
Ho: Heteroskedasticity is not present in the data set
H1: Heteroscedasticities exist in the data set .
The Breusch Pagan and the white test for heteroskedasticity is employed, both test yields significant p-values at a 5% level, indicating the presence of heteroskedasticity. The study will therefore run robust regressions to address the problem.

4.3.3 Analytical Model

The study employs two main multiple regression equations with Post x Buyout , Delt-lev and , Delt-lev Post x Buyout as the main independent variables for the first model the second model, respectively. Finally, the study combines variables in the first and second models in a third equation to access their joint effect on cash holdings .

$$Model\ 1: CSH\_holdings = \beta_0 + \beta_1 (POST\ x\ Buyout)_{it} + \beta 2\ (F\_S)_{it} + \beta 3\ (LEV)_{it} + \beta 4\ (TGB)_{it} + \beta 5\ (NWC)_{it} + \beta 6\ (INVT)_{it} + \beta 7\ (AGE) + \beta 8\ (OP\_PERF)_{it} + \beta 9 (CF)_{it} + \varepsilon_{it}$$

$$Model\ 2: CSH\_holdings = \beta_0 + \beta_1 (DLT\_LV)_{it} + \beta 2 (DLT\_LV\ x\ POST\ x\ Buyout)\ it + \beta 3\ (F\_S)_{it} + \beta 4\ (LEV)_{it} + \beta 5\ (TGB)_{it} + \beta 6\ (NWC)_{it} + \beta 7\ (INVT)_{it} + \beta 8\ (AGE) + \beta 9 (OP\_PERF)_{it} + \beta 10\ (CF)_{it} + \varepsilon_{it}$$

$$Additional\ model: CSH\_holdings = \beta_0 + \beta 1\ (POST\ x\ Buyout)_{it} + \beta 2\ (F\_S)_{it} + \beta 3\ (LEV)_{it} + \beta 4\ (TGB)_{it} + \beta 5 (NWC)_{it} + \beta 6\ (INVT)_{it} + \beta 7\ (AGE)_{it} + \beta 8\ (OP\_PERF)_{it} + \beta 9\ (CF)_{it} + \beta 10\ (DLT\_LV)_{it} + \beta 11\ (DLT\_LV\ x\ POST\ x\ Buyout\ )_{it} + \varepsilon_{it}$$

Table 2 ESTIMATION OF VARIABLES

CSH_holdings = Cash Holdings	
POST = Post Acquisition period POST x Buyout= PE Buyout in Post period	DLT_LV x BYOUT = Change in Leverage x post x PE buyout
F_S = Firm Size	DLT_LV = Change **in** Delta Leverage
LEV = Leverage	AGE = Firm Age
TGB = Tangibility	CF = Cash Flow
NWC = Net Working Capital	OP_PERF = EBITDA margin
INVT = Inventory	

β_0 and $\beta_{is,}$ are the intercept/slope, and regression coefficients, respectively.

CHAPTER 5 Results

5.1 Descriptive Statistics

The study employs the independent t-test to investigate the mean differences in cash holdings and other corporate variables that affect it. The mean of these variables is analysed to provide a thorough understanding of how variables differ between Private Equity and Non-private Equity backed firms.

Analysis Before Match

In table 3, the average and median values of cash holdings for the two sample firms before matching are analysed. In the pre match phase, Private Equity backed firms hold an average(median) cash value of 11(6) while their non –private equity backed counterparts have an average(median) value of 10(5) . These results show a highly significant difference in the cash holdings between Private Equity and Non-Private Equity backed firms. The p-value of <0.05 indicates the average cash held by Private Equity backed firms differ significantly from that held by Non-Private Equity backed firms.

In addition, the study analyses other variables that impact corporate cash holdings. The p-value of the test statistics yields significant differences in majority of the variables. Firm size, , Inventory, Tangibility, Age, , Deal year, Leverage, and Net profitability show significant p-values at 0.05 percent.

The results obtained is an implication that, based on the covariates considered in this study, firms backed by the two ownership forms differ significantly before the matching process. The remaining variables, EBITDA margin, change in leverage and Net Working capital have insignificant p-values, indicating similar characteristics among the two samples when these factors are accounted for.

