

Governance Mechanisms, Investment Opportunity Set and SMEs Cash Holdings

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ABSTRACT

This study analyses the effect of firm characteristics and governance mechanisms on cash holdings for a sample of UK SMEs. The results show that UK SMEs with greater cash flow volatility, and institutional investors hold more cash; whereas levered and dividend paying SMEs with non-executive ownership hold less cash. We also find that ownership structure is significant only in explaining the cash holdings for firms with high growth investment opportunities, and leverage is only significant in explaining the cash held by firms with low growth investment opportunities. Our findings suggest that internal governance mechanisms are more effective for SMEs with high growth investment opportunities, while external governance mechanisms, such as capital market monitoring, are more effective for firms with low growth investment opportunities.

Keywords: SMEs, ownership structure, governance mechanisms, investment opportunity set and cash holdings

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1. INTRODUCTION

During the period of 1984 to 1999, UK firms had about 10% of their total assets invested in cash and cash equivalents (Ozkan and Ozkan, 2004). This proportion indicates that investments in cash are considerable for UK firms. Investment in cash, however, is subjected to an opportunity cost. This opportunity cost is characterised by the low rate of return earned on highly liquid assets. The question of why firms hold cash has attracted a number of researchers (see for example, Kim, Mauer and Sherman, 1998; Opler, Pinkowitz, Stulz and Williamson, 1999; Ferreira and Vilela, 2004; Ozkan and Ozkan, 2004; Harford, Mansi and Maxwell, 2008). Perhaps two of the most notable features of these studies are the absence of consistent evidence on the hypothesised determinants of cash holdings and the lack of focus on the small medium-sized firms (SMEs)¹.

In this paper we investigate the cash holdings of UK SMEs. We focus on SMEs as the previous studies on the determinants of cash holdings concentrated on large firms. The lack of attention to SMEs is somehow surprising given that they are the backbone of the UK economy² and are often characterized as high risk firms. Market imperfections such as informational asymmetry and financial distress are documented as being more serious for SMEs. For instance, Titman and Wessels (1988) highlight that SMEs are likely to suffer from financial

¹ A notable exception for the focus on SMEs is the study by Garcia-Teruel and Martinez-Solano (2008) who investigate the effect of firm financial characteristics on cash holdings for a Spanish sample.

² According to von Kalckreuth and Murphy (2005) small and medium firms represent around 54% of the gross value added in the UK economy, 56% of employment and 52% of turnover.

distress. Similarly, Whited (1992), and Fazzari and Peterson (1993) argue that small firms are more likely to be affected by financial constraints (due to limited internal finance and costly external finance) compared to large firms. In addition, transaction costs for small firms are expected to be high (Mulligan, 1997). With respect to ownership structure, Faulkender (2002) argues that the ownership of SMEs is more varied as opposed to large firms, which provides a better platform from which to examine the agency cost elements associated with cash holdings. Finally, in the wake of the 2007 financial crisis that led to stringent credit conditions, studying the cash holdings behaviour of SMEs is far more important today than ever before.

The extent to which managers actually have the ability to implement decisions that increase or decrease firm cash holdings depends on a firm's governance structure. The current study incorporates an extensive range of firm-level attributes for internal governance mechanisms. These governance attributes include board size, non-executives representation on the board, executives and non-executives ownership, and leadership structure. Another important feature of this paper is that we contend that SMEs cash holdings and the effectiveness of governance mechanisms depend on the firm's investment opportunities. It is generally held that firms with high growth investment opportunities face greater information asymmetry and agency costs (Smith and Watts, 1992). If this is the case one would expect internal governance mechanisms to play a significant role in high growth but not necessarily low growth firms.

To carry out the empirical analysis, the study employs a sample of 368 UK SMEs for the period 2005 to 2008. The results show that non-executive ownership

is negatively related to cash holdings. This result suggests that the non-executives ownership is the most effective internal monitoring mechanism. Interestingly, institutional ownership is positively related to cash holdings. This result highlights the passive nature of UK institutional investors (Faccio and Lasfer, 2000; Franks, Mayer, and Reeneboog, 2001; Ozkan and Ozkan, 2004) which makes them ineffective monitors of cash holding decisions. Therefore, in their presence entrenched management can easily accumulate large cash reserves with minimal fear of discharge or discipline. As expected, the results also show that governance mechanisms are not as effective for firms with low growth investment opportunities compared to firms with high growth investment opportunities.

The rest of this study is structured as follows. Section 2 discusses how the existing cash holdings theories can be used to explain the financing decisions for SMEs, and presents the empirical hypotheses. Section 3 provides a description of the sample utilized in the current study. Section 4 presents the empirical results. Section 5 concludes.

