Investment committees and corporate cash holdings*

Abstract

We investigate the association between the voluntary formation of a board investment committee (IC) and corporate cash holdings for a large sample of Gulf Cooperation Council (GCC) firms over the 2005–2013 period. We provide evidence that the existence of a specialized IC increases corporate cash holdings. We also find that several IC characteristics, i.e., member experience, independence, number of meetings, and committee size, are associated with an increase in firms' cash holdings. Furthermore, the local and foreign institutional ownership of GCC firms moderates the IC-cash holdings relationship. These results remain robust to alternative specifications of cash holdings and endogeneity tests. We contribute to the literature on firms' incentives to hold cash and to the literature on governance in emerging market contexts.

Key Words: Investment committee, cash holding, GCC, institutional and foreign ownerships.

JEL: G30; G32; G34; G35

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1. Introduction

We investigate the association between the voluntary formation and characteristics of a board investment committee (hereafter IC) and corporate cash holdings. Delegating specific board functions to distinct committees facilitates the monitoring and specialization of board functions (Spira and Bender 2004). Prior studies (Subramaniam, McManus, and Zhang 2009, Al-Hadi, Hasan, and Habib 2016) indicate that the existence of a board investment committee can ensure credible communication about and effective oversight of organizational risk management strategies and investment-related policies and processes. Yoder (2011) maintains that ICs provide critical oversight and expertise in the investment decision-making process (Ellis 2011). Hoskisson et al. (2000) call for further investigation into ICs to clearly understand their dynamics and how they enhance investment-related financial decision making in emerging markets such as those in the GCC. Given the increased focus on governance reforms in the GCC countries,[1] we investigate whether ICs affect firm-level operational decisions in our case, decisions on corporate cash holdings.

Several theories have been proposed to explain corporate cash holdings. The trade-off model suggests that firms set their optimal level of cash to buffer against any shortfall of cash, so that they can continually finance positive net present value (NPV) projects.[2] The pecking order theory of (Myers and Majluf 1984) suggests that firms finance their investments first from their retained earnings, second from debt, and finally from equity. The free cash flow theory of Jensen (1986) suggests that managers have incentives to increase the amount of cash for "empire building." We

[1] Although not all GCC authorities mandate the establishment of and compliance with corporate governance codes, voluntary adoption is now common, with some of these countries holding their firms accountable for non-compliance with business regulations (Al-Shammari, Brown, and Tarca 2008). Some GCC countries have established corporate governance task forces to monitor the adherence of firms to codes of conduct and good governance (Hussain et al. 2002). Recently, the regulation of GCC firms has made significant progress toward establishing more independent boards of directors.

[2] Opler et al. (1999) find that firms that have more cash are likely to have better growth opportunities and greater volatility of cash flows.

expect that an IC consisting of members with expertise in investment-related matters is able to help a firm to use its cash to create the flow-on benefit of increasing the firm's investments.[3]

The establishment of a specialized IC allows committee members to focus on monitoring managerial investment decisions, and requires managers to provide better quality reporting on investment projects (Ellis 2011). These responsibilities are performed more competently in firms that have ICs than in firms where such tasks are handled by individual managers. ICs oversee investment decision making and perform related board oversight functions (e.g., establishing investment policy, assets allocation, selecting stocks, selecting managers). Furthermore, firms with qualified and/or experienced IC members are able to better estimate and evaluate the operational cash requirements of the firm, and are likely to better estimate the expected cash flows from efficient investments.

Based on a hand-collected sample of 1,266 firm-year observations of publicly listed non-financial GCC firms over the 2005–2013 period, we provide evidence that the existence of specialized ICs increases corporate cash holdings. In terms of economic significance, the reported coefficient implies an 8.11% increase in cash holdings for a one-standard-deviation change in the presence of an IC. We also find that some characteristics of ICs increase a firm's cash holdings, such as member experience, independence, number of meetings, and committee size. In addition, we show that local and foreign institutional ownership moderates the association between ICs and cash holdings, which is consistent with the argument that institutional investors in firms constrain investment in negative NPV projects. Hence, a specialized

[3] In fact, prior studies conducted in GCC settings (e.g., Al-Hadi, Hasan, and Habib 2016) provide evidence that the voluntary formation of sub-board committees (e.g., risk committees) reduces information asymmetry and risk estimations. Eulaiwi et al. (2016) also find that the voluntary formation of ICs reduces both information asymmetry and agency costs in a firm's investments, thus reducing both under- and overinvestment by GCC firms.

IC plays a positive role in a firm by providing high-quality assessments of investment risk, which optimally leads to saving more cash. This suggests that institutional investors complement the recent efforts of the GCC's authorities to improve corporate governance, which eventually increases corporate cash holdings.

This study is motivated by several important observations. First, ICs are important to the growth and survival of firms, particularly in emerging markets. In the U.S., the investment committees of firms are collectively responsible for the oversight of some $18 trillion in institutional assets (Collie 2014). Committees like ICs are responsible for identifying investment and growth opportunities and are considered necessary to maximize shareholder wealth (Chen, Chen, and Wei 2011). The development of governance structures in the GCC over the past decade provides us with a unique opportunity to assess how ICs and their characteristics affect firms' ability to maintain or increase their cash holdings. Second, GCC firms have been subject to a number of external shocks such as the global financial crisis and the recent oil price shocks. This enables us to determine how ICs have maintained assets and investments in the face of constricted investment opportunities, and how these actions relate to firms' cash holdings. The most important functions of ICs in the GCC is to oversee firms' financial resources and the maintenance of operational capital, to identify future investment opportunities with the aim of maximizing shareholders wealth, and to manage market and liquidity risks to optimize and maximize firms' returns. Third, a vast majority of the studies that focus on the determinants of cash holdings have been conducted in countries with high investor protection such as the U.S. (Dittmar, Mahrt-Smith, and Servaes 2003), Europe (Hall, Mateus, and Mateus 2014), and well-established emerging markets such as China (Cull and Xu 2000). Fewer studies have investigated the role of IC characteristics or other governance factors on firms' cash holdings in an emerging market context such as the GCC. This

study attempts to fill that gap. Fourth, this research augments recent cross-country studies (Hall, Mateus, and Mateus 2014, Ferreira and Vilela 2004) that have investigated the determinants of cash holdings. Pinkowitz, Stulz, and Williamson (2006) suggest that differences in institutional factors across countries are associated with differences in financial constraints, information asymmetry, and agency problems across firms and hence the variation in cash holdings.

We extend earlier studies by providing evidence that the presence of an investment committee increases the level of firms' cash holdings. There is a paucity of studies of the effect of corporate governance (particularly the existence of a specialized investment board committee) on firms' cash holdings in the GCC, which is characterized by generally weak investor protection, poorer regulation quality, and a weaker enforcement regime. These factors are likely to affect the level of firms' cash holdings, as cash reserves are typically used as a buffer to protect the firm against adverse shocks, or are used for private purposes (Amess, Banerji, and Lampousis 2015). This study explicitly contributes to the literature by quantifying the association between the existence of an investment committee and the level of firms' cash holdings. Furthermore, although the benefits of an IC are well known (Ellis 2011, Yoder 2011), to the best of our knowledge, the effect of ICs on firms' cash holdings has not been explored.

The remainder of this paper is organized as follows. Section 2 discusses the background, provides the literature review, and develops the hypotheses. Section 3 describes the research design and the measurement attributes of the dependent, independent, and control variables. The methodology is discussed in Section 4, followed by the results in Section 5. Section 6 concludes the paper.

2. Background and institutional setting

While formation of an IC is encouraged in the corporate governance codes in Saudi Arabia,[4] Bahrain,[5] and Qatar[6], it is not explicitly required to establish a separate IC in Oman,[7] the UAE[8] and Kuwait.[9] Nevertheless, a large proportion of firms listed across the GCC stock markets have established voluntary ICs.[10] Once established, the presence of ICs requires firms to set up general criteria to regulate their investment decision-making processes such as to oversee the firms' financial resources and its maintenance of operational capital, and to identify future investment opportunities. Managing market and liquidity risks is also an important investment function of ICs, which helps firms to optimize and maximize returns.[11]

Firms with government and family ownership concentration, including business elites, tend to not comply with governance codes to the same degree as their counterparts (Al-Hadi, Hasan, and Habib 2016); hence, public and foreign investors continue to face information asymmetry and agency problems (Mazaheri 2013). The GCC region has also seen a marked increase in foreign direct investment (Mina 2007). This internationalization of GCC listed firms makes them subject to greater scrutiny from stakeholders, regulators, and international institutional investors, who

[4] http://www.ecgi.org/codes/code.php?code_id=295
[5]http://www.moic.gov.bh/En/Commerce/DomesticTrade/Corporate%20Governance/Documents/bb9903e050a24fc6b65190cfcd637cd1BahrainCGCodeEN.pdf
[6] http://www.ecgi.org/codes/code.php?code_id=327
[7] https://www.cma.gov.om/documents/En/Charter2014.pdf
[8] http://linklaters.com/pdfs/Insights/UAECorporateGovernanceRegime.pdf
[9] https://www.hawkamah.org/uploads/reports/KuwaitCorpGov_0207.pdf
[10] Panel D of Table 1 shows that the number of firms that have established ICs in the GCC increased from 10 in 2006 to 215 at the end of 2013. Firms in Saudi Arabia (KSA) and Oman (OMN) have the highest number of ICs—43% and 22.3%, respectively—in the 2005–2013 period.
[11] Over the years, the GCC publicly listed firms have been motivated to formulate a common standard for the duties of ICs in relation to growth and investment opportunities. For example, in its 2005 annual report, the Qatar Telecom (Qtel) suggests that its "Investment committee reviews all proposals for strategic investment opportunities. Investment committee reviewed Qtel's opportunities for growth in the region and initiated and recommended major investment opportunities for the company." In Bahrain, the National Hotels Company 2011 annual report acknowledges that the investment committee is responsible for identifying investment and growth opportunities that will return a sufficient yield to maximize shareholders wealth. In its 2012 annual report, the Southern Province Cement Company (SOCCO) in the KSA suggests that the Investment committee seek new investment opportunities in line with the company's growth requirements.

have recently been demanding greater governance and accountability from those firms (Abu-Nassar and Rutherford 1996). The establishment of specialized ICs may be considered a response to these demands.

3. Literature and hypotheses development

The IC has emerged as a new center for managing and monitoring the risk portfolios that face organizations. Subramaniam, McManus, and Zhang (2009) find that Australian firms with an IC have higher financial reporting risk, lower organizational complexity, and larger boards chaired by an independent director. In the U.S., Beasley, Clune, and Hermanson (2005) show that board independence, the presence of a big-four auditor, firm size, and firms in the banking, education, and insurance industries are more likely to form a voluntary IC. Weill and Ross (2005) suggest that ICs should play a key role in any investment in innovative technology. Ellis (2011) proposes that the optimal membership size of an IC is 5–8, with members having sufficient experience, knowledge, and qualifications to deal with committee requirements.

Prior research has identified the following determinants of firms' cash holdings: financial constraints (Denis and Sibilkov 2009), growth opportunities and riskiness of cash flow (Opler et al. 1999), refinancing risk (Harford, Klasa, and Maxwell 2014), product market threats (Hoberg, Phillips, and Prabhala 2014), customer concentration (Itzkowitz 2013), national culture (Chen et al. 2015), and corporate governance factors (Chen 2008). This study extends the research on the relationship between corporate governance and cash holdings. Our study responds to calls by Liebenberg and Hoyt (2003), and Hines and Peters (2015) for additional research on the effect of ICs on firms' cash holdings.