Table 3 PRE-MATCH T-TEST

	PE Buyout		**Non-PE Buyout**			
	Mean	*Median*	*Mean*	*Median*	*t-diff*	*P-value*
CF_Frac	-.045	0.22	-0.05	0.00	1.42	0.16
Firm size	3.98	4.00	3.71	3.72	-15.32	0.00
Growth in Asset	2	2	2	2	.	.
Inventory	1.41	1.26	1.36	1.13	-3.22	0.00
Tangibility	0.20	0.13	0.21	0.14	4.89	0.00
Age	2.79	2.89	3.00	3.05	19.03	0.00
deal year	2014	2015	2013	2014	-11.49	0.00
Leverage	0.26	0.22	0.21	0.14	-20.51	0.00
EBITDA_margin	-0.11	0.08	-0.27	0.03	-0.91	0.36

DLT_ in leverage	-0.04	0.03	-1.35	-1.35	-1.18	0.24
Net profitability	-0.11	.04	-0.63	0.02	-2.13	0.03
Net working capital	0.49	.48	0.20	0.61	-0.78	0.43
Cash Holdings	0.11	0.06	0.10	0.05	-3.30	0.00

There are significant differences captured in the mean of cash holdings and the other factors affecting Private Equity backed and Non-Private Equity backed firms before the matching procedure.

Analysis After the Match

Similar to the pre match t-test, the P-values shown in table 4 of the covariates after matching does not lose or improve its significance.

PE Buyout **Non-PE Buyout**

Table 4 POST MATCH T-TEST

	Mean	***Median***	***Mean***	***Median***	***t-diff***	***P-value.***
CF_Frac	0.10	0.26	- 0.10	0.00	2.58	0.01
Firm size	3.84	3.92	3.66	3.60	-5.62	0.00
Growth in Asset	2	2	2	2		
Inventory	1.26	0.95	1.36	1.20	3.57	0.00
Tangibility	0.19	0.11	0.22	0.16	8.49	0.00
Age	2.76	2.83	2.91	3.00	7.35	0.00
deal_year	2019	2019	2019	2020	3.17	3.17
Leverage	0.25	0.21	0.18	0.10	-14.59	0.00
EBITDA_margin	-0.12	0.08	-0.06	0.02	0.50	0.62
Change in leverage	-0.02	0	- 0.02	-0.00	- 0.23	0.82
Net profitability	-0.11	0.49	- 0.54	0.02	- 0.90	0.37
Net working capital	0.47	0.49	0.60	0.60	5.12	0.00
Cash holdings	0.12	0.07	0.11	0.06	- 2.71	0.01

There are significant differences captured in the mean of cash holdings and the other factors affecting Private Equity and Non-Private Equity backed firms after the matching procedure.

Deal Year

After the matching process, the study restricts the time range of observations to 5 years relative to the deal year (t) *see Appendix C*. *Table 5*. presents a statistical description for deals within the data set of the defined period. Within this period, acquisition for the years 2004 to 2023 are captured. The past decade has observed significant fluctuations in acquisition for the two samples as consistent with current trends.

Table 5 DEAL YEARS

Deal_year	PE buyout	Non-E buyout	Total
2004	11	5	16
2005	10		10
2006	12		12
2007		15	15
2008	13		13
2009		5	5
2010	6		6
2011		14	14
2013	6		6
2014	7	14	21
2015	22		22
2016	10	29	39
2017	173	160	333
2018	311	385	696
2019	212	306	518
2020	105	169	274
2021	241	318	559
2022	103	178	281
2023	15	35	50
Total	1,651	1,239	2,890

Table 5 displays the deal years captured in the observations of the study. Notably, acquisitions fluctuate in the year 2015 to 2023 for both firm samples . Deal transactions seem to have dropped in years relative to 2008 and 2019, depicting the effect of some world class events that hit the financial sector (namely the 2008 & COVID -19). Private Equity Firms observe more deals .This is consistent with Kaufmann, Kolaric and Walter., (2023) in their assertion that acquisition are growth strategies for Private Equity firms.

Evolution of Cash Holdings between Forms of Ownership

The study observes the evolution of cash holding within a defined period. Figure 4 shows a fluctuating percentage of Cash holdings within a speculated time . In the years prior to the acquisition, both Private Equity and Non-Private Equity backed firms held vast amount of cash. The cash holding percentage however drops sharply ex-post. The maximum cash held in the post acquisition phase still stays below the minimum percentage of cash held prior to the deal years.