2. Theoretical Foundations and Empirical Hypothesis

In their seminal papers Modigliani and Miller (1958, 1963) argue that in the presence of perfect capital markets any financial decision made by a firm, such as cash holdings, will have a net present value (NPV) of zero. The literature on the determinants of cash holding has utilized the relaxation of the Modigliani-Miller condition of perfect capital markets. This allows characteristics such as bankruptcy cost, capital market frictions, agency conflicts and taxation to play a

greater role in understanding cash holdings. Ultimately, this has resulted in theoretical frameworks which have their antecedent in capital structure to explain the determinants of corporate cash holdings, namely: the Trade-Off Theory, the Pecking Order Theory and Free Cash Flow hypothesis.

The Trade-Off Theory

The premise of the Trade-Off Theory is that firms set their optimal cash holdings by considering the tradeoff between the marginal benefits and costs of cash holdings (Kim, Mauer and Sherman, 1998; Opler et al., 1999). The marginal benefits are: reduction of the likelihood of financial distress, allowance for the pursuance of investment policy when financial constraints are met and the minimization of the cost of raising external funds or liquidating assets. Similarly, the marginal costs of holding cash are the low rate of return on these assets and possible tax disadvantages. In this context, the Trade-Off Theory implies the existence of an optimal level of cash holdings.

The Pecking Order Theory

The Pecking Order Theory state that to reduce asymmetric information costs and financing costs, firms should first finance their investments with retained earnings (cash), then with debt and finally with equity (Myers, 1984). Furthermore, Opler et al. (1999) argue that the Pecking Order Theory implies the absence of an optimal level for cash holdings. As such, cash holding levels fluctuate on the basis of a firm's fortune. Opler et al. (1999) also highlight that the

empirical implications of the determinants of corporate cash holdings with respect to the Trade-Off Theory and the Pecking Order Theory are not always easily differentiable when the cost of external capital is allowed to play a greater role as the Trade-Off Theory and the Pecking Order Theory have similar empirical implications for specific firm characteristics.

The Free Cash Flow Hypothesis

A critical assumption of the Trade-Off Theory and Pecking Order Theory is that management always acts in the interest of shareholders, in other words, there is an implicit absence of agency conflicts between shareholders and managers. Jensen (1986) highlights that in the presence of large free cash flows the agency problem between shareholders and managers can be severe. Opler et al. (1999) argue that in the presence of agency problems associated with managerial discretion, management may pursue self interests at the expense of shareholders with cash serving as a catalyst. They argued that management may hold excessive cash reserves because they wish to reduce their personal undiversified risk and pursue their own objectives. Opler et al. (1999), and Ozkan and Ozkan (2004) argue that the Free Cash Flow Hypothesis highlights the determinants which provide an incentive for the accumulation of large cash reserves which might not be consistent with firm value maximization.

2.1 The Determinants of Cash Holdings

This section elaborates on the firm characteristics which are prominent in the literature as the determinants of cash holdings. Importantly, Ferreira and Vilela (2004) highlight that firm characteristics influence cash holding decisions in different ways in the three theories under consideration.

Firm Size

Since small firms are described as suffering from severe exposure to informational asymmetries (Berger and Udell, 1998). It is this exposure which Kim, Mauer and Sherman. (1998) highlight as a factor which contributes to small firms facing more borrowing constraints and high costs of external financing. Furthermore, small firms are likely to experience financial distress (Titman and Wessels, 1988). Therefore, firm size is expected to be inversely related to the amount of cash a firm holds, consistent with the Trade-Off Theory. However, the Pecking Order Theory presumes that firm size provides an indication of success. Therefore, in the Pecking Order world a positive relationship between firm size and cash holdings is expected (Ferreira and Vilela, 2004). Finally, the Free Cash Flow Hypothesis suggests that large firms have greater shareholder dispersion, resulting in greater levels of managerial discretion over cash holding decisions (Ferreira and Vilela, 2004). Therefore, where managers of large firms have more discretionary power over investment and financial policy, a greater level of cash holding may be evident; this would imply a positive relationship between cash holdings and firm size.

Hypothesis 1: There is an ambiguous relationship between firm size and cash holdings.

Leverage

Ferreira and Vilela (2004) argue that in the Pecking Order world, debt grows when investment needs exceed the amount of internal resources available and falls when investment needs are less than the internal resources. Within the framework of the Free Cash Flow Hypothesis, Ferreira and Vilela (2004) contend that debt serves as a monitoring mechanism to ensure that managerial decisions are in line with shareholder wealth maximization. Therefore, low levels of debt would provide little monitoring and offer incentives for management to engage in the accumulation of large cash reserves. Thus, the Pecking Order theory and the Free Cash Flow Hypothesis imply an inverse relationship between leverage and cash holdings. However, Ozkan and Ozkan (2004) argue that firms with high levels of leverage have high probability of financial distress, suggesting a positive relationship may exist between leverage and cash holdings. As such, the relationship between cash holdings and leverage is potentially ambiguous.

