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The Interaction Between Asset Tangibility, Cash Holdings, and Financial Development: An Evidence from Emerging Economy

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Abstract

Objective: This research delves into the intricate relationships among asset tangibility, corporate cash holdings, and corporate financial development within corporate firms. The primary aim is to estimate these interactions and discern their direct and combined impacts through empirical analysis.

Methodology: Utilizing Financial Statement Analysis (FSA) data spanning from 2010 to 2019, comprising 220 corporate firms and 1,947 observations, this study employs panel data analysis techniques. The research evaluates the direct influence of asset tangibility on corporate cash holdings and examines the joint effect of corporate financial development on both asset tangibility and corporate cash holdings. The methodology involves various analytical tools, including descriptive statistics, correlation analysis, fixed effect models, random effect models, Hausman tests, and various diagnostic tests. These methodologies ensure the rigor and validity of the estimations and econometric approaches.

Findings: The findings reveal significant associations. Firstly, asset tangibility negatively correlates with corporate cash holdings, indicating that firms with higher tangible asset structures tend to maintain lower cash reserves. Moreover, a negative relationship exists between corporate financial development and asset tangibility, suggesting that financially developed firms tend to possess lower tangible assets.

Implications: Understanding the inverse relationship between asset tangibility and cash reserves can guide firms in optimizing asset composition, potentially leading to more efficient resource allocation and strategic decision-making, particularly in emerging economies**.**

Novelty: This study underscores the interdependent nature of asset tangibility, corporate cash holdings, and financial development within corporate entities. The outcomes contribute valuable insights into the strategic management of tangible assets and cash reserves, particularly in financial development among corporate firms.

Keywords: Corporate Cash Holdings; Asset Tangibility; Financial Development; Fixed Effect; Pakistan

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1. Introduction

Financial decisions are the backbone of every business (Khan, et al., 2023). Cash and equivalent cash are the most evaluated liquid assets in firms. Firms typically reserve cash to assure liquidity and precautionary motives in unforeseen circumstances (Vuong, et al., 2023). Nevertheless, Opler, et al. (1999) contend that firms with more cash can ignore higher profits from other asset forms. Bargeron, et al. (2010) state that the visible rise of cash holdings diminishes capital expenditures in firms. This means storing more cash restricts speculative activities (Nguyen, et al., 2023). Moreover, the variations in policy development are unavoidable and might come unexpectedly. Such uncertainty drives a range of adjustments in individual and organizational decisions. To navigate unpredictable situations, various regulations such as political, social, economic, or a mix of these can be employed to grasp current occurrences or foresee ongoing advancements (Darsono, et al., 2022). Financial decisions are considered the backbone of every business. Therefore, it attracted the attention of many researchers worldwide (Nguyen, et al., 2023).

All over the world, collateral is widely used in business borrowing. Over 70% of industrial and commercial loan collateral is secured in the United States (Berger & Udell, 1990). According to Black, et al. (1996), collateral requirements apply to 85% of loans to small enterprises in the United Kingdom. From 48 countries using a sample of businesses, Bae and Goyal (2009) demonstrate that stationing collateral decreases organization loan stretches considerably. Considerable attention has been paid to the record-high U.S. firms' cash holdings. Bates et al. (2009), the average cash-to-assets ratio more than doubled from 10.5% to 23.2% from 1980 to 2006, documented by U.S firms. The Wall Street Journal stated in June 2010, “Non-financial companies had siphoned off $ 1.84 trillion in cash and more cash equivalents by the end of March, 26% more than a year earlier and the largest increase since 1952. Cash represented around 7% of the company's total assets, the highest amount since 1963.” Prior work on determinants of cash holdings suggests that firms accrue cash for various reasons, such as the precautionary motive, transaction cost motive, repatriation tax motive, and management agency cost motive.

Because of its low evidence irregularity in high recovery ratio as well as appraisal, tangible assets (plants, land, and buildings) have always functioned as the dominant type of collateral in external borrowing (Shleifer & Vishny, 1992; Hart & Moore, 1994; Calomiris, et al., 2016). Corporations, through limited asset solidity, typically confront expensive outside funding and are compelled to accumulate precautionary funds (Bates, et al., 2009; Lyandres & Palazzo, 2016). As corporate financing frequently depends upon asset-based finance, Kiyotaki and Moore (1997) stress that tangibles are subordinate in determining businesses' monetary capability and might have significant repercussions for a country's financial development (Zhou, et al., 2023). Chaney (2012) discovers that a typical US corporation cuts financing by $0.06 for every dollar fall in real estate worth.

Tangible assets are single of the highly crucial factors in explaining a company's capital structure (Charalambakis & Psychoyios, 2012; Suu, et al., 2021; Nguyen, et al., 2023). The influence of a firm's asset mixes and how it explains its investment composition is a hotly debated topic. In general, tangible assets are more liquid than intangible ones. As a result, physical assets have a more significant second market value and may be rapidly and readily sold in the event of bankruptcy. Furthermore, ownership of physical assets should boost the debt capacity of organizations that hold such assets (Biswas, et al., 2020; Darsono, et al., 2022a). According to Sibilkov (2009), it is unclear if physical assets are adversely or favorably connected with debt. The current disparity between previous studies and hypotheses about the link prompted this research work about whether tangible assets are a crucial variable in explaining company debt levels. The mix of tangible assets is critical in explaining organizations' debt degree (Giambona, et al., 2014). Tangible resources are subdivided into tinier and more precise asset classes, which remain detailed around the annual report summaries. As a result, this separation discloses some of the assets' Redeploy ability and liquidity. Tangible assets employed in several sectors should indicate a better debt capacity for the company. This research will investigate the effect of the mix of tangible assets on the debt level.

This study investigates the influence of asset tangibility on the cash holding and investment strategies adopted by corporate sectors. Additionally, it seeks to understand the combined effects of financial

development on corporate cash holdings and asset tangibility within listed firms on the Pakistan Stock Exchange. The main focus is on unraveling how asset tangibility shapes the patterns of corporate cash holdings in Pakistan and determining the magnitude of this impact. In addition, we find the moderating effect of financial development in the nexus between assets tangibility and corporate cash holdings. Such a study has not previously conducted in an emerging country, which leads to investigating the impact of asset tangibility/asset intangibility on cash holding by a corporation for their daily operations as well as they're on their future investment policies, firm growth, and financial development of the country.

This research seeks to unravel the intricate dynamics between asset tangibility, corporate cash holdings, and financial development, a nexus that has garnered increasing attention within corporate finance. Academics and practitioners will be drawn to our findings due to their practical implications in shaping corporate financial strategies. Our study ventures into relatively unexplored territory by examining how asset tangibility influences cash reserves and, notably, the link between financial development and asset structures. This study's novelty lies in its comprehensive analysis spanning a substantial timeframe using panel data techniques, allowing for a deeper understanding of these relationships. By elucidating the inverse correlation between asset tangibility and cash holdings and highlighting the impact of financial development on asset structures, our work provides a unique perspective essential for practitioners in optimizing asset composition strategies. This research bridges gaps in existing knowledge, offering insights crucial for strategic decision-making in emerging economies and contributing substantially to the evolving discourse on corporate financial management.

