

Corporate Cash Holdings and Firm Performance in India: An Empirical Investigation of the Effects of Audit Quality and Firm Growth

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ABSTRACT

This paper examines the effects of audit quality and firm growth on the relationship between corporate cash holdings and firm performance by using a sample of about 2500 unique non-financial Indian firms from 2000 to 2017, consisting of 51,388 firm-year observations. The results obtained by controlling for potential endogeneity using the dynamic panel generalised method of moment (GMM) approach show that cash holdings have an inverse U-shaped (concave) relationship with firm performance, which is stronger for firms with higher audit quality than firms with lower audit quality. Our findings also show that firm growth affects the cash holdings and firm performance relationship and the moderating effect of audit quality. Our study highlights the need for corporate managers to consider firm performance, audit quality and firm growth levels in policy decisions on cash holdings.

KEYWORDS

Cash Holdings, Audit Quality, Firm Growth, Firm Performance, Agency Theory

INTRODUCTION

Since the last global financial crisis, increasing levels of corporate cash reserve¹ have triggered considerable interest in accounting and finance literature (see Chang & Noorbakhsh, 2006; Lin, Chang, Yu, & Kao, 2019; Orlova & Sun, 2018). The primary motivation to hold cash is precautionary. Nevertheless, excess cash holdings² can exacerbate agency conflicts when self-interested managers with discretion over cash expenditure invest in negative net present value projects or misuse corporate cash resources for their self-benefit (Kim, Lee, & Park, 2015). The focus on Indian firms is particularly important as Asian firms, in general, are heavily constrained by borrowing limits and will

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¹ The financial crisis (2007 – 2009) triggered an increasing trend in cash holdings in the United States, reaching \$2.2 trillion by the end of 2011 compared to \$1.5 trillion at the end of 2007 (Gandel, 2012). Federal Reserve statistics show an increase for U.S. non-financial corporations in the percentage of liquid assets to short-term liabilities from the 25% -30% range prior to 2001 to a range of 45% - 50% in 2012 – 2013 (Bartlett, 2013). Japanese firms hold \$2.1 trillion in cash, which accounts for 44% of their GDP and the figures for Korean firms are \$440 billion and 34%, respectively (Bartlett, 2013). Continental European firms at the beginning of the 2000s held 15% of their total assets in cash (Ferreira & Vilela, 2004), while it is more than 20% for Chinese listed firms (Chen, Chen, Schipper, Xu, & Xue, 2012). Roy (2018) reports a persistent and increasing pattern in cash holdings in the aggregate behaviour of Indian corporations around the period of 2007–2008 and 2012–2013.

² Cash holdings represent cash in hand or being readily available for investment in physical assets and cash for distribution to investors (Gill & Shah, 2012). Sánchez and Yurdagül (2013) include cash and short-term investments transferable to cash in their reference to cash holdings. Some studies consider Free Cash Flow (FCF) as cash flow in excess of that required to fund positive net present value investments not distributed to shareholders (Jensen, 1986), whereas cash holdings is often defined in terms of cash and marketable securities (Opler, Pinkowitz, Stulz, & Williamson, 1999).

hold more cash for future investments than firms in developed countries³ (Horioka & Terada-Hagiwara, 2014). Examining this issue in the context of India is particularly important given that it is the second-largest emerging economy in the world and possesses many socio-economic characteristics of many other countries in the Asian region in contrast to the biggest emerging economy, China, which has a unique hybrid market and a controlled economy. Furthermore, the auditors selected by a firm in developing markets such as India, typically have personal ties with management and may fail to be fully independent in their audits. Therefore, it is also worth examining how audit quality affects the association between cash holdings and firm performance in developing markets and the factors that affect their relationship.

Why companies have different preferences to hold a certain level of cash has been substantially argued. Liquidity preference theory (Keynes, 1936) postulates that firms hold liquid assets, preferably cash, to save costs and time in unexpected payment and seize future investment opportunities. The pecking order theory (Myers & Majluf, 1984) illustrates that managers feel more convenience financing investments with retained earnings first, then with debt and finally with equity. Both liquidity preference theory and pecking order theory suggest a higher cash holding than the necessary level. However, the trade-off theory (Dittmar, Mahrt-Smith & Servaes, 2003) states that firms consider the trade-off between the costs and benefits of holding cash and suggests an optimal level of cash holding maximises shareholder wealth. On the one hand, insufficient cash may incur liquidity risk costs or forgo profitable investment opportunities. On the other hand, redundant cash reduces earnings due to the low profitability of cash. Therefore, optimal cash holding is a condition that ensures a firm high level of performance and growth. A firm with high growth is characterised by plenty of cash inflows to keep optimal cash for further operation.

Agency theory offers a theoretical framework for explaining the connections between optimal cash holding, firm performance and the moderating effect of audit quality. Market imperfections persuade firms to carry significant cash holdings (see Dittmar & Mahrt-Smith, 2007; Kim et al., 2015; Opler et al., 1999). Large cash holding can lead to managerial decisions that are detrimental to shareholders' interests (Jensen, 1986), such as when managers invest cash in negative NPV projects that diminish shareholder value (Jensen & Meckling, 1976). From an agency perspective, high-quality audits facilitate an effective monitoring mechanism that prevents potential misuse of cash holdings and the associated destruction of cash values (Feng, Li, McVay, & Skaife, 2015; Han, Kim, Lee, & Lee, 2014). An ex-post external audit may influence managers' ex-ante investment decisions, reducing agency costs associated with cash holdings (Harris & Raviv, 1996). Also, high-quality audits expose early signs of managerial empire-building investments at the expense of shareholder value, particularly when firm-level cash holdings are high (Kim et al., 2015).

Analysis of the data of 2500 Indian non-financial firms from 2000 to 2017 suggests that cash holdings are significantly related to financial performance in an inverse U-shaped relationship. Furthermore, we find that the association between firm performance and cash holdings is moderated by audit quality. Our study indicates that the positive association between firm performance and cash holdings is stronger for firms with higher audit quality. In comparison, the negative association between firm performance and cash holdings is weaker for firms with higher audit quality. Overall results indicate that high-quality auditors have concerns regarding both over-investment and under-investment strategies resulting from management discretion over using cash holdings. We also find that the auditor role is more pronounced in high-growth firms in terms of the relationship between cash holdings and firm performance relationship. This may be because firms with high cash holdings

³ Chinese listed firms at the beginning of the 2000s held more than 20% of their total assets in cash (H. J. Chen & Chen, 2012). In India, a persistent and increasing pattern in cash holdings was notable in the aggregate behaviour of Indian corporations around the period from 2007–2008 and 2012–2013 (Roy, 2016).

are likely to require greater auditor involvement due to agency problems. The results are robust to different estimation methods, including the GMM, 2SLS and alternative proxies for cash holdings and audit quality.

This paper adds to the existing literature in several ways. First, this article contributes to the broader literature on cash holdings and firm performance by testing an empirically nonlinear relationship (concave) between cash holdings and financial performance. Also, we add empirical evidence of how audit quality impacts corporate cash holdings and firm performance. Although prior studies have suggested either complementary or competing relationships between corporate cash holdings and firm performance, the mediating role of external audits in this relationship has remained largely unexplored. We fill this gap by providing a fresh perspective of these assumptions of trade-off theory by conducting a test of the nonlinear relationship between cash holdings and firm performance by examining the moderating effects of audit quality. Second, our focus on an emerging Asian country offers several new insights beyond the existing studies of the relationship between cash holdings and firm performance. The Indian firms, in general, are heavily constrained by borrowing limits and hold more cash and operate in less robust regulation and legislation under weak institutional environments. Therefore, our study has implications for emerging Asian corporate managers for determining how firms can increase their firm performance by achieving cash holdings close to the optimal level and by considering the governance role of external auditors and the influence of firm growth levels. Third, Among the existing literature on the relationship between cash holding and firm performance of Indian companies, our study has the longest time span from 2000 to 2017, employs the most extensive data set of 51,388 firm-year observations, and covers listed companies in both National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). In contrast, Maheshwari and Rao (2017) investigate the S&P CNX 500 companies listed on the National Stock Exchange (NSE) for a period from 2007 to 2012 with 2,370 firm-year observations, while Arora (2019) examines the S&P BSE 500 indexed 266 Indian companies for a period from 2005 to 2015 with 2,926 firm-year observations. Therefore, our evidence provides relatively high explanation power.