The literature on the determinants of cash holdings is built on three established theories. The "transaction motive" suggests that firms hold an optimal

balance of cash based on the marginal costs and benefits (Opler et al. 1999). The "precautionary motive" posits that external financing is often costly because of capital market frictions and agency considerations, and firms therefore hold cash to better cope with adverse shocks (Han and Qiu 2007). The "pecking order theory" proposes that companies adopt a financing hierarchy to finance new investments: internal funds first, then debt, and finally equity. Firms tend to prefer internally generated cash to external financing because the cost of external financing for investment projects is higher due to information asymmetry (Chen 2008). The key difference between the precautionary and pecking order theories is reflected in the investment and cash holdings relationship (Dittmar, Mahrt-Smith, and Servaes 2003). When firms have limited investment opportunities, retaining a high level of cash increases the likelihood of asset expropriation by managers, and excess cash may effectively force managers to overinvest and thus damage the interests of shareholders (Dittmar, Mahrt-Smith, and Servaes 2003). The "agency motive" for cash holdings is based on the premise that entrenched managers will squander cash for personal benefits (Harford 1999, Gao and Jia 2015).

Previous studies have examined the effect of corporate governance on cash holdings (Chen 2008, Dittmar and Mahrt-Smith 2007). Agency theory and resource-based theory (Rumelt and Lamb 1984, Wernerfelt 1984) can explain how an IC, as a corporate governance mechanism, influences corporate cash holdings through the "efficient investment" channel. A standalone IC allows committee members to concentrate on corporate investment and investment risk processes, which ensures quality investment risk monitoring, management, and reporting. Jensen (1986) argue that managers have the incentive to accumulate cash in order to increase liquid assets under their control. This process then provides management with power and flexibility in relation to investment decision making.

IC members are in charge of establishing investment policy, asset allocation, and stock picking policies. They further review pertinent issues applicable to investment decisions (Al-Hadi, Hasan, and Habib 2016). Resource-based theory posits that the existence and application of resources generates a competitive advantage and heterogeneity in organizational capabilities (Wernerfelt 1984). Thus, if ICs are effectively used, they can galvanize firm resources so that firms can more effectively compete with their peers. Boyle and Guthrie (2003) argue that holding a high level of cash is particularly important for innovative companies. The success of these firms is highly dependent on the uniqueness of their business innovations, and thus they tend to make substantial cash investments in R&D activities. With special patents, they can commercialize their innovations and maintain competitive positions in dynamic environments (Bahrami and Evans 1987). Without sufficient funds, firms reliant on higher external-financing costs may forgo investment opportunities with detrimental effects on firm value and shareholder wealth. To avoid such losses, firms that need more capital must retain more cash, especially if they face challenges obtaining external financing. Therefore, it is reasonable to expect that an effectively performing IC can motivate a firm to hold increased levels of cash to meet current and new investment requirements and opportunities. We thus develop the following hypothesis.

H1: All else being equal, the existence of an IC is positively associated with firms' level of cash holdings.

Experience of IC members and cash holdings

Directors on board committees who have financial or monitoring expertise tend to perform their investing or monitoring duties more effectively (Lee and Stone 1997). DeZoort and Salterio (2001) argue that audit committee directors with sufficient

knowledge of auditing practices make better judgments than those without auditing experience. Al-Hadi, Hasan, and Habib (2016) also find that qualified directors on risk committees are more likely to enhance the quality of market risk disclosures by GCC firms. Resource-dependency theory suggests that qualified and financially literate directors help to link firms to their external environment and assist in obtaining valuable resources (Pfeffer and Salancik 1978).

The agency and information asymmetry risks related to investment policies can be better gauged by financially literate directors (Ellis 2011). IC directors who have financial expertise may perform better than other directors during periods of high uncertainty. Hill (1982) suggests that complex financial issues can be overcome through an aggregation of opinions from experienced and proficient board members. Financial experts can also benefit from their personal links to the financial sector. For example, Custódio and Metzger (2014) find that part of many firms' loan facilities are commonly provided by former employers of the CEOs. Given the value-enhancing roles played by directors with financial and monitoring expertise, it is reasonable to assert that the presence of such directors on an IC can enhance a firm's cash holdings. We thus develop the following hypothesis:

H2: All else being equal, firms with ICs hold more cash when ICs are comprised of members with investment expertise.

Institutional ownership, corporate cash holdings, and ICs

Globally, firms use a broad set of tools to attract investors to their stocks and capital, as a greater investor base is expected to raise share price and increase firm value (Merton, 1987). Many companies explicitly state that the main goal of reverse splits is to attract more institutional investors (Chung and Zhang 2011). Institutional investors

prefer stocks of firms with better disclosure (Bushee and Noe 2000), larger companies (Gompers and Metrick 2001), companies that pay cash dividends or repurchase shares (Grinstein and Michaely 2005), and firms with better managerial performance (Parrino, Sias, and Starks 2003).

McCahery, Sautner, and Starks (2016) find that corporate governance is important to institutional investors' investment decisions, and they are willing to engage in shareholder activism, especially in countries characterized by low investor protection and high information asymmetry. Kalcheva and Lins (2007) find that cash held by firms with entrenched management is valued at a discount when external country-level shareholder protection is weak. Additionally, Dittmar and Mahrt-Smith (2007) show that the value of cash is lower in firms with severe agency problems (as measured by the intensity of anti-takeover provisions and institutional ownership). Dittmar, Mahrt-Smith, and Servaes (2003) show that firms are likely to hold more cash in countries with weaker investor protection.[12] Kalcheva and Lins (2007) focus on the effects of firm-level agency problems and the institutional environment on cash holdings and find that in countries with weak shareholder protection, private sector firms tend to hold more cash, but firm value is lower when entrenched management holds more cash. None of these studies examines the interplay between specialized and expert board committees such as an IC on institutional ownership and cash holdings, particularly in emerging markets.

Institutional investors have a much stronger incentive to monitor firms that they own than individual investors because of their larger equity stakes, particularly in countries with weaker investor protection (Mitton 2002, McCahery, Sautner, and Starks 2016). In emerging markets such as the GCC, there are severe information

[12] For private firms, Pinkowitz, Stulz, and Williamson (2006) find that the market value of cash holdings is lower in countries with low investor protection.

asymmetry problems, making it difficult for shareholders to monitor managers or directors and to make them behave in the interests of shareholders.[13] Institutional investors are likely to prefer companies with better governance mechanisms over those with poor governance mechanisms. Ozkan and Ozkan (2004) argue that cash holding is an important determinant of firms' growth opportunities. Firms with cash reserves are more likely to have growth opportunities (Opler et al. 1999). Based on the precautionary cash holding motive, cash represents a valuable source of investment funds for business growth opportunities during a period of economic uncertainty (Ahrends, Drobetz, and Puhan 2016). Gillan and Starks (2000) find that both local and foreign institutional investors see corporate governance as an effective tool for improving the monitoring of a firm's cash. We argue that firms with specialized ICs and higher proportion of (foreign and local) institutional ownership have better opportunity to monitor and evaluate a firm's future growth opportunities and investment portfolio (Ellis 2011). We thus develop the following hypotheses:

H3a: All else being equal, local institutional ownership moderates the positive association of ICs and firms' level of cash holdings.

H3b: All else being equal, foreign institutional ownership moderates the positive association of ICs and firms' level of cash holdings.

Financial crisis, corporate cash holdings, and ICs

An optimal level of cash can be used by management to ensure that the firm can participate in ongoing positive NPV projects as they become available and it can also act as a buffer against financial constraints. However, the effectiveness of these activities will ultimately depend on firms' plans and strategies with respect to their cash holdings (Harford 1999). Campello, Graham, and Harvey (2010) assert that

[13] Bushee and Noe (2000) suggest that institutional investors prefer firms with better disclosure rankings, as they reduce monitoring costs.

financially constrained firms strategize around curbing expenditure in relation to capital spending, employment and technology. They argue that during a financial crisis, firms planned investment in attractive projects are restricted, cancelled or postponed. They also find that firms may tend to over-invest cash if they are readily able to access external financing or are able start selling their assets to support their operations. Additionally, corporate investment declines significantly and particularly more extensively in firms characterised by low cash reserves (Duchin, Ozbas, and Sensory 2010). Consistent with the precautionary cash holding motive, (Ahrends, Drobetz, and Puhan 2016) show that cash represents a valuable source of investment funds for business growth opportunities during a period of economic and financial uncertainty. Given that the 2008 financial crisis was an unexpected event, Mitton (2002) documents that good corporate governance had considerable impact on firm performance during a period of extreme financial distress. In line with the view that a financial crisis can have a negative impact on firms' investment opportunities, Lemmon and Lins (2003) find that firms have a lower market value during a financial crisis particularly in the presence of severe agency problems such as the separation between cash flow rights.

On the one hand, Harford, Mansi, and Maxwell (2008) conclude that management with poor corporate governance structures can over-invest cash more quickly than firms with stronger corporate governance systems. Bliss, Cheng, and Denis (2015) suggest that firms that better manage cash usually chooses to avoid future payout commitments (i.e., to maintain cash levels as a substitute to external financing), and to fund investments during financial crises. Considering the important role of ICs in mitigating agency costs of managerial discretion on cash holdings, ICs can position the firm to hold more cash as a buffer to protect the firm against adverse shocks or crises. Hence, specialized ICs may help relieve financially constrained firms

during periods of financial crisis and enable them to hold more cash for precautionary purposes. We thus develop the following hypothesis.

H4: All else being equal, the financial crisis moderates the positive relationship between the existence of ICs and firms' level of cash holdings.

4. Research design

4.1. Data and sample

The sample of GCC firms in this study covers the 2005–2013 period. The data are drawn from two sources. First, observations on ICs, corporate governance, and ownership structure are hand-collected from the annual financial reports and filings of non-financial firms publicly listed on the KSA, UAE, Oman, Qatar, Bahrain, and Kuwait stock exchanges and in some cases from the websites of these firms and their Capital IQ filings. The second data source is Standard & Poor's Capital IQ database for financial and other control variables. We begin with an initial sample of 1,670 firm-year observations. The exclusion of joint-listed firms (72 firm-years) and firms with missing control variables (332 firm-years) yields a final sample of 1,266 firm-year observations (Table 1 Panel A). All of the continuous variables are winsorized at the first and ninety-ninth percentiles to mitigate the influence of outliers.

[Insert Table 1 here]

Table 1 Panel B shows that Saudi Arabia (KSA) has the highest number of observations (45%), followed by Oman (OMN) and the UAE, which together represent 43% of the observations; the remaining 12% represent Bahrain, Kuwait, and Qatar. Panel C shows that materials sector firms represent about 28% of our sample, followed by industrial firms (23%) and consumer products firms, which represent 17% of the total sample.

In Panel D of Table 1, we tabulate the mean of ICs and number of firms in each country and each year. It is observed that number of IC's formation is increasing

in overall for each country. For instance, the number of firms in KSA is increasing every year, but the number of IC formation is fluctuating over the period 2006-2013. In Bahrain, we can also observe a fluctuation of IC's mean over year, while in Oman the mean of ICs declines in 2012 and 2013. Further, the mean of ICs in UAE increases gradually from 2006 to 2013. In overall, this suggests that the formation of of ICs is voluntary adopted by the boards and the number of ICs is increasing over the sample period.

4.2. Variable measurement

4.2.1. Dependent variable: Proxy for cash holding

In line with previous studies, we measure cash holdings using three models. Our first measure (*Cash_TA*) is the ratio of cash and marketable securities to total assets as an asset-weighted average of firm-level cash ratios (Azar, Kagy, and Schmalz 2016).. However, studies argue that this measurement have a problem as extreme outliers of aggregate assets ratio for firms. To address this problem, we follow First follow Opler, Pinkowitz, Stulz, and Williamson (2006), we measure (*Cash_NA*) is the ratio of cash and marketable securities to net assets, where net assets are the total assets minus cash and marketable securities (Megginson, Ullah, and Wei 2014). Second, we follow Foleyet al. (2007) by measuring (*Cash_LN*) which defined as the natural logarithm of cash and marketable securities to total assets in order to reduce the magnitude of the problem of extreme outliers and to control the normality in our in our sample. (Qiu and Wan 2015).