This research study will indicate the corporate firm growth in leu with asset tangibility, asset intangibility, financial development, and corporate cash holding by the organization listed in the Pakistan stock exchange and the borrowing from the financial institutions in the emerging country Pakistan. The primary intention of such study work is to know about the corporate firm growth and economic growth trends in the nation done by firms with the association of some interlinked factors.

2. Literature Review

The key to achieving high-quality development is to make innovation the primary driver and improve economic development and environmental protection policies (. In the subsequent portion, the present form of literature, turning across the matter of interaction between asset tangibility, corporate money holdings coupled with firm financial development, will be reviewed (Ramadan & Safavi, 2022). According to Lei, et al., (2018), growing immaterial resources on company balance sheets over the globe can restrict borrowing ability and obstruct development if companies must maintain money and sacrifice investment prospects. They show that a firm's financial improvement reduces money holdings' thoughtfulness towards tangible resources and encourages growth. The authors similarly discover that areas with a minor percentage of tangible resources develop more rapidly in nations with more established financial marketplaces. Their assessment exposes a significant resource tangibility path beyond which financial improvement enables firm growth (Chisadza & Biyase, 2023; Wing-Kwong & Ei-Yet, 2022).

Shah and Khan (2017) studied the factors influencing non-financial Pakistani enterprises' capital structure decisions. For ten years, from 2005 to 2014, the influence of business profitability, cash flow, volume, solidity, and non-liability tax shield upon capital formation determination of 10 non-financial enterprises trading on the Pakistan Stock Exchange is explored. Using the fixed effects panel estimate approach, it is discovered that a firm's profitability and current ratio are inversely related to its leverage proportion. At the same time, business volume, solidity, and the non-liability tax shield benefit the leverage ratio. Profitability has a minimal effect, but liquidity, scale, solidity, and a non-liability tax shield have a strong influence. According to the study, the solutions for profitability and liquidity remain consistent with the Pecking Order Concept, while the results for volume, solidity, and a non-debit tax shield remain consistent through the Trade-Off Concept.

Burke et al. (2020) studied how worldwide trade influences business financing through asset tangibility. The analysis postulated that when a national company's asset tangibility is reduced by overseas export, the firm's reaction to internal funds is reduced. First, show that foreign export supply affects the tangibility of local enterprises' assets using 2SLS regressions. In addition, analysis discloses that when worldwide

trade-induced resource tangibility falls, capital financing reacts less toward money flow. This research contributes to our knowledge of the effects of worldwide trade appearing in the perspective of corporate investment by way of emphasizing the impact of trade-induced investment frictions on corporate financing.

Dudley and Zhang (2016) investigated the association between a nation's degree of trust and corporate money holdings. Permitting the precautionary savings incentive, enterprises in countries with less trusting communities would save more cash to offset decreased gain access to capital marketplaces. According to the agency theory, shareholders around nations with minimal community confidence would pressure corporations to pay out money. The initial hypothesis expects an adverse relationship between trust and corporate money holdings, whereas another theory expects a constructive relationship. The extract indications favor the agency-based justification used for the relationship between trust and corporate money holdings using data from enterprises in 54 countries worldwide. Overall, the findings emphasize the importance of informal organizations in determining corporate finance management.

Evidence from a massive model of Italian private enterprises demonstrates that money holdings remain highly connected to a smaller volume, higher risk, and lower applicable tax rates, corroborating the trade-off model's predictions. Companies with retentive cash conversion cycles and lower funding deficits hold more cash, while anticipated through the finance pyramid hypothesis. According to stated research, dividend payments remain correlated with increased cash holdings, and both bank obligations and net operating capital are good money replacements. Once macroeconomic and industry circumstances are considered, certain variables drop their relevance, although the overall conclusions remain upheld. Ultimately, cash-rich firms have been seen to stay more profitable, on the way to giving higher dividends and investing further in the medium period (Bigelli & Sánchez-Vidal, 2012).

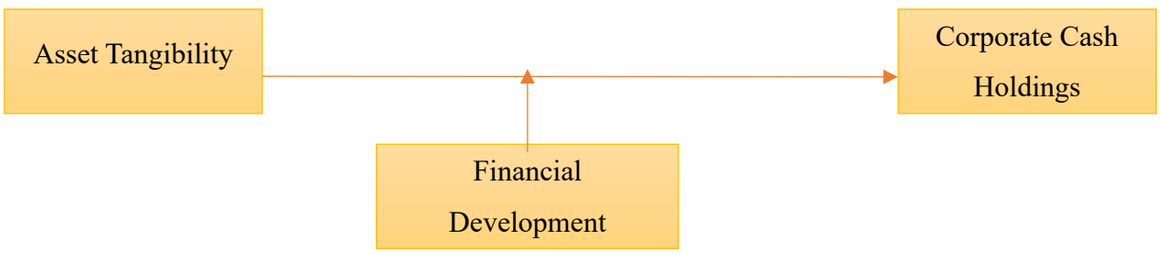
Maheshwari and Rao (2017) conducted a study to examine the financial factors of company money holdings. The panel information regression approach remains applied in this investigation. Their study estimates the panel statistics method using the fixed-effects technique built upon Hausman test findings. This study provides implications that help company managers better understand the function and value of corporate money holdings variables. The results show a substantial optimistic association among the model organizations' cash holdings, market-to-book ratio, cash flow, dividend payment, net debt issue, and net equity issuance. It remains similarly discovered that networking capital, leverage, R&D spending, and capital expenditures negatively influence these organizations’ money holdings. The study assists scholars and managers in understanding what motivates organizations to store cash.

According to Harford, et al. (2014), corporations manage to refinance threats by raising cash holdings and preserving cash as cash flows. The age of enterprises' long-term liability has shrunk significantly, explaining a significant portion of the growth in cash holdings over time. They establish that the amount of cash resources is higher for such enterprises and that they minimize underinvestment difficulties. This is reliable with the hypothesis that cash resources remain especially beneficial for companies with refinancing threats. The findings show that the refinancing threat significantly predicts cash holdings and underscores the interconnectedness of a company's financial strategy actions.

Al-Najjar (2013) researched corporate money holdings in underdeveloped nations. The author examines the impact of capital composition and dividend policy on money holdings in China, Russia, Brazil, and India and compares its conclusions to a control model of the United States and the United Kingdom. For the years 2002 to 2008, our sample included 1992 companies from these nations. The study uses Instrumental Variables analysis (capital structure, cash holdings, and dividend policy) to account for the endogeneity of economic policies. The author's findings suggest that capital structure, along with dividend policy, have an impact on cash holdings. The determinants driving corporate money holdings remain comparable in developed and emerging nations. Our cross-country method findings show that capital composition, dividend policy, and business volume all play a role in influencing cash holdings (Lee et al., 2022). Finally, Al-Najjar (2013) demonstrates that enterprises in nations with weak shareholder shields hoard more cash.

