Does Cash Holdings Influence the Firm Value of Philippine Public Companies Under the Industrial Sector: Evidence from Panel Data

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DOI: https://doi.org/10.47772/IJRISS.2026.100701070

Received: 08 August 2026; Accepted: 14 August 2026; Published: 21 August 2026

ABSTRACT

This study examines the relationship between cash holdings and the firm value of Philippine Publicly Listed Companies (PLCs) in the Industrial Sector, with a focus on the liquidity and profitability dimensions of firm performance. Cash holdings play a crucial role in both business survival and growth; as a result, organizations must choose between allocating resources to strategic investments for enhanced firm value and sustaining liquidity. This decision-making environment is further complicated by the intrinsic complexity of the Philippine industrial sector, which encompasses a wide range of businesses from manufacturing to infrastructure development. The study pursues three primary objectives: first, to identify the relationship between the age and size of Philippine PLCs in the industrial sector and their association with cash holdings and firm value; second, to profile these entities' liquidity and profitability through the lens of their cash holdings; and third, to determine the association between cash holdings and these entities' liquidity and profitability. Employing a descriptive quantitative approach, the study analyzes panel data for eighteen randomly selected publicly listed industrial enterprises over the period 2013–2017 (90 firm-year observations) through panel regression analysis in STATA, with the cash ratio used to measure cash holdings and Tobin's Q used to measure firm value. To address the pronounced skewness observed in several variables, the data were winsorized at the 1st and 99th percentiles before estimation. The results indicate a significant negative association between firm value and Return on Assets (ROA), a positive association between firm value and Net Profit Margin (NPM), a negative association between firm value and the Inventory Conversion Period (ICP), and a significant negative association between firm size and firm value. The findings highlight the important roles that profitability, working capital efficiency, size, and age play in understanding the value of Philippine PLCs in the industrial sector, while the study cautions that the results reflect associations rather than causal effects.

INTRODUCTION

In the ever-evolving landscape of corporate finance, one of the most pivotal decisions that managers must grapple with is the management of cash holdings. Cash, often regarded as one of the least-productive assets due to its limited ability to generate returns, is nonetheless a cornerstone of financial resilience and strategic flexibility. This strategic significance has become even more pronounced in the aftermath of the COVID-19 pandemic, as businesses worldwide have navigated a landscape of unprecedented uncertainty and volatility. In the Philippines, as in many parts of the world, the pandemic underscored the critical importance of cash holdings for businesses' survival and growth. The Philippine industrial sector, a key driver of the nation's economic engine, found itself at the nexus of these financial challenges. In response, firms grappled with complex financial trade-offs: should they maintain higher cash reserves for liquidity and risk mitigation, or should they deploy those resources toward

strategic investments to enhance firm value?

As Shah (2011) aptly noted, cash holdings are a tangible expression of an organization's financial strategy. They embody the delicate balance between securing the present and investing in the future. Moreover, cash is not a passive asset; it plays a dynamic role in a firm's financial health. Cash holdings facilitate prompt debt payments, bridge the gap between revenue receipts and fund releases, and provide the flexibility to capitalize on unforeseen opportunities (Zhang and Ling, 2016). In essence, cash is the lifeblood that courses through a firm's financial veins.

THE CONTEMPORARY CONTEXT

As the global business landscape grapples with ongoing uncertainty and the Philippines navigates its own economic recovery, the interplay between cash holdings and firm value remains a compelling and timely subject of inquiry. The significance of this research is further underscored by the dynamic nature of the Philippine industrial sector, which is characterized by diverse businesses, ranging from manufacturing to infrastructure development. In this context, the study aims to unravel the intricate relationship between cash holdings and firm value in publicly traded companies within the Philippine industrial sector.

To shed light on this multifaceted relationship, we examine the association between cash holdings and firm value, with specific consideration of the firm's age and size, alongside Tobin's Q—a measure reflecting a firm's market value relative to the replacement cost of its assets. Furthermore, our inquiry probes the drivers behind cash-holding decisions, addressing fundamental questions such as whether firms maintain cash to meet future contingencies and the potential agency problems that can arise between management and shareholders due to high cash levels (Jensen, 1986, cited in Al-Najjar, 2012).

This study is designed to provide a comprehensive analysis of cash holdings in the context of Philippine public companies within the industrial sector. By considering both the pre-pandemic and post-pandemic periods, we aim to assess how the pandemic, a profound shock to the global economy, has reshaped the cash management landscape in the Philippines. In addition to examining the association between cash holdings and firm value, we also incorporate control variables, such as the firm's age, years in operation, and size, into our analysis to provide a nuanced understanding of the interplay between these factors.

In doing so, this study seeks to contribute to the broader discourse on corporate finance, offering insights that are not only academically enriching but also practically valuable for businesses, policymakers, and investors in the Philippines. Our findings illuminate the strategic importance of cash holdings in the context of a rapidly changing economic environment, providing guidance for businesses seeking to strike the optimal balance between liquidity and value creation in an era of heightened uncertainty.

Objectives of the Study

This study aims to examine the influence of cash holdings on the firm value of Publicly Listed Companies (PLCs) in the Philippines under the Industrial Sector.

Specifically, this study aims to:

1. Determine the significant relationship between the age and size of Philippine Publicly Listed Companies (PLCs) under the industrial sector and their association with cash holdings and firm value.