The remaining part of this paper is organised as follows: section 2 describes the unique aspects of the institutional environment in India, section 3 provides a review of the related literature and developed hypotheses, section 4 presents the data and methodology, section 5 presents the results, and section 5 concludes our paper with the theoretical implications of findings and the suggestions for future research.

INSTITUTIONAL ENVIRONMENT IN INDIA

Being an emerging market, India possesses common characteristics of many emerging markets, such as lax regulatory environment, weak corporate governance, and greater information asymmetry between firms and investors (Arora, 2019). This contrasts with developed markets where these characteristics are on the opposite spectrum. In developed countries, firms can borrow money easily from well-established capital markets and enjoy low transaction costs due to the well-functioned market mechanism that exists in these markets. In contrast, the corporate financing behaviours and transaction costs that Indian firms experience are quite different from those in developed markets. Given the unique institutional environment in India, unsurprisingly, Indian firms display different cash holding behaviours from their global counterparts (Tripathy & Uzma, 2020). Arora (2019) observes that Indian firms have a high dependence on internal funds due to higher external financing costs due to market imperfections in India. Therefore, it is important to understand key aspects of the Indian institutional environment that have a bearing on existing cash holding practices in India.

REGULATORY ENVIRONMENT

As is the case with many former British colonies, India has a highly developed judicial system. On paper, this provides a very high level of protection to investors (Chakrabarti, Megginson, & Yadav, 2008). However, enforcement standards and business practices are relatively weak compared to western standards, and regulatory updates are slow to occur (Jackling & Johl, 2009). For example, it took 57 years to enact the Companies Act, 1956 to be updated to the current Companies Act, 2013. Consequently, enforcing compliance with security market regulation has been difficult, and the penalties levied on violations are inadequate to act as a deterrent.

CORPORATE GOVERNANCE

Compared to the shareholder or coordinated models of corporate governance that prevail in developed markets, Indian companies witness promoter-dominated shareholder models. In the private sector, most companies are family-owned businesses, with the largest shareholder owning over 50 per cent (Goel, 2017). Even in large companies, shareholdings remain relatively concentrated among promoters and family business groups. This ownership structure has resulted in significant pyramiding and tunnelling among Indian business groups (Chakrabarti et al., 2008). Another unique feature of the Indian corporate sector is the phenomenon of multiple directorships. Although recent regulatory reforms have reduced the limit to a significantly lower number of 10 directorships, the high incidence of multiple directorships and associated concentration of managerial power contributes to weaker controls in Indian firms (Sarkar & Sarkar, 2009). Despite the various reforms that have been undertaken in the last three decades, Indian corporate governance practices still lag those of developed countries (Jackling & Johl, 2009).

FINANCIAL SYSTEM AND BUSINESS ENVIRONMENT

India has a well-designed financial system consisting of diversified financial institutions, including both banks and non-banks. The substantial liberalisation reforms that have taken place in India since the 1990s has expanded the financial system to include private and foreign banks (Ghosh, 2016). However, since public sector banks dominate the banking sector, holding more than 70% of the total assets held across Indian banks, and the prevailing information asymmetry that exists, the product markets of Indian banks are only moderately competitive (Al-Homaidi, Tabash, Farhan, & Almaqtari, 2019). In general, investors find doing business in India difficult. As evident by the World Bank Enterprise Survey, the key factors contributing to this investor perception are poor institutional quality and bureaucratic corruption. Kumar and Worm (2011) identify corruption and corrupt practices as a major roadblock for India to achieve a higher rate of growth and develop its businesses. They pointed out that the Indian bureaucracy, which has retained a large volume of discretionary powers, provides incentives for corruption and has increased transaction costs. In recent years, the Government of India has focused on streamlining regulations to ease difficulties in doing business through the Make in India Initiative (SN & Sen, 2017). However, as indicated by the World Bank's Doing Business Indicators, where India ranks 63 out of 190 countries, India has a long way to go to improve its business environment to attract investors to invest in their businesses (Tripathy & Uzma, 2020).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Theoretical foundations underpinning optimal cash holdings are explained in agency theory, trade-off theory and the pecking order theory. Market imperfections and information asymmetry pose

difficulties and higher costs for firms to obtain external funding (Chung, Kim, Kim, & Zhang, 2015). Hence, pecking order theory assumes that firms hold optimal cash and would resort to using internally generated funds before opting for external sources of funds (Myers & Majluf, 1984). Such financing policies are expected to provide financial flexibility without agency costs and are especially beneficial when confronted with market imperfections. Furthermore, using external sources of finance may incur financial distress costs when cash flows are insufficient to cover debt payments (Faulkender & Wang, 2006). Therefore, market imperfections persuade firms to carry significant cash holdings (Dittmar & Mahrt-Smith, 2007).

The costs related to excess cash holdings are agency and opportunity costs. Jensen (1986) argues that excess cash provides no flexibility benefits but incurs agency costs. The existence of extensive cash holdings can lead to managerial decisions that are detrimental to shareholders' interests, such as when managers invest cash in negative NPV projects, which diminish shareholder value (Jensen & Meckling, 1976). Holding large amounts of cash provides managers with more flexibility to pursue their objectives (Drobotz & Grüninger, 2007). Shareholders become susceptible to these agency issues when information asymmetry on cash holdings makes it harder for them to monitor the actions of managers (Chung et al., 2015). The opportunity costs associated with cash holding include a lower rate of return of corporate cash holdings and tax disadvantages for the shareholders (Opler et al., 1999). Risk-averse managers hold excess cash to avoid market discipline (Jensen, 1986; Opler et al., 1999), but this discretion can result in low pecuniary returns on the cash holdings. The tax disadvantages arise from holding liquid assets when the accrued income is taxed twice, whereas shareholders can earn a higher pre-tax return from holding these securities directly.

CASH HOLDINGS AND FIRM PERFORMANCE

Maheshwari and Rao (2017) and Arora (2019) indicate that India has an inefficient external financing market, and thus Indian firms heavily rely on internal financing. They document a positive relation between cash holding and market-to-book ratio, presumably, a firm performance measure. We argue that although the internal fund is the primary financing resource for Indian companies, there should be an optimal level of cash holding. The benefit would be low when cash holding is beyond optimal. The only difference is that the optimal level of cash holding for the companies in India is higher than that of developed countries.

Firms aim to maintain optimal levels of cash to pay daily operating needs (transaction cost motive) to meet unexpected contingencies (precautionary motive) and to fund investments without having to access the external fund market (speculative motive) (Martínez-Sola, García-Teruel, & Martínez-Solano, 2013). The costs and benefits of increasing levels of cash holdings, under imperfect market conditions suggest that there is an “*optimal cash level that balances costs and benefits, and maximises the value of the firm*” (Martínez-Sola et al., 2013, p. 162). Extant studies provide evidence of the existence of optimal cash levels by revealing that the relationship between cash holdings and firm performance is nonlinear and concave (Martínez-Sola et al., 2013). The findings of these studies portray the opposing effects of cash holding on firm performance. For example, Martínez-Sola et al. (2013) study the relationship between corporate cash holdings and firm value using a sample of 472 US listed industrial companies during 2001–2007. The results show empirically that an optimum level of cash holdings exists at which firm value is maximum, which demonstrates an inversed U-shape. The marginal value of cash for shareholders is higher when a change in cash moves corporate cash holdings toward the optimal level. This relationship holds for the above and the below-optimal deviations (Tong, 2014). However, the marginal value of cash declines with larger cash holdings, higher leverage, better access to capital markets, and when firms choose to distribute cash through dividends rather than repurchases (Faulkender & Wang, 2006).

Similarly, Oler and Picconi (2007) argue that the cumulative abnormal returns and the company's future operating performance could be predicted based on deviation from the estimated optimal level of cash holdings. The findings indicate that cash balances lower than the optimal level is strongly associated with future operating performance, and future operating performance reduces when companies hold more cash. Overall, the benefit of holding cash at the beginning is higher than the cost, increasing firm value. When cash holding grows, the firm's value increases and approaches an optimal point. When the cash holding grows over the optimal level, the cost is higher than the benefit, decreasing firm value. The relationship between cash holdings and firm performance is much weaker in countries with poor investor protection than in countries with high investor protection (Pinkowitz, Stulz, & Williamson, 2006). When a firm operates under poor governance, excess cash holdings not required for precautionary, transaction or investment motives can easily be misappropriated by management (Dittmar & Mahrt-Smith, 2007). Thus, we formulate our first hypothesis as follows:

H₁: There is an inverse U-shaped relationship between cash holdings and firm performance.