Ample asset solidity of corporate cash holdings and financing indicates flaws in a country's monetary system since, in a frictionless marketplace, a firm's financing choice should solely be built on coming projected cash movements, as well as cash holdings, develop inappropriately. Financial development has been regarded as reducing financial interactions while promoting economic growth (King & Levine, 1993; Levine, 1997). Such a study identifies an essential tool beyond which financial progress enables financial growth by reducing corporate finance and investment programs' reliance on the stock of physical assets.

2.1 Schematic Diagram



When contracting connections and limited enforcement exist, external capital providers will demand tangible assets as security against borrowing. The recent drop in intangible capital on business balance sheets may have limited firms' loan capacity and prompted cash hoarding. A strict cash strategy is expensive since surplus cash reserves are sometimes accumulated at the price of earlier investment possibilities (Darsono, et al., 2022a). As a result, the financial cost of tangibility has far-reaching consequences for company policy and national economic growth. Given the growing prominence of immaterial capital, which includes resource portfolios, this one is critical to comprehend how a country's business structure's evolution impacts company cash reserves and investment conclusions via the frequency of tangible resources.

This research utilizes data from Pakistan's non-financial sector data from 2010 to 2019 to explore the combined influence of financial development on corporate cash holdings on asset tangibility. The result of financial development on institutions, such as improved creditor claims along with openness, reduces cash solidity. Moreover, the financial development of firms influences corporate investment.

The considerable asset solidity of corporate cash holdings, as well as financing, indicates flaws in a country's business system since, in a frictionless marketplace, a firm's financing choice would solely be centered on potential predicted cash movements, rendering corporate cash holdings inappropriate. Financial development has been regarded as reducing financial interactions while promoting economic growth (King & Levine, 1993; Levine, 1997). Such a study identifies an essential tool beyond which financial progress enables financial growth by reducing corporate finance and investment programs' reliance on the stock of physical assets.

3. Data and Methodology

The analysis was conducted on ten years of data from 2010 to 2019. I am considering the ten years of panel data to analyze the issue's impact and reach some conclusions. The sample size would contain non-financial region data of Pakistan. Data from the non-financial sector will be collected for the study under consideration because the financial sector study leads to data collecting problems and the difference in nature from non-financial as it would cause biases in the research, and the results would be affected. I am considering using corporate sector data to implement various relevant techniques to reach a solid conclusion.

3.1 Econometric Equations

This research examines “the interaction among asset tangibility, corporate cash holdings along with financial development of firms” in the Pakistani context by manipulating the data of no-financial

companies registered at the Pakistan Stock Exchange (PSX) from 2005 to 2019. The related empirical models are as follows:

Impact of asset tangibility on corporate cash holding

In this paper, we employ the following model to examine the direct impacts of asset tangibility and other factors on company cash holdings:

$$CH_{it} = \beta_0 + \beta_1 ASST_{it} + \beta_2 LEVRG_{it} + \beta_3 FAGE_{it} + \beta_4 FSZ_{it} + \beta_5 CATY_{it} + \varepsilon_{it}, \quad (1)$$

where CH is corporate cash holding, ASST is asset tangibility, LEVRG is leverage ratio, FAGE shows firm age, FSZ is firm size, and CATY is an acronym for capital intensity. The subscript i is for cross-section, t is for time, and symbols show the coefficients. Similarly, ε_{it} denotes the error term.

The combined effect of asset tangibility & corporate financial development on company cash holding

In addition, we utilize the following model (Equation (2)) to examine the moderating role of financial development in the nexus from asset tangibility and other factors to company cash holdings:

$$CH_{it} = \beta_0 + \beta_1 ASST_{it} + \beta_2 ASST_{it} * FDV_{it} + \beta_3 LEVRG_{it} + \beta_4 FAGE_{it} + \beta_5 FSZ_{it} + \beta_6 CATY_{it} + \varepsilon_{it}, \quad (2)$$

where FDV is the financial development of firms and other variables have been defined after Equation (1).

Moderating effect

We utilize the following models to show the effect of asset tangibility (ASST) on firm financial development (FD) and company cash holdings (CH) to check the combined effect on cash holdings.

$$FD_{i,t} = \beta_0 + \beta_1 ASST_{it+} + \beta_2 LEVRG_{it} + \beta_3 FAGE_{it} + \beta_4 FSZ_{it} + \beta_5 CATY_{it} + \varepsilon_{it}, \quad (3)$$

$$CH_{it} = \gamma_0 + \gamma_1 ASST_{it} + \gamma_2 FDV_{it} + \gamma_3 ASST_{it} * FDV_{it} + \gamma_4 LEVRG_{it} + \gamma_5 FAGE_{it} + \gamma_6 FSZ_{it} + \gamma_7 CATY_{it} + \varepsilon_{it}, \quad (4)$$

where equations (3) and (4) show the moderating relationship between the study variables and all the variables have been defined after Equations (1) and (2). The equations demonstrate the trend of variables in which Equation (3) presents the moderating relationship between asset tangibility and financial development, exploring how financial development moderates the relationship between asset tangibility and corporate cash holdings. Similarly, Equation (4) combines the moderating effect from Equation 3 into the main model (Equation 2) to include coefficients for asset tangibility, financial development, and their interaction effect.

3.2 Estimation Methods

In this segment, our focus revolves around the foundational aspects of estimation methods, primarily grounded in the meticulous analysis of panel data. Panel data emerges as the preferred choice owing to its intrinsic attributes that lend heightened efficiency and an expanded degree of freedom in our study. Our methodology encompasses a structured approach. Initially, outliers are meticulously identified and removed to ensure the integrity of the subsequent analysis. Subsequently, the Shapiro-Wilk test is employed to scrutinize the normality of the dataset, providing insights into the distribution characteristics crucial for our further research. Further scrutiny involves a comprehensive assessment of multicollinearity and heteroskedasticity. The Variance Inflation Factor (VIF) assists in identifying multicollinearity issues, while the Breusch-Pagan test helps detect heteroskedasticity, ensuring our analytical framework's robustness. Navigating between Fixed Effects and Random Effects methods, our inclination lies towards the Random Effects approach, chosen for its aptness in this context. To enhance model selection precision,

we meticulously execute the Hausman analysis. This step allows for a discerning evaluation between the fixed and random models, ensuring that the selected model aligns most accurately with the intricacies of the dataset and the analytical objectives at hand. The Fixed Effects model holds significant advantages, particularly in scenarios where there are unobserved individual characteristics or persistent factors that might influence the variables under scrutiny. It effectively accounts for these unobserved heterogeneities by isolating and considering individual-specific effects, thereby minimizing potential biases in estimation.