2. Examine the cash holdings of the companies in terms of liquidity and profitability.

3. Determine the association of cash holdings with the liquidity and profitability of the companies, as reflected in firm value.

Research Questions and Hypotheses

Guided by the objectives above, this study addresses the following research questions: (1) Do the age and size of Philippine PLCs in the industrial sector exhibit a significant relationship with cash holdings and firm value? (2) How do the sampled companies hold cash in terms of their liquidity and profitability profiles? (3) Is the cash-holding level of the companies significantly associated with their liquidity and profitability, and hence with firm value?

In line with the study's theoretical foundation, the following hypotheses were formulated:

$H0_1$: There is no significant relationship between firm age (AGE) and firm size (SIZE) and the firm value of Philippine PLCs in the industrial sector.

$H0_2$: Cash holdings (cash ratio) are not significantly associated with the liquidity and profitability profiles of the sampled companies.

$H0_3$: The liquidity and profitability profiles of the companies do not have a significant association with firm value.

LITERATURE REVIEW

The Philippines' 2020 pandemic crisis had an immediate effect on the economy, and the economy thus saw a considerable decline. Firms frequently shift their cash holdings in direct response to changes in the business and economic environment. This is particularly crucial in times of global systemic shocks, when businesses must swiftly change their financial positions to preserve operations and reduce possible financial distress, such as during financial or liquidity crises and pandemics.

Considering the importance of funds that firms require in different situations, Jebran et al. (2019) designed their study to examine factors that are important in determining corporate cash holdings in different contexts, namely normal and crisis periods. Their results find a decrease in firms' cash holdings in the financial crisis period, and the mean values of cash flow, growth, and liquidity also declined during the financial crisis period. However, they observe a significant increase in the mean values of all variables (except capital expenditure and leverage) in the post-crisis period, and they find that the financial crisis affects the correlation between cash holdings and its determining factors. The regression results show that capital expenditure, growth, and the volatility of cash flows have an insignificant effect on cash holdings in the three sub-periods. They find a significantly positive effect of cash flow and liquidity on cash holdings, as well as a significantly negative effect of tangibility, in the three sub-periods. The findings indicate that leverage affects cash holdings only in the post-crisis period. In addition, size has a significant negative effect on cash holdings in the pre-crisis and crisis periods, while the relationship is insignificant in the post-crisis period. Overall, the results demonstrate that financial crisis significantly affects the corporate cash-holding behavior of firms.

According to Batuman et al. (2022), firm size, leverage, dividend policies, debt maturity, net working capital, and cash flows are the main determinants of cash holdings; the study did not find any significance of macroeconomic variables in explaining corporate cash holdings. These results generally align with the results of prior studies. However, it is also evident that the impact of these firm-specific variables differs significantly between pre- and post-crisis periods. More specifically, the majority of these variables—such as firm size, dividend policies, debt maturity, and profitability—are significant only for the post-crisis period. On the other hand, leverage, net working capital, and cash flows are significant at conventional levels for both pre- and post-crisis periods. Overall, the findings indicate that the determinants of cash holdings of East European firms are generally consistent with previous research and existing hypotheses. However, it would be misleading to conclude without considering the impact of the global financial crisis on the determinants of cash holdings and adjustment toward target cash levels. Their findings provide an understanding of how global financial crises have affected the cash-holding policies of corporations located in countries experiencing significant liquidity problems.

Wassie (2021) found, on the basis of regression analysis, that the accounts receivable period, cash conversion cycle, inventory conversion period, and accounts payable period are statistically significantly and positively

correlated with the performance of exporting firms in Ethiopia; however, the inventory conversion period has an insignificant correlation with performance when measured by return on assets. Noticing the outcomes of the study, exporting-firm managers in Ethiopia need to refer to the influencing factors that positively and significantly correlate with their performance.

Aldubhani et al. (2022) found that companies with shorter receivables collection periods and cash conversion cycles are more profitable, and that longer inventory turnover periods and accounts payable payment periods are related to higher firm profitability; the study also shows that working capital management has no significant effect on ROE. Managers must know how to manage working capital, as it is essential to the profitability and performance of companies. The ideal management of working capital will provide the liquidity required to finance a company's operations through automatic financing (effective management of working capital management components), which has become necessary due to the lack of liquidity and credit constraints resulting from the COVID-19 crisis.

Xie et al. (2018) hold that an improvement in the level of cash holdings can reduce the credit risk of a company. Agency theory, by contrast, suggests that cash or cash equivalents are more likely to be misappropriated than other assets, so higher levels of cash holdings may imply more serious agency problems; agency theory therefore predicts that an improvement in cash holdings will not reduce credit risk and may even increase the credit risk of the company due to serious misappropriation.

PREVIOUS EMPIRICAL STUDIES ON CASH HOLDINGS

Lee and Powell (2011) examined the determinants of corporate cash holdings in Australia and the impact on shareholder wealth of holding excess cash. They found that 'transitory' excess-cash firms earn significantly higher risk-adjusted returns compared to 'persistent' excess-cash firms, suggesting that the market penalizes firms that hoard cash. The marginal value of cash also declines with larger cash balances and the longer firms hold on to excess cash. The results are consistent with agency costs associated with persistence in excess cash holdings.