THE MEDIATING ROLE OF AUDITING QUALITY

The responsibilities and efforts of external auditors about their clients' excess cash holdings are shaped by the complexities of auditing and auditors' risks. The auditor's primary role is to carry out independent examinations of corporate financial statements and certify the statements' credibility (Jayalakshmy, Seetharaman, & Khong, 2005). Auditing cash holdings involves certification of the reported figures and facilitating shareholders' monitoring of agency issues, especially regarding excess cash holdings (Kim, Lee, & Park, 2015). The quality of auditing is reflected in the time and resources (characterised by audit fees) and the skills and expertise (characterised by Big N) that audit firms commit. High audit fees represent either more completed auditing efforts or hiring high-quality auditing firms. Alternatively, high auditing quality is related to the top auditing firms (such as Big N) recognised as high adding skills, experiences and more expertise.

Audit quality has several implications for client firms, especially with the management of cash holdings. First, an external audit acts as a means of monitoring or governance by mitigating agency costs and aligning the interests of shareholders with those of managers (Kim et al., 2015). The monitoring and scrutiny of a firm's internal control system by an auditor can mitigate the rent-seeking behaviour of self-interested managers. Second, a well-functioning internal control system, put in place by external auditors, provides corporate managers with more timely and accurate internal information to facilitate the monitoring of cash management (Feng et al., 2015). Third, external auditing and investigation of excess cash are deemed to improve the quality of financial reporting by alleviating the information asymmetry between shareholders and managers (Han et al., 2014).

The overall beneficial outcomes of high audit quality are increasing the value of cash holdings and firm performance. High-quality audits enhance the market value of cash assets by effectively constraining managerial diversion or misallocation of cash resources (Kim et al., 2015). Investors are likely to attach a higher value to the cash assets of firms with a higher-quality audit which serves as an effective disciplinary mechanism to prevent potential destruction of cash values and improve investment efficiencies (Kim et al., 2015). The above findings are consistent with the view that a high-quality audit facilitates the effectiveness in using cash and prevents managers from diverting corporate cash resources to negative NPV projects.

Based on the inverse U-shape (concave) of our first hypothesis, the positive relationship on the left-hand side of concave should be enhanced by high-quality auditing, and the negative relationship on the right-hand side of concave should be weakened by high-quality auditing. Therefore, in line with our first hypothesis, we put forward the following parallel hypotheses,

H2a: The positive association between firm performance and cash holdings is stronger for firms with higher audit quality.

H2b: The negative association between firm performance and cash holdings is weaker for firms with higher audit quality.

THE EFFECT OF GROWTH ON CASH HOLDING AND FIRM PERFORMANCE AND AUDIT QUALITY

We argue that the growth levels of firms are expected to affect the firm's cash holdings level and auditors' perceptions of the agency issues related to the cash holdings. Thus, the interrelation between growth levels, cash holdings and audit quality is anticipated to affect overall firm performance. Several studies reveal a positive relationship between cash holdings and growth prospects, indicating that high growth firms hold more cash (Ferreira & Vilela, 2004). Opler et al. (1999) argue that firms with strong growth opportunities and riskier cash flows hold relatively high ratios of cash to total non-cash assets. Pinkowitz, Stulz, and Williamson (2012) indicate that higher growth firms with lower and more volatile cash flows tend to have more extensive cash holdings due to stronger precautionary motives. Several other studies also concur with the notion that firms with more investment opportunities hold more excess cash (Opler et al., 1999). Chen (2008) contention is that high growth firms have more cash to invest in research and development activities and hire Big N auditors to ensure investor protection. Lai (2009) contends that high-quality audits could be a means of monitoring firms with high investment opportunities. A consistent increase in sales growth may induce managers to hold greater excess cash to fund future growth or may result in greater levels of accumulated excess cash collected on sales (Gleason, Greiner, & Kannan, 2017). If high growth contributes to increased cash holdings, then growth is an additional factor affecting auditors' perception of business risk on excess cash holdings (Gleason et al., 2017). Growth opportunities are deemed to cause agency problems because they can be undertaken or abandoned at managers' discretion (Myers, 1984). Excess cash holdings in the presence of higher growth opportunities could lead to funding misuse because firms with more growth opportunities are costlier to monitor and give their managers more discretion over cash holdings (Smith Jr & Watts, 1992). Consequently, firms with high cash holdings and growth opportunities may require greater auditor involvement due to agency problems arising from managers decisions to invest free cash flow (FCF) sub-optimally (Lang, Stulz, & Walkling, 1991).

Jensen (1986) argues that FCF is also a source of agency problems for low growth firms. Agency problems in low growth firms arise when these firms retaining a high level of cash are exposed to the likelihood of overinvestment at the expense of damaging shareholders' interests. Griffin, Lont, and Sun (2010) contend that agency problems exist in low growth firms with high FCF where low growth prospects encourage managers to invest in the FCF unwisely and mask such behaviour by manipulating the financial statements. Hence, firms may need to rely on other means of monitoring, such as using high-quality auditing (Lai, 2009) to check managerial behaviour and ensure that managers will not behave opportunistically (Jensen & Meckling, 1976). In conclusion, we deem that whether firms are deemed high growth or low growth entities and how the firms use excess cash are important considerations for auditors in helping shareholders monitor agency issues. Based on this argument, we formulate the following hypothesis:

H3: The positive effect of auditing on the relationship between cash holding and firm performance is larger in high growth firms than that in low growth firms.

DATA AND METHODOLOGY

DATA

Our sample covers all firms listed on the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) from 2000 to 2017. Firm-level financial data were obtained from the Centre for Monitoring Indian Economy (CMIE) Prowess database (December 2017 vintage). The Prowess database has been used in recent studies (Baghai & Becker, 2018; Chauhan, Pathak, & Kumar, 2018). The total number of firms listed under BSE and NSE in March 2018 is 8,163 firms. As a general practice, we exclude the firms in the financial sector as the capital structures of banks and financial firms are quite different from those of non-financial firms. Following Jan & Ou (2012), we also exclude the observations of firm-years with a negative equity book value. We further winsorise all continuous variables in the bottom and the top 1% to mitigate the effect of outliers. In line with earlier research on the value of cash holdings, we also excluded financial firms from the sample. Our final sample consists of 51,388 firm-year observations for about 2500 unique non-financial firms.

The proxies for the firm performance we adopted in this study are one accounting-based measure—Return on Assets (ROA) and one market-based measure—Market to Book Value Ratio (MBVR), which have commonly been used in previous studies. The ROA has been used in prior studies to capture the operational efficiency of firms (Chauhan et al., 2018; Nguyen, Nguyen, & Le, 2016). Tobin's Q is a widely used proxy for firm performance in studies related to countries with well-developed and regulated stock markets (Martínez-Sola et al., 2013), but according to Roy (2016), Tobin's Q may not be appropriate for developing economies like India for two key reasons. First, India does not have a developed debt market, and therefore, corporate debt in India is primarily institutional debt. Second, Indian firms report asset values on the historical cost basis and not on replacement cost. These two reasons control the usability of Tobin's Q in India. Hence, we use MBVR in our analysis.

We use audit fees and the appointment of Big N international auditing firms as proxies for audit quality as these are the most commonly used proxies in current literature (Kabir, Sharma, Islam, & Salat, 2011; Kim et al., 2015). Audit fees as a proxy for audit quality can be supported because higher audit fees reflect higher skills and more experience on the part of audit staff (Kim et al., 2015), the greater effort of auditors and higher risks of litigation faced by the auditors (Choi, Kim, Liu, & Simunic, 2009). The size of audit firms (characterised by the hiring of Big N audit firms) as a proxy for audit quality is well established in extant literature (Lai, 2009). Large multinational audit firms (Big N) with industry specialisation skills (Kim et al., 2015), greater monitoring ability and expertise are considered to provide higher audit quality (DeFond & Zhang, 2014). Vinten, Leventis, & Caramanis (2005) report that Big Eight audit firms, exhibiting both higher audit fees and audit hours, conduct high-quality audits.