Hypothesis 2: There is an ambiguous relationship between leverage and cash holdings.

Non-Cash Liquid Substitutes

Opler et al. (1999) and Ozkan and Ozkan (2004) argue that in context of the Trade-Off Theory it is plausible to believe that the cost associated with converting non-cash liquid assets into cash is less, relative to other asset classes. As such, in the event of a cash shortfall, the presence of substantial non-cash

liquid assets provides firms with an internal resource, making it unnecessary to fill shortfalls with trips to the capital markets. Therefore, firms with more non-cash liquid asset would be expected to hold less cash.

Hypothesis 3: There is a negative relationship between non-cash liquid assets and cash holdings.

Cash Flow Volatility

Opler et al. (1999) argue that firms with greater cash flow volatility are likely to enter in situations where there is a shortfall in internal resources. Additionally, such a shortfall can incur substantial costs if it results in the abandonment of positive NPV projects. Moreover, Minton and Schrand (1999) argue that firms with a high frequency of cash shortfalls find the external sources of finance expensive. Consistent with the Trade-Off Theory, firms with a greater degree of cash flow volatility will hold greater amounts of cash to lower the expected cost of liquidity constraints (Kim et al. 1998; Opler et al., 1999; Ozkan and Ozkan, 2004).

Hypothesis 4: There is a positive relationship between cash flow volatility and cash holdings.

Dividends

Within the Trade-Off Theory realm, the relationship between dividends and cash holdings is expected to be negative. For example, Ferreira and Viela (2004) argue that firms with a reputation for paying dividends can raise funds at lower cost (by cutting dividends) as opposed to those not paying dividends.

Therefore, the relationship between cash holdings and dividends is expected to be negative.

Hypothesis 5: *There is a negative relationship between dividend paying firms and cash holding.*

2.2 Governance Mechanisms and Cash Holdings

To minimize the agency costs stemming from the separation of ownership and control, a number of governance mechanisms have been put forward (Jensen and Meckling, 1976; Fama, 1980; Fama and Jensen, 1983). Ultimately, the purpose of these mechanisms is to align the interest of managers and shareholders.

Board Size

There is no clear consensus in the literature about whether the size of the board of directors matters when it comes to monitoring managers and limits their opportunistic behaviour. For instance, Jensen (1993) argues that large boards tend to be less effective as the involvement of more individuals in the decision making process slows agreements. Yermack's (1996) study lends support to the premise that small boards are more effective than large ones. On the other hand, Lehn, Sukesh and Zhao (2003) contend that monitoring is more efficient with a large board because of greater shared information. In the same vein, Raheja (2005) argues that, as the benefits of monitoring increase, boards will do more monitoring leading to large boards. Dalton, Daily, Johnson and Ellstrand (1999) document a positive relationship between board size and firm performance. Therefore, the relationship between board size and cash holdings is expected to be ambiguous.

Hypothesis 6: *There is an ambiguous relationship between board size and cash holdings*

Non-Executive Representation

Weir, Laing and McKnight (2002) highlight that the composition of the board of directors is an important mechanism as the presence of non-executive directors serve as a mechanism to monitor and ensure the interest of executive directors and shareholders are aligned. Furthermore, they argue that this is attributable to the independence of non-executive directors and the incentive for non-executive directors to maintain a good reputation. Additionally, the fear of lawsuits and the market for their services provide further motivation for non-executives to be efficient monitors of board decisions (Fama and Jensen, 1983; Kaplan and Reishus, 1990; McKnight and Weir, 2009). Weir, Laing and McKnight present a positive relationship between non-executives presence and firm performance for a UK sample. Ozkan and Ozkan (2004) argue that there is a greater expectation for firms with more non-executives directorship representation to make better decisions.

Hypothesis 7: *There is a negative relationship between non-executive representation and cash holdings.*

Executive Ownership and Non-Executive Ownership

Within the paradigm of the Free Cash Flow Hypothesis, a possible solution to mitigating the problems associated with managerial opportunism is to increase managerial equity ownership (Jensen, 1993), as this strengthens the

alignment of shareholders' and management's interest. Therefore, if large cash holdings are detrimental to firm value, management would be discouraged in hoarding cash due to their greater interest in maximizing firm value. In this context, the Free Cash Flow Hypothesis indicates a strict monotonic negative relationship between managerial ownership and cash holdings. However, other studies highlight that the relationship between managerial ownership and cash holdings is not monotonic (see for example, Morck, Shleifer and Vishny, 1988; McConnell, Servaes and Lins, 2004). In these studies, it is argued that high levels of managerial ownership lead to entrenchment (for example, by over-investing and accepting negative NPV projects that reduce corporate wealth). Unlike prior studies, the current study controls for both executives and non-executives ownership. Considering that non-executives have sufficient incentives for their interest to be aligned with that of shareholders, non-executive ownership should reduce agency problems and result in a reduction in large cash reserves, strictly consistent with the Free Cash Flow Hypothesis. However, executive ownership may follow a non-linear relationship with large cash holdings.