Hardin et al. (2009) investigated the factors influencing the cash holdings of REITs. Using the Ordinary Least Squares (OLS) method, they analyzed a sample of 1,114 observations for 194 Real Estate Investment Trusts (REITs) in the US from 1998 to 2006. The results show that the cash holdings of REITs have a negative relationship with funds from operations, leverage, and internal advisement.

Faulkender and Wang (2006) investigated the cross-sectional variation in the marginal value of corporate cash holdings that arises from differences in corporate financial policy. They examined the variation in excess stock returns over the fiscal year and found that the marginal value of cash declines with larger cash holdings, higher leverage, and better access to capital markets, and firms choose cash distribution via dividends rather than repurchases. Brisker et al. (2013) investigated the changes in cash-holding policies of S&P 500 companies before and after their inclusion in the index. One year after inclusion, their average industry-adjusted cash holdings are down nearly 32% from the previous year. This decline can be attributed to a number of factors. Researchers discover that the precautionary motive for cash diminishes as these firms become more visible, less uncertain, and less constrained in their ability to raise cheap external capital. According to the free cash flow hypothesis, corporate governance deteriorates after inclusion due to increased managerial entrenchment, which leads to a decrease in cash. Most index firms are facing declining investment opportunities and lower capital expenditures, implying a reduced need for cash holdings related to the transaction motive.

Al-Najjar (2012) investigated corporate cash holdings in developing countries, examining the effect of capital structure and dividend policy on cash holdings in Brazil, Russia, India, and China and comparing the results with a control sample from the US and the UK. The sample contains 1,992 firms across these countries for the period 2002–2008. The study also employed an Instrumental Variables analysis to control for the endogeneity of the financial policies (cash holdings, capital structure, and dividend policy). The results showed some evidence that capital structure and dividend policy affect cash holdings, and there are similarities between developed and developing countries in the factors determining corporate cash holdings. The results of the cross-country model provide evidence that capital structure, dividend policy, and firm size are important factors in determining cash holdings, and the researcher found that firms operating in countries with low shareholder protection hold more

cash.

Han and Qiu (2006) conducted an empirical test of the implications of their theory using quarterly information from a sample of U.S. publicly traded companies from 1997 to 2002, and found that there is no systematic relationship between cash holdings and cash flow volatility for unconstrained firms, which empirical evidence supported their theory. Their paper studies the model of the precautionary motive for a firm's cash holdings. They find that the two-period investment model shows that the cash holdings of financially constrained firms are sensitive to cash flow volatility because financial constraints create an intertemporal trade-off between current and future investments. They found that when future cash flow risk cannot be fully diversified, this intertemporal trade-off gives constrained firms the incentives of precautionary savings: they increase their cash holdings in response to increases in cash flow volatility.

Luo and Hachiya (2005) focused on the impact of corporate governance factors on cash holdings and the implication of cash holdings for firm value for Japanese firms listed on the Tokyo Stock Exchange. The study documented evidence that cash holdings lead to agency problems and impact firm value. Researchers also found that governance characteristics affect the negative relation between cash holdings and firm value. Poor earnings quality, according to Sun et al. (2012), worsens the information gap between a firm's internal and external stakeholders. Their research raised agency considerations, which caused investors to discount the value of corporate cash holdings due to concerns about improper use of funds. According to their paper, poor earnings quality has a negative impact on the value of corporate cash holdings but a positive impact on the level of cash reserves. The negative effect of poor earnings quality either neutralizes or more than offsets the positive effect of excess cash on firm value, according to several measures of earnings quality and model specifications.

THE SIGNIFICANCE OF CASH HOLDINGS IN THE PHILIPPINE SETTING

In the Philippine business landscape, cash holdings are particularly significant due to the country's unique economic challenges and opportunities. The Philippines is known for its dynamic industrial sector, comprising various industries such as manufacturing, construction, and utilities. Given the diversity and competitive nature of these industries, managing cash effectively becomes paramount.

Furthermore, the Philippine financial environment, characterized by fluctuations in interest rates and exchange rates, underscores the importance of prudent cash management. Companies in the Philippines often hold cash as a hedge against currency devaluation and interest rate fluctuations, which can significantly impact their financial stability.

THEORETICAL FRAMEWORK

The Modigliani-Miller theorem, formulated by Franco Modigliani and Merton Miller in 1958, has been a cornerstone in corporate finance theory. The theorem comprises two fundamental propositions. First, Proposition I (Without Taxes) asserts that in the absence of taxes and bankruptcy costs, the capital structure of a firm, which includes its cash holdings, does not affect its overall value. In essence, the way a company chooses to finance its operations—whether through equity, debt, or cash—should not change its total value. However, Proposition II (With Taxes) extends the theorem to incorporate the impact of taxes. It suggests that in the presence of taxes, the value of a firm increases as the proportion of debt in its capital structure rises. This is due to the tax-deductible nature of interest payments on debt, which can reduce the firm's overall tax liability. The Modigliani-Miller theorem serves as a foundational framework for understanding the implications of cash management and capital structure choices on firm value, a perspective crucial for evaluating the dynamics of Philippine industrial firms, especially in the context of the pre- and post-pandemic eras (Modigliani & Miller, 1958).