Table 1. Description and Measurement of Variables

| Variable | Description | Measurement |
|------------------------------------|--|----------------------------------|
| Dependent Variables | | |
| MBVR | Market capitalisation, divided by total book value. | Ratio (%) |
| ROA | The ratio of operating profits to total assets. | Ratio (%) |
| Independent Variables | | |
| Cash | Cash and cash equivalent/Book assets | Ratio (%) |
| Audit Fees | This data field captures the amount paid by a company to its auditor, explicitly towards audit fees. Natural logarithm in analysis. | Millions of Rupee Natural log |
| Big4 | Firm use Big4 audit firm. (PwC, Deloitte, KPMG and EY) | 1=yes; 0=otherwise |
| RPT | Sum of all the related party transactions income and expenses in a given year. Natural logarithm in analysis. | Millions of Rupee Natural log |
| Share Concentration (Share) | Percentage of shares held by the largest shareholder. | Percentage (%) |
| Group | A firm is identified as a group-affiliated firm. | 1=yes;0=otherwise |
| Dividend (DIV) | Dividend payment per share / Earn Per share | 1 to 100 |
| Control Variables | | |
| Firm Size (SIZE) | Total assets in millions of Rupee Natural logarithm in analysis. | Millions of Rupee Natural log |
| Firm Age (AGE) | The number of years since the firm's inception. Natural logarithm in analysis. | Years Natural log |
| Growth | The annual growth rate of EBIT | Ratio (%) |
| Intangibility | The ratio of intangibility assets to total assets | Ratio (%) |
| Financial Distress | The inverse of variation of Altman's Z score (excluded liquidity measure) | Percentage |
| Private Credit | The ratio of the private sector credit flow to GDP | Ratio (%) |
| Stock Market Development | The ratio of the total capitalisation to GDP | Ratio (%) |
| Alternative Proxies | | |
| Cash to Net | Cash and cash equivalent/ (Book Assets- cash and cash equivalent)- Robustness | Ratio (%) |
| Auditors Fees | As per the disclosure requirements of part II of Schedule VI of Companies Act 1956, total expenses are in the following three headings 1. Audit fees 2. Fees paid for taxation matters 3. Fees paid for company law matters. Service tax levied on Audit fees is treated as part of the audit fees paid. (for Robustness test) Natural logarithm in analysis. | Millions of Rupee Natural log |

METHOD

The panel ordinary least square (OLS)⁴ and fixed effect approaches are more efficient estimators when the independent variables are exogenous to cash holding proxies. However, according to the extant literature, it can be suspicious that firm performance (*FP*), cash holdings (*Cash*) and audit quality may be jointly and dramatically influenced by unobservable firm-specific heterogeneities (Martínez-Sola et al., 2013), which an OLS regression may fail to identify (Wooldridge, 2010). Also, it can be argued that unobservable firm characteristics in cash holdings and audit quality can vary over time, which means that fixed effect solution does not work as a remedy (Börsch-Supan & Köke, 2002). Since the strictly exogenous condition is invalid, we employ a Durbin-Wu-Hausman (DWH) test as a diagnostic indicator of exogeneity for *FP*, *Cash* and *audit quality* variables in our dataset. Test statistics follow a Chi-squared (Chi-sq) distribution with the degree of freedom equal to three, which are the number of explanatory variables checked for endogeneity⁵. The DWH statistics indicate that the panel with fixed effect is not appropriate as the coefficient estimates are likely to be unreliable and biased.

Following Arellano and Bover (1995) and Blundell and Bond (1998) we propose the dynamic panel generalised method of moment (GMM) approach as a reliable estimator of *FP*, *Cash* and *audit quality* variables. The dynamic GMM model uses internal instruments (lag variable) which satisfy well two requirements for instrumental variables to be valid: (R1) uncorrelated with Error term (*u*), and (R2) partially, sufficiently and strongly correlated with *X* (endogenous variable) once the other independent variables are controlled.

Following Wintoki, Linck, and Netter (2012), we empirically check the necessary number of lags of the dependent variable (i.e., Y_{it-1} and Y_{it-2}). Since the coefficient on Y_{it-2} is not statistically significant, we use a one-year lagged *FP* proxy to construct a complete dynamic specification in our formal dynamic model. Using a one-year lag, the baseline model in this study is as follows:

$$FP_{it} = \alpha + \gamma FP_{it-1} + \beta_1 (Cash)_{it} + \beta_2 (Cash)_{it}^2 + \delta_1 Control\ Variables_{it} + n_i + \varepsilon_{it} \quad (1)$$

$$FP_{it} = \alpha + \gamma FP_{it-1} + \beta_1 (Cash)_{it} + \beta_2 (Cash)_{it}^2 + \beta_3 (Audit\ Quality)_{it} + \beta_4 (Audit\ Quality * Cash)_{it} + \beta_5 Audit\ Quality * (Cash)_{it}^2 + \delta_1 Control\ Variables_{it} + n_i + \varepsilon_{it} \quad (2)$$

In the formulas, *i* indicates observational firms and *t* denotes time. Further, interaction variables are included in the above equation to investigate the interactive effects. We expect β_1 to be positive and β_2 to be negative and provide a test of H_1 . We expect β_4 to be positive and provide a test of H_{2A} . Further, we expect β_5 to be positive and provide a test of H_{2B} . We estimate this formulation using the Blundell and Bond (1998) system GMM estimator. Given the lack of appropriate external instruments, the system GMM estimator is a feasible solution to respond to endogeneity (Tanjung, 2020). Specifically, the GMM estimator allows the use of internal instruments within the panel itself (Blundell & Bond, 1998), and deals with “the combination of a short panel, a dynamic dependent variable, fixed effects and a lack of good external instruments” (Roodman, 2009, p. 156). The GMM estimator is a system of two simultaneous equations, including one in levels and the other in first differences. While lagged levels of explanatory variables can be employed as instruments in the first-differenced equation, their lagged first differences can be used as instrumental variables for the levels equation. Thus, lag 2 and lag 3 of the levels of firm *FP* proxies, audit quality and control variables are employed as GMM-type instruments for the first-differenced equation. Meanwhile, the first lagged

⁴ An F test is applied to test for the poolability across cross sections in panel data models (Jin & Su, 2013).

⁵ DWH test results indicate that an exogenous condition is invalid for cash holdings, audit fees and Big4 explanatory variables.

differences in firm performance, Cash and control variables are used as GMM-type instruments for the levels equation.

A Hansen/Sargan over-identification test for serial correlation supports the validity of this model specification. The test produces a J statistic that is distributed χ^2 with $J-K$ degrees of freedom, where J is the number of instruments, and K is the number of regressors, under the null hypothesis of valid instruments.

RESULTS

Table 2 reports descriptive statistics for the variables of interest for the sample. The average MBVR ratio for the sample firms is 4.79%, which is approximately similar to Roy (2016) who used Indian listed firms in his study. ROA is, on average, 7.88%. Although this mean value is lower than the Indian top firms' average ROA reported by Jackling and Johl (2009), it is approximately similar to the median value of their top Indian firm sample. Cash holding (*Cash*) average is approximately 16.6% greater than those reported in Chauhan et al. (2018) in their Indian study. Nevertheless, cash holdings display wide variations, with a minimum of 0 to a maximum of 87.6%. This suggests a great degree of heterogeneity regarding corporate cash holdings in the selected sample. The mean audit fee in our sample is \$0.05 million, and approximately 14% of firms used services from Big 4 audit firms.⁶

Table 2. Descriptive Statistics

| Variable | Mean | Median | Std. Dev | Min | Max |
|---------------------------------|--------|--------|----------|--------|---------|
| MBVR (%) | 4.790 | 1.920 | 0.152 | 0.000 | 9.410 |
| ROA (%) | 7.880 | 1.410 | 6.442 | 0.000 | 36.500 |
| Cash (%) | 16.600 | 15.000 | 35.800 | 0.000 | 87.600 |
| Audit Fees (Millions of Rupee) | 1.488 | 1.010 | 1.670 | 0.000 | 16.120 |
| Audit Fees (lnAudit fees) | 0.053 | 0.001 | 0.513 | - | 2.780 |
| Big4 | 0.251 | 0.000 | 0.184 | 0.000 | 1.000 |
| RPT (Millions of Rupee) | 37430 | 14310 | 17940 | 0.000 | 107230 |
| RPT (lnRPT) | 10.530 | 9.570 | 9.790 | - | 11.580 |
| Share Concentration (Share) (%) | 30.780 | 15.140 | 21.340 | 1.960 | 100.000 |
| Group | 0.050 | 0.000 | 0.217 | 0.000 | 1.000 |
| Dividend (DIV) (%) | 28.550 | 16.500 | 0.311 | 0.000 | 63.200 |
| Firm Size (Millions of Rupee) | 42200 | 11300 | 121000 | 25.975 | 968700 |
| Firm Size (lnSIZE) | 10.650 | 9.330 | 11.700 | 3.250 | 13.780 |
| Firm Age (Years) | 35.390 | 15.800 | 1.440 | 17.990 | 151.860 |
| Firm Age (lnAGE) | 3.478 | 2.760 | 0.361 | 2.890 | 5.023 |
| Growth | 0.208 | 0 | 3.438 | -199.9 | 164.800 |
| Intangibility | 0.408 | 0.414 | 0.388 | .0067 | 0.526 |
| Financial Distress | 0.441 | 0.320 | 2.300 | -.0049 | 34.780 |
| Private Credit | 77.290 | 76.100 | 30.620 | 28.300 | 161.200 |
| Stock Market Development | 40.860 | 48.200 | 8.862 | 30.600 | 50.800 |