Hypothesis 8: *There is a non-linear relationship between executive ownership and cash holdings.*

Hypothesis 9: *There is a negative relationship between non-executive ownership and cash holdings.*

Institutional Ownership

Institutional ownership serves as an external mechanism to further monitor the activities of a firm's management to ensure pursuance of firm value maximization. Pound (1988) argues that institutional investors have resources and

expertise in monitoring and evaluating the performance of management at low costs. Similarly, Shleifer and Vishny (1986) suggest that institutional holders mitigate the free-rider problem, perform monitoring functions, and reduce the scope for managerial opportunism. Consequently, Admati, Pfleiderer, and Zechner (1994) argue that institutional investors can reduce the free cash flow in management hands through their active monitoring role. Therefore, firms with high level of institutional owners are expected to hold less cash.

Hypothesis 10: *There is a negative relationship with institutional ownership and cash holdings.*

Non-Executive Chairman

One of the recommendations of the UK Corporate Governance Code is that the roles of chairman and chief executive should be held by different individuals (see Weir, Laing and McKnight, 2002).³ Furthermore, the Code recommends that the chairman be a non-executive director. In the same vein, OECD principles of corporate governance (2004, p. 39) asserts that “*separation of the two posts may be regarded as a good practice as it can help to achieve an appropriate balance of power, increase accountability and improve the board’s capacity for decision making independent of management*”. As such, we contend that there should be a negative relationship between the presence of a non-executive chairman and excess cash holdings, consistent with the Free Cash Flow Hypothesis.

Hypothesis 11: *There is a negative relationship between the presence of a non-executive chairman and cash holdings.*

³Hereafter referred to as the Code.

3. SAMPLE SELECTION AND DESCRIPTIVES

There is no generally accepted definition of SMEs, but a quantitative definition, which employs total assets, annual turnover and number of employees of the firm, is commonly employed in the literature (see for example, Sogorb-Mira, 2005; Garcia-Teruel and Martinez-Solano, 2008; Psillaki and Daskalakis, 2009). The sample of SMEs considered in this study is extracted from all non financial listed firms in the UK for the period of 2005-2008. More specifically, in each year firms that meet the following criteria are considered as SMEs: (1) total assets less than or equal to £11.4 million; (2) annual turnover less than or equal to £22.8 million; (3) total number of employees less than or equal to 250⁴.

To carry out the empirical analysis, we hand collected the governance and ownership structure information for each firm and for each year from the *Capital Ideas Corporate Register*⁵. In particular, we collected the following information: the number of directors on a firm's board, the number of non-executive directors on the firm's board, the percentage ownership of the largest institutional shareholder, the presence of a non-executive chairman, the number of ordinary shares held by each executive director, the number of ordinary shares held by each non-executive. Data on firm financial characteristics is obtained from DataStream. After excluding firms without the requisite information for the empirical analysis, this yields a sample of 368 listed SMEs for the period 2005 to 2008. For convenience, data source and empirical definitions of all variables are presented in table 1.

⁴ This definition of SMEs is taken from the UK's Company Act (2006).

⁵ The *Capital Ideas Corporate Register* was formerly published as the Price Waterhouse Coopers Corporate Register.

The sample means and medians are presented in table 2. The mean cash ratio (CASH) for the whole sample is 24.90%, with a median value of 17.97%. With comparison to Ozkan and Ozkan's (2004) study, which examines cash holdings for large UK non financial firms, this study shows that SMEs hold high levels of cash. The average (median) board size (BSIZE) is 5.40 (5.44). Executives own, on average, 23% of the firms' shares, with a median of 11%; whereas non-executive directors own, on average (median), 7% (2.4%) of the firms' shares. 66.49%, on average, of UK SMEs have a non-executive as a chairman (NCH). This result suggests that the majority of SMEs appointed a non-executive as a chairman and this is consistent with the recommendations by the Code. The Pearson's pair-wise correlation matrix, in table 3, shows that the maximum absolute correlation coefficient amongst the set of variables is between cash volatility (CVOL) and leverage (LEV), with an absolute value of 0.513. Furthermore, the correlation between QRATIO and MCTA is significantly positive with a value of 0.98 suggesting that the two variables are strong proxies for the investment opportunity set (IOS).