4.2.2. Independent variables

The main independent variable of interest, *IC_D*, denotes the existence of an IC. *IC_D* is a dichotomous variable that takes the value of 1 if the firm has a dedicated IC in year *t*, and 0 otherwise. To estimate the role of IC characteristics and their effect on cash holdings, we regress individual IC characteristics with respect to cash holdings.

Each IC characteristic is denoted in terms of the IC members' experience (*IC_Tot_Exp_LN*, *IC_CEOExp_LN*, and *IC_ChairExp_LN*).[14]

Following Badolato, Donelson, and Ege (2014), we measure IC experience as the natural logarithm of the sum of four factors: (*a*) the number of directors on the IC with prior experience as a chairperson of a board, (*b*) the number of directors on the IC with prior experience as a CEO, (*c*) the number of IC directors with prior investment-related experience, and *(d*) the number of directors on the IC with prior experience as a CFO. If an IC director has any of these experience categories, that director is scored as 1. We then sum the number of IC directors with any of these experience categories and take the natural log of that value (*IC_Tot_Exp_LN*). To mitigate the measurement problem, we also use individual characteristics of experience (e.g., *IC_CEOExp_LN* and *IC_ChairExp_LN*), as defined in *(a)* and *(b)*.[15]

We adopt two types of institutional ownership measures used in prior studies (DeFond et al. 2011, Megginson, Ullah, and Wei 2014). The first measure is *Loc_Inst_Own* is a dummy variable coded 1 if a firm has local institutional ownership, and 0 otherwise. The second measure is *For_Inst_Own* is a dummy variable coded 1 if a firm has foreign institutional ownership, and 0 otherwise.[16]

4.2.3. Control variables

[14] *IC_Tot_Exp_LN*, *IC_CEOExp_LN*, and *IC_ChairExp_LN* refer to total IC supervisory experience, CEO experience, and chairman experience, respectively. All of the IC experience measures for year *t* are taken from the voluntary or mandatory disclosures in the annual reports of the firms incorporated in the GCC stock markets. We also use social media network websites (LinkedIn, Facebook, and Twitter) to collect data on IC experience, as some firms do not disclose the experience of board and committee members.

[15] In our robustness checks, we use other measures of IC characteristics such as number of independent directors on the IC (*IC_IND_LN*), IC Size (*IC_Size_LN*), and number of IC meetings per year (*IC_Meeting_LN*).

[16] Appendix 2 and Appendix 3 show the distribution of *Loc_Inst_Own* and *For_Inst_Own* based on year and country. Both appendices show that local and foreign institutional ownership are gradually increased after economics reforms of the GCC's governments (Al-Hadi et al. 2015). For all countries, the *Loc_Inst_Own* shows a clearer increasing pattern after 2008 (financial crisis), while the growth of *For_Inst_Own* is steady over the sample period.

Consistent with previous empirical studies of cash holdings (Azar, Kagy, and Schmalz 2016, Megginson, Ullah, and Wei 2014), we control for several firm characteristics, industry sector, and country effects in our regression models. The list of control variables are in Appendix 1.

4.2.4. Empirical model

We estimate the regression models using ordinary least squares (OLS) regressions, controlling for country, industry sector, and year effects and with standard errors adjusted for heteroskedasticity and within-firm clustering (Petersen 2009). We also use a fixed effect (FE) regression to control for time-invariant factors. Our main regression equation is as follows:

$$Cash\ Holdings_{i,t} = a_0 + a_1 IC\_D_{i,t} + a_2 SIZE_{i,t} + a_3\ Q_{i,t} + a_4 LEV_{i,t} + a_5 NWC_{i,t} + a_6 CFO_{i,t} + a_7 CAPX_{i,t} + a_8 DIV_{i,t} + a_9 Gov\_Own_{i,t} + a_{10} CEO\_Own_{i,t} + a_{11} IND\_BSIZE_{i,t} + a_{12} BSIZE_{i,t} + a_{13} AGE_{i,t} + Year\ Industry\ Country\ Dummies + e_{i,t}\ . \qquad Eq.(1)$$

We expect the coefficient of *IC_D* to be positive and significant. To examine the association between IC characteristics and firm cash holdings, we replace *IC_D* with the IC experience variables denoted previously.

5. Results

5.1. Descriptive statistics

Table 2 reports the summary statistics for the variables included in the regression models. The mean values for *Cash_TA*, *Cash_NA*, and *Cash_LN* are 0.12, 0.17, and 2.69, with standard deviations of 0.12, .0.26, and 1.21, respectively. The mean (median) IC (*IC_D*) is 0.17 (0.00), with a standard deviation of 0.37. The mean (median) values of *IC_Tot_Exp_LN* are 0.20 (0.00), the mean (median) values of *IC_CEOExp_LN* are 0.06 (0.00), and the mean (median) values of *IC_ChairExp_LN* are 0.11 (0.00). We find that the ICs in the sample consist of four directors on

average. The mean and median values of the control variables are generally consistent with recent studies of emerging markets in the GCC region (Al-Hadi, Hasan, and Habib 2016, Eulaiwi et al. 2016).

[Insert Table 2 Here]

5.2. Regression analyses

5.2.1 Association between IC and corporate cash holdings

Columns (1)–(3) of Table 3 present the OLS regression results using alternative cash holding measures. The coefficient on *IC_D* is positive and statistically significant across all three cash holdings specifications with coefficients of 0.026, 0.06, and 0.17 for *Cash_TA*, *Cash_NA*, and *Cash_LN*, respectively. The positive and significant coefficients lend support to H1, i.e., the formation of a specialized IC increases the monitoring of managerial investment decisions, and thus increases a firm's level of cash holdings. In terms of economic significance, the estimated coefficient in Column (1) suggests a 2.63%[17] increase in cash for firms using specialized ICs. This is equivalent to an average increase of $7.27 million in the value of cash and marketable securities.[18] We obtain similar results using fixed effects regressions, as shown in Columns (4)–(6). For example, the coefficient on the *Cash_TA* measure is 0.0542 with a t-statistic equal to 2.38, significant at $p<0.05$.

The findings are consistent with the control variables used in both models, i.e., size (*Size*), leverage (*LEV*), net working capital (*NWC*), capital expenditure (*CAPX*), and firm age (*AGE*) are negatively associated with firms' cash holdings. In contrast, firm profitability (*Q*), cash flow from operations (*CFO*), government ownership (*Gov_Own*), and board size (*BSize*) are positively associated with firms' cash holdings. The sign and significance of the control variables are generally consistent

[17] This is calculated as [**0.37** (SD of ICs)*** 0.0263** (regression coefficient on ICs)/ **0.12** (SD of Cash_TA)].
[18] This is calculated as $276.4 million (the average amount of cash and marketable securities)*2.63% = $7.27 million.

with prior studies of cash holdings (Azar, Kagy, and Schmalz 2016, Megginson, Ullah, and Wei 2014). The adjusted R-square in all of the OLS models ranges from 31% to 51%, and the the adjusted R-square in the Pooling FE regression ranges from 63% to 73%.

To investigate whether any years, countries or industries stand out relatively to the others in our sample, we run a simple logit model with dependent variable being *IC_D*. Un-tabulated results show that four industries (ENREG, HEALT, INFOR and MATER), and two countreis (UAE and KUW)have positive and significant impact on *IC_D*. It is probably due thte fact that some countries with their own regulation, macro-economic and geopolitical characteristics and some industries with their own investment, management and business strategies' characteristics have more impact on the IC formation.

[Insert Table 3 Here]

5.2.2. IC characteristics and firm cash holdings

We also examine the association between various IC characteristics and cash holdings, as shown in Table 4. We now including IC experience (*IC_TotExp_LN*) in the baseline model, and we find a positive and significant coefficient on *IC_TotExp_LN* for the *Cash_TA* measure at $p<0.01$, suggesting that firms with IC members who have financial and monitoring expertise hold more cash. Positive and significant coefficients are evidenced across all of the cash holdings measures using OLS, and all but the *Cash_LN* measure in the firm FE regressions. These results provide support for H2: IC members with greater monitoring and financial expertise increase firms' level of cash holdings by ensuring that value-increasing NPV projects are funded. We also disaggregate *IC_TotExp_LN* into two components: (*a*) the natural logarithm of the number of directors in the IC with CEO experience (*IC_CEOExp_LN*) and (*b*) the natural logarithm of the number of directors in the IC

with experience as a chairperson (*IC_ChairExp_LN*). We present each of these two governance items in Table 4. The coefficients on both of these variables are positive and significant for the *Cash_TA* measure at $p<0.01$. Collectively, we find evidence consistent with our predictions, suggesting that the formation of specialized ICs can positively affect firms' cash holdings.[19]

[Insert Table 4 Here]

5.2.3. ICs, institutional ownership, and corporate cash holdings

Our variables of interest are the interaction variable *IC_D* Loc_Inst_Own* (shown in Table 5 Panel A), and *IC_D* For_Inst_Own* (shown in Table 5 Panel B). Consistent with our expectations, it is found that the existence of an IC significantly (at $p<0.05$) increases cash holdings when we interact either *Loc_Inst_Own* or *For_Inst_Own* with *IC_D*. These results provides support for H3a and H3b, suggesting that both local and foreign institutional ownership moderates the association between IC and cash holdings. This result is consistent with the argument that institutional investors do not allow firm managers to undertake value destroying projects. A specialized IC can therefore provide a quality assessment of investment risk estimation that optimally leads to the accumulation and holding of more cash.

[Insert Table 5 Here]

5.2.4. ICs, the global financial crisis, and corporate cash holdings

Prior studies have shown that financial constraints may increase firms' desire to increase cash savings (Fazzari et al. 1988, Song and Lee 2012). Therefore, it is argued that financially constrained firms have a greater propensity to save cash in order to secure future investments and alternative forms of financing (Almeida,

[19] As a robustness check, we test the correlation between all of the characteristics of IC members, including independence, number of meetings, financial and monitoring expertise, independent chairman, and qualifications, IC overlapping membership with compensation and audit committee, and size. We find that all of the characteristics are highly correlated. These un-tabulated results also show consistent evidence that all of the characteristics improve cash holdings. For more information, please see Section 5.4.5.

Campello, and Weisbach 2004). To examine the role of ICs during the global financial crisis, we examine the effects of the interaction of the financial crisis and IC on firms' cash holdings by introducing a *GFC* variable in our regression model. In Table 6, we find a positive and significant coefficient on cash. These results support our assertion that ICs manage to hold more cash during a financial crisis. Finally, cash holding decisions, as well as the achievement of long-term investment value, are significantly related to the presence of an IC owing to that committee's oversight of risk pertaining to investments and financing.

As additional analysis, we also calculate the *GFC* variable for the immediate post-GFC period encompassing the 2008, 2009 and 2010 years and find similar results[20] to those reported in Table 6. The interaction variable between *IC_D* and *GFC* is significantly positive at $p<0.10$ for all of our models.