3.3 Variable Definition

3.3.1 Asset Tangibility

Asset tangibility is the proportion of an entity's assets held in physical form apart from current assets. That remains the proportion of physical non-current assets towards the total assets of an entity. Campello and Giambona (2013) in their study, maintained that since most entities used debt financing, which required the use of collateral, tangible assets can be used as collateral to ease companies' financial limitations via reducing borrowing costs, as well as firms by low asset tangibility, tend toward hold extra money from a precautionary motive standpoint (Charalambakis & Psychoyios, 2012).

3.3.2 Cash Holding

The cash ratio will be used to analyze the elements of cash holdings in this research work. The literature offers numerous cash proportion methods, including cash-to-assets, cash-to-net-assets, and cash-to-net-assets logarithm. The first ratio is calculated by dividing cash and marketable securities via total assets. This metric remains often utilized in the literature (Ozkan & Ozkan, 2004). Opler, et al. (1999) employ the cash toward net assets ratio, which describes net assets, so total assets are less marketable securities and cash. However, this variable generates severe outliers for enterprises with significant cash assets (BKS). This remained the circumstance designed for the illustration employed in this research work. Finally, Foley, et al. (2007) utilize the final ratio, which stays well-defined by the logarithm of the preceding percentage. This variable mitigates but does not eliminate the problem of severe outliers. As a result, the emphasis of this research work remains primarily.

In general, enterprises maintain an optimum positive cash reserve because having positive cash reserves has no negative consequences in a frictionless economy. Though appearing around the globe, the marketplace remains full of many types of costs; therefore, maintaining a cash reserve is essential. The literature on cash holdings implies that corporations hoard cash for various reasons, including transaction motivation, agency motivation, precautionary motivation, tax motivation, and predation motivation (Thakur & Kannadhasan, 2019).

3.3.3 Motives of Cash Holdings

Keynes's (1936) research on the common concepts of occupation, interest, and money perhaps best explains why companies hold cash. Keynes writes about the importance of cash in this research work and outlines three main motives for reserving cash: precautionary, transaction, and speculative.

3.3.4 Theoretical Background

Different theories explain which factors determine the need to hold cash. Three theories are explained hereafter to give better insight into the existing literature. These three theories include the Static trade-off theory, The financial hierarchy models, and the free cash flow theory.

3.3.5 Financial Development

The financial division is a component of the economic environment and serves as a context for various transactions. The financial division comprises the national banks, central banks, stock and securities marketplaces, pension funds, and insurers. Developing these monetary organizations and their facilities is critical to a nation's development. Ang (2008) states that monetary associations emerge due to market transactions and information expenses. Financial reserves have been given and requested through savers

and borrowers, respectively. The law of discovering eligible savers and borrowers remains costly since a similar procedure remains challenging without a reliable organization or an individual to act as an intermediary. Individuals looking to invest have a tough time identifying reliable investment ideas. They are cautious about making investments unless they can secure favorable agreements on future dividends. However, negotiating these agreements can be a time-consuming and costly process. As a result, project managers in the necessity of investment reach a stalemate around accumulating the funds required for the effective progress of their initiatives. There remains a strong possibility of reducing these costs through utilizing banking associations. The financial division's institutions get the authority to assist with activities and cut costs. Their roles are the exact way in which they cut expenses.

Financial institutions, financial markets, and financial products are all evolving. The ongoing increase in financial efficiency brought about by the development of the financial transaction scale and the financial industry's upgrading process. This is evident in the abolition of financial repression and upgrading financial structure, the development of new financial instruments, and the diversification of financial institutions to react to economic progress (Shangguan, et al., 2022).

4. Empirical Analysis and Discussion

4.1 Descriptive Statistics

Table 1 displays the descriptive measurements for all variables from the whole model of 1,947 firm-year data. The value of 2.1940 is the mean of asset tangibility (asst), the standard deviation is 25.4795, and the minimum & highest amount is 0 & 491.4852. The mean amount of corporate cash holdings is 0.1606, the standard deviation is 115.8312, and the minimum & maximum values are -2,151.779 and 3,448.284. The mean value of the financial development of the firm by sales growth is 363.3539, the standard deviation is 16,160.38, and the minimum & maximum values are -1 and 727950.3. The descriptive statistics for the financial development (moderating variable) variable indicate that the mean amount of the firm's business growth by assets growth is 0.9989, the standard variation is 11.1188, and the least & maximum amount is -0.9996 & 306.4036. The control variables show that 18669.76 is the mean of capital intensity, the standard deviation is 487765.7, and the minimum & maximum amounts are 0 & 1.2807. The mean amount of firm leverage is 2.5500, the standard deviation is 22.1581, and the minimum & maximum values are -88.4333 and 795.979. The mean value of firm age is 39.5102, the standard variation is 17.0731, and the least & maximum amount is 8 & 133. The mean amount of firm size is 15.4428, the standard deviation is 1.8130, and the minimum & maximum values are 8.1056 and 20.4575.

Table 1 Descriptive statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
Asst	Overall	2.1940	25.4795	0	491.4852	N = 1959
	Between		24.2325	0.1146	347.3722	n = 205
	Within		6.1264	6.1264	146.3070	T-bar = 9.5561
Csh	Overall	0.1606	115.8312	-2151.7790	3448.2840	N = 2060
	Between		1.1664	-.12887420	16.7769	n = 207
	Within		115.8253	-2168.3960	3431.6680	T-bar = 9.9517
fdS	Overall	363.3539	16160.38	-1	727950.3	N = 2029
	Between		5059.63	-0.5873	72798.79	n = 207
	Within		15335.34	-72436.43	655514.8	T-bar = 9.8193
fdA	Overall	0.9989	11.1188	-0.9996	306.4036	N = 2059
	Between		3.4234	-0.2360	30.6962	n = 207
	Within		10.5806	-29.7526	276.7063	T-bar = 9.9469
Capty	Overall	18669.76	487765.7	0	1.28e+07	N = 2050
	Between		265999.5	0.027838	3827068	n = 207
	Within		408390.9	-3808398	8948340	T-bar = 9.9034
Lvg	Overall	2.5500	22.1681	-88.4333	795.979	N = 2060
	Between		7.1286	-4.7865	70.2136	n = 207

	Within		20.9906	-112.0587	728.3154	T-bar = 9.9517
Age	Overall	39.5102	17.0731	8	133	N = 2060
	Between		16.5910	12.2	128.5	n = 207
	Within		4.0989	0.1019	70.4102	T-bar = 9.9517
Fsz	Overall	15.4428	1.8130	8.1056	20.4575	N = 2058
	Between		1.7542	9.1869	19.9492	n = 207
	Within		0.4873	10.1262	18.3556	T-bar = 9.9420

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-Calculation)

4.2 Correlation analysis

Before doing the regression and investigating the issue of multicollinearity, the correlation constant remained calculated to investigate the link among the variables. Table 2 shows the correlation matrix between predicted, explanatory, moderating, and control variables.