Agency theory provides an insightful lens to comprehend how conflicts of interest between different stakeholders within a firm can influence decisions regarding cash holdings and, subsequently, firm value. In the agency theory framework, managers act as agents, making decisions on behalf of shareholders, who are the principals. The divergence of interests between these two groups can manifest when it comes to the management of cash. Managers may be inclined to accumulate excessive cash holdings for reasons such as job security, personal

incentives, or risk aversion, even if such hoarding does not maximize shareholder wealth. Shareholders, conversely, might prefer that excess cash be distributed as dividends or invested in projects that enhance the firm's value. This theory of agency illuminates how managerial motivations and behaviors regarding cash management can impact the value of Philippine industrial companies, particularly in the context of the COVID-19 pandemic, which posed unique challenges and opportunities for cash management decisions (Jensen & Meckling, 1976).

The application of these theoretical foundations to Philippine public companies in the industrial sector holds significant relevance, especially considering the distinct economic landscape and regulatory environment in the Philippines. Examining the Modigliani-Miller theorem in the context of Philippine industrial firms pre- and post-pandemic can shed light on whether these companies adjusted their capital structures and cash management practices in response to changing economic conditions. Agency theory provides insights into the potential conflicts between shareholders and managers within these firms and how these conflicts may have influenced decisions related to cash holdings and their impact on firm value. By drawing on these theoretical frameworks, the researchers can offer a nuanced understanding of the relationship between cash management and firm value specific to the Philippine industrial sector, contributing to the literature on corporate finance in emerging markets.

DETERMINANTS OF CASH HOLDINGS

Opler, Pinkowitz, Stulz, and Williamson (1999) explore the complex factors that influence businesses' decisions to keep cash on hand in their groundbreaking research. The careful analysis of a wide range of financial and economic elements that affect corporate cash management serves as the foundation for their empirical inquiry. This study provides a thorough view of the motivations underlying cash-holding decisions by utilizing a broad dataset spanning several years. Their methodology integrates information on American companies of different sizes and industries, ensuring a diverse picture of corporate activities.

The study's findings are highly pertinent to recent research into cash holdings and business value in pre- and post-pandemic Philippine industrial companies. The study provides insight into how businesses handle their cash reserves strategically by identifying and classifying the reasons behind cash holdings. Understanding these motivations is essential in times of economic uncertainty like the COVID-19 pandemic. For instance, firms can experience increased liquidity needs as a result of market insecurity, which might lead to a greater emphasis on cash holdings. On the other hand, businesses with strong growth prospects could decide to use their resources for initiatives that will increase value. The findings of Opler et al. can therefore be used as a conceptual framework to investigate how these determinants affected the cash management practices of Philippine industrial enterprises in response to the pandemic, ultimately impacting their firm values.

The choice of the ideal quantity of cash holdings is a crucial component of corporate financial management. This choice is governed by a number of interconnected variables, each of which has a distinctive impact on the cash management strategy of a company. One fundamental reason for keeping cash on hand is the necessity for liquidity. For short-term financial needs including operational costs, debt payments, and unforeseen contingencies, businesses need cash reserves. Having enough cash on hand can act as a cushion against liquidity shocks, improving a company's capacity to handle financial crises or seize unanticipated opportunities. Additionally, having cash on hand gives businesses the operational flexibility they need to react quickly to market shifts or engage in value-adding projects when the time is right. Another important factor affecting cash holdings is growth prospects. Businesses with strong development prospects and the ability to engage in profitable projects may decide to preserve lower cash levels and direct their resources toward expansion plans. On the other hand, businesses with limited chances for expansion may want to maintain larger cash reserves. The complex trade-off between cash holdings and growth depends on the particular conditions of the firm, market dynamics, and risk appetite. For instance, during the COVID-19 epidemic, businesses faced unprecedented difficulties that forced many of them to review their expansion plans and temporarily enhance their capital reserves in order to weather the turbulence.

Financial limitations, such as the cost of capital and the availability of outside financing sources, have a big impact on how a company manages its cash. Businesses that are having trouble accessing the credit markets or are dealing with excessive borrowing prices may decide to keep higher cash levels as a protection. During

economic downturns, this can lessen the danger of financial trouble and cut back on the need for expensive external funding.

Understanding Firm Value in the Philippine Context

Firm value in the Philippines, as in any other country, represents the intrinsic worth of a company at a specific point in time. It encapsulates the monetary outlay required for acquiring or taking control of a business entity. However, in the Philippine setting, firm value can be influenced by unique factors such as local market dynamics, government policies, and regional economic conditions. These factors can have a direct bearing on a company's market value, making it crucial to consider these elements in the analysis.

METHODOLOGY

The study's research design is based on descriptive research (quantitative approach), which collects quantifiable information in order to statistically analyze the impact of cash holdings on firm value within the scope of the study.

Eighteen (18) publicly listed companies in the Industrial sector in the Philippines were selected randomly in terms of cash holdings and firm value during the period 2013–2017. Annual data of these sample companies were collected for the period of 2013–2017 from the annual financial statements of the publicly listed companies in the Philippines under the industrial sector. The cash ratio was used to measure the cash holdings of the companies under the industrial sector together with Tobin's Q, the firms' age, and firm size. The resulting panel dataset comprises 90 firm-year observations (N = 90; n = 18; T = 5).

Panel regression analysis was used in STATA to determine the impact of cash holdings on firm value to facilitate data analysis. The Hausman test was used to decide between fixed and random effects, with the null hypothesis being that the preferred model is random effects versus the alternative, fixed effects (Green, 2008).