Figure 4

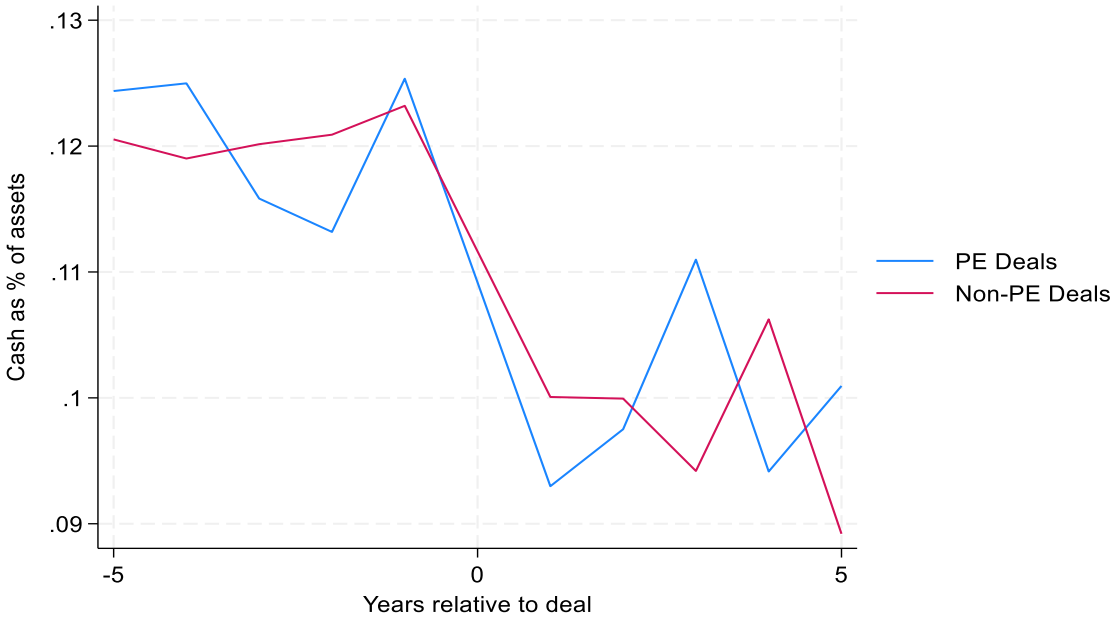

Figure 4 EVOLUTION OF CASH HOLDINGS

Figure 4: The evolution of cash holdings for Private Equity backed Firms are represented by the blue plot and that of Non private Equity backed firms are represented by the red plot. Firms on average see a drastic fall in cash holdings after being acquired by any of the two ownership forms.

Table 6 SUMMARY STATISTICS OF CASH HOLDINGS

	mean	Sd	min	max
Cash % Total assets	0.11	0.12	0.00	0.45
Observations	2890			

Table 6 captures 2,890 observations employed in the data set. the average firm holds 11 percent cash as a fraction of its total assets. The maximum amount of cash held on average is 45 percent.

The summary statistics of cash holdings shown in table 6 provides values of dispersion and mean of cash holdings within the data set employed. The average cash holdings captured is 11 percent, implying that, on the average , firms hold a cash value of 11 percent. On the other hand, the 12 percent standard deviation represents the variability captured in the data set. It interprets that some firms differ

by maintaining an average cash holding of 12 percent which is above the normal average of 11%. Cash holdings across firms spans from a minimum of zero to a maximum of 45 percent.

IMPACT OF ACQUISITION OF THE TWO SAMPLE FIRMS ON CASH HOLDINGS

To access the overall impact of Private Equity and Non-Private Equity acquisitions on cash holdings, the study analyses a regression of the post acquisition phase on cash holdings. On average, firms acquired by either of the two sample groups observe a 0.02 percentage points (1% significance) reduction in cash holdings. In the absence of the post acquisition effect, firms hold a positive cash value of 0.12 percentage points (1% significance).

Table 7 IMPACT OF ACQUISITION BY THE TWO SAMPLE FIRMS

	(1)
VARIABLES	Cash % Total assets
Post	-0.02***
	(0.005)
Constant	0.12***
	(0.003)
Observations	2,890
R-squared	0.007

1% (***) 5% (**) and 10% (*)

Table 7 examines on the real impact of Private Equity and Non -Private equity buyouts on Cash holdings. The two forms of ownership reduce cash holdings by 0.02 percentage points on average. Acquisition has a significant and negative effect on cash holdings and in its absence, firms hold an average of 12 percent cash in reserve at 1% significance.