4. EMPRICAL RESULTS

To examine the determinants of cash holdings for UK SMEs, multivariate regressions are utilized. One possible salient issue with the analysis is that the relationship between cash holdings and its hypothesized determinants are endogenous. To control for the existence of this endogeneity problem, we employ the methodology of Rajan and Zingales (1995), where the dependent variable is measured in year 2008, while for the independent variables the average values

over the period 2005-2007 are utilized⁶. In order to provide a comprehensive analysis of the determinant of cash holdings, we consider three different models. Model 1 includes only firm financial characteristics to facilitate comparison with earlier studies. Models 2 and 3 provide a more complete framework on the relationship between the different governance mechanisms, firm financial characteristics and cash holdings. The results on the determinants of UK SME cash holdings are documented in table 4.

The coefficient of cash volatility (CVOL) is positive and significant in all models. This result is consistent with the Trade-Off Theory, which suggests that firms with a greater degree of cash flow volatility need to hold more cash in order to lower the expected cost of liquidity constraints. Leverage (LEV) has a significant negative effect on cash holdings. This finding is also reported by Baskin (1987), Kim et al. (1998), and Opler et al. (1999). According to Trade-Off Theory, leverage is considered as an index of a firm's ability to generate external funds, suggesting that a levered firm does not need to hold cash. Another plausible explanation is that debt can be used as a substitute for cash holdings. There is also some evidence, in models 1 and 2, that dividend payments affect negatively cash holdings. This result is consistent with the Trade-Off Theory, which suggests that dividend paying SMEs cut dividends in the event of a shortfall in cash reserves. Therefore, in the presence of expensive external funds SMEs can cut dividends in order to have available liquid resources implying a

⁶ Ozkan and Ozkan (2004) employ a similar methodology to examine the determinants of cash holdings.

transaction motive. Regarding governance mechanisms, non-executive ownership (NEXO) is negatively related to cash holdings at the 10% level. This result suggests that providing non-executive directors with ownership creates an additional incentive to reduce the cash in management hands. Additionally, model 3 provides evidence of low levels of executives' ownership (EXO) minimize cash holdings. This result supports the strict negative relationship predicted by the Free Cash Flow Hypothesis, as there is no significant evidence of a non-monotonic relationship between executive ownership (EXOSQ) and cash holdings in model 3. Contrary to our expectation, institutional ownership (INST) is positive and significant. This result could be associated to the fact that institutional investors are poor monitors of firm financial decisions in the UK. This result is consistent with the view advanced by Ozkan and Ozkan (2004, p. 2114), which suggests that UK institutional owners adopt a passive attitude towards monitoring and disciplining firms' management.

Firm opportunity set and cash holdings

To assess the effect of a firm investment opportunity set on cash holdings, the sample of 368 SMEs is split into three sub-samples, based on the following two proxies for the investment growth opportunities: the Tobin's Q (Q-Ratio) and the ratio of market capitalisation to total assets (MCTA). The sample is split as follows: firms with investment opportunity values below the 40th percentile are considered as low growth investment SMEs, firms with investment opportunity values above the 60th percentile are considered as high growth investment firms. The means and the medians of these two sub-samples are presented in table 2. On

average, high growth investment SMEs hold larger amounts of cash, are smaller in size, are subjected to greater levels of cash flow volatility, pay less dividends, have low levels of debts and hold smaller amounts of non-liquid cash substitutes, compared to low growth investment SMEs. The difference in means between the two sets is significant at the 1% level.

The regression analysis results are reported in table 5. The sample in models 1 to 4 is split on the basis of Q-Ratio, while in models 5 to 8 the sample is split on the basis of the ratio of market capitalisation to total assets. Non-executive ownership (NEXO) is negative and significant at the 5% level, for firms with high growth opportunities (models 3, 4, 7 and 8). There is also some evidence that the relationship between executives' ownership (EXO) and cash holdings is monotonic and negative for high growth firms (models 3 and 7). This finding suggests that ownership structure plays an important role in mitigating agency conflicts stemming from the cash held for investments. The results also show a significant positive relationship between institutional ownership (INST) and cash holdings, irrespective of the investment opportunity set. This result supports the existing evidence that UK institutional investors are passive and inactive monitors (Faccio and Lasfer, 2000; Franks et al., 2001; Ozkan and Ozkan, 2004). Therefore, in the presence of institutional ownership, *ceteris paribus*, management may engage in hoarding cash for self-interest, with minimal fear of discharge. Interestingly, results in table 5 show that none of the board structure measures (BSIZE, NEXR and NCH) is significant. This suggests that these mechanisms are ineffective in mitigating potential free cash flow problems in UK SMEs.