Definition and Measurement of Variables

To ensure transparency and replicability, each variable used in the study is defined and measured as follows. The dependent variable, firm value, is proxied by Tobin's Q, computed as the sum of the market value of equity and the book value of total liabilities, divided by the book value of total assets. The key independent variable, cash holdings (cash ratio), is measured as the ratio of cash and cash equivalents to current liabilities. Return on Assets (ROA) is measured as net income divided by total assets, and Net Profit Margin (NPM) is measured as net income divided by net sales; both serve as profitability controls given that firm value must be distinguished from operating performance. The Inventory Conversion Period (ICP) is measured as (inventory divided by cost of goods sold) multiplied by 365 days and captures the efficiency of working capital management along the liquidity dimension. Firm age (AGE) is measured as the number of years from incorporation (or listing, where applicable) to the end of the fiscal year, while firm size (SIZE) is measured as the natural logarithm of total assets. AGE and SIZE are included as standard control variables: size captures scale economies and access-to-finance effects that are well documented in the cash-holdings literature (Opler et al., 1999; Al-Najjar, 2012), and age captures maturity and reputation effects that condition both cash policy and market valuation. The rationale for each control variable is consistent with the determinants of cash holdings identified in prior studies: profitability (ROA, NPM) and working capital efficiency (ICP) reflect the internal funds available to firms and the liquidity needs that drive cash policy, whereas AGE and SIZE ensure that the estimated association between cash holdings and firm value is not confounded by firm maturity or scale.

Panel Data Treatment

Several variables in the dataset exhibit extreme skewness and kurtosis—notably Tobin's Q (skewness 3.14, kurtosis 14.91), ROA (skewness −5.05, kurtosis 35.73), and NPM (skewness −6.39, kurtosis 45.41)—which indicates the presence of extreme observations that could unduly influence the estimates. Accordingly, all continuous variables were winsorized at the 1st and 99th percentiles before estimation to mitigate the influence of outliers while preserving the full sample of 90 firm-year observations.

Model Specification

Consistent with the research objectives and hypotheses, the panel regression model is specified as follows:

$$\text{Tobin's } Q_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 NPM_{it} + \beta_3 ICP_{it} + \beta_4 AGE_{it} + \beta_5 SIZE_{it} + \varepsilon_{it}$$

where the subscripts i and t denote firm and year, respectively, and ε is the error term. The coefficients on AGE and SIZE test $H0_1$, while the coefficients on the liquidity and profitability variables speak to $H0_2$ and to the alignment between the regression specification, the research question, and the conclusions. As discussed throughout the paper, the profitability controls ROA and NPM serve as the primary lenses through which the liquidity and profitability of the sampled companies' cash holdings are profiled ($H0_2$), while firm value is assessed through Tobin's Q.

RESULT AND DISCUSSION

Panel Regression

Table 1.1 Panel Regression

Tobins Q	Coefficient	Std. Err.	T-Value	P> Value	95% Conf.	Interval
Return On Assets	-1.52823	0.4118	-3.71	0.0000	-2.33534	-0.72111
Net Profit Margin	0.036842	0.017521	2.1	0.0390	0.00188	0.071804
Inventory Conversion Period	-0.00176	0.000736	-2.39	0.0170	-0.00321	-0.00032
AGE	0.003173	0.004834	0.66	0.5120	-0.0063	0.012648
SIZE	-1.39968	0.389989	-3.59	0.0010	-2.17789	-0.62147
_cons	13.05672	3.305425	3.95	0.0000	6.460847	19.65259

The regression analysis provides important information about the variables affecting the dependent variable. Remarkably, Return on Assets (ROA) shows a strong negative association; that is, a one-unit increase in ROA is projected to translate into a 1.53-unit drop in the dependent variable. The Net Profit Margin (NPM) exhibits a positive association, indicating that a one-unit rise in NPM is linked to an estimated increase of around 0.037 units in the dependent variable. Another important factor is the Inventory Conversion Period (ICP), which has a negative coefficient; this means that an increase of one unit in ICP is expected to result in a loss of about 0.0018 units in the dependent variable. Conversely, the non-significant p-value and relatively modest coefficient of the firm age (AGE) variable suggest that it does not appear to have a statistically significant effect on the dependent variable. With a significant negative coefficient, firm size (SIZE) stands out as a significant determinant; a one-unit increase in SIZE is projected to translate into a 1.40-unit drop in the dependent variable. Significantly important, the intercept (_cons) emphasizes its significance even when all other variables are zero. All things considered, the findings offer a sophisticated comprehension of the associations between these organizational and financial aspects, offering significant perspectives to the wider research framework.

Descriptive Statistics

Table 1. 2

Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
	Percentiles	Smallest		
1%	0.080956	0.080956		
5%	0.153465	0.13328		
10%	0.209672	0.146739	Obs	90
25%	0.422738	0.147864	Sum of Wgt.	90
50%	0.819593		Mean	0.985907
		Largest	Std. Dev.	0.94994
75%	1.21715	2.057265		
90%	1.628058	5.12106	Variance	0.902386

95%	1.995241	5.395686	Skewness	3.136361
99%	5.416762	5.416762	Kurtosis	14.91389

Using several percentiles, the distributional properties of the variable Tobin's Q are explained, giving a clear picture of its spread and central tendency. At 0.8195926, the 50th percentile, or median, denotes that half of the observations are below this threshold. The mean, which is the average, is determined to be 0.9859074, giving the dataset a central measure. The Tobin's Q variability is highlighted by the standard deviation of 0.94994, which suggests some dispersion. The computed variance, or 0.902386, provides a deeper analysis of the spread of the data. Significantly, the distribution is positively skewed, with extreme values concentrated in the right tail (skewness = 3.136361). There may be outliers or extreme values in the dataset, as indicated by the kurtosis of 14.91389, which leans towards heavy tails. With a value of 5.416762, the 99th percentile highlights the presence of extreme values in the upper tail. It is important for researchers to take into account these distributional properties, especially the positive skewness and heavy tail, when interpreting and analyzing the variable within their research; these concerns motivated the winsorization and robust-standard-error procedures described in the Methodology section.