Table 3 reports the correlations between firm performance, corporate cash holdings and audit quality variables. A significant correlation between firm performance proxies, cash holdings and audit quality proxies offer tentative support for the claim that the selected audit quality proxies (audit fees

⁶ The Big 4 international audit firms in India are Deloitte, PricewaterhouseCoopers, EY, KPMG (Dave & Mahanta, 2018).

and Big 4) and cash holding proxies interact with MBVR and ROA. The Variance Inflation Factor (VIF) of 1.81⁷ calculated to assess the multi-collinearity for all explanatory and dependent variables indicated that our results are not affected by the multicollinearity issue.

Table 3. Correlations Among Firm Performance, Cash Holdings and Audit Quality

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---------------------------|---------------|-------------|--------|---------------|--------------|---------------|---------------|--------------|--------|---------------|-------------|--------|-------|----|
| MBVR | 1 | | | | | | | | | | | | | |
| ROA | .7817 *** | 1 | | | | | | | | | | | | |
| Cash | .1269 ** | .2928 ** | 1 | | | | | | | | | | | |
| Audit fees | .9464 *** | .4363 ** | -.0031 | 1 | | | | | | | | | | |
| Big4 | .8955 ** | .4934 ** | .0022 | .5975 *** | 1 | | | | | | | | | |
| RPT | .0411 ** | .0131 | .0055 | -.0091 | .6288 *** | 1 | | | | | | | | |
| Share | -.0042 | .0283 ** | .0012 | -.0069 | .7649 *** | .5402 *** | 1 | | | | | | | |
| Group | -.0098 | -.0028 | -.0012 | .0014 | .0172 ** | .4935 *** | .5263 *** | 1 | | | | | | |
| DIV | -.1211 *** | -.0084 | -.0241 | .4955 *** | .6347 *** | -.0874 *** | -.0793 *** | .1135 *** | 1 | | | | | |
| InSIZE | .0203 | -.0067 | .0184 | .0904 *** | .0573 *** | .1147 *** | -.0759 *** | .2157 *** | .0192 | 1 | | | | |
| InAGE | .0038 | -.0048 | .0124 | -.2126 *** | -.0212 ** | -.6132 *** | -.0329 | -.0272 | .0233 | -.0711 *** | 1 | | | |
| Growth | -.0003 | .0011 | -.0024 | -.0018 | -.0002 | -.0009 | .0056 | -.0021 | .0000 | .0106 ** | -.0075 * | 1 | | |
| Intangibility | .0509 *** | .0001 | .0016 | .0023 | -.0016 | .6662*** | .0137 | -.0018 | .0006 | .0138 ** | -.0021 | -.0004 | 1 | |
| Financial Distress | -.0024 | .0056 | .0010 | -.0007 | -.0022 | .0256 | .0115 | .0008 | -.0011 | -.0299 *** | .0103 * | -.0022 | .0855 | 1 |

CASH HOLDINGS AND FIRM PERFORMANCE RELATIONSHIP

Table 4 reports the results on the relationship between firm performance, cash holdings and audit quality obtained from the GMM method, using MBVR and ROA as the main dependent variables. Although, cash variable is significantly related to MBVR and ROA in Model III and IV, our results show that the cash variable in Model I and II does not significantly relate to MBVR and ROA. This questions the linear relationship between cash holding and firm performance. Therefore, we include linear and quadratic terms of cash holdings (i.e., Cash and Cash²) in Model V to VIII to check the nonlinear relationship.

In Model V to VIII, the Cash variable is significantly and positively related to the MBVR and ROA when proxied to audit quality by audit fees ($\beta=.610$ and $\beta=.674$) and Big4 ($\beta=.515$ and $\beta=.595$). Also, the quadratic terms of the Cash² variable are significant and negatively associated with the MBVR and ROA

⁷ The general rule of thumb is that VIFs need to be less than 4, while VIFs exceeding 10 are signs of serious multi-collinearity requiring correction.

when proxied to audit quality by audit fees ($\beta=-.643$ and $\beta=-.275$) and Big4 ($\beta=-.649$ and $\beta=-.229$). Therefore, we accept H_1 , which indicates an inverted U-shaped relationship. Overall, our study provides empirical evidence of the trade-off theory about cash holding and firm performance. In alignment with prior studies (Myers & Majluf, 1984), our study confirms that firm performance may increase when a firm has a large amount of cash. However, free cash flow leads to conflict between shareholders and managers, which may decrease firm performance (Jensen, 1986). As Martínez-Sola et al. (2013) contend, when firms balance costs and benefits of cash holding, this creates the concave relationship between cash holdings and firm performance. In particular, based on the optimal level, firms can adjust their cash reserve to maximise firm performance. Our finding indicates that there is a nonlinear relationship between firm performance and cash holdings.

The calculated turning point for the nonlinear relationship for MBVR is 62 per cent, and 29 per cent for ROA when measuring audit quality by *Audit fees proxy* (a maxima point)⁸. The maximum points for MBVR is 67 per cent, and 27 per cent for ROA when measuring audit quality by *Big4 proxy*. This implies that the cash holding is positively related to MBVR in the 0–67 per cent range and negatively related when cash holdings exceed 67 per cent ('inverse U-shape'). Similarly, cash holding is positively related to ROA in the 0–29 per cent range and negatively related to ROA when cash holdings exceed 29 per cent ('inverse U-shape'). The turning points imply an optimum level of cash holding, beyond which firm performance diminishes.

⁸ We used the following equation to calculate the turning point: $EXP(\text{coefficient of Cash}/(2*\text{Cash}^2))$.