With respect to firm characteristics, leverage (LEV) is negative and significant at the 5% level for firms with low growth investment opportunities, suggesting that these firms are exposed to capital market monitoring. Leverage, however, does not affect the cash held by high growth investment firms. This finding is consistent with the argument that high growth investment firms are more prone to informational asymmetries (compared to low growth investment firms) which makes external financing such as debt expensive (Myers, 1984; Hutchinson and Gul, 2004). Therefore, if low growth investment SMEs are subjected to lower informational asymmetries, then leverage might provide a cheaper mechanism with which to monitor management. Finally, the results indicate that the cash flow volatility (CVOL) affects positively the cash held by low growth investment firms.

5. SUMMARY AND CONCLUSION

Most of the current understanding of what determines firm cash holdings comes from studies that focused on large firms. Given the importance of cash for SMEs and their role in the UK economy, this paper examines the effect of governance mechanisms and firm characteristics on cash holdings for a sample of 368 UK SMEs. Overall, the evidence suggests that UK SMEs hold cash mainly for transaction costs and precautionary motives.

The empirical analysis shows that UK SMEs with greater cash flow volatility and institutional investors hold more cash. Conversely, levered and dividend paying SMEs with non-executives ownership hold less cash. Interestingly, when we distinguish between firms with high growth investment

opportunities and firms with low growth investment opportunities, the results show that ownership structure is significant only in explaining the cash holdings for firms with high growth investment opportunities; while leverage is only significant in explaining the cash held by firms with low growth investment opportunities. This implies that internal governance mechanisms are more effective for firms with high growth SMEs, whereas external governance mechanisms, such as capital market monitoring, are more effective for firms with low growth investment opportunities. Finally, the lack of support for the hypothesis that the board structure affects cash holdings may be attributed to the UK being characterised as having strong levels of investor protection (Dittmar, Mahrt-Smith and Servaes, 2003). Shareholder might have sufficient legal protection to inhibit management from pursuing self-interests. Therefore, publicly traded UK SMEs might hold large cash reserves and not necessarily incur severe agency costs.

Table 1: Variable Definition

VARIABLE	PROXY	EMPIRICAL DEFINITION	SOURCE
CASH	Cash Holdings	Cash and Cash Equivalents/ Total Assets	DataStream
SIZE	Firm Size	Natural logarithm of Total Assets	DataStream
LEV	Leverage	Total Debt/Total Assets	DataStream
CSUB	Non-Cash Liquid Substitutes	(Current Assets - Cash and Cash Equivalents - Current Liabilities) / Total Assets	DataStream
CVOL	Cash Flow Volatility	Standard Deviation of the past 5 years of: Funds from Operations / Total Assets	DataStream
DIVD	Dividend Paying Firms	Firms that have a non-zero Dividend per Share for the year takes a value of 1, otherwise 0	DataStream
BSIZE	Board Size	The natural logarithm of total directors on the board of directors	Corporate Register,
NEXR	Non-executive Representation	Number of non-executive directors / total directors on board	Corporate Register
EXO	Executive Ownership	The number of shares held by executive directors / Number of Outstanding Shares	Corporate Register, DataStream
EXOSQ	Executive Ownership Squared	EXO ²	
NEXO	Non-executive Ownership	The number of shares held by non-executive directors / Number of Ordinary Shares	Corporate Register, DataStream
INST	Institutional Ownership	Max (Percentage Ownership among the set of institutional owners)	Corporate Register, FAME
NCH	Non-Executive Chairman Presence	This variable is set to 1 if a firm has a non-executive chairman, otherwise 0.	Corporate Register
QRATIO	Investment Opportunity Set	(Market Capitalisation + Total Debt) / Total Assets	DataStream
MCTA	Investment Opportunity Set	Market Capitalisation / Total Assets	DataStream