Table 3

Return on Asset	Return on Asset	Return on Asset	Return on Asset	Return on Asset
	Percentiles	Smallest		
1%	-1.49862	-1.49862		
5%	-0.30845	-0.61537		
10%	-0.08972	-0.34706	Obs	90
25%	0.002137	-0.34254	Sum of Wgt.	90
50%	0.05559		Mean	0.022445
		Largest	Std. Dev.	0.205253
75%	0.100285	0.200045		
90%	0.174966	0.205999	Variance	0.042129
95%	0.195003	0.22064	Skewness	-5.04508
99%	0.224415	0.224415	Kurtosis	35.72759

The above table shows that the Return on Assets (ROA) variable's distribution is thoroughly understood by the statistical summary, which also offers important insights into the variable's extreme values, variability, and central tendency. At 0.05559, the 50th percentile (median) of ROA, half of the observations are below this value. The average ROA, or mean, is determined to be 0.022445. The distribution's standard deviation, which is 0.2052527, indicates that ROA varies to a moderate extent throughout the dataset. By looking at the percentiles, one can see that the ROA values are typically concentrated in a small range. The difference between the 25th and 75th percentiles, for example, represents the interquartile range (IQR), which ranges from 0.0021374 to 0.1002848. This suggests that this range contains the middle 50% of the data. The distribution appears to be skewed to the left, with a long tail on the negative side, as indicated by the skewness of −5.045078, which indicates a significant negative skew. This suggests that the dataset may contain a concentration of lower ROA values. The notably high kurtosis of 35.72759 suggests heavy tails and a distribution that is more peaked than normal. This implies that there may be extreme values or outliers, which add to the ROA distribution's leptokurtic characteristics. The ROA distribution has a moderate mean and standard deviation; however, it is not normal and may contain outliers due to the significant negative skew and high kurtosis. When interpreting ROA values, researchers should take these distributional characteristics into account and exercise caution regarding the potential impact of extreme observations on their analyses.

Table 4

Net Profit Margin	Net Profit Margin	Net Profit Margin	Net Profit Margin	Net Profit Margin
	Percentiles	Smallest		
1%	-46.1863	-46.1863		
5%	-4.75897	-28.8902		

10%	-0.2085	-10.1571	Obs	90
25%	-0.00081	-8.46532	Sum of Wgt.	90
50%	0.05978		Mean	-1.00199
		Largest	Std. Dev.	5.881909
75%	0.189368	0.481884		
90%	0.319891	0.541654	Variance	34.59685
95%	0.449903	0.592514	Skewness	-6.38812
99%	0.694561	0.694561	Kurtosis	45.40913

The Net Profit Margin (NPM) variable's distribution is explained by the statistical summary, which also highlights the variable's central tendency, variability, and existence of extreme values. At 0.0597798, which is the 50th percentile (median) of NPM, half of the observations are below this value. But the mean is −1.00199, indicating that the distribution contains lower values and pointing to a negative mean. The substantial 5.881909 standard deviation suggests that the NPM values in the dataset are widely distributed. The high variance of 34.59685, which emphasizes the variability in NPM, further reflects this. It is clear from looking at the percentiles that NPM values vary a lot, with the 25th and 75th percentiles showing a significant difference. With a long tail on the negative side and a distribution skewed to the left, the skewness of −6.388122 denotes a significant negative skew. This implies that the dataset contains a concentration of lower NPM values; the kurtosis of 45.40913 is unusually high, which suggests heavy tails and a distribution that is more peaked than normal. This suggests that there are extreme values or outliers, which add to the NPM distribution's leptokurtic characteristics. The NPM distribution exhibits significant variability as evidenced by its large standard deviation. A non-normal distribution with a concentration of lower values and the presence of extreme values or outliers is suggested by the negative skew and high kurtosis. When interpreting NPM values, researchers should be aware of these distributional characteristics and take into account the possible influence of outliers on their analyses.

Table 5

SIZE	SIZE	SIZE	SIZE	SIZE
	Percentiles	Smallest		
1%	4.744535	4.744535		
5%	4.837222	4.756902		
10%	6.436425	4.766286	Obs	90
25%	7.201909	4.773925	Sum of Wgt.	90
50%	8.712155		Mean	8.532334
		Largest	Std. Dev.	1.655548
75%	9.655605	11.04433		
90%	10.68499	11.04741	Variance	2.740838
95%	10.99808	11.15058	Skewness	-0.43081
99%	11.16921	11.16921	Kurtosis	2.507764