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MAIN RESULTS

Table 8 shows the results of OLS regressions displayed in 3 models. Estimates obtained from the White and Breusch pagan test proved that the data set used in this study has a non-constant variance (heteroskedastic). For that reason, this study employs robust regressions to ensure reliability and validity of its findings. The model controls for time invariant factors like firm, country and deal year that could impact cash holdings.

The three models displayed in table 8, shows an average R-square value of 0.71. This implies that the model employed explains 71 percent of the variation in cash holdings on account of the independent variables. The average p-value of the F-statistic also shows a highly significant value, affirming the model's fit and reliability in terms of this study's empirical analysis.

The coefficients of the variables employed, shows the impact of the main independent variables (i.e. being in a post-acquisition period and being acquired by Private Equity Firm, change in leverage and

Interaction of the two), on the dependent variable (Cash Holdings). It further explores the magnitude , direction, and significance of other control variables. The output generated from the table helps to evaluate the hypotheses and to determine if there is no variation of cash holdings between Private Equity and Non -Private Equity backed firms and if the impact of changes in Leverage on cash holdings differ between the two sample firms post acquisition.

5.2 Empirical Results

Table 8 EMPIRICAL RESULTS

	(1)	(2)	(3)
	Cash holdings	Cash_holdings	Cash_holdings
Post x PE acquired	-0.02*		-0.02
	(0.01)		(0.01)
Firm size	-0.02***	-0.03***	-0.03***
	(0.01)	(0.01)	(0.01)
Tangibility	-0.06	-0.02	-0.02
	(0.04)	(0.04)	(0.04)
Leverage	-0.00	-0.04*	-0.04*
	(0.02)	(0.02)	(0.02)
Net_Working_cap	0.06***	0.04***	0.04***
	(0.02)	(0.02)	(0.02)
Inventory	-0.01	-0.00	-0.00
	(0.01)	(0.01)	(0.01)
Firm_Age	0.00	-0.00	0.01
	(0.02)	(0.02)	(0.02)
Operational_performance	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Cashflow	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
DLT_in_leverage		-0.84***	-0.92***
		(0.31)	(0.30)
Delt_LevxPostxBuyout		0.10*	0.10*
		(0.05)	(0.05)
Constant	0.21***	0.20***	0.15**
	(0.05)	(0.06)	(0.07)
Observations	1826	1102	1102
R^2	0.73	0.71	0.71

Adjusted R^2	0.66	0.63	0.63

Table 8: OLS regression on the effect of forms of ownership and change in leverage on Cash holdings. The variables Post x PE Acquired takes the value of 1 if a firm is in the acquisition period and zero if otherwise. Delt_LevxPostxBuyout determines the impact of post leverage change on cash holdings. The estimates are of the significance 1% (***), 5% (**) and 10% (*).

Hypothesis 1

H_o: Post acquisition, there is no variation in cash holdings between Private Equity and Non -Private Equity backed firms.

The variable Post x PE acquired shows that Private Equity acquired firms, see an average change in cash holdings by -0.02 percentage points significant at a 10 percent level. The negative sign of the coefficient implies that Private Equity acquisition and cash holdings move in opposite directions. Thus, per acquisition, Private Equity backed firms reduce cash holdings by 0.02 percentage points more than their Non-private Equity backed counterparts. The significant P-value implies that we reject the null hypothesis, that is, cash holdings does not vary between the two ownership forms.

The study also employs several control variables to account for other firm factors that could affect cash holdings, Firm size displays a coefficient of -0.02. The negative signs indicate an inverse relationship between firm size and cash holdings at a 1% significant level. The implication is that firm size and cash holdings move in opposite directions. Thus, a unit increase in firm size reduces cash holdings by 0.02 percentage points. The sign and significance are consistent with previous results of (Ferreira & Veila, 2004)

However, the sign of coefficient of Net Working Capital (NWC) is inconsistent with (Ferreira & Veila, 2004). The 0.06 percentage points significant at 1 percent level , shows a positive relationship between NWC and cash holdings. The magnitude of the sign indicates that the two variables move in the same direction, hence, a 1 percent increase in NWC increases cash holdings by 0.06 percentage points.