Table 4. Firm Performance Cash Holdings and Audit Quality Relationship

| Variables | Model I MBVR | Model II ROA | Model III MBVR | Model IV ROA | Model V MBVR | Model VI ROA | Model VII MBVR | Model VIII ROA | Model IX MBVR | Model X ROA | Model XI MBVR | Model XII ROA |
|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| Intercept | -1.191 *** (0.147) | -4.423 *** (0.740) | -3.548 *** (0.321) | -9.823 *** (0.597) | -4.722 *** (0.211) | -1.628 *** (0.070) | -1.170 *** (0.086) | -4.889 *** (0.554) | -4.529 *** (0.164) | -1.640 *** (0.199) | -3.714 *** (0.180) | -4.846 *** (0.588) |
| Lag MBVR/ROA | 0.317 *** (0.027) | 0.174 *** (0.042) | 0.341 *** (0.073) | 0.231 ** (0.091) | 0.600 *** (0.100) | 0.813 *** (0.072) | 0.669 ** (0.311) | 0.470 ** (0.221) | 0.282 *** (0.080) | 0.101 *** (0.020) | 0.578 *** (0.099) | 0.614 *** (0.035) |
| Cash | 0.250 (0.375) | 0.312 (0.236) | 0.392 *** (0.028) | 0.642 *** (0.151) | 0.610 *** (0.052) | 0.674 *** (0.060) | 0.515 *** (0.040) | 0.595 *** (0.042) | 0.1936 *** (0.039) | 0.498 *** (0.062) | 0.211 *** (0.010) | 0.689 *** (0.021) |
| Cash ² | - | - | - | - | -0.643 *** (0.100) | -0.275 *** (0.032) | -0.649 *** (0.041) | -0.229 ** (0.100) | -0.552 *** (0.022) | -0.211 *** (0.021) | -0.104 *** (0.014) | -0.278 *** (0.011) |
| Audit Fees* Cash | - | - | - | - | - | - | - | - | 0.713 *** (0.013) | 0.342 *** (0.100) | - | - |
| Audit Fees* Cash ² | - | - | - | - | - | - | - | - | 0.313 *** (0.040) | 0.139 *** (0.010) | - | - |
| Big4* Cash | - | - | - | - | - | - | - | - | - | - | 0.638 ** (0.310) | 0.338 *** (0.110) |
| Big4* Cash ² | - | - | - | - | - | - | - | - | - | - | 0.428 *** (0.077) | 0.791 *** (0.111) |
| Audit Fees | 0.351 *** (0.050) | 0.262 *** (0.042) | - | - | 0.489 *** (0.050) | 0.651 *** (0.031) | - | - | 0.195 ** (0.086) | 0.200 *** (0.010) | - | - |
| Big4 | - | - | 0.482 *** (0.091) | 0.225 (0.553) | - | - | 0.734 *** (0.100) | 0.751 *** (0.064) | - | - | 0.053 (0.197) | 0.054 *** (0.003) |
| Business Group | -0.502 *** (0.062) | -0.005 (0.113) | -0.201 *** (0.020) | -0.347 *** (0.044) | -0.1654 *** (0.200) | -0.028 *** (0.004) | -0.899 *** (0.111) | -0.825 *** (0.271) | -0.158 * (0.094) | -0.155 *** (0.034) | 0.228 *** (0.018) | -0.294 ** (0.133) |
| RPT | 0.016 (0.105) | -0.126 *** (0.015) | -0.003 (0.014) | -0.061 *** (0.011) | -0.026 *** (0.005) | -0.065 *** (0.013) | 0.087 (0.736) | 0.072 (0.879) | -0.002 (0.015) | -0.201 ** (0.096) | -0.379 *** (0.089) | -0.075 *** (0.021) |
| Share | 0.004 *** (0.001) | 0.002 (0.006) | -0.005 (0.069) | 0.003 (0.029) | 0.002 (0.194) | 0.015 (0.031) | 0.334 *** (0.007) | 0.101 (0.512) | 0.001 (0.020) | 0.350 *** (0.113) | 0.005 (0.017) | 0.003 (0.002) |
| Firm Size | -0.010 (.3189) | -0.019 (.0130) | 0.004 (.0139) | -0.427 *** (0.051) | -0.141 *** (0.007) | 0.534 (0.350) | -0.414 *** (0.138) | -0.534 ** (0.209) | -0.130 (0.273) | -0.125 *** (0.006) | -0.397 *** (0.060) | -0.291 *** (0.091) |
| Firm Age | -0.070 *** (0.009) | 0.012 (0.090) | 0.012 (0.094) | -236 *** (0.020) | 0.114 (0.109) | -0.202 *** (0.002) | -0.898 *** (0.004) | 0.926 *** (0.354) | 0.111 (0.112) | -0.3171 *** (0.002) | 0.110 (0.298) | -0.228 *** (0.056) |

Table 4. Continued

| | | | | | | | | | | | | |
|---|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|
| Dividend Ratio | -0.641 (0.654) | -0.006 * (0.000) | 0.002 (0.004) | -0.002 (0.011) | 0.118 (0.240) | -0.004 (0.011) | 0.206 *** (0.009) | 0.650 *** (0.008) | 0.012 (0.024) | -0.003 (0.011) | 0.222 *** (0.018) | 0.613 *** (0.011) |
| Debt to Equity Ratio | 0.005 (0.817) | -0.010 (0.007) | 0.068 (0.230) | -0.365 (0.641) | 0.667 *** (0.010) | -0.351 (0.652) | 0.860 *** (0.003) | 0.427 *** (0.110) | 0.670 *** (0.041) | -0.775 (.7290) | 0.822 *** (0.003) | 0.355 *** (0.064) |
| Growth | -0.004 ** (0.002) | -0.001 (0.003) | -0.002 ** (0.001) | -0.001 (0.001) | -0.002 (0.018) | -0.001 (0.001) | 0.678 *** (0.008) | 0.283 (0.416) | -0.025 (0.193) | -0.001 (0.042) | 0.002 ** (0.001) | 0.001 (0.001) |
| Intangibility | 0.775 ** (0.330) | 0.533 *** (0.080) | 0.460 (0.792) | 0.222 (0.832) | 0.255 (0.601) | 0.363 *** (0.039) | 0.593 * (0.360) | 0.737 *** (0.063) | 0.035 (0.536) | 1.411 ** (0.051) | 1.831 *** (0.220) | 0.681 ** (0.300) |
| Financial Distress | -0.017 (0.288) | 0.016 (0.011) | 0.030 (0.934) | 0.093 (0.1263) | 0.039 (0.292) | -0.243 *** (0.006) | -0.266 (0.322) | -0.312 (0.323) | 0.177 (0.814) | 0.748 (0.751) | -0.692 *** (0.060) | -0.828 *** (0.001) |
| Private Credit | .0296 *** (0.044) | 0.4053 *** (0.041) | 1.093 (1.308) | 0.256 *** (0.080) | 0.337 (0.411) | 0.026 (0.020) | 0.619 (0.440) | 0.592 *** (0.151) | -0.038 (0.147) | 0.601 *** (0.182) | 0.085 (0.128) | 0.025 (0.779) |
| Stock Market Development | 0.661 *** (0.011) | 0.984 **** (0.003) | 0.308 (0.411) | 0.349 (0.832) | 0.182 (0.411) | 0.167 (0.433) | 0.312 (0.547) | 0.370 (0.492) | -0.298 (0.413) | -0.846 (0.691) | 0.601 (0.400) | 0.115 (0.410) |
| Industry Dummy | Yes | Yes | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummy | Yes | Yes | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Summary Statistics | | | | | | | | | | | | |
| Observations | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 | 51,388 |
| DWH Test for endogeneity of regressors (P-value) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Hansen J test of overidentification (P- Value) | 0.181 | 0.261 | 0.186 | 0.312 | 0.111 | 0.151 | 0.529 | 0.421 | 0.569 | 0.336 | 0.457 | 0.322 |
| Arellano–Bond Test for 2nd order | 0.890 | 0.884 | 0.856 | 0.866 | 0.723 | 0.792 | 0.852 | 0.851 | 0.719 | 0.722 | 0.777 | 0.782 |

Note: Table 4 presents the relationship between firm performance, cash holdings and audit quality. The model I to IV report the linear and quadratic relationship between firm performance and cash holdings. Model V to VIII report the impact of audit quality in the association between firm performance and cash holdings relationship. Audit fees* Cash, Audit fees* Cash², Big4 * Cash, Big4 * Cash² variables are interactive variables. All models included Audit fees, Big4, Business group, RPT, Majority Share, Firm size, Firm age, Dividend ratio, Debt to equity ratio, Growth, Intangibility, Financial Distress, Private Credit and Stock market development as control variables. Standard errors are reported in parenthesis. ***, **, *, significant at the 1%, 5%, and 10% levels using two-tailed test, respectively. The sample is an unbalanced panel of 51,388 firm-year observations. All columns are estimated by the system GMM estimator. In all models, year and industry dummies are included. All variables have been converted into a logarithmic form for the empirical estimation with the exception of the Big4 and localBig4.

AUDIT QUALITY AND FIRM PERFORMANCE

In Model I and II, Audit Fees variable is significantly and positively related to the MBVR and ROA ($\beta=.351$, $p<0.001$ and $\beta=.262$, $p<0.001$). Also, the Big4 variable is significantly and positively related to the MBVR ($\beta=.482$, $p<0.001$). This indicates that higher audit quality increases firm financial performance for two main reasons. First, high audit quality may enhance investors' perception since companies audited by big audit firms, such as Big4, will disclose the most reliable and accurate financial reports, strengthening the overall confidence of investors towards these companies. Second, a high-

quality audit may reduce agency costs, resulting in lower monitoring costs and better performance by the corporation (Adams, 1994).

THE MODERATION EFFECT OF AUDIT QUALITY ON CASH HOLDINGS AND FIRM PERFORMANCE

In Model IX and X, the coefficients of the interaction term *Audit fees* Cash* is positive and significant to MBVR ($\beta=.713, p<0.001$) and ROA ($\beta=.342, p<0.001$). This result indicates that the positive association between firm performance and cash holdings is stronger for firms with higher audit quality and confirms our hypothesis H_{2A}. Also, the coefficients of the interaction term *Audit fees* Cash²* is positive and significant to MBVR ($\beta=.313, p<0.001$) and ROA ($\beta=.139, p<0.001$), suggesting that the negative association between firm performance and cash holdings is weaker for firms with higher audit quality, confirming our hypothesis H_{2B}. The results in Model XI and XII where the audit quality represented by *Big4* supports H_{2A} and H_{2B} as well. Those results indicate that external monitoring done through high-quality audits helps to regulate and penalise managers for inefficient use of investment resources. External auditors have concerns on both over-investment and under-investment strategies that result from management discretion over the use of cash holdings.