Table 2 Descriptive statistics

Variables	All Sample	Low IOS (Q-ratio)	High IOS (Q-ratio)	T-diff.	Low IOS (MCTA)	High IOS (MCTA)	T-diff.
CASH	0.249 (0.179)	0.193 (0.112)	0.324 (0.284)	4.81 ^a	0.177 (0.108)	0.328 (0.284)	5.66 ^a
SIZE	8.799 (8.856)	9.059 (9.132)	8.541 (8.565)	-4.52 ^a	9.058 (9.154)	8.542 (8.589)	-4.51 ^a
LEV	0.111 (0.042)	0.115 (0.072)	0.101 (0.024)	-0.81	0.1477 (0.099)	0.098 (0.021)	-2.32 ^b
CSUB	-0.021 (-0.008)	0.022 (0.024)	-0.057 (-0.028)	-3.08 ^a	0.013 (0.015)	-0.060 (-0.028)	-2.78 ^a
CVOL	0.130 (0.084)	0.100 (0.071)	0.1773 (0.106)	4.36 ^a	0.1035 (0.073)	0.177 (0.106)	4.20 ^a
DIVD	0.229 (0)	0.324 (0)	0.155 (0)	-3.45 ^a	0.331 (0)	0.162 (0)	-3.42 ^a
BSIZE	5.403 (5.33)	5.274 (5.010)	5.653 (5.658)	2.46 ^b	5.253 (5.002)	5.633 (5.655)	2.43 ^b
NEXR	0.481 (0.500)	0.451 (0.450)	0.494 (0.500)	2.52 ^b	0.4540 (0.4512)	0.492 (0.500)	2.20 ^b
EXO	0.230 (0.110)	0.227 (0.117)	0.274 (0.120)	0.55	0.222 (0.123)	0.274 (0.120)	0.60
NEXO	0.074 (0.024)	0.066 (0.028)	0.088 (0.022)	1.15	0.0736 (0.033)	0.091 (0.023)	0.91
INST	0.097 (0.091)	0.098 (0.094)	0.095 (0.083)	-0.38	0.096 (0.094)	0.094 (0.083)	-0.18
NCH	0.664 (1)	0.589 (1)	0.746 (1)	2.88 ^a	0.589 (1)	0.746 (1)	2.88 ^a

This table shows the sample means and medians for 368 SMEs. Figures between brackets are medians. T-diff is the static for difference in means between small and large IOS firms. a, b and c indicate the coefficient is significant at 1%, 5% and 10% respectively. For definition of variables see table 1.

Table 3: Spearman Correlation Coefficients

	1	2	3	4	4	5	6	7	8	9	10	11	12	13
1.CASH	1													
2.SIZE	-0.16 ^a	1												
3.LEV	-0.38 ^a	-0.01	1											
4.CSUB	0.02	0.12 ^b	-0.20 ^a	1										
5.CVOL	0.23 ^a	-0.51 ^a	0.07	-0.15 ^a	1									
6.DIVD	-0.17 ^a	0.26 ^a	0.04	0.20 ^a	-0.22 ^a	1								
7.QRATIO	0.33 ^a	-0.26 ^a	-0.12 ^b	-0.19 ^a	0.28 ^a	-0.19 ^a	1							
8.MCTA	0.36 ^a	-0.26 ^a	-0.21 ^a	-0.15 ^a	0.26 ^a	-0.19 ^a	0.98 ^a	1						
9.BSIZE	0.06	-0.16 ^a	-0.006	-0.06	0.23 ^a	-0.16 ^a	0.28 ^a	0.30 ^a	1					
10.NEXR	0.06	0.08	-0.07	-0.008	-0.02	-0.22 ^a	0.08	0.08 ^c	0.09 ^c	1				
11.EXO	-0.02	-0.01	0.06	0.07	0.04	0.08	0.007	0.004	0.04	-0.13 ^b	1			
12.NEXO	-0.08 ^c	0.07	0.001	0.09 ^c	-0.05	0.01	-0.08 ^c	-0.08	0.02	0.11 ^b	0.07	1		
13.INST	0.10 ^b	0.15 ^a	-0.07	0.05	-0.04	-0.15 ^a	0.003	-0.006	0.01	0.12 ^b	0.001	0.05	1	
14.NCH	0.10 ^c	0.02	-0.08	0.09 ^c	0.08	0.005	0.12 ^b	0.13 ^b	0.15 ^a	0.29 ^a	-0.08	0.09 ^c	0.128 ^b	1

For definition of variables see table 1. a, b and c indicate the coefficient is significant at 1%, 5% and 10% respectively.

Table 4: Cross sectional regressions explaining cash holdings.