Further, Tangibility has a coefficient of -0.06, based on its sign, it moves in the opposite direction from cash holdings. A unit increase in the tangible assets of firms reduces their cash holdings by 0.06 percentage points. Despite the high magnitude of tangibility's effect on cash holdings, the results show a statistically insignificant value.

The coefficient of Leverage, Operational performance and inventory shows a negative value, yet an insignificant relation to cash holdings. This implies that Firms with high Leverage, Operating performance, and Inventory on average, reduce cash holdings by an insignificant margin.

The constant of model (1) in table 8, shows a positive coefficient of 0.21 at a 1 percent significant

level. This explains the expected change in cash holdings, in the absence of the independent and control variables. The positive sign and the magnitude of 0.21 implies that in the absence of acquisition and all other firm characteristics that affect cash holdings, firms hold a cash value of 0.21 percentage points.
The remaining control variables, Firm Age and Cashflow prove to have no value and an insignificant effect on Cash holdings.

Overall, the model employs 1,832 observations of 391 unique firms. The p-value is significant at 10 percent for the variable POSTxPE acquired. This implies that we reject the null hypothesis and accept the alternative hypothesis that there is variation in cash holdings between Private Equity and Non private equity backed firms in the post acquisition period.

Hypothesis 2

Model (2) utilizes 1,102 observations under 216 unique firms to assess the second hypothesis. The model shows an overall significant p-value of the F-statistic, 0.000 < 0.05 and an R-squared of 71 percent. Model 2 test the second null hypothesis that there is no variation in the impact of Change in leverage on Cash Holdings between Private Equity and Non-Private Equity backed Firms. The results obtained shows that upon acquisition, changes in leverage reduces cash holdings. The -0.84 coefficient of change in Leverage (DLT_in_leverage) implies that a percentage increase in Leverage change reduces cash holdings by 0.84 percentage points. The magnitude of this effect is not only high but also highly significant, at a 1 percent level.

The interacting effect of change in leverage with Post x Private equity buyout, shows a coefficient of 0.10 significant at a 10 percent level. The non negative sign present with the value of the coefficient implies that upon acquisition, Private Equity backed Firms hold an average of 0.10 percentage cash value more than their Non-Private Equity backed counterparts. Despite the low statistical significance, the magnitude shows a considerable impact of change in leverage on cash holdings for the two sample groups. Further, the significant P-value of both variables leads to the rejection of the second null hypothesis.

Firm size increases in magnitude to 0.03 percentage points but stays constant in significance. Leverage increases in magnitude and statistical significance, its -0.04 coefficient shows that a percentage change in Leverage results in a decrease in cash holdings by 0.04 percentage points at a 10 percent significant level. Net working capital reduces in magnitude but maintains significance. The remaining variables remain statistically insignificant.

The Constant of the model (2) reduces in magnitude to 0.20 percentage points and maintains its

statistical significance relative to model (1). This coefficient highlights effect of the absence of the independent and control variables on cash holdings.

The Final Model (3) regresses all the variables employed in the previous 2 models. It shows nearly consistent estimates. The main independent variable losses its significance effect due to the correlation effect of the PE acquired in the interacted terms Delt_LevxPostxBuyout and Post x PE buyout. The variable Dlt_lev increases in magnitude to -0.92 percentage points.

CHAPTER 6 Discussion

6.1 Key Findings

Summary and interpretation

With the existing gap in literature on the dynamics of cash holding in Private Equity and Non private equity backed firms, this study analysed the impact of the two sample firms on its target's corporate cash holdings. The findings showed that Private Equity and Non-Private Equity Acquisitions decreases cash holdings of their target Firms. Fundamentally, the effect of being acquired by a private equity backed firm is more intense on cash holdings relative to being acquired by a Non-Private Equity backed Firm. The Private Equity effect is obtained by Interacting the ownership form with post acquisition period, to isolate its effect on the targets' cash holdings. The p-value obtained rejects the null hypothesis that, there is no significant difference in cash holdings between the two forms of ownership. After acquisition, a target acquired by a Private Equity firm holds 0.02 percentage points cash less than their non-private equity counterparts.

Subsequently the study analysed the effect of post acquisition change in the leverage of a target firm on cash holdings. The coefficient showed that the post acquisition change in leverage significantly reduces cash holdings by 0. 84 percent. However, when a target was acquired by a Private Equity firm, the impact was 10 percent less.