[Insert Table 6 Here]

5.3. Robustness analyses

5.3.1. Association of cash holdings and IC characteristics

We test the effects of IC independence (*IC_IND_LN*), IC size (*IC_ Size_LN*) and the frequency of IC meetings per year (*IC_Meet_LN*) on cash holdings. Klein (2002) defines IC independence as the number of independent directors on an IC scaled by the total number of IC members. However, the corporate governance codes in the GCC market consider several characteristics of independence (e.g., family relationships, substantial relationships, director relationships, remuneration, ownership, long-term board tenure, and directors' prior roles in the firm) in defining the degree of a director's independence on an IC.[21] In this study, directors are

[20] Results will be available upon request.

[21] Corporate governance codes in all of the GCC countries restrict independent directors from having any close family ties with any of the company's advisors, directors, or employees. In Bahrain, Qatar, KSA, and the UAE, independent directors should not represent a significant shareholding (of more than

considered independent if they meet the criteria of independence stated in their country's respective corporate governance codes. The un-tabulated results reveal that the coefficients of *IC_IND_LN*, *IC_ Size_LN*, and *IC_Meet_LN* are positive and significant across all three cash holding specifications (at $p<0.01$). These findings (un-tabulated) hold for both the panel OLS regression results and the pooled fixed effect regression results using different cash holding measures.

5.3.2. Generalized method of moments (GMM) regression

In this section, we test the robustness of the results using the GMM estimator (Blundell and Bond 1998). The IC and the lagged dependent variable constitute the endogenous variables in our analysis. The instruments' validity under the null hypothesis suggests that these instruments are valid. The exogeneity of the instruments are tested using the "Sargan" test. The results from the GMM model, reported in Table 7 are consistent with the OLS results in Table 3.

[Insert Table 7 Here]

5.3.3. Two-stage least squares (2SLS) regression

We apply 2SLS technique to further address the endogeneity issue of adoption of ICs on firms' cash holdings. Our two instrumental variables are *IC_AC_Overlap* (the number of directors who have overlapping or dual duties in both an audit committee (AC) and an IC in a given year) and *IC_CC_Overlap* (the number of directors who have overlapping or dual duties in both the IC and the compensation committee (CC)).

10%) (Al-Hadi, Hasan, and Habib 2016). Furthermore, in KSA, Oman, and the UAE, independent directors should not have been employees or senior executives of the firm within the preceding two years. In Qatar, the limit is the preceding three years, and in Bahrain it is the preceding year.

The use of these two instruments is justified given that the board of directors faces multifaceted tasks in decision making. Directors with overlapping duties across board sub-committees may reduce coordination time, cost and may enhance decision quality. A report of the round-table discussions in Brussels, Hong Kong, and New York City[22] suggests that firms that have at least one overlapping member in both the audit committee (AC) and the risk/investment IC can facilitate communication regarding key risk issues. The existence of overlapping directors in both the CC and IC would favor compensation packages that reduce the risk of earnings manipulation and risk taking (Tao and Hutchinson 2013). The results of 2SLS regression are provided in Table 8 Panel A (for OLS) and Panel B (for fixed effects). We find that our results are unchanged, and that both IC and cash holdings are positive and significant at the $p<0.01$.

[Insert Table 8 Here]

5.3.4. Effect of Oil Crises

Oil crises in the GCC significantly impact country-level revenue and country-level credit risk and ratings. We include a dummy variable for the 2014, 2015 and 2016 years representing the years in which oil price shocks could potentially impact our results. After including variables to control for any potential effect of oil crises, our results are consistent with our base line results (see Table 4).

5.3.5. Additional measure of local and foreign institutional ownership

As a robustness check, we now use continuous measures of *Loc_Inst_Own* and *For_Inst_Own* and re-run the base regressions model with these variables. We report the results in Table 10 and find the coefficients on the interaction terms *IC_D*Loc_Inst_Own* and *IC_D*For_Inst_Own* are positive and significant at p<.05

[22] See e.g.Tysiac (2013).

or better. This suggests that our results are robust to the alternative measures of institutional ownership.[23]

5.3.6 Propensity score matching (PSM) procedure

Another way to overcome potential endogeneity concerns is to construct a sample of matched firms to sample firms with ICs (Shipman, Swanquist, and Whited 2017). First, we estimate a logistic regression model[24] of *IC_D* being dependent to calculate propensity scores. The predicted propensity scores from the logistic regression are used to match on a one-to-one basis the observations in the treatment firms (firm-year observations with *IC_D* equal to 1) to the control firms (firm-year observations with *IC_D* equal to 0) using the Gaussian-Kernel function without replacement. We then combine the matched pairs into a weighted sample and perform OLS regression analysis (Equation 1). Table 11 Panel A shows that our matching procedure is suitable as we achieve covariate balance for all variables for treatment and control groups. The regression results of the PSM analysis in Table 11 Panel B show that the results in Table 3 are robust. We find that the regression coefficients for *IC_D* (first and third models) are positively and statistically associated with all cash holdings ($p<0.10$) demonstrating that firms with an IC have more cash holdings.

6. Conclusions

This study examines the association between the voluntary formation of a board IC and its characteristics, and corporate cash holdings of GCC firms. The GCC provides an ideal setting to examine the role of ICs and their effects on firms' level of cash holdings as a large proportion of firms listed across GCC stock markets have established voluntary ICs. Using data from the six GCC countries over the 2005–2013

[23] As additional analysis, we also find that ICs are more likely improve corporate cash holdings when firms have better financial performance compared as compared to firms with lower levels of financial performance.

[24] The logit model includes the same set of control variables as in our base regression model (1).

period, we find that the formation of a specialized IC provides additional monitoring of managerial investment decisions, thereby increasing a firm's cash holdings. Moreover, we show that local and foreign institutional ownership moderates the association between IC and cash holdings. This result suggests that institutional investors view corporate governance as an effective tool for monitoring a firm's cash holdings, and that firms with specialized ICs and a greater proportion of institutional owners are better placed to monitor and constrain opportunistic investment behavior.

This study contributes to the growing body of literature on corporate governance and cash management. It is the first study to investigate the effect of ICs on firms' cash holdings in the GCC, which is characterized by generally weak investor protection, poor regulation quality and a weaker enforcement regime. These factors are likely to affect firms' level of cash holdings, as cash reserves are typically used to safeguard a firm against adverse shocks. We contribute to the literature on firms' incentives to hold cash and to the governance literature by showing that the presence of an investment committee and an IC comprised of experienced members increases firms' cash holdings.

The study does, however, have some limitations. The roles of ruling family directors, family ownership, and government ownership could be examined in relation to the establishment of specialized board committees such as ICs and risk committees. Such studies would be important in the context of the GCC, given the rapid evolution of governance structures and capital markets in these countries. In addition, the results of this study may be useful for regulators when establishing corporate governance regulations, including the voluntary formation of board committees such as ICs and the benefits associated with them. Our results may also have important implications for other emerging economies, where policymakers and regulators are likely to

consider regulations regarding board committees such as ICs, audit committees, and risk committees.

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Appendix 1: Variable Definitions

Dependent variables:		
Cash Holdings Models:		
Cash_TA	=	The ratio of cash and marketable securities to total assets.
Cash_NA	=	The ratio of cash and marketable securities to net assets, where net assets are total assets minus cash and marketable securities.
Cash_LN	=	The natural logarithm of cash and marketable securities to total assets.
Independent variables:		
IC_D	=	1 if a firm adopt specialized Investment Committee (IC), otherwise 0.
IC_Tot_EXP_LN	=	Natural logarithm of number of directors with CFO or investment or chairman or CEO experience. If an IC director has any of these experience categories, that director is scored as 1. We then sum the number of IC directors with any of these experience categories and take

		the natural log of that value (IC_EXP).
Loc_Inst_Own	=	1 if a firm has a proportion of ownership structure owned by local institutional investors, otherwise 0.
For_Inst_Own	=	1 if a firm has a proportion of ownership structure owned by foreign institutional investors, otherwise 0.
GFC	=	It is a dummy variable that takes value 1 for the crisis period 2008, and 0 otherwise.
Control variables:		
SIZE	=	Natural logarithm of total assets.
Q	=	The sum of the market value of equity and the difference between book value of total assets and book value of equity in year *t*, scaled by the book value of total assets in year t_{-1}
LEV	=	Total long-term and short-term scaled to total assets.
NWC	=	Working capital less cash and equivalents, scaled by total assets.
CFO	=	Cash from Operation scaled to total assets.
CAPX	=	The ratio of capital expenditure, scaled by total assets.
DIV	=	Total dividends scaled by total assets.
Gov_Own	=	1 if a firm has government ownership, otherwise 0.
CEO_Own	=	1 if a firm has CEO ownership, otherwise 0.
IND_BSIZE	=	Proportion of total independent directors to total board size.
BSIZE	=	Natural logarithm of total number of board of directors.
AGE	=	Natural logarithm of firms' age calculated as the difference between the establishment date and current year.
Str_Investor_Pro	=	Country level investor protection index measured by La Porta, Lopez-de-Silanes, Shleifer, & Vishny, (2000). It includes the extent of disclosure index, extent of director liability index and ease of shareholder suits index from World Bank's official website (DoingBusiness.org).
Reg_Quality	=	Regulation quality from country governance index of Kaufmann, Kraay, Mastruzzi (2005).

Appendix 2: Distribution of the mean of local and foreign institutional ownership based on country and year

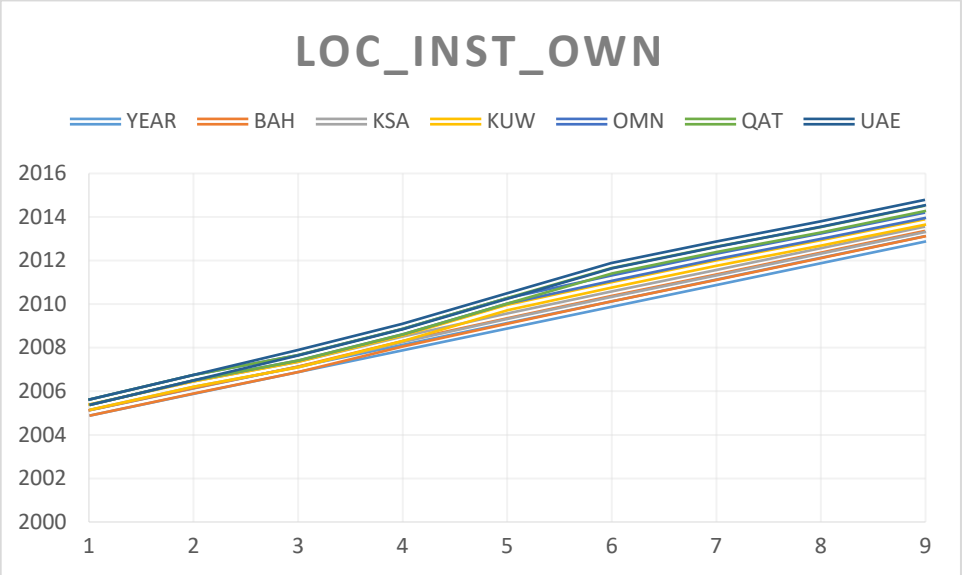
Panel A: Local institutional ownership (Loc_Inst_Own)

YEAR	BAH	KSA	KUW	OMN	QAT	UAE	Total
2005	0.000	0.261	0.000	0.228	0.000	0.000	**0.235**
2006	0.021	0.310	0.000	0.287	0.000	0.000	**0.290**
2007	0.004	0.227	0.000	0.299	0.000	0.233	**0.285**
2008	0.174	0.216	0.041	0.310	0.000	0.237	**0.289**
2009	0.228	0.220	0.398	0.306	0.000	0.220	**0.284**
2010	0.250	0.210	0.429	0.310	0.333	0.237	**0.285**
2011	0.242	0.200	0.448	0.309	0.311	0.241	**0.286**
2012	0.242	0.198	0.373	0.308	0.298	0.264	**0.291**
2013	0.243	0.196	0.337	0.306	0.320	0.266	**0.291**