The statistics that are supplied provide an overview of the distributional properties of the SIZE variable, including information on its central tendency, variability, and existence of extreme values. With SIZE's 50th percentile (median) at 8.712155, half of the observations are below this threshold. The average SIZE, or mean, is 8.532344; this suggests that the central measure is in line with the median. With a moderate standard deviation of 1.655548, the dataset's SIZE variability appears to be moderate. The variance, calculated at 2.740838, provides additional insight into the SIZE value distribution. The distribution of SIZE values shows a consistent upward trend throughout the percentiles, indicating a relatively slow progression. Notably, a distribution with a slightly longer tail on the left side is suggested by the skewness of −0.430805, which shows a slight negative skew. A concentration of higher SIZE values is indicated by this. The distribution has tails and a peak that are moderately shaped in relation to a normal distribution, as indicated by the moderate kurtosis of 2.507764. This points to a distribution that is neither overly peaked nor heavy-tailed, with a moderate number of extreme values. The SIZE variable shows a moderate degree of variability and a central tendency around the mean and median. A concentration of higher SIZE values is indicated by the distribution's slight negative skew. A distribution with a moderate number of extreme values is suggested by the kurtosis. These distributional properties should be taken

into account by researchers interpreting SIZE values and evaluating the possible effects they may have on the analyses.

Table 6

AGE	AGE	AGE	AGE	AGE
	Percentiles	Smallest		
1%	5	5		
5%	5	5		
10%	15	5	Obs	90
25%	19	5	Sum of Wgt.	90
50%	33.5		Mean	44.33333
		Largest	Std. Dev.	28.58066
75%	62	99		
90%	91	99	Variance	816.8539
95%	99	99	Skewness	0.51959
99%	99	99	Kurtosis	2.006748

The statistics that are shown shed light on the AGE variable's distributional properties by revealing details about its extreme values, variability, and central tendency. With AGE's 50th percentile (median) at 33.5, half of the observations are below this threshold. The average AGE, or mean, is 44.33333, indicating a central measure that is in line with the median. Significant variation in AGE across the dataset is indicated by the substantial 28.58066 standard deviation. The variance, which comes out to 816.8539, adds more weight to the idea that AGE values vary widely. From the first percentile at 5 to the 99th percentile at 99, the percentiles show a broad range of AGE values. With a skewness of 0.51959, the distribution appears to have a slight positive skew, with a slightly longer tail on the right side. This implies that the dataset contains a concentration of older AGE values. When compared to a normal distribution, the distribution's tails and peak have a moderate shape, as indicated by the moderate kurtosis of 2.006748. This points to a distribution that is neither overly peaked nor heavy-tailed, with a moderate number of extreme values. There is a significant amount of variability in the AGE variable, which shows a central tendency around the mean and median. A concentration of older AGE values is indicated by the distribution's mildly positive skew. A distribution with a moderate number of extreme values is suggested by the kurtosis. These distributional features should be taken into account by researchers when interpreting AGE values and evaluating how they might affect analyses.

Panel Descriptive

Variable /		**Mean /**	**Std. Dev. /**	**Min /**	**Max /**	**Observations /**
YEAR	overall	2015	1.422136	2013	2017	N = 90
	between		0	2015	2015	n = 18
	within		1.422136	2013	2017	T = 5
AGE	overall	44.33333	28.58066	5	99	N = 90
	between		29.24541	5	99	n = 18
	within		0	44.33333	44.33333	T = 5
SIZE	overall	8.532334	1.655548	4.744535	11.16921	N = 90
	between		1.687018	4.775774	11.01578	n = 18
	within		0.150735	8.025795	8.92552	T = 5
RMI	overall	7.05E+08	1.74E+09	0	8.16E+09	N = 90
	between		1.75E+09	0	7.00E+09	n = 18
	within		3.16E+08	-8.86E+08	1.86E+09	T = 5
WPI	overall	6.90E+08	2.80E+09	0	1.78E+10	N = 90
	between		2.62E+09	0	1.12E+10	n = 18
	within		1.15E+09	-7.42E+09	7.33E+09	T = 5
INVENTORY	overall	2.19E+09	5.41E+09	8210	2.52E+10	N = 90
	between		5.18E+09	12783	1.62E+10	n = 18

	within		1.91E+09	-1.04E+10	1.12E+10	T = 5
TOTAL SALES	overall	1.02E+10	2.53E+10	48356	1.25E+11	N = 90
	between		2.53E+10	58452.4	1.04E+11	n = 18
	within		4.94E+09	-1.26E+10	3.14E+10	T = 5
ICP	overall	88.45046	136.9265	2.489151	769.7028	N = 90
	between		120.7577	7.183588	547.5513	n = 18
	within		69.43944	-386.3036	345.2196	T = 5
NET INCOME	overall	1.36E+09	3.18E+09	-1.19E+09	1.54E+10	N = 90
	between		3.21E+09	-2.64E+08	1.22E+10	n = 18
	within		5.37E+08	-6.80E+08	4.56E+09	T = 5
NETSALES	overall	5.98E+09	1.21E+10	-8.54E+08	4.36E+10	N = 90
	between		1.19E+10	-3.55E+08	3.78E+10	n = 18
	within		3.39E+09	-1.42E+10	1.89E+10	T = 5
DEBIT	overall	1.43E+09	3.88E+09	-1.20E+09	1.88E+10	N = 90
	between		3.91E+09	-4.24E+08	1.49E+10	n = 18
	within		6.86E+08	-1.88E+09	5.37E+09	T = 5
NPM	overall	-1.00199	5.881909	-46.18629	0.694561	N = 90
	between		4.6676	-19.69157	0.552103	n = 18
	within		3.713425	-27.49671	13.93062	T = 5
TOTALASSET	overall	1.33E+10	3.23E+10	55531	1.48E+11	N = 90
	between		3.14E+10	59842	1.09E+11	n = 18
	within		1.02E+10	-3.92E+10	5.21E+10	T = 5
ROA	overall	0.022445	0.205253	-1.49862	0.224415	N = 90
	between		0.134727	-0.4244567	0.158108	n = 18
	within		0.157458	-1.051719	0.667541	T = 5
TQ	overall	0.985907	0.94994	0.0809556	5.416762	N = 90
	between		0.792362	0.1850077	3.595735	n = 18
	within		0.550241	-1.668563	2.806935	T = 5