6.2 Implications

Agency centred Theories and Cash Holdings

Patterns in the data set showed a fluctuation effect of both forms of ownership on cash holdings. Upon acquisition, cash holdings of Private Equity and Non-private Equity backed firms reduce drastically such that, the maximum post acquisition cash holdings value is still below the minimum cash value held in the pre acquisition phase (see *Figure 1*). In analysing how the effect varies, the study showed that the impact of Private Equity ownership on cash holdings is more severe. The severity affirms the expectations initially developed by this study that, Private Equity backed firms often execute high quality strategies that improve overall management practices targets (Kaplan & Stroomberg 2009), which includes cash management decisions. The findings are also consistent with Erel et al., (2015) who, in their quest to investigate whether acquisitions relieve targets firms of cash constraints found that, both Private Equity and Non-private Equity backed firms see a reduction in cash holdings upon acquisition.

Per the agency conflicts centred theories, the Agency cost of free cash flow as purported by Jensen , (1986) suggest that managers with excess cash may invest in non shareholder value enhancing

projects. Peculiar to Private Equity ownership, their active presence in firm management ensures constant monitoring and control of managers. This prevents managers from ignoring share holder desires and to engage in shareholder friendly investment or to return excess cash to shareholders instead of hoarding them unnecessarily. This effect may not always be the case for non-private equity backed firms.

The results obtained empirically also supports the arguments that upon acquisition, acquiring Firm might undertake new investments with the targets' cash reserves (Brauning, Fillat & Joaquim, 2023), thereby significantly reducing its cash holdings. The value seeking behaviour of Private Equity Firms is attested to. Their existence eliminates to an extent, the agency problem because they actively participate in management and function as stewards who prioritize both investor and Firm value.

Capital Structure centred theories and change in leverage.

Secondly, the findings of the study meet the expectation that leverage has a negative relationship with cash holdings (Ferreira and Viela ., 2004). The coefficient obtained for the variable change in leverage, show a considerable portion of cash holdings is wiped out, per percentage increase of change in leverage that occurs when a firm is acquired by any of the two forms of ownership. The impact of this is however less severe for Private equity backed firms. This affirms the capital structure centred theories and Myers, (1984)'s assertion that, firms maintain an optimal capital structure by reducing cash reserves, among others. They show that Private Equity and some active Non-private Equity backed firms may optimize their capital structure through increases in leverage and reduction of cash holdings, by patronising in growth investments and debt settlements.

Changes in Leverage on average, have a negative and significant effect on cash Holdings. This implies that a percentage increase in change in leverage reduces cash holdings severely. These findings shows that the resultant reduction in cash holdings from optimizing capital structure through leverage increases, is ubiquitous in the two forms of ownership under study. It also suggests that managers of the two ownership forms may take similar actions to reduce cash holdings and boost equity returns when leverage Increases (Fama & Jensen 1983).

From the study, the alternative hypothesis; variation exist in cash holdings of Private equity and Non-private Equity backed firms is affirmed. Despite the fact that theories and motives backing cash holding decision may cut across the two forms of ownership, Private Equity and Non-private Equity backed firms differ significantly in terms of the level of cash held in reserves possibly due to institutional differences. Increases in change in leverage reduces cash holdings, with the magnitude of the effect less severe for Private Equity backed firms.

6.3 Robustness and Limitations

Model 3 in the regression table includes all variables employed in models (1) and (2), the estimates show marginal changes in coefficients. However, the main variable of interest Post x PE acquired loses its significance. This can be attributed to the presence of the variable change in leverage interacted with Post x PE acquired, and the variable Post x PE acquired. By introducing the two variables in the same regression model, correlation between them reduces the significant effect of the variable Post x PE acquired due to a common interaction term .

The variation in the impact of the two forms of ownership and post acquisition change in leverage on cash holdings can be attributed to the fact that, cash management decisions of the two sample firms is influenced by its governance policies. This limits the findings of this study by its failure to capture some governance mechanisms that could have explained the variations in the magnitude, sign and effect of the independent variables employed in the study.

Another limitation is that the matching method and time range of minus and plus five relative to deal year employed reduces the sample size to only 2, 890 observations of 443 unique Firms. The criteria selected dropped out many firms and observations for most of the countries selected. In the end, only observations of firms from the United Kingdom (GB), Denmark (DK) and Finland (FI) were captured in the study. Moreover, the study limits its sample to only large non financial firms, this creates a gap in literature on the dynamics at play in small firms and other European countries. The study also failed to acknowledge the effect of diverse Industries which might have a relevant influence on Corporate Cash holdings decisions.