Panel B: Foreign institutional ownership (For_Inst_Own)

YEAR	BAH	KSA	KUW	OMN	QAT	UAE	Total
2005	0.000	0.060	0.000	0.149	0.000	0.000	**0.133**
2006	0.000	0.047	0.000	0.147	0.000	0.000	**0.131**
2007	0.046	0.092	0.000	0.160	0.000	0.027	**0.132**
2008	0.094	0.073	0.000	0.184	0.000	0.022	**0.135**
2009	0.072	0.058	0.000	0.184	0.000	0.037	**0.127**
2010	0.064	0.053	0.000	0.184	0.017	0.043	**0.121**
2011	0.060	0.074	0.000	0.185	0.016	0.042	**0.123**
2012	0.060	0.049	0.000	0.185	0.000	0.045	**0.118**
2013	0.060	0.049	0.000	0.185	0.000	0.045	**0.117**

Appendix 3: **Distribution of local and foreign institutional ownership based on country and year**



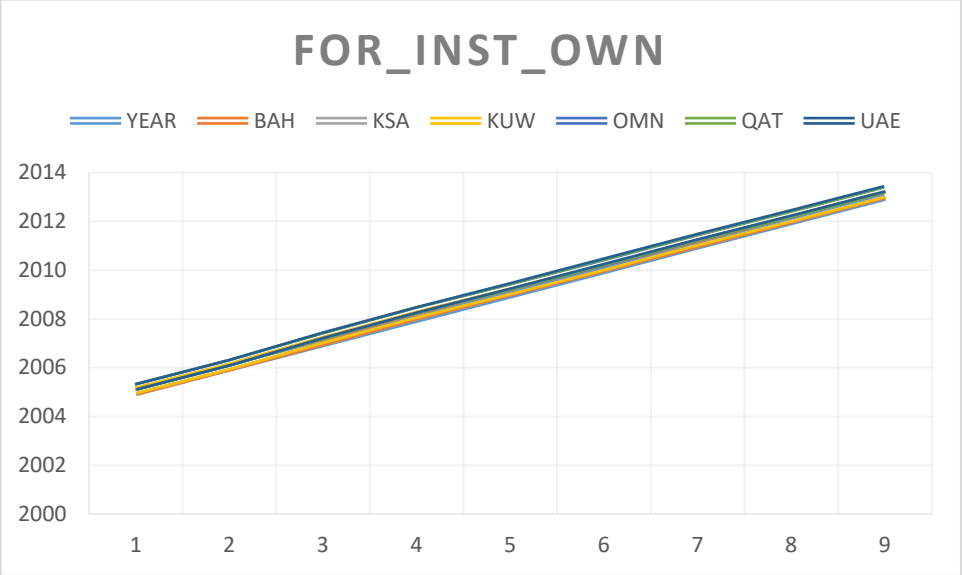


Table 1: Panel A: Sample selection

Total Observations	
Number of Non-financial firms available in S & P Capital IQ for the GCC countries	*1,670*
Less:	
Joint listed firms observation	*-72*
Key control variables	*-332*
Total Observations	***1,266***

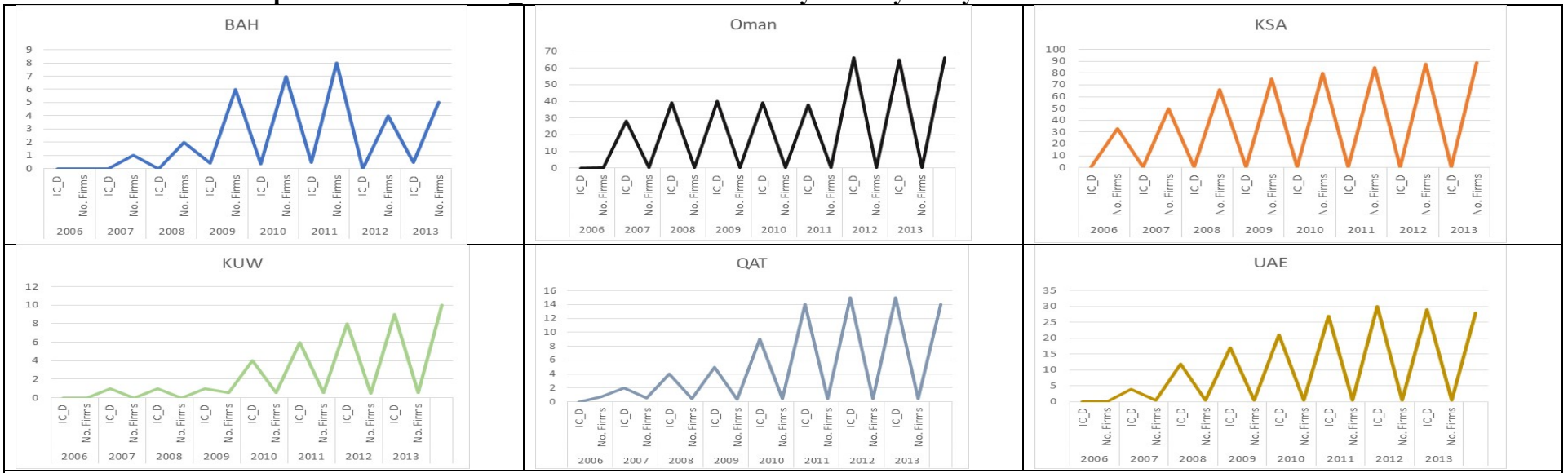
Table 1: Panel B: Sample distribution based on country

	Year									
Country	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*Total*	*% Percent*
BAH	*0*	*1*	*1*	*6*	*7*	*8*	*4*	*5*	*32*	*0.03*
KSA	*33*	*50*	*66*	*75*	*80*	*85*	*88*	*89*	*566*	*0.45*
KUW	*1*	*1*	*1*	*4*	*6*	*8*	*9*	*10*	*40*	*0.03*
OMN	*28*	*39*	*40*	*39*	*38*	*66*	*65*	*66*	*381*	*0.30*
QAT	*2*	*4*	*5*	*9*	*14*	*15*	*15*	*14*	*78*	*0.06*
UAE	*4*	*12*	*17*	*21*	*27*	*30*	*29*	*28*	*168*	*0.13*
Total	*68*	*107*	*130*	*154*	*172*	*212*	*210*	*212*	*1265*	*1.00*

Table 1: Panel C: Sample selection based on industry

	Year									
Industry	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*Total*	*% Percent*
CONSD	*5*	*13*	*11*	*17*	*15*	*27*	*25*	*27*	*140*	*0.11*
CONSS	*7*	*15*	*23*	*26*	*30*	*39*	*38*	*38*	*216*	*0.17*
ENERG	*6*	*8*	*11*	*13*	*13*	*13*	*14*	*14*	*92*	*0.07*
HEALT	*1*	*1*	*1*	*2*	*4*	*7*	*7*	*7*	*30*	*0.02*
INDUS	*16*	*25*	*33*	*40*	*44*	*48*	*48*	*47*	*301*	*0.23*
INFOR	*0*	*0*	*0*	*0*	*1*	*2*	*2*	*2*	*7*	*0.005*
MATER	*23*	*33*	*38*	*41*	*50*	*57*	*57*	*59*	*358*	*0.28*
TELEC	*4*	*6*	*6*	*7*	*7*	*9*	*9*	*8*	*56*	*0.04*
UTILI	*5*	*6*	*8*	*8*	*8*	*10*	*10*	*10*	*65*	*0.05*
	67	*107*	*131*	*154*	*172*	*212*	*210*	*212*	*1265*	*1.00*

Table 1: Panel D: Sample distribution of IC_D and number of firms by country and year



Sample distribution of IC_D and number of firms for country and year

YEAR	2006		2007		2008		2009		2010		2011		2012		2013	
	IC_D	No. Firms	IC_D	No. Firms	IC_D	No. Firms	IC_D	No. Firms	IC_D	No. Firms	IC_D	No. Firms	IC_D	No. Firms	IC_D	No. Firms
BAH	0	0	0	1	0	2	0.408248	6	0.377964	7	0.46291	8	0	4	0.447214	5
KSA	0.242306	33	0.35051	50	0.328875	66	0.392268	75	0.392775	80	0.383482	85	0.378187	88	0.395325	89
KUW	0	1	0	1	0	1	0.57735	4	0.516398	6	0.517549	8	0.5	9	0.516398	10
OMN	0.417855	28	0.388776	39	0.334932	40	0.338688	39	0.369537	38	0.328875	66	0.291712	65	0.266638	66
QAT	0.707107	2	0.57735	4	0.447214	5	0.333333	9	0.425815	14	0.414039	15	0.414039	15	0.425815	14
UAE	0	4	0.389249	12	0.437237	17	0.436436	21	0.423659	27	0.406838	30	0.412251	29	0.440959	28

Table 2: Descriptive statistics and univariate t-tests

Variable	*Mean*	*S.D.*	*0.25*	*Mdn*	*0.75*	*t-test(IC_D)*
Cash $(m)	*276.4*	*1308.6*	*6.2*	*24.2*	*108.3*	*-*
Cash_TA	*0.12*	*0.12*	*0.03*	*0.07*	*0.16*	*6.0388****
Cash_NA	*0.17*	*0.26*	*0.04*	*0.08*	*0.19*	*5.5282****
Cash_LN	*-2.69*	*1.21*	*-3.4*	*-2.61*	*-1.83*	*5.713****
IC_D	*0.17*	*0.37*	*0*	*0*	*0*	*-*
IC_Tot_EXP_LN	*0.20*	*0.50*	*0*	*0*	*0*	*-*
IC_CEOExp_LN	*0.06*	*0.22*	*0*	*0*	*0*	*-*
IC_ChairExp_LN	*0.11*	*0.30*	*0*	*0*	*0*	*-*
SIZE	*5.86*	*1.84*	*4.72*	*5.88*	*6.95*	*0.6016*
SIZE $ (m)	*2352*	*8278.2*	*111.7*	*358.4*	*1047.5*	*-*
Q	*1.95*	*1.26*	*1.13*	*1.54*	*2.35*	*0.0435*
LEV	*0.23*	*0.22*	*0.03*	*0.18*	*0.37*	*-4.8101****
NWC	*1.4*	*0.82*	*0.91*	*1.34*	*1.72*	*-4.7892****
CFO	*0.09*	*0.1*	*0.03*	*0.08*	*0.15*	*1.4065*
CAPX	*0.07*	*0.08*	*0.02*	*0.04*	*0.1*	*-1.405*
DIV	*-0.04*	*0.05*	*-0.06*	*-0.02*	*0*	*0.2385*
Gov_Own	*0.55*	*0.5*	*0*	*1*	*1*	*2.2644*
CEO_Own	*0.34*	*0.47*	*0*	*0*	*1*	*-6.3197****
IND_BSIZE	*0.7*	*0.33*	*0.44*	*0.71*	*1*	*-2.128***
BSIZE	*2.05*	*0.22*	*1.95*	*2.08*	*2.2*	*1.6615*
BSIZE (No)	*7.99*	*1.78*	*7*	*8*	*9*	*-*
AGE	*2.92*	*0.7*	*2.57*	*3.05*	*3.47*	*-0.4842*
AGE (year)	*22.82*	*13.23*	*13*	*21*	*32*	*-*
Str_Investor_Pro	*5.439*	*0.934*	*5.000*	*5.000*	*6.700*	*-*
Reg_Quality	*0.325*	*0.254*	*0.100*	*0.340*	*0.540*	*-*