Table 2 Correlation Analysis

	asst	**csh**	**fdS**	**fdA**	**capty**	**lvg**	**age**	**fsz**
asst	1.0000							
csh	-0.0623	1.0000						
fdS	-0.1300	-0.2546	1.0000					
fdA	-0.2323	-0.2675	0.1670	1.0000				
capty	-0.2325	-0.3276	-0.7770	-0.0033	1.0000			
lvg	-0.4551	-0.7077	0.4450	-0.5724	-0.8225	1.0000		
age	0.3249	-0.4525	0.6545	0.4050	-0.4274	0.2070	1.0000	
fsz	0.1600	0.5045	0.2515	-0.1047	-0.4255	0.3076	0.2101	1.0000

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-Calculation.

In Table 2, the findings of the correlation evaluation demonstration control variable firm age (age) coupled with firm size (fsz) are drastically correlated with asset tangibility (asst) and capital intensity (capty), firm leverage (lvg) has a negative relationship. The negative correlation between corporate cash holdings (csh) and asset tangibility (asst) is if a firm has excessive tangible assets, so it doesn't need too much cash to retain them. Financial development through sales and asset growth has a negative relationship with asset tangibility (asst).

In words of corporate cash holdings correlation, firm size (fsz) is drastically associated with corporate cash holdings (csh). Corporate cash holdings have been adversely correlated with financial development by sales growth (fdS), financial development by assets growth (fdA), capital intensity (capty), firm leverage (lvg), firm age (age).

The financial development by sales growth (fdS) is significantly positively related to financial development by assets growth (fdA), capital intensity (capt), firm leverage (lvg), firm age (age), and firm size (fsz).

The financial development by assets growth (fdA) is significantly positively related to firm age (age) and negatively correlated with capital intensity (capt), firm leverage (lvg), and firm size (fsz). The capital intensity (capt) is significantly negatively correlated to firm leverage (lvg) and firm age (age), paired with firm size (fsz). The firm leverage (lvg) is drastically optimistically associated with firm age (age), paired with firm size (fsz). The firm age (age) is positively related to firm size (fsz).

4.3 Diagnostic Tests

4.3.1 Normality test

We employed the Jarque-Bera test as a robust method to assess the normality of our dataset's statistics. The results, illustrated in Figure 1, provide a comprehensive overview of the normality statistics. Behind the figure, the Join values of the Jarque-Bera Test are reported, revealing crucial insights into the distribution characteristics of the data. Upon careful examination of Figure 1, it becomes evident that all components exhibit insignificant probability values associated with the Jarque-Bera Test. This collectively implies a strong indication of the normality of our dataset. The consistently low p-values across the various components bolster our confidence in the reliability of the normality assessment. The Jarque-Bera test, being a powerful tool, allows us to scrutinize the departure of our data from a normal distribution, offering a more nuanced understanding of its underlying characteristics. The insignificance of the probability values reinforces the notion that our dataset conforms well to a normal distribution.

This confirmation of normality is crucial for subsequent statistical analyses, as many parametric tests rely on the assumption of normality. Our findings provide a solid foundation for the validity and reliability of such analyses, contributing to the overall robustness of our study. It is noteworthy that the Jarque-Bera test, by encompassing skewness and kurtosis, offers a comprehensive examination of deviations from normality, making it a valuable tool in the assessment of data distribution.

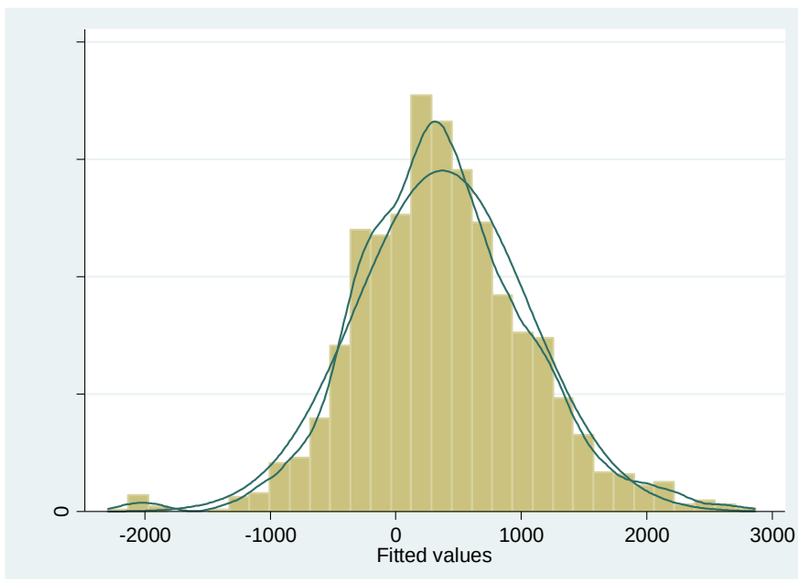


Figure 1 Normality

Component	Jarque-Bera	D.f.	Probability
1	0.209	4	0.671
2	0.261	4	0.288
3	1.762	4	0.427
4	0.388	4	0.272
5	0.488	4	0.612
6	0.278	4	0.718

4.3.2 Heteroskedasticity

In Table 3, the calculated p-value, which surpasses the conventional significance level of 5%, indicates a lack of evidence supporting the presence of heteroskedasticity in the data analysis. This outcome implies that the assumption of constant variance across the observed values is statistically justified. The robustness of the analysis results is affirmed, as the absence of heteroskedasticity supports the reliability and consistency of the model. This finding adds a layer of confidence to the study, suggesting that the estimated parameters and inferences drawn from the analysis are less susceptible to the potential bias introduced by varying levels of variance. It underscores the robust nature of the statistical model employed, enhancing the credibility of the conclusions drawn from the data analysis.

Table 3 Breusch-Pagan test for heteroskedasticity

	Test of heteroskedasticity through Cook-Weisberg /Breusch-Pagan		
Test	**LM**	**d.f.**	**p-value**
Breusch-Pagan	3146.70	2	0.3655

4.3.3 Multi-collinearity

In our research analysis, we employed the Variance Inflation Factor (VIF) test to assess the presence of multicollinearity among the independent variables. Multicollinearity can distort the reliability of regression analysis by inflating the standard errors of the coefficients. The results of the VIF test are summarized in Table 4. The VIF values provide insights into the extent to which each independent variable is correlated with the others. A generally accepted rule of thumb is that VIF values exceeding 10 indicate a cause for concern regarding multicollinearity. Fortunately, in our case, all VIF values are well below this threshold, suggesting that multicollinearity is not a significant issue in our analysis. Specifically, examining the VIF values for each variable, we observe that the VIF value for firm size is approximately 1.06, with a corresponding 1/VIF value of 0.9432. Similarly, the VIF value for firm age is about 1.05, and the 1/VIF value is approximately 0.9559. These results indicate that both firm size and firm age exhibit low levels of multicollinearity.