The supplied panel shows statistical summaries for several variables within a dataset, encompassing data from 2013 to 2017. For each variable, the mean, standard deviation, minimum, maximum, and number of observations (N) are shown, with variations classified as overall, between, and within-group. Looking at the "YEAR" variable, the overall mean is 2015, with a standard deviation of 1.42, indicating rather little variability around the mean. The "AGE" variable has an overall mean of 44.33 and a significant standard deviation of 28.58, indicating that the dataset contains a large age range. In terms of financial indicators, "TOTAL SALES," "NET INCOME," and "TOTAL ASSETS" show large overall averages, indicating significant financial figures. The high standard deviations and ranges, on the other hand, indicate significant variation among organizations. The overall mean of "NPM" (Net Profit Margin) is −1.00%, signifying a negative average profit margin and possibly indicating financial difficulties for the sampled organizations.

Furthermore, the data reveal a broad group of enterprises with varying financial results. The wide ranges and standard deviations in important financial variables demonstrate that the sampled firms are diverse. For a complete understanding of the underlying reasons impacting these financial outcomes, additional study and context would be required.

CONCLUSION

As a result, the regression study revealed numerous noteworthy findings concerning age and size, as well as their association with company value (Tobin's Q) in Philippine Publicly Listed Companies (PLCs) in the Industrial Sector, alongside its association with cash holdings and firm value. The AGE variable exhibited high fluctuation, indicating that the dataset had a wide range of company ages. The large standard deviation and variation revealed that age varied significantly amongst companies. The somewhat positive skewness of the sample shows a prevalence of older businesses. The SIZE variable, on the other hand, showed significant variability, with a central tendency around the mean and median. The negative skewness meant that higher SIZE values were concentrated.

According to the regression analysis, firm size (SIZE) exhibited a significant negative association, meaning that an increase in size was associated with a significant decline in firm value. Among Philippine PLCs in the industrial sector, the study discovered a statistically significant association between firm size and business value. Firm value was also found to have a mildly positive link with older enterprises. This shows that age and size are important factors in understanding these organizations' financial performance and worth, although the evidence indicates association rather than causation.

In terms of examining the cash holdings of the companies in terms of liquidity and profitability, the descriptive examination of financial indicators, such as "TOTAL SALES," "NET INCOME," and "TOTAL ASSETS," revealed considerable overall averages, indicating significant financial numbers. However, the tested firms' negative average profit margin (NPM) suggested probable financial challenges. Cash-related variables such as Return on Assets (ROA) and Net Profit Margin (NPM) were investigated for their distributional features. The mean and standard deviation of ROA were moderate, but its non-normal distribution with a substantial negative skew and high kurtosis showed the possibility of outliers. In contrast, NPM showed high fluctuation with a negative mean, signaling probable financial difficulties. The negative skew and high kurtosis indicated a non-normal distribution with a preponderance of lower values and the occurrence of extreme values or outliers. The study discovered significant variation in cash-related variables, showing disparities in financial performance across the studied firms. The negative profit margin and non-normal distribution of ROA and NPM highlighted the importance of taking financial health and potential outliers into account when analyzing liquidity and profitability.

Further, the association of cash holdings with liquidity and profitability, based on the regression study, revealed the association of major financial indicators with the dependent variable (Tobin's Q), such as Return on Assets (ROA) and Net Profit Margin (NPM). ROA had a strong negative association, demonstrating that a decrease in ROA was linked to a significant decrease in firm value. NPM showed a positive association, implying that an increase in NPM was related to an increase in company value. ROA and NPM's distributional features underlined their association with firm value even more. Both variables' non-normal distributions, negative skewness, and high kurtosis suggested probable outliers and extreme values that could have an impact on company value. According to the findings, cash-related variables, particularly ROA and NPM, are substantially associated with the liquidity and profitability of Philippine PLCs in the industrial sector. When assessing the association of cash holdings with business value, researchers and stakeholders should be wary of potential outliers and extreme values.

Ultimately, the study gives a deeper understanding of the relationships and dynamics among Philippine PLCs in the industrial sector. The findings provide useful information for future study and decision-making in the context of financial management and strategic planning for these businesses. The study nevertheless acknowledges certain limitations. The sample of eighteen firms over five years (90 firm-year observations) is relatively small, which constrains the generalizability of the results, and the extreme distributions of several variables, although addressed through winsorization and robust standard errors, call for caution in interpretation. In addition, the panel design identifies associations rather than causal effects; future research using longer panels, larger samples, and identification strategies such as instrumental variables or difference-in-differences designs would be valuable for establishing the causal effect of cash holdings on firm value.

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