FIRM PERFORMANCE, CASH HOLDINGS AND AUDIT QUALITY FOR FIRMS WITH HIGH GROWTH FIRMS

Additional analysis was undertaken to determine the impact of firm growth. Table 5 Panel A presents GMM estimations of firm performance, cash holdings and audit quality of high growth firms. In a given year, companies generating a return on equity of greater than fifteen percent are generally classified as high growth companies. The coefficients of *Audit fees* Cash* and *Audit fees* Cash²* are positive and significant for both high growth and low growth firms. However, for MBVR, the *Audit fees* Cash* magnitude decline from 0.0249 (high growth firms) to 0.0243 (low growth firms) and *Audit fees* Cash²* magnitude decline from 0.0352 (high growth firms) to 0.0282 (low growth firms). For ROA, a similar trend is observed where *Audit fees* Cash* magnitude decline from 0.0311 (high growth firms) to 0.0191 (low growth firms) and *Audit fees* Cash²* magnitude decline from 0.0791 (high growth firms) to 0.0733 (low growth firms). However, the coefficients of *Big4 * Cash* indicates a positive and significant relationship for both high growth and low growth firms for MBVR, while the relationship for ROA is insignificant. Overall, we accept H₃, which hypothesised that the positive effect of auditing on firm performance in high growth firms is larger than that in low growth firms.

Table 5. Firm Performance, Cash Holdings and Audit Quality Relationship: High Growth and Low Growth Firms

| Variables | Model | | | | Model | | | |
|--|----------------------------|-------------------------|-----------------------|--------------------|---------------------------|-------------------------|-------------------------|--------------------|
| | Model I MBVR | Model II ROA | Model III MBVR | Model IV ROA | Model I MBVR | Model II ROA | Model III MBVR | Model IV ROA |
| | Panel A: High Growth Firms | | | | Panel B: Low Growth Firms | | | |
| Audit Fees* Cash | 0.025 *** (0.003) | 0.031 *** (0.01) | - | - | 0.024 *** (0.004) | 0.012 * (0.007) | - | - |
| Audit Fees* Cash² | 0.035 *** (0.004) | 0.079 *** (0.013) | - | - | 0.028 *** (0.005) | 0.073 *** (0.020) | - | - |
| Big4 * Cash | - | - | 0.031 * (0.021) | 0.065 (0.198) | - | - | 0.019 ** (0.011) | 0.062 (0.645) |
| Big4 * Cash² | - | - | 0.259 * (0.156) | 0.062 (0.129) | - | - | 0.162 *** (0.018) | 0.090 (0.396) |
| Lag MBVR/ROA Control Variables | Significant Yes | Significant Yes | Significant Yes | Significant Yes | Significant Yes | Significant Yes | Significant Yes | Significant Yes |
| Industry Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Summary Statistics | | | | | | | | |
| Observations | 18,288 | 18,288 | 18,288 | 18,288 | 33,100 | 33,100 | 33,100 | 33,100 |
| DWH Test for endogeneity of regressors (P- value) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Hansen J test of overidentificati on (P- Value) | 0.160 | 0.109 | 0.174 | 0.144 | 0.516 | 0.109 | 0.411 | 0.158 |
| Arellano–Bond Test for 2nd order | 0.665 | 0.805 | 0.516 | 0.805 | 0.881 | 0.764 | 0.610 | 0.864 |

Note: Table 5 Panel A presents the relationship between cash holdings and firm performance and audit quality of high growth firms. Panel B presents the relationship between cash holdings and firm performance and audit quality of low growth firms. Audit fees* Cash, Audit fees* Cash², Big4 * Cash, Big4 * Cash² variables are interactive variables. Standard errors are reported in parenthesis. ***, **, *, significant at the 1%, 5%, and 10% levels using two-tailed test, respectively. All columns are estimated by the system GMM estimator. In all models, year and industry dummies are included.

High and low growth firms have agency problems associated with corporate cash holdings. Therefore, an empirical question is whether external auditors play a more important role in high growth or low growth firms. The high magnitude of interaction variables of audit quality and cash holdings indicate that auditors play a more important role in high growth firms. In other words, the auditor role is more pronounced in high growth firms than in low growth firms.

THE VALIDITY OF THE GMM MODEL

To test the validity of using the system GMM estimator, we report the results of the DWH test for the endogeneity of regressors (*P-value*), which examines whether our predictor variables are endogenous. The results indicate that DWH (*P_Values*) are statistically significant at 1% level accepted endogeneity of predicted variables for all models. As presented in Table 4 and Table 5, the coefficients of the one year lagged firm performance variable (*MBVR / ROA*) are significantly related to *MBVR* and *ROA* for all models. This implies that firm performance in the previous year impacts the current year's performance, reconfirming the validity of the GMM model. Therefore, to address endogeneity via the system GMM model, it is important to get unbiased results. Further, Arellano Bond, AR (2) test statistics (Arellano & Bover, 1995), which examines the null hypothesis of no second-order serial correlation in the error term, are statistically insignificant. Also, the Hansen tests for over-identifying restrictions and test for the absence of correlation between instruments and the error term, are insignificant. Therefore, the system GMM estimator applied is valid.

ROBUSTNESS TESTS

Several tests are performed to check the robustness of our main findings.

ACCOUNTING FOR ENDOGENEITY USING INSTRUMENTAL VARIABLES

A particular concern underlying our analyses is that the firm performance and the levels of cash holdings are endogenously determined. We, therefore, repeat the analyses in Table 4 by applying an IV regression model. To use this model, we consider an instrumental variable correlated with the explanatory variable (cash holding proxy) but uncorrelated with the dependent variables (*MBVR* and *ROA*). Frésard and Salva (2010) use asset tangibility (*Tangibility*) and two lagged values of cash holdings (*Cash_{t-1}* and *Cash_{t-2}*) as an instrument for cash holdings. In our main model (GMM), we used *cash_{t-1}* as an instrument. For the robustness study, we used intangibility as an instrument for firm-level cash holdings, expecting a positive relationship between cash holdings and intangibility. Firms with more tangible assets can be expected to hold less cash because tangible assets can be sold to meet a cash shortfall (Drobetz & Grüninger, 2007). Also, firms with more collateral encounter fewer problems to issue debt (Titman, Wei, & Xie, 2004), and therefore, they have less need to build up high cash reserves. Therefore, we use *Intangibility* as an instrument for cash holdings (*Cash*), along with control variables (We exclude *Intangibility* from the control variables list as we used in Table 4). As shown in Table 6, the IV regression results are similar to the ones in the main analyses, suggesting that our main results are robust.

Table 6. 2SLS Regressions (Second Stage) on Cash Holdings and Firm-Level Performance

| Variables | Model I MBVR | Model II ROA | Model III MBVR | Model IV ROA |
|----------------------------|--------------------|---------------------|---------------------|---------------------|
| Intercept | - | - | 0.657* (0.398) | 0.931*** (0.090) |
| Intangibility | 0.815 (0.620) | 0.896*** (0.146) | 0.181** (0.093) | 0.100*** (0.010) |
| Intangibility ² | - | - | -0.059** (0.036) | -0.139* (0.071) |
| Audit Fees | 0.182** (0.092) | 0.189* (0.114) | 0.114** (0.050) | 0.089** (0.041) |
| Control Variables | Yes | Yes | Yes | Yes |
| Industry Dummy | Yes | Yes | Yes | Yes |
| Year Dummy | Yes | Yes | Yes | Yes |
| Summary Statistics | | | | |
| Observations | 46,555 | 46,555 | 46,555 | 46,555 |
| Adjusted R ² | 0.378 | 0.465 | 0.506 | 0.495 |

Note: Table 6 presents the relationship between cash holding and firm performance relationship using an instrumental variable for cash holdings. Standard errors are reported in parenthesis. ***, **, *, significant at the 1%, 5%, and 10% levels using two-tailed test, respectively. All columns are estimated by the system GMM estimator. In all models, year and industry dummies are included. Following Frésard and Salva (2010), we used asset intangibility (Intangibility) as an instrumental variable for Cash holdings.