Furthermore, the VIF values for financial development assets growth, asset tangibility, capital intensity, and leverage are all close to 1.00, with their respective 1/VIF values ranging from 0.9890 to 0.9982. These findings suggest minimal correlation among these variables, reinforcing the robustness of our analysis. It is noteworthy that the mean VIF, which is around 1.02, reaffirms the absence of substantial multicollinearity concerns in our regression model. This low average VIF indicates that the variance of the estimated coefficients is not significantly inflated due to intercorrelations among the independent variables.

Table 4 VIF test for multicollinearity

Variable	VIF	1/VIF
fsz	1.06	0.9432
age	1.05	0.9559
fda	1.01	0.9890
asst	1.00	0.9960
capty	1.00	0.9970
lvg	1.00	0.9982
Mean VIF	**1.02**	

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-calculation).

4.4 Regression Analysis

In Table 5, fixed effect method shows value of co-efficient of asset tangibility is -0.7949, t-value -13.07 and 0.000 p-value, the value of co-efficient of capital intensity is 0.9007, t-value 2.11 and 0.1916 p-value, the value of co-efficient of leverage is -0.6248, t-value -3.05 and 0.0296 p-value, the value of co-efficient of firm age is -1.3647, t-value -1.98 and 0.0458 p-value, value of co-efficient of firm size is 1.9135, t-value 2.31 and 0.0175 p-value. F statistics value is 35.08, R^2 is about 0.1962, and observations are about 1,947.

Table 5 Impact of asset tangibility on corporate cash holdings-fixed effect method & random effect method

Variable Name	Fixed Effect Method			Random Effect Method		
	Co-efficient	**t-value**	**p-value**	**Co-efficient**	**t-value**	**p-value**
asst	-0.7949	-13.07	0.000	-0.2907	-2.75	0.006
capty	0.9007	2.11	0.1916	-0.0207	-2.02	0.0199
lvg	-0.6248	-3.05	0.0296	-0.0019	-3.02	0.0499

age	-1.3647	-1.98	0.0458	-0.0721	-2.45	0.0165
fsz	1.9135	2.31	0.0175	-3.5772	2.23	0.0482
cons	37.2210	2.41	0.0468	-1.8823	-0.08	0.937
F-Stat		35.08			7.79	
R-Square		0.1962			0.9553	
N		1947			1947	
D.W test		1.981			2.019	

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-Calculation.

Second, the Random effect method shows that the co-efficient value of asset tangibility is -0.2907, t-value –2.75 and 0.006 p-value, the value of the co-efficient of capital intensity is -0.0207, t-value -2.02, and 0.0199 p-value, the value of co-efficient of leverage is -0.0019, t-value -3.02 and 0.0499 p-value, value co-efficient of firm age is -0.0721, t-value -2.45 and 0.0165 p-value, the value of co-efficient of firm size is -3.5772, t-value 2.23 and 0.0482 p-value. F statistics value 7.79, R^2 is about 0.9553, and the number of observations is about 1947.

Hausman test

The results of the Hausman test are as under Prob>chi2 = 0.3465.
Ho is accepted once the p-value is more than 5%. In this study, the Random Effect method is suitable for estimating statistics.

Table 6 Influence of asset solidity proceeding financial development.

Variable Name	Co-efficient	t-value	p-value
fdA (DV)			
asst	-0.0586	-2.58	0.0356
capt	0.4608	0.05	0.962
lvg	-0.0051	-0.45	0.656
age	0.0096	0.63	0.531
fsz	0.6432	4.35	0.000
cons	-9.2858	-4.11	0.000
R-Square		0.0109	
Chi2 (P-Value)		0.0006	
N		1947	
D.W Test		2.019	

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-Calculation.

In Table 6, the co-efficient value of asset tangibility is -0.0586, t-value –2.58 and 0.0356 p-value; the value of co-efficient of capital intensity is -0.4608, the value of t 0.05, 0.962 p-value; the value of co-efficient of leverage is -0.0051, the value of t -0.45, 0.656 value of p; the value of co-efficient of firm age is 0.0096, the value of t 0.63, 0.531 value of p; the value of co-efficient of firm size is 0.6432, t-value 4.35 and 0.000 p-value. The R2 value is about 0.0109, 0.0006 Chi2 (p-value), and the value of several observations is about 1,947.

Table 7 On company cash resources, the collective influence of firm development on asset tangibility.

Variable Name	Co-efficient	t-value	p-value
Csh (DV)			
asst	-0.2504	-2.23	0.026
fdA	-0.2681	-0.78	0.434
c.asst#c.fdA	0.5136	1.06	0.291
capty	-1.0507	-0.02	0.984
lvg	-0.0021	-0.02	0.986

age	-0.0724	-0.45	0.652
fsz	0.3605	0.23	0.817
cons	-1.9063	-0.08	0.936
R-Square		0.0046	
Chi2 (P-Value)		0.2577	
N		1947	
D.W. Test		2.188	

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-Calculation.

Table 7 shows the co-efficient value of asset tangibility is -0.2504, t-value –2.23 and 0.0.026 p-value; the co-efficient value of financial development through assets growth is-0.2681, -0.78 t-value and 0.434 p-value; the combined coefficient value of asset tangibility and financial development through assets growth is 0.5136, 1.06 t value, and 0.291 p-value; the co-efficient value of capital intensity is –1.0507, the value of t -0.02 and 0.984 p-value, the value of co-efficient of leverage is -0.0021, the value of t -0.02 and 0.986 p-value of p, the value of co-efficient of firm age is -0.0724, the value of t -0.45 and 0.652 value of p, the value of co-efficient of firm size is 0.3605, the value of t 0.23 and 0.817 value of p. R^2 value about 0.0046, 0.2577 Chi^2 (p-value), the value of observations is about 1,947.

Table 8 Moderating effect

	Co-efficient	t-value	P-value
asst*fdA	0.0157	2.47	0.0464

The value of the moderating effect of asset tangibility reported in Table 8 and financial development through assets growth on corporate cash holdings, the co-efficient value is about 0.0157, the t value is about 2.47, and the p-value is approximately 0.0464.

Table 9 Impact of asset tangibility on financial development

Variable Name	Co-efficient	t-value	p-value
fdS	-2.4170	-0.16	0.870
asst	0.0000	0.05	0.957
capt	1.9805	0.12	0.906
lvg	0.8342	0.61	0.539
age	0.8094	1.52	0.128
fsz	-0.065	-1.59	0.111
cons	0.091	1.982	0.081
R-Square		0.0017	
Chi2 (P-Value)		0.6595	
N		1922	
D.W. Test		1.888	

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-Calculation.