Table 3: ICs and cash holdings

	OLS			***Firm FE***		
	Cash_TA	*Cash_NA*	*Cash_LN*	*Cash_TA*	*Cash_NA*	*Cash_LN*
	(1)	(2)	(3)	(4)	(5)	(6)
IC_D	***0.0263******	***0.0610****	***0.1693******	***0.0542****	***0.1705****	***0.1890****
	(2.74)	***(2.43)***	***(2.70)***	***(2.38)***	***(2.40)***	***(1.73)***
SIZE	*-0.0086****	*-0.0250****	*0.028*	*0.0228*	*0.0788**	*0.1437*
	(-3.01)	*(-3.54)*	*(1.09)*	*(1.28)*	*(1.79)*	*(1.11)*
Q	*0.0093***	*0.0222***	*0.0681****	*0.0174****	*0.0407****	*0.0866****
	(2.32)	*(2.06)*	*(2.66)*	*(3.79)*	*(3.2)*	*(2.99)*
LEV	*-0.0934****	*-0.1484****	*-0.9340****	*-0.0413*	*-0.1079**	*0.2653*
	(-5.86)	*(-4.34)*	*(-5.70)*	*(-1.42)*	*(-1.68)*	*(0.85)*
NWC	*-0.0662****	*-0.1127****	*-0.8207****	*-0.0662****	*-0.1118****	*-0.8329****
	(-9.08)	*(-7.91)*	*(-11.71)*	*(-4.76)*	*(-3.97)*	*(-5.48)*
CFO	*0.0587*	*0.0424*	*1.3295****	*0.1373****	*0.2570***	*1.7957****
	(1.43)	*(0.40)*	*(3.56)*	*(3.27)*	*(2.18)*	*(3.50)*
CAPX	*-0.0383*	*-0.1535**	*0.0268*	*-0.1123****	*-0.3467****	*-0.0994*
	(-1.00)	*(-1.66)*	*(0.09)*	*(-2.60)*	*(-3.28)*	*(-0.28)*
DIV	*-0.096*	*-0.0442*	*-0.5747*	*0.0606*	*0.3367**	*-0.2397*
	(-1.12)	*(-0.22)*	*(-0.90)*	*(0.62)*	*(1.70)*	*(-0.33)*
Gov_Own	*0.0357****	*0.0735****	*0.1028*	*0.0329**	*0.0754**	*0.0723*
	(5.07)	*(4.51)*	*(1.59)*	*(1.76)*	*(1.66)*	*(0.62)*
CEO_Own	*0.011*	*0.025*	*0.0771*	*0.0032*	*0.0266*	*-0.0511*
	(1.58)	*(1.46)*	*(1.30)*	*(0.15)*	*(0.47)*	*(-0.47)*
IND_BSIZE	*-0.0105*	*-0.0138*	*-0.0291*	*0.0148*	*0.0242*	*0.1868*
	(-0.96)	*(-0.53)*	*(-0.30)*	*(0.97)*	*(0.62)*	*(1.53)*
BSIZE	*0.0274**	*0.036*	*0.5852****	*0.0853**	*0.1928***	*0.7878***
	(1.79)	*(0.96)*	*(4.28)*	*(1.96)*	*(2.02)*	*(2.50)*
AGE	*-0.0276****	*-0.0468****	*-0.2977****	*-0.0183*	*-0.0518*	*0.0274*
	(-7.13)	*(-6.05)*	*(-7.47)*	*(-0.61)*	*(-0.91)*	*(0.09)*
Firms FE	*-*	*-*	*-*	*YES*	*YES*	*YES*
Year FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
IND FE	*YES*	*YES*	*YES*	*-*	*-*	*-*
Country FE	*YES*	*YES*	*YES*	*-*	*-*	*-*
Constant	*0.2829****	*0.5348****	*-2.2721****	*-0.1255*	*-0.5607*	*-4.7366****
	-6.45	*-4.88*	*(-6.14)*	*(-0.78)*	*(-1.49)*	*(-3.31)*
N	*1266*	*1266*	*1265*	*1266*	*1266*	*1265*
Adj.R-sq	*0.4168*	*0.3195*	*0.5056*	*0.729*	*0.637*	*0.729*

Variable definitions are described in the Appendix. Coefficient estimates with t-statistics reported in parentheses. The statistical significance of the estimates is denoted with asterisks: ***, ** and * correspond to 1%, 5% and 10% levels of significance, respectively.

Table 4: Experience of IC members and cash holdings.

OLS									
	Cash_TA			*Cash_NA*			*Cash_LN*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
IC_Tot_EXP_LN	***0.0241******			***0.0541******			***0.1447******		
	(3.36)			***(2.93)***			***(2.77)***		
IC_CEOExp_LN		***0.0737******			***0.1845******			***0.4749******	
		(3.98)			***(3.39)***			***(5.14)***	
IC_ChairExp_LN			***0.0321******			***0.0746****			***0.2450******
			(2.79)			***(2.56)***			***(3.24)***
SIZE	*-0.0092****	*-0.0097****	*-0.0091****	*-0.0276****	*-0.0286****	*-0.0271****	*0.0296*	*0.025*	*0.03*
	(-3.01)	*(-3.24)*	*(-2.97)*	*(-3.56)*	*(-3.77)*	*(-3.51)*	*(1.09)*	*(0.92)*	*(1.10)*
Q	*0.0095***	*0.0092***	*0.0099***	*0.0242***	*0.0232***	*0.0250***	*0.0675***	*0.0649***	*0.0698***
	(2.21)	*(2.11)*	*(2.31)*	*(2.07)*	*(1.96)*	*(2.15)*	*(2.46)*	*(2.38)*	*(2.56)*
LEV	*-0.0893****	*-0.0872****	*-0.0910****	*-0.1317****	*-0.1261****	*-0.1362****	*-0.9644****	*-0.9430****	*-0.9649****
	(-5.31)	*(-5.23)*	*(-5.46)*	*(-3.52)*	*(-3.39)*	*(-3.69)*	*(-5.61)*	*(-5.46)*	*(-5.59)*
NWC	*-0.0658****	*-0.0658****	*-0.0662****	*-0.1139****	*-0.1133****	*-0.1146****	*-0.8119****	*-0.8116****	*-0.8125****
	(-8.86)	*(-8.94)*	*(-8.90)*	*(-7.70)*	*(-7.79)*	*(-7.75)*	*(-11.30)*	*(-11.40)*	*(-11.35)*
CFO	*0.0511*	*0.0434*	*0.0465*	*0.0311*	*0.0135*	*0.0208*	*1.2754****	*1.2314****	*1.2555****
	(1.20)	*(1.04)*	*(1.09)*	*(0.28)*	*(0.12)*	*(0.19)*	*(3.26)*	*(3.16)*	*(3.21)*
CAPX	*-0.0349*	*-0.0334*	*-0.035*	*-0.1477*	*-0.1448*	*-0.1486*	*-0.0231*	*0.0074*	*-0.0034*
	(-0.85)	*(-0.82)*	*(-0.85)*	*(-1.48)*	*(-1.46)*	*(-1.49)*	*(-0.07)*	*(0.02)*	*(-0.01)*
DIV	*-0.0784*	*-0.0956*	*-0.0833*	*0.0136*	*-0.0255*	*0.0041*	*-0.4726*	*-0.5809*	*-0.495*
	(-0.89)	*(-1.09)*	*(-0.94)*	*(0.06)*	*(-0.12)*	*(0.02)*	*(-0.71)*	*(-0.88)*	*(-0.75)*
Gov_Own	*0.0383****	*0.0383****	*0.0383****	*0.0827****	*0.0815****	*0.0818****	*0.0961*	*0.1037*	*0.1013*
	(5.00)	*(5.18)*	*(5.05)*	*(4.54)*	*(4.68)*	*(4.57)*	*(1.39)*	*(1.52)*	*(1.46)*
CEO_Own	*0.0087*	*0.0102*	*0.0077*	*0.0184*	*0.0229*	*0.0161*	*0.0644*	*0.0773*	*0.0644*
	(1.21)	*(1.46)*	*(1.09)*	*(1.05)*	*(1.31)*	*(0.93)*	*(1.05)*	*(1.28)*	*(1.06)*
IND_BSIZE	*-0.0141*	*-0.0166*	*-0.0146*	*-0.0169*	*-0.0226*	*-0.0177*	*-0.0474*	*-0.0629*	*-0.0484*
	(-1.15)	*(-1.37)*	*(-1.19)*	*(-0.56)*	*(-0.77)*	*(-0.59)*	*(-0.44)*	*(-0.58)*	*(-0.45)*
BSIZE	*0.0201*	*0.0242*	*0.0245*	*0.0201*	*0.0277*	*0.0292*	*0.5283****	*0.5543****	*0.5523****
	(1.26)	*(1.56)*	*(1.56)*	*(0.51)*	*(0.74)*	*(0.77)*	*(3.67)*	*(3.93)*	*(3.89)*
AGE	*-0.0280****	*-0.0263****	*-0.0281****	*-0.0469****	*-0.0431****	*-0.0476****	*-0.3038****	*-0.2921****	*-0.3034****
	(-6.71)	*(-6.32)*	*(-6.73)*	*(-5.54)*	*(-5.13)*	*(-5.59)*	*(-6.89)*	*(-6.63)*	*(-6.91)*
Year FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
IND FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Country FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
	*0.3009****	*0.2969****	*0.2922****	*0.5529****	*0.5674****	*0.5564****	*-2.0606****	*-2.1039****	*-2.1320****
Constant	*-6.82*	*-6.56*	*-6.42*	*-5.37*	*-5.01*	*-4.9*	*(-5.28)*	*(-5.44)*	*(-5.48)*
N	*1187*	*1196*	*1196*	*1187*	*1196*	*1196*	*1186*	*1195*	*1195*
adj. R-sq	*0.4043*	*0.4122*	*0.4012*	*0.3049*	*0.3178*	*0.3019*	*0.491*	*0.4947*	*0.4909*

Firms FE									
	Cash_TA			*Cash_NA*			*Cash_LN*		
	(10)	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*
IC_Tot_EXP_LN	***0.0310******			***0.1132****			***0.1097***		
	(3.41)			***(1.98)***			***(1.27)***		
IC_CEOExp_LN		***0.0577******			***0.2194****			***0.2222***	
		(3.38)			***(1.73)***			***(1.36)***	
IC_ChairExp_LN			***0.0391****			***0.1636****			***0.1818***
			(2.58)			***(1.66)***			***(1.26)***
All controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Year FE	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Firms FE	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Constant	*-0.1694*	*-0.163*	*-0.1818**	*-0.6142*	*-0.5896*	*-0.6659**	*-5.1150****	*-5.0913****	*-5.1740****
	(-1.64)	*(-1.58)*	*(-1.76)*	*(-1.60)*	*(-1.57)*	*(-1.67)*	*(-5.20)*	*(-5.18)*	*(-5.26)*
N	*1187*	*1196*	*1196*	*1187*	*1196*	*1196*	*1186*	*1195*	*1195*
adj. R-sq	*0.1328*	*0.1329*	*0.1287*	*0.2085*	*0.2099*	*0.2037*	*0.1968*	*0.1969*	*0.1966*

Table 5: Panel A: Interaction between IC and local institutional ownership and its impact on corporate cash holdings