CHAPTER 7 Conclusion

This study examined the effect of forms of ownership on cash holdings upon acquisition. Corporate Cash holdings prove to vary significantly between Private Equity and Non -Private Equity backed firms. From the findings, the effect of acquisition by the two forms of ownership on corporate cash holdings is negative. Due to the high value orientation of Private Equity firms, they introduce prudent cash management policies (Kaplan & Stroomberg 2009) that reduces the unnecessary cash hoarding than their Non- private Equity backed counterparts. The study affirms that , *Non-private Equity-backed firms hold more cash than private Equity-backed firms.*

As the most liquid assets of a firm, it is rational for firms to settle the coverable portion of debt with cash as leverage increases. This might not entirely be the case for Private Equity backed firms because they can always rely on their high-net-worth investors for liquidity coverage when debt obligation arises (Fama & Jensen 1983). Private Equity backed firms among others, may not necessarily use a large portion of its cash holdings to settle debt obligations as leverage increases, thus the *impact of post acquisition changes in Leverage on cash holdings differ between Private Equity and Non-Private Equity backed firms, with the former holding more cash than the latter.*

The prospects of this study can be expanded by further research into how corporate cash holdings differ for Private Equity and Non-private Equity backed firms, taking corporate governance measures and industry specific effects into consideration.
Secondly, the horizon and time span captured relative to deal year could be extended beyond 5 years ex post to see if the dynamics between the two sample firms change as time increases, thereby improving the study's generalization.
Nevertheless, the distinction identified in cash holdings among the Private Equity and Non-private Equity backed firms is a relevant piece of information to corporate finance and defining Cash management policies post acquisition.
This study concludes by showing that the two forms of ownership (Private Equity and Non-Private Equity backings), reduces corporate cash holdings and the magnitude of the reduction differs significantly between the two forms of ownership.

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APPENDIX

PE acquired – Private Equity acquired.

Non-PE acquired – Non-Private Equity acquired.

NWC -Net Working Capital

ADDITIONAL FIGURES AND TABLES

Appendix A: Probit regression model obtained from the Matching regression model.

	Coefficient	*P-value*
CF_Frac_wi	*0.02*	*0.18*
Log_TOAS_wi	*0.93*	-
Log_TOAS2_wi	*-0.10*	*0.00*
Log_INVT_wi	*-0.05*	*0.12*
TFA_frac_wi	*-3.11*	*0.00*
Log_TOAS_wixTFA_f~i	*0.53*	*0.01*
Log_age	*-0.06*	*0.79*
Log_age2	*0.00*	*0.89*
Log_ageXLog_TOAS_wi	*-0.01*	*0.73*
Deal_year	*-0.04*	*0.02*
EBITDA_margin	*-0.01*	*0.53*
_cons	*75.68*	*0.02*

Probit regression with total number of observations of 1,241. The p value of the chi2 is significant indication the model's relevance.

The significant coefficients show potential factors that cause variations in the two sample firms under consideration.

Appendix B: Correllation between main independent variables

	Delt_Levx POSTxBuyout
POSTxBUYOUT	0.0085

The correlation matrix describes the correlation coefficients between pairs of variables in the data set . Values close to one indicate a strong and positive correlation, those close to -1 indicate a strong and negative correlation and those close to 0 indicate close to or no correlation at all. Variables employed in the study has negligible correlation values. The interaction of change in leverage with Post acquisition and buyout has a weak correlation with Post acquisition buyout, this eliminates the significance of Post acquisition buyout from the regression model (3) when the two variables are introduced at the same some.

Appendix C: Distribution Of observations in years relative to deal year

t	*Freq*	*Percent*	*Cum.*
-5	369	12.77	12.77
-4	387	13.39	26.16
-3	395	13.37	39.83
-2	419	14.5	54.33
-1	421	14.57	68.89
1	338	11.7	80.59
2	235	8.13	88.72
3	172	5.95	94.67
4	110	3.81	98.48
5	44	1.52	100
Total	2890	99.71	

Observations are captured five years prior to the deal year and 5 years after.