ALTERNATIVE PROXIES FOR AUDIT QUALITY

We also checked the robustness of our findings by using two alternative measures of audit quality—Abnormal audit fees (*Abnormal audit fees*) and Total audit fees. The first measure of Abnormal audit fees takes views of the prior research, which dissect audit fees into two main components: normal and abnormal (Eshleman & Guo, 2014). Normal audit fees are calculated based on the client's size, risk and complexity. The difference between audit fees paid and normal audit fees is known as abnormal audit fees (Choi et al., 2009). The second measure of total audit fees captures the total auditors' expenses (*Auditors fees*) in the following three headings: Audit fees; Fees paid for taxation matters; and Fees paid for company law matters. Service tax levied on audit fees is treated as part of the audit fees paid. We re-estimated the models by using *Abnormal audit fees* and *Auditors fees* as an alternative measure of *Audit fees*.

The results in Table 7 shows that although coefficients changed slightly, the overall interpretation of the results is similar to the baseline results, reinforcing the main findings. In particular, in Model I and II, *Abnormal audit fees* and *Auditors fees* are significantly and positively related to MBVR and ROA. This result confirms that higher audit quality increases firm financial performance. Also, the coefficients of the interaction terms *Abnormal audit fees** *Cash to net* and *Auditors fees** *Cash to net*, suggest that the positive association between firm performance and cash holding is stronger for firms with higher audit quality. In a similar vein, *Abnormal audit fees** *Cash to net*² and *Auditors fees** *Cash to net*² results indicate that the negative association between firm performance and cash holding is weaker for firms with higher audit quality.

Table 7. Firm Performance, Cash Holding and Audit Quality Relationship (Using Alternative Proxies)

| Variables | Model I | Model II | Model III | Model IV | Model V | Model VI |
|--|------------------|------------------|---------------|---------------|---------------|------------------|
| | MBVR | ROA | MBVR | ROA | MBVR | ROA |
| Intercept | 5.675 *** | -2.847 *** | -6.328 *** | -2.430 ** | -6.026 *** | -7.418 *** |
| | (0.900) | (0.930) | (0.791) | (1.239) | (0.960) | (0.690) |
| lagTobin'sQ/ROA | 0.863 *** | 0.794 ** | 0.873 *** | 0.310 * | 0.862 *** | 0.589 *** |
| | (0.281) | (0.405) | (0.060) | (0.180) | (0.280) | (0.150) |
| Cash | 0.485 (0.377) | 0.697 (0.770) | 0.243 *** | 0.565 *** | 0.494 *** | 0.044 *** |
| | | | -0.361 ** | -0.544 *** | -0.240 *** | -0.763 *** |
| Cash ² | - | - | (0.018) | (0.033) | (0.020) | (0.020) |
| | | | 0.108 *** | 0.101 *** | - | - |
| Abnormal Audit Fees* Cash to Net | - | - | (0.021) | (0.042) | - | - |
| | | | 0.126 *** | 0.188 *** | - | - |
| Abnormal Audit Fees * Cash to Net ² | - | - | (0.012) | (0.061) | - | - |
| | | | | | 0.108 ** | 0.127 (0.456) |
| Auditors Fees * Cash to Net | - | - | - | - | (0.055) | |
| | | | | | 0.103 * | 0.125 (0.451) |
| Auditors Fees * Cash to Net ² | - | - | - | - | (0.062) | |
| | | | | | 0.155 *** | 0.2020 *** |
| Abnormal Audit Fees | (0.007) | (0.007) | (0.007) | (0.010) | (0.008) | (0.006) |
| | 0.121 *** | 0.183 ** | 0.126 *** | 0.236 *** | 0.183 *** | 0.178 (0.510) |
| Auditors Fees | (0.003) | (0.093) | (0.011) | (0.713) | (0.020) | |
| | Yes | Yes | Yes | Yes | Yes | Yes |
| Control Variables | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Summary Statistics | | | | | | |
| Observations | 29,222 | 30,968 | 29,222 | 50,968 | 29,222 | 30,968 |
| DWH Test for endogeneity of regressors (P-value) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table 7. Continued

| | | | | | | |
|---|-------|-------|-------|-------|-------|-------|
| Hansen J test of overidentification (P- Value) | 0.180 | 0.138 | 0.253 | 0.181 | 0.116 | 0.244 |
| Arellano–Bond Test for 2nd order | 0.448 | 0.589 | 0.449 | 0.521 | 0.857 | 0.464 |

Note: Table 7 presents the relationship between cash holding and firm performance and audit quality, using alternative proxies. The alternative proxies for Audit fees are Abnormal Audit Fees and Auditors fees. Abnormal Audit Fees* Cash, Abnormal Audit Fees * Cash to net², Auditors fees * Cash to net, Auditors fees * Cash to net² are interactive variables. Standard errors are reported in parenthesis. ***, **, *, significant at the 1%, 5%, and 10% levels using two-tailed test, respectively. The sample is an unbalanced panel of 51,388 firm-year observations. All columns are estimated by the system GMM estimator. In all models, year and industry dummies are included.

CONCLUSION

The policy of cash holdings has gained considerable interest in academia and the financial community, especially since the last global financial crisis, which resulted in increasing levels of corporate cash holdings throughout the world. This study contributes to the growing literature in this field by investigating the effects of Audit Quality and Firm Growth on the Relationship between Corporate Cash Holdings and firm performance by using a sample of Indian firms from 2000 to 2017. The assumptions underpinning the hypotheses examined in this paper are drawn from the agency theory. Firstly, we conclude that the cash holdings have an inverse U-shaped (or concave) relationship with the firm performance. This means that the cash holding levels below the optimal level (turning point), the marginal benefits arising from precautionary and transaction motives are higher than the marginal costs that stem from agency problems of increasing cash holdings and opportunity costs of low pecuniary returns on liquid assets. Hence, firm performance is heightened by trading off the costs for the benefits. However, at levels above the optimal cash holdings, the marginal cost of agency conflicts exceeds the marginal benefits. Consequentially firm performance is diminished when the irrational behaviour of managers continues to trade off the marginal costs for lower marginal benefits, leading to firm performance being sacrificed for the personal benefits of managers.

Secondly, we conclude that the association between firm performance and cash holdings is stronger for firms with higher audit quality than firms with lower audit quality. External auditors have a moderating role in the concave relationship between firm performance and cash holdings. Auditors, in general, are subject to audit risks by virtue of their accountability to shareholders and exposed to litigation for being negligent or failing to carry out the responsibilities related to the auditing of cash holdings. Our results show that the audit quality can enhance the effectiveness of the auditor's responsibility in monitoring overinvestment or underinvestment by managers. The theoretical implication of this finding is that auditors' responsibility extends beyond the verification of cash reported in financial statements and entails safeguarding the interests of shareholders in agency conflicts lest auditors may suffer the consequences of litigation and reputational risks.

Thirdly, we conclude the positive effect of auditing on firm performance in high growth firms is larger than that in low growth firms. When cash holdings are increased to finance anticipated firm growth, the effects of the downward deviation from the optimum cash holdings need to be considered. If anticipated returns from growth exceed the reduction in returns (in terms of ROA and MBVR) due to increasing cash holdings, then maintaining the optimum cash holding does not justify economic rationality. Conversely, if the former is lower than the latter, upholding optimal cash holding may prove to be the rational option. Using external financing for firm growth would help shareholders monitor agency issues. The scrutiny of lenders over the viability of projects anticipated to foster firm growth and the debt covenants and conditions imposed by lenders should be targeted to ensure that

managers do not indulge in negative NPV projects or use funds for their private use. In a similar vein, an evaluation that potential investors make on the feasibility of growth projects may help resolve agency issues favouring equity holders. Hence, if increasing cash holdings to finance growth projects is expected to yield decreasing returns, it would serve the interest of shareholders if managers use external finance, opting for debt first then equity.

The consideration of two moderating factors in our analysis of the relationship between cash holdings and firm performance is original and highlights the need for corporate managers to consider firm performance, audit quality and firm growth levels in policy decisions on cash holdings. Firms can increase their performance merely by being around the optimal level of cash holdings, which seems rational when there is a trade-off between the benefits and cost of cash holdings. Audit quality is an important factor to consider, as it positively moderates the relationship between corporate cash holdings and firm performance. Firm growth level is an additional factor to consider as it affects not only the cash holdings and firm performance relationship but also the impact of audit quality.

Future researchers may want to consider whether there are differences in the relationship between cash holdings and firm performance for firms operating in different institutional environments. Another possible research agenda is to examine the relationship between cash holdings and related party transactions and the moderating impact of audit quality in that relationship.

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