	OLS			***Firm FE***		
	Cash_TA	*Cash_NA*	*Cash_LN*	*Cash_TA*	*Cash_NA*	*Cash_LN*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
IC_D	*-0.0245***	*-0.0569***	*-0.0915*	*0.0042*	*0.0472*	*-0.0065*
	(-2.28)	*(-2.49)*	*(-1.00)*	*(0.22)*	*(1.08)*	*(-0.05)*
Loc_Inst_Own	*-0.0117**	*-0.0246*	*-0.0908*	*-0.0166*	*-0.0680***	*0.0223*
	(-1.74)	*(-1.61)*	*(-1.43)*	*(-1.18)*	*(-2.02)*	*(0.17)*
*IC_D*Loc_Inst_Own*	*0.0856****	*0.1997****	*0.4293****	*0.0718****	*0.1763***	*0.2818**
	(5.48)	*(5.14)*	*(3.67)*	*(2.68)*	*(2.46)*	*(1.72)*
SIZE	*-0.0070***	*-0.0213****	*0.0358*	*0.0203*	*0.0757**	*0.1248*
	(-2.53)	*(-3.15)*	*(1.40)*	*(1.15)*	*(1.70)*	*(0.96)*
Q	*0.0084***	*0.0201**	*0.0630***	*0.0167****	*0.0389****	*0.0838****
	(2.09)	*(1.86)*	*(2.50)*	*(3.62)*	*(3.01)*	*(2.89)*
LEV	*-0.0924****	*-0.1463****	*-0.9283****	*-0.0356*	*-0.0949*	*0.2913*
	(-5.82)	*(-4.29)*	*(-5.69)*	*(-1.21)*	*(-1.43)*	*(0.94)*
NWC	*-0.0663****	*-0.1130****	*-0.8223****	*-0.0658****	*-0.1115****	*-0.8293****
	(-9.10)	*(-7.91)*	*(-11.70)*	*(-4.73)*	*(-3.94)*	*(-5.46)*
CFO	*0.0633*	*0.0517*	*1.3697****	*0.1362****	*0.2550***	*1.7893****
	(1.57)	*(0.50)*	*(3.69)*	*(3.30)*	*(2.21)*	*(3.47)*
CAPX	*-0.04*	*-0.1575**	*0.0178*	*-0.1113***	*-0.3474****	*-0.0859*
	(-1.05)	*(-1.71)*	*-0.06*	*(-2.59)*	*(-3.29)*	*(-0.24)*
DIV	*-0.1066*	*-0.0689*	*-0.63*	*0.0399*	*0.2908*	*-0.3364*
	(-1.26)	*(-0.34)*	*(-0.99)*	*(0.42)*	*(1.50)*	*(-0.47)*
Gov_Own	*0.0353****	*0.0724****	*0.1028*	*0.0357**	*0.0860**	*0.0713*
	(5.04)	*(4.48)*	*(1.58)*	*(1.83)*	*(1.81)*	*(0.61)*
CEO_Own	*0.0086*	*0.0193*	*0.0642*	*0.0004*	*0.0198*	*-0.0631*
	(1.24)	*(1.14)*	*(1.08)*	*(0.02)*	*(0.35)*	*(-0.57)*
IND_BSIZE	*-0.0069*	*-0.0052*	*-0.0115*	*0.021*	*0.0407*	*0.2077**
	(-0.63)	*(-0.20)*	*(-0.12)*	*(1.43)*	*(1.07)*	*(1.70)*
BSIZE	*0.0263**	*0.0332*	*0.5841****	*0.0837**	*0.1848***	*0.7935***
	(1.74)	*(0.89)*	*(4.31)*	*(1.94)*	*(1.98)*	*(2.51)*
AGE	*-0.0263****	*-0.0435****	*-0.2946****	*-0.0198*	*-0.0557*	*0.0221*
	(-6.77)	*(-5.65)*	*(-7.26)*	*(-0.67)*	*(-1.00)*	*(0.08)*
Year FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
IND FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Country FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Constant	*0.2828****	*0.5321****	*-2.2468****	*-0.0955*	*-0.4788*	*-4.6459****
	(6.71)	*(5.08)*	*(-6.09)*	*(-0.61)*	*(-1.32)*	*(-3.24)*
N	*1266*	*1266*	*1265*	*1266*	*1266*	*1265*
Adj.R-sq	*0.432*	*0.3379*	*0.5095*	*0.2363*	*0.0720*	*0.4013*

Variable definitions are described in the Appendix. Coefficient estimates with t-statistics reported in parentheses. The statistical significance of the estimates is denoted with asterisks: ***, ** and * correspond to 1%, 5% and 10% levels of significance, respectively.

Table 5: Panel B: Interaction between IC and foreign ownership and its impact on corporate cash holdings

	OLS			***Firm FE***		
	Cash_TA	*Cash_NA*	*Cash_LN*	*Cash_TA*	*Cash_NA*	*Cash_LN*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
IC_D	***0.0131***	***0.0243***	***0.1191****	***0.0442*****	***0.1302*****	***0.1775***
	(1.42)	***(1.10)***	***(1.73)***	***(3.73)***	***(4.45)***	***(1.58)***
For_Inst_Own	***-0.0016***	***0.0028***	***-0.0528***	***0.0052***	***0.0042***	***-0.0011***
	(-0.24)	***(0.18)***	***(-0.75)***	*(0.41)*	*(0.13)*	*(-0.01)*
IC_D*For_Inst_Own	***0.0796****	***0.2269****	***0.2675***	***0.0705*****	***0.2738*****	***0.077***
	(2.56)	***(2.48)***	***(1.58)***	***(2.96)***	***(4.64)***	***(0.34)***
SIZE	*-0.0076****	*-0.0220****	*0.03*	*0.0228***	*0.0790*****	*0.1438*
	(-2.72)	*(-3.28)*	*1.16*	*(2.14)*	*(3.00)*	*(1.42)*
Q	*0.0099***	*0.0237***	*0.0714*****	*0.0178*****	*0.0425*****	*0.0872*****
	(2.46)	*(2.18)*	*(2.76)*	*(5.67)*	*(5.46)*	*(2.92)*
LEV	*-0.0961*****	*-0.1573*****	*-0.9363*****	*-0.0419**	*-0.1124**	*0.2637*
	(-5.99)	*(-4.55)*	*(-5.71)*	*(-1.72)*	*(-1.86)*	*1.14*
NWC	*-0.0658*****	*-0.1117*****	*-0.8183*****	*-0.0662*****	*-0.1120*****	*-0.8330*****
	(-9.06)	*(-7.91)*	*(-11.68)*	*(-15.46)*	*(-10.57)*	*(-20.53)*
CFO	*0.0594*	*0.0444*	*1.3318*****	*0.1352*****	*0.2480*****	*1.7931*****
	1.49	*0.44*	*3.57*	*(4.36)*	*(3.23)*	*(6.10)*
CAPX	*-0.0408*	*-0.1562*	*-0.0091*	*-0.1108*****	*-0.3424*****	*-0.0985*
	(-1.04)	*(-1.64)*	*(-0.03)*	*(-3.13)*	*(-3.91)*	*(-0.29)*
DIV	*-0.084*	*-0.0162*	*-0.4952*	*0.0532*	*0.3201**	*-0.2426*
	(-0.98)	*(-0.08)*	*(-0.76)*	*0.79*	*1.92*	*(-0.38)*
Gov_Own	*0.0327*****	*0.0627*****	*0.1076*	*0.0294***	*0.0671***	*0.0707*
	4.43	*3.68*	*1.63*	*2.28*	*2.11*	*0.58*
CEO_Own	*0.0084*	*0.0163*	*0.0765*	*-0.0004*	*0.0162*	*-0.0536*
	1.26	*1.03*	*1.29*	*(-0.03)*	*0.59*	*(-0.51)*
IND_BSIZE	*-0.0096*	*-0.0111*	*-0.0275*	*0.0137*	*0.021*	*0.186*
	(-0.89)	*(-0.43)*	*(-0.28)*	*1.12*	*0.69*	*1.61*
BSIZE	*0.0306***	*0.0451*	*0.5968*****	*0.0824*****	*0.1820*****	*0.7849*****
	2.09	*1.28*	*4.37*	*2.98*	*2.66*	*2.99*
AGE	*-0.0268*****	*-0.0441*****	*-0.2956*****	*-0.0169*	*-0.0458*	*0.0291*
	(-6.89)	*(-5.74)*	*(-7.42)*	*(-0.92)*	*(-1.01)*	*0.17*
Year FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
IND FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Country FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Constant	*0.2624*****	*0.4738*****	*-2.3248*****	*-0.1215*	*-0.5483***	*-4.7335*****
	-6.35	*-4.76*	*(-6.31)*	*(-1.25)*	*(-2.29)*	*(-5.15)*
N	*1266*	*1266*	*1265*	*1266*	*1266*	*1265*
Adj.R-sq	*0.4253*	*0.3354*	*0.5066*	*0.2240*	*0.0772*	*0.3926*

Variable definitions are described in the Appendix. Coefficient estimates with t-statistics reported in parentheses. The statistical significance of the estimates is denoted with asterisks: ***, ** and * correspond to 1%, 5% and 10% levels of significance, respectively.

Table 6: The impact of IC on corporate cash holdings during financial crisis

	Cash_TA	*Cash_NA*	*Cash_LN*	*Cash_TA*	*Cash_NA*	*Cash_LN*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
IC_D	***0.0221******	***0.0478****	***0.1594****	***0.0493******	***0.1573******	***0.1781****
	(2.73)	***(2.55)***	***(2.17)***	***(4.34)***	***(5.56)***	***(1.67)***
GFC	*-0.0085*	*-0.0419*	*0.0384*	*0.0221***	*0.0606***	*0.1570*
	(-0.63)	*(-1.36)*	*(0.32)*	*(2.16)*	*(2.37)*	*(1.17)*
*IC_D*GFC*	*0.0479**	*0.1507***	*0.1125*	*0.0444***	*0.1201****	*0.0990*
	(1.88)	*(2.56)*	*(0.49)*	*(2.45)*	*(2.66)*	*(0.68)*
SIZE	*-0.0087****	*-0.0253****	*0.0277*	*0.0222***	*0.0772****	*0.1424*
	(-3.36)	*(-4.26)*	*(1.19)*	*(2.08)*	*(2.91)*	*(1.10)*
Q	*0.0093****	*0.0221****	*0.0680****	*0.0171****	*0.0397****	*0.0858****
	(3.24)	*(3.34)*	*(2.62)*	*(5.42)*	*(5.06)*	*(2.96)*
LEV	*-0.0931****	*-0.1475****	*-0.9334****	*-0.0408**	*-0.1066**	*0.2664*
	(-5.46)	*(-3.75)*	*(-6.04)*	*(-1.68)*	*(-1.76)*	*(0.86)*
NWC	*-0.0660****	*-0.1123****	*-0.8204****	*-0.0660****	*-0.1112****	*-0.8324****
	(-17.22)	*(-12.68)*	*(-23.64)*	*(-15.39)*	*(-10.42)*	*(-5.48)*
CFO	*0.0574*	*0.0384*	*1.3265****	*0.1335****	*0.2466****	*1.7871****
	(1.64)	*(0.47)*	*(4.17)*	*(4.29)*	*(3.19)*	*(3.46)*
CAPX	*-0.0366*	*-0.1482**	*0.0308*	*-0.1095****	*-0.3392****	*-0.0933*
	(-1.00)	*(-1.76)*	*(0.09)*	*(-3.09)*	*(-3.85)*	*(-0.26)*
DIV	*-0.1004*	*-0.0582*	*-0.5852*	*0.0569*	*0.3267***	*-0.2480*
	(-1.40)	*(-0.35)*	*(-0.90)*	*(0.85)*	*(1.96)*	*(-0.34)*
Gov_Own	*0.0361****	*0.0749****	*0.1039**	*0.0333****	*0.0765***	*0.0731*
	(5.64)	*(5.06)*	*(1.79)*	*(2.72)*	*(2.52)*	*(0.62)*
CEO_Own	*0.0111*	*0.0251*	*0.0772*	*0.0035*	*0.0273*	*-0.0506*
	(1.62)	*(1.59)*	*(1.25)*	*(0.32)*	*(1.02)*	*(-0.46)*
IND_BSIZE	*-0.0096*	*-0.0111*	*-0.0270*	*0.0165*	*0.0290*	*0.1907*
	(-0.91)	*(-0.45)*	*(-0.28)*	*(1.35)*	*(0.95)*	*(1.56)*
BSIZE	*0.0275**	*0.0365*	*0.5855****	*0.0873****	*0.1980****	*0.7922***
	(1.85)	*(1.06)*	*(4.35)*	*(3.15)*	*(2.87)*	*(2.51)*
AGE	*-0.0276****	*-0.0467****	*-0.2976****	*-0.0174*	*-0.0493*	*0.0294*
	(-6.05)	*(-4.43)*	*(-7.20)*	*(-0.95)*	*(-1.08)*	*(0.10)*
Constant	*0.2828****	*0.5344****	*-2.2724****	*-0.1292*	*-0.5708***	*-4.7448****
	-6.87	*-5.62*	*(-6.10)*	*(-1.33)*	*(-2.36)*	*(-3.31)*
Year FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
IND FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Country FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
N	*1266*	*1266*	*1265*	*1266*	*1266*	*1265*
Adj.R-sq	*0.4024*	*0.3044*	*0.492*	*0.2146*	*0.0646*	*0.3917*

Variable definitions are described in the Appendix. Coefficient estimates with t-statistics reported in parentheses. The statistical significance of the estimates is denoted with asterisks: ***, ** and * correspond to 1%, 5% and 10% levels of significance, respectively.