Predicted Sign		(1)		(2)		(3)	
		Coeff.	P. value	Coeff.	P. value	Coeff.	P. value
<i>SIZE</i>	?	-0.021	(0.13)	-0.023	(0.12)	-0.023	(0.11)
<i>CVOL</i>	+	0.222 ^a	(0.010)	0.219 ^a	(0.01)	0.224 ^a	(0.01)
<i>LEV</i>	?	-0.316 ^a	(0.00)	-0.326 ^a	(0.00)	-0.330 ^a	(0.00)
<i>CSUB</i>	-	-0.046	(0.42)	-0.058	(0.31)	-0.058	(0.30)
<i>DIVD</i>	-	-0.053 ^b	(0.05)	-0.047 ^c	(0.10)	-0.044	(0.12)
<i>BSIZE</i>	?			-0.038	(0.43)	-0.038	(0.43)
<i>NEXR</i>	-			-0.022	(0.78)	-0.023	(0.77)
<i>EXO</i>	-			-0.014	(0.33)	-0.066 ^c	(0.09)
<i>EXOSQ</i>	+					0.008	(0.12)
<i>NEXO</i>	-			-0.111 ^c	(0.09)	-0.107 ^c	(0.09)
<i>INST</i>	-			0.444 ^b	(0.01)	0.434 ^b	(0.01)
<i>NCH</i>	-			0.030	(0.27)	0.028	(0.30)
<i>N</i>		368		363		363	
<i>F-Test</i>		5.90 ^a		4.60 ^a		4.62 ^a	
<i>R</i> ²		0.15		0.17		0.17	

All models include a constant and industry dummies. P-values are robust to heteroscedasticity and are reported in parenthesis. Table 1 provides definition for all variables. a, b and c indicate the coefficient is significant at 1%, 5% and 10% respectively

Table 5: IOS and Cash Holdings

	Low IOS (Q-ratio)		High IOS (Q-ratio)		Low IOS (MCTA)		High IOS (MCTA)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>SIZE</i>	-0.035 (0.19)	-0.034 (0.203)	0.006 (0.803)	0.005 (0.844)	-0.041 ^c (0.090)	-0.041 ^c (0.090)	0.010 (0.709)	0.008 (0.757)
<i>LEV</i>	-0.392 ^a (0.00)	-0.395 ^a (0.009)	-0.253 (0.333)	-0.255 (0.327)	-0.277 ^a (0.005)	-0.281 ^a (0.003)	-0.240 (0.359)	-0.242 (0.353)
<i>CSUB</i>	-0.063 (0.56)	-0.064 (0.558)	-0.053 (0.496)	-0.048 (0.543)	0.009 (0.926)	0.006 (0.951)	-0.043 (0.606)	-0.037 (0.660)
<i>CVOL</i>	0.539 ^b (0.022)	0.5393 ^b (0.022)	0.041 (0.708)	0.042 (0.699)	0.508 ^b (0.018)	0.512 ^b (0.017)	0.028 (0.799)	0.029 (0.788)
<i>DIVD</i>	-0.0005 (0.99)	-0.0008 (0.983)	-0.071 (0.242)	-0.071 (0.242)	-0.012 (0.736)	-0.010 (0.775)	-0.091 (0.139)	-0.090 (0.142)
<i>BSIZE</i>	-0.069 (0.342)	-0.069 (0.344)	-0.054 (0.561)	-0.047 (0.619)	-0.064 (0.347)	-0.064 (0.340)	-0.076 (0.424)	-0.067 (0.487)
<i>NEXR</i>	0.018 (0.86)	0.019 (0.859)	0.047 (0.764)	0.040 (0.798)	0.002 (0.979)	-0.0008 (0.994)	0.090 (0.582)	0.082 (0.618)
<i>EXO</i>	0.014 (0.157)	0.023 (0.695)	-0.036 ^c (0.085)	-0.129 (0.239)	0.011 (0.348)	-0.018 (0.760)	-0.037 ^c (0.083)	-0.146 (0.185)
<i>EXOSQ</i>		-0.001 (0.871)		0.017 (0.373)		0.004 (0.580)		0.020 (0.300)
<i>NEXO</i>	0.0140 (0.938)	0.014 (0.937)	-0.239 ^a (0.004)	-0.237 ^a (0.003)	0.021 (0.891)	0.021 (0.894)	-0.217 ^a (0.008)	-0.215 ^a (0.006)
<i>INST</i>	0.4683 ^c (0.087)	0.472 ^b (0.093)	0.571 ^b (0.073)	0.5677 ^b (0.074)	0.361 (0.126)	0.355 (0.133)	0.610 ^c (0.061)	0.608 ^c (0.061)
<i>NCH</i>	0.0038 (0.918)	0.004 (0.913)	0.0176 (0.743)	0.011 (0.835)	0.003 (0.917)	0.003 (0.924)	0.014 (0.788)	0.007 (0.896)
<i>N</i>	144	144	144	144	144	144	144	144
<i>F-Test</i>	5.34 ^a	20.39 ^a	1.97 ^b	1.99 ^b	2.81 ^a	25.72 ^a	2.05 ^b	2.09 ^a
<i>R²</i>	0.25	0.25	0.17	0.17	0.28	0.28	0.17	0.17

All models include a constant and industry dummies. P-values are robust to heteroscedasticity and are reported in parenthesis. Table 1 provides definition for all variables. a, b and c indicate the coefficient is significant at 1%, 5% and 10% respectively

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