Table 9 shows the analysis results of the impact of asset tangibility on financial development. Financial development through sales growth is considered a dependent variable, and the other variables impact it. The co-efficient value of asset tangibility is -2.4170, value of t –0.16, and the value of p is 0.870; the value of the co-efficient of capital intensity is 0.0000, 0.05 value of t and 0.957 value of p; the value of co-efficient of leverage is 1.9805, value of t 0.12 and value of p 0.906; value of co-efficient of firm age is 13.8342, value of t 0.61 and value of p 0.531; value of co-efficient of firm size is 333.8094, t-value 1.52 and 0.128 p-value. The R2 value is about 0.0017, 0.6595 Chi2 (p-value), and the value of several observations is about 1,922.

Table 10 Upon corporate cash holdings, the collective influence of firm development and asset tangibility.

Variable Name	Co-efficient	t-value	p-value
csh			
asst	-0.4770	-4.55	0.000
fdS	-0.4725	-10.66	0.000
c.asst#c.fdS	0.5772	10.66	0.000
capty	-2.6807	-0.05	0.959
lvg	-0.0042	-0.04	0.971
age	-0.0914	-0.58	0.563
fsz	-0.0015	-0.00	0.999
cons	5.6432	0.24	0.811
R-Square		0.0596	
Chi2 (P-Value)		0.0000	
N		1922	
D.W. Test		2.351	

Note: asst = asset tangibility (independent variable), csh = corporate cash holdings (dependent variable), fds = financial development of sales growth (moderating variable), fdA = financial development of assets growth (moderating variable), capt = capital intensity (control variable), lvg = leverage (control variable), age = firm age (control variable), fsz = firm size (control variable) ***Source***: (Own-Calculation.

Table 10 shows the analysis results of the combined corporate cash holdings and firm growth's influence on asset solidity. The co-efficient value of asset tangibility is -0.4770, t-value –4.55, and p-value is 0.000; the co-efficient value of financial development through sales growth is-0.4725, the value of t is -10.66, and the value of p is 0.000; the combined coefficient value of asset tangibility and financial development through sales growth is 0.5772, value of t is 10.66, and value of p is 0.000; the co-efficient value of capital intensity is –2.6807, t-value -0.05 and 0.959 p-value, leverage co-efficient value is -0.0042, t-value -0.04 and p-value is 0.971, the value of co-efficient firm age is -0.0914, t-value -0.58 and p-value is 0.563, the value of co-efficient firm size is -0.0015, t-value -0.00 and 0.999 p-value. The value of R^2 is about 0.0596, Chi^2 (p-value) is 0.0000, and the number of observations is about 1,922.

Table 11 Moderating effect

	Co-efficient	t-value	P-value
asst*fds	0.1421	3.16	0.01870

Table 11 shows the value of the moderating effect of asset tangibility and financial development through sales growth on corporate cash holdings; the co-efficient value is about 0.1421, the t-value is about 3.16, and the p-value is approximately 0.01870.

5. Conclusion

The primary objectives of this research work revolve around investigating the influence of asset tangibility on corporate cash holdings and investment policies within the corporate sector. Additionally, a key focus lies in examining how financial development moderates the relationship between asset tangibility and corporate cash holdings. Furthermore, the research explores the moderating role of financial development in the connection between asset tangibility and investment policies of the corporate sector. In essence, this study seeks to unravel the intricate interplay between tangible assets, corporate cash management, investment decisions, and the moderating influence of financial development in shaping these dynamics within the corporate landscape. To do so, we employ the panel data analysis method for estimating and examining descriptive statistics, correlation analysis, and various models such as fixed effect, random effect, and Hausman. Additionally, diagnostic tests, including assessments for normality, heteroskedasticity, and multicollinearity, are conducted to ensure the relevance and validity of the estimations and econometric methods.

The overall result indicates that asset tangibility negatively affects corporate cash holdings in the emerging country (Pakistan). It is further concluded that the financial development of the firm is negatively associated with asset tangibility in the emerging region (Pakistan). Firms with excessive forms of tangible assets do not need to hold vast amounts of cash. Firms that are financially developed have negatively associated with asset tangibility. Generally, firms in Pakistan have excessive tangibility assets, so they

don’t need to pretend to use a liquid form of cash. They can quickly get loans or debt from financial institutions due to solid liquidity. In most emerging countries, especially Pakistan, most financial institutions first check the liquidity position of the firms before issuing debt, whether they are financially stable or able to pay the loan/debt back to the financial institutions. For further explanation, a firm has a vast amount of tangible assets whose size and age are high, and they can quickly get debt or loan from financial institutions once they need it.

The empirical estimations suggest that in Pakistan, firms with a surplus of tangible assets may not require an excess of liquid cash to efficiently manage their business cycles, allowing them to focus their financial resources on diverse investment projects. In contrast, in developing countries, particularly when a company possesses substantial intangible assets, maintaining a larger cash reserve is recommended compared to developed countries. It is essential to emphasize a more robust commitment to corporate financing policies in these regions. This research incorporates financial development as a moderator variable to assess the impact of asset tangibility on corporate cash holdings, enhancing the precision of the estimation. The study concludes that a firm's financial development is driven by sales and asset growth. In summary, a firm's financial development, whether through sales growth or asset expansion, exhibits a negative association with asset tangibility.

References

Al-Najjar, B. (2013). The financial determinants of corporate cash holdings: Evidence from some emerging markets. *International Business Review*, 22(1), 77-88.

Ang, J. B. (2008). A survey of recent developments in the literature of finance and growth. *Journal of Economic Surveys*, 22(3), 536-576.

Bae, K. H., & Goyal, V. K. (2009). Creditor rights, enforcement, and bank loans. *The Journal of Finance*, 64(2), 823-860.

Bargeron, L. L., Lehn, K. M., & Zutter, C. J. (2010). Sarbanes-Oxley and corporate risk-taking. *Journal of Accounting and Economics*, 49(1-2), 34-52.

Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do US firms hold so much more cash than they used to? *The Journal of Finance*, 64(5), 1985-2021.

Berger, A. N., & Udell, G. F. (1990). Collateral, loan quality and bank risk. *Journal of Monetary Economics*, 25(1), 21-42.

Bigelli, M., & Sánchez-Vidal, J. (2012). Cash holdings in private firms. *Journal of Banking & Finance*, 36(1), 26-35.

Biswas, S., Jawaid, S., & Mukherjee, D. (2020). Multi-asset portfolio optimization with stochastic sharpe ratio under drawdown constraint., *Annals of Financial Economics*, 2080001, 15 (1), https://doi.org/10.1142/S2010495220800019.

Black, J., Meza, D. D., & Jeffreys, D. (1996). House prices, the supply of collateral and the enterprise economy. *The Economic Journal*, 106(434), 60-75.