ADDITIONAL FIGURES AND TABLES

Appendix D: Data Selection

Private Equity Backed Firms

Data on these firms are extracted from Orbis M &A, it is gathered by collecting deals available with the peculiar characteristics. The data collected on Private Equity acquisitions was done with the following search 2-part steps.

Part 1:

For the sample selection of Private Equity acquired firms, Targets with Venture capital of Private equity investments and institutional buyouts are selected. These deal types have substantial risk profiles with substantial risk returns which are incredibly attractive for Private Equity firms.

The deals were selected by following the criteria below:

1. World regions: Primary address, United Kingdom, Norway, Sweden, Finland, Denmark, Germany, France, and Spain(target)
2. Deal Status: Completed-confirmed.
3. Deal type: IPO-targets with VC / PE investments only.
4. Deal structure: Buy & Build, contested bid, distressed sales /companies, Administrative, insolvency, receivership, Exit, partial exit, follow on offer, leverage buyout, Multiple bids, public takeover by Private equity, secondary buy out, secondary offer, tender offer, and Tertiary buyout.
5. Deal Financing: Private Equity

Part 2:

Further motivations behind the listed steps are that target firms are categorized based on their assets to capture any variations that may occur between asset heavy and assets light companies on cash holdings levels. Firms with a minimum operating revenue of fifty million were selected to help capture firms that are more established. More established firms are likely to have available publicly available financial information.

Private Equity acquisitions in the selected group of firms are restricted acquisition with a minimum of 55% thus signifying only firms with majority ownerships and substantial control. Finaly, the extensive period captured in the study will eliminate the effect of any short-term fluctuations in cash holdings that are influenced by one off events like the COVID-19 pandemic and the 2008 financial crises. These lead to the following search steps.

6. Company Type: Assets, Company (Target)
7. Percentage stake: Final stake with a minimum of 55% and a maximum of 100% including unknown majority.
8. Time period: With status completed -confirmed 01/01/3003 up to and including 31/12/2024.
9. Target Financials: Operating revenue/ turnover (m USD) minimum of fifty in the last available year

ADDITIONAL FIGURES AND TABLES

In all, 4880 private equity firms were captured.

Non-Private Equity Backed Firms

To ensure relevance in the study, the study employs a control group of Non-private equity acquired firms of a similar criteria and motivations as listed in the treatment group above. The collection employs a two-part search step as described as follows:

The Deal type for non-private equity firms was selected on acquisitions with the search steps deal structure and deal financing eliminated from the list to ensure that all firms that are acquired are captured. In the processing of the data, and Private Equity backed firm are filtered out of the data.

1. World regions: Primary address, United Kingdom, Norway, Sweden, Finland, Denmark, Germany, France, and Spain(target)
2. Deal Status: Completed-confirmed.
3. Deal type: Acquisition.

Part 2:

Firms with a minimum operating revenue of fifty million will help capture firms that are more established. In the control group selection, a maximum operating revenue / turnover of about thirty-nine billion. This is to ensure that firms in the control group categorically match those in the treatment group.

The sample firms are restricted to Non-private Equity acquisition with a minimum of 55% thus signifying only firms with majority ownerships. These lead to the following search steps.

4. Company Type: Assets, Company (Target)
5. Percentage stake: Final stake with a minimum of 55% and a maximum of 100% including unknown majority.
6. Time period: With status completed -confirmed 01/01/2003 up to and including 31/12/2024.
7. Target Financials: Operating revenue/ turnover (m USD) minimum of fifty in the last available year

In all, 7225 private equity firms were captured.

Appendix E Propensity to score test table.

Variable	Treated	Control	t-test	p-value	Variance
CF_Frac_wi	*.08*	*-0.02*	*0.43*	*0.665*	*9.67**
Firm Size	*4.44*	*4.44*	*-0.10*	*0.919*	*0.96*
Inventory	*1.40*	*1.40*	*0.06*	*0.948*	*1.05*
Tangibility	*0.15*	*0.14*	*0.54*	*0.587*	*1.03*
Age	*2.91*	*2.94*	*0.60*	*0.550*	*1.04*
Profitability	*1.11*	*-0.03*	*0.93*	*0.354*	*58.98**

ADDITIONAL FIGURES AND TABLES

PS score test from the matching displays high p-values of majority of the covariates employed and all the variances close to one. This is an empirical implication that the match between private and not private equity backed firms was a near success.

ADDITIONAL FIGURES AND TABLES