Burke, Q. L., Wang, M., & Xu, X. (2020). How does international trade affect US corporate investment? Evidence from the asset tangibility channel. *International Review of Economics & Finance*, 70, 41-54. https://doi.org/10.1016/j.iref.2020.06.040

Calomiris, C. W., Larrain, M., Liberti, J., & Sturgess, J. (2016). Which Creditors' Rights Drive Financial Deepening and Economic Development? *Journal of Applied Corporate Finance*, 28(4), 53-59.

Campello, M., & Giambona, E. (2013). Real assets and capital structure. *Journal of Financial and Quantitative Analysis*, 48(5), 1333-1370.

Chaney, K. (2012). Managing a Diverse Workforce: The Influence of Generation Membership and Career Stage on Workaholism (Master's Thesis, East Carolina University). Retrieved from the Scholarship. (http://hdl.handle.net/10342/3819)

Charalambakis, E. C., & Psychoyios, D. (2012). What do we know about capital structure? Revisiting the impact of debt ratios on some firm-specific factors. *Applied Financial Economics*, 22(20), 1727-1742.

Chisadza, C., & Biyase, M. (2023). Financial development and income inequality: Evidence from advanced, emerging and developing economies. *Annals of Financial Economics*, 18(01), 2241002.

Darsono, S. N. A. C., Wong, W. K., Nguyen, T. T. H., Jati, H. F., & Dewanti, D. S. (2022). Good governance and sustainable investment: The effects of governance indicators on stock market returns. *Advances in Decision Sciences*, 26(1), 69-101.

Darsono, S. N. A. C., Wong, W. K., Nguyen, T. T. H., & Wardani, D. T. K. (2022a). The economic policy uncertainty and its effect on sustainable investment: A panel ARDL approach. *Journal of Risk and Financial Management*, 15(6), 254.

Dudley, E., & Zhang, N. (2016). Trust and corporate cash holdings. *Journal of Corporate Finance*, 41, 363-387. https://doi.org/10.1016/j.jcorpfin.2016.10.010

Foley, C. F., Hartzell, J. C., Titman, S., & Twite, G. (2007). Why do firms hold so much cash? A tax-based explanation. *Journal of financial economics*, 86(3), 579-607.

Giambona, E., Golec, J., & Schwienbacher, A. (2014). Debt capacity of real estate collateral. *Real Estate Economics*, 42(3), 578-605.

Harford, J., Klasa, S., & Maxwell, W. F. (2014). Refinancing risk and cash holdings. *The Journal of Finance*, 69(3), 975-1012.

Hart, O. D., & Moore, J. (1994). Debt and seniority: An analysis of the role of hard claims in constraining management. NBER Working Paper No. w4886. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1956994#

Keynes, J. M. (1936). The supply of gold. *The Economic Journal*, 46(183), 412-418.

Khan, N., Zada, H., & Wong, W. K. (2023). Enhancing Financial Performance and Market Acceptance Through Golden Ratio-Based Capital Structure Decisions: An Empirical Investigation in the Manufacturing and Services Sectors. Asian Academy of Management *Journal of Accounting and Finance*, 19(2), 41-70.

King, R. G., & Levine, R. (1993). Finance, entrepreneurship and growth. *Journal of Monetary Economics*, 32(3), 513-542.

Kiyotaki, N., & Moore, J. (1997). Credit cycles. *Journal of Political Economy*, 105(2), 211-248.

Lee, C. S., Cheang, P. Y. S., & Moslehpour, M. (2022). Predictive analytics in business analytics: decision tree. *Advances in Decision Sciences*, 26(1), 1-29.

Lei, J., Qiu, J., & Wan, C. (2018). Asset tangibility, cash holdings, and financial development. *Journal of Corporate Finance*, 50, 223-242. https://doi.org/10.1016/j.jcorpfin.2018.03.008

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature*, 35(2), 688-726.

Lyandres, E., & Palazzo, B. (2016). Cash holdings, competition, and innovation. *Journal of Financial and Quantitative Analysis*, 51(6), 1823-1861.

Maheshwari, Y., & Rao, K. V. (2017). Determinants of corporate cash holdings. *Global Business Review*, 18(2), 416-427.

Nguyen, H. M., Wong, W. K., & Vuong, T. H. G. (2023). Market Capitalized Scale and Corporate Capital Structure—Evidence from CSI300's Listed Firms. *Annals of Financial Economics*, 2350002.

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52(1), 3-46.

Ozkan, A., & Ozkan, N. (2004). Corporate cash holdings: An empirical investigation of UK companies. *Journal of Banking & Finance*, 28(9), 2103-2134.

Ramadan, A., & Safavi, H. P. (2022). Impact Of Strategic Management Practices on Organizational Performance: Empirical Studies of Selected Firms in Libya. *Advances in Decision Sciences*, 26(2), 1-17.

Shah, M. H., & Khan, A. (2017). Factors determining capital structure of Pakistani non-financial firms. *International Journal of Business Studies Review*, 2(1), 46-59.

Shangguan, X., Hashmi, S. M., Hu, H., & Wong, W. K. (2022). Tax competition, environmental regulation and high-quality economic development: An empirical test based on spatial Durbin model. *Frontiers in Public Health*, 10, 982159.

Shleifer, A., & Vishny, R. W. (1992). Liquidation values and debt capacity: A market equilibrium approach. *The Journal of Finance*, 47(4), 1343-1366.

Sibilkov, V. (2009). Asset liquidity and capital structure. *Journal of Financial and Quantitative Analysis*, 44(5), 1173-1196.

Suu, N. D., Tien, H. T., & Wong, W. K. (2021). The impact of capital structure and ownership on the performance of state enterprises after equitization: Evidence from Vietnam. *Annals of Financial Economics*, 16(02), 2150007.

Thakur, B. P. S., & Kannadhasan, M. (2019). Corruption and cash holdings: Evidence from emerging market economies. *Emerging Markets Review*, 38, 1-17.

Vuong, T. H. G., Nguyen, H. M., & Wong, W. K. (2023). Whether Economic Policy Uncertainty Instigates an Increase in The Cash Holdings of Singaporean-Listed Firms? *Asian Academy of Management Journal of Accounting & Finance*, **19**(1).

Wing-Kwong, C. H. A. N., & Ei-Yet, C. H. U. (2022). The Impacts of Corporate Governance Mechanisms and Ownership Structure on Firm Performance: A Case Study of Chinese Dual-Listed Companies. *Advances in Decision Sciences*, 26(4), 98-126.

Zhou, Y., Dai, J., Farooq, U., Ahmed, J., & Sergeevna, K. N. (2023). National Culture as a Determinant of Corporate Capital Structure: Empirical Evidence from Three Emerging Economies. *Advances in Decision Sciences*, 27(2), 122-144.