Table 7: ICs and cash holdings - GMM results

	Cash_TA	*Cash_NA*	*Cash_LN*
	(1)	*(2)*	*(3)*
Lagged Dependent(t-1)	***0.7235******	***0.5089******	***0.3657******
	(5.90)	***(9.20)***	***(3.64)***
IC_D	***0.0282****	***0.0343****	***0.2560******
	(2.09)	***(1.88)***	***(2.64)***
SIZE	*-0.0014*	*-0.0064*	*0.0219*
	(-0.64)	*(-1.23)*	*(0.94)*
Q	*0.0141****	*0.0252****	*0.0670****
	(3.92)	*(3.01)*	*(3.05)*
LEV	*0.0439**	*0.0048*	*-0.1460*
	(1.68)	*(0.15)*	*(-0.66)*
NWC	*-0.0366****	*-0.0546****	*-0.6889****
	(-4.29)	*(-3.75)*	*(-7.03)*
CFO	*0.2202****	*0.2679****	*1.6876****
	(4.23)	*(3.60)*	*(4.92)*
CAPX	*-0.2871****	*-0.3238****	*-1.0337***
	(-4.44)	*(-3.17)*	*(-2.45)*
DIV	*0.2397****	*0.3212***	*0.6138*
	(3.03)	*(2.39)*	*(1.03)*
Gov_Own	*0.0001*	*0.0211***	*-0.0215*
	(0.01)	*(2.01)*	*(-0.34)*
CEO_Own	*0.0018*	*-0.0038*	*0.0203*
	(0.28)	*(-0.33)*	*(0.35)*
IND_BSIZE	*0.0070*	*-0.0003*	*0.0193*
	(0.79)	*(-0.02)*	*(0.23)*
BSIZE	*0.0103*	*0.0239*	*0.2810***
	(0.93)	*(1.01)*	*(2.09)*
AGE	*0.0031*	*0.0004*	*-0.1220***
	(0.55)	*(0.05)*	*(-2.28)*
Constant	*0.0000*	*0.0000*	*-1.2715****
	(.)	*(.)*	*(-2.92)*
Year FE	*YES*	*YES*	*YES*
INDFE	*YES*	*YES*	*YES*
CountryFE	*YES*	*YES*	*YES*
	Post-Estimations		
M1-TEST	*0.000*	*0.014*	*0.000*
M2-TEST	*0.303*	*0.452*	*0.277*
	Over-Identification		
Sargan Test:	*12.37*	*21.36*	*23.03*
P-value	*0.336*	*0.498*	*0.236*
Hansen Test:	*13.25*	*21.87*	*17.68*
P-value:	*0.277*	*0.468*	*0.544*

Table 8 Panel A: ICs and cash holdings - 2SLS results (using OLS)

	$Cash\_TA_t$ (1)		$Cash\_NA_t$ (2)		$Cash\_LN_t$ (3)	
	1st Stage	*2nd Stage*	*1st Stage*	*2nd Stage*	*1st Stage*	*2nd Stage*
Intercept	*0.367*	*0.280****	*0.367*	*0.503****	*0.372*	*-2.178****
	(0.90)	*(6.88)*	*(0.90)*	*(5.30)*	*(0.89)*	*(-6.07)*
Cash_TA		***0.0567******				
		(4.08)				
Cash_NA				***0.134******		
				(3.41)		
Cash_LN						***0.394******
						(4.68)
All variables in Main Specification	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Year & Industry & Country Dummies	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Firm Robust	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
N						
Instrumental Variables	*Coff.*	*t-statistic*	*Coff.*	*t-statistic*	*Coff.*	*t-statistic*
IC_AC_Overlap_ln	*0.539****	*9.59*	*0.539****	*9.59*	*0.539****	*9.59*
IC_CC_Overlap_In	*0.423****	*7.48*	*0.423****	*7.48*	*0.423****	*7.48*
Post-estimations Test for Instrumental Variables:						
1-Predictive power partial R2						
Robust F-test		*355.15*		*355.15*		*354.94*
P-value		*0.000*		*0.000*		*0.000*
2- Underidentification test						
Kleibergen -paap rk LM statistic		*150.38*		*150.38*		*150.483*
P-value		*0.000*		*0.000*		*0.000*
3- Weak identification test						
Kleibergen-Paap rk Wald F statistic		*355.15*		*355.15*		*354.937*
10% maximal IV size		*19.93*		*19.93*		*19.93*
4- Overidentification test						
Hansen J statistic		*0.229*		*0.002*		*1.001*
Chi-sq(1) P-val		*0.6326*		*0.9607*		*0.317*
5- Endogeneity test						
Durbin-Wu-Hausman tests	*4.798*		*5.246*		*5.639*	
Chi-sq(1) P-val	*0.0285*		*0.022*		*0.0176*	

Table 8 Panel B: ICs and cash holdings - 2SLS results (using fixed effects)

	Cash_TA$_t$ (1)		*Cash_NA$_t$* (2)		*Cash_LN$_t$* (3)	
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
Intercept	-			-	-	
Cash_TA		**0.0862*** (4.05)**				
Cash_NA				**0.252*** (3.76)**		
Cash_LN						**0.311** (2.38)**
All variables in main specification	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Firm Robust	Yes	Yes	Yes	Yes	Yes	Yes
N						
Instrumental Variables	Coff.	t-statistic	Coff.	t-statistic	Coff.	t-statistic
IC_AC_Overlap_ln	0.609***	(12.13)	0.609***	(12.13)	0.609***	(12.12)
IC_CC_Overlap_In	0.284***	(5.08)	0.284***	(5.08)	0.284***	(5.08)
Post-estimations Test for Instrumental Variables:						
1-Predictive power partial R2						
Robust F-test		190.49		190.49		190.4
P-value		0.000		0.000		0.000
2- Underidentification test						
Kleibergen -paap rk LM statistic		43.992		43.992		43.998
P-value		0.000		0.000		0.000
3- Weak identification test						
Kleibergen-Paap rk Wald F statistic		190.492		190.492		190.397
10% maximal IV size		19.93		19.93		19.93
4- Overidentification test						
Hansen J statistic		1.967		5.291		1.702
Chi-sq(3) P-val.		0.1608		0.0214		0.1921
5- Endogeneity test						
Durbin-Wu-Hausman tests		5.307		2.71		1.885
Chi-sq(1) P-val		0.0212		0.0997		0.1697

Table 9: Additional analysis to control for the oil crisis (sample period 2005-2016).

VARIABLES	*Cash_TA$_t$* (1)	*Cash_NA$_t$* (2)	*Cash_LN$_t$* (3)
InvCom_D	0.0209***	0.0192*	0.1648***
	(2.90)	(1.81)	(2.92)
OilCrisis	0.0043	0.0227	0.0481
	(0.27)	(1.07)	(0.21)
Constant	0.2920***	0.4202***	-1.7105***
	(8.41)	(7.56)	(-4.92)
Controls	YES	YES	YES
Year FE	YES	YES	YES
IND FE	YES	YES	YES
Country FE	YES	YES	YES
N	1703	1703	1701
Adj.R-sq	0.335	0.271	0.847

Table 10: Interaction between IC and (local and foreign) institutional ownership and its impact on corporate cash holdings

Panel A: Using foreign institutional ownership variable as a continuous variable

	OLS			***Firm FE***		
	Cash_TA	*Cash_NA*	*Cash_LN*	*Cash_TA*	*Cash_NA*	*Cash_LN*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
IC_D	0.0167*	0.0284	0.1489**	0.0234	0.0733*	0.0621
	(1.76)	(1.22)	(2.25)	(1.48)	(1.85)	(0.43)
For_Inst_Own	-0.0544***	-0.0964***	-0.3636	-0.0236	-0.0912	0.2994
	(-3.22)	(-3.10)	(-1.50)	(-0.40)	(-0.63)	(0.43)
*IC_D*For_Inst_Own*	0.5340***	1.3614***	2.4890***	0.3703***	1.0123***	0.8963***
	(3.95)	(2.97)	(5.47)	(9.96)	(10.60)	(2.69)
Year FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
IND FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Country FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Constant	0.2354***	0.4037***	-2.0036***	-0.0647	-0.2680	-4.8471***
	(5.07)	(3.54)	(-5.50)	(-0.44)	(-0.85)	(-3.22)
N	1066	1066	1065	1066	1066	1065
Adj.R-sq	0.430	0.342	0.507	0.299	0.233	0.350

Panel B: Using local institutional ownership variable as a continuous variable

	OLS			***Firm FE***		
	Cash_TA	*Cash_NA*	*Cash_LN*	*Cash_TA*	*Cash_NA*	*Cash_LN*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
IC_D	-0.0069	0.0192	-0.2307	-0.0037	-0.0150	0.0269
	(-0.37)	(0.57)	(-1.20)	(-0.38)	(-0.69)	(0.33)
Loc_Inst_Own	-0.0873	-0.2109*	0.5107	-0.0006	-0.0091	0.0757
	(-1.44)	(-1.72)	(0.90)	(-0.04)	(-0.32)	(0.55)
*IC_D*Loc_Inst_Own*	0.1589**	0.3566**	1.0362**	0.1503***	0.3531***	0.8039***
	(2.37)	(2.11)	(2.33)	(3.83)	(3.53)	(3.51)
Year FE	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
IND FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Country FE	*YES*	*YES*	*YES*	*No*	*No*	*No*
Constant	-0.0482	-0.2125	-4.6094***	0.2703***	0.4511***	-1.6254***
	(-0.34)	(-0.67)	(-3.11)	(5.88)	(4.46)	(-4.10)
N	1026	1026	1026	1026	1026	1026
Adj.R-sq	0.309	0.232	0.372	0.415	0.317	0.504

Table 11: ICs and cash holdings – PSM results

Panel A: Covariate balance for PSM procedure (*IC_D* and control variables)

	Treated mean	Control mean	t	p>t
SIZE	5.926	5.9165	0.05	0.958
Q	1.9539	2.0283	-0.6	0.551
LEV	0.16066	0.15984	0.05	0.961
NWC	1.1557	1.1803	-0.49	0.627
CFO	0.08203	0.07769	0.45	0.651
CAPX	0.06352	0.06374	-0.03	0.974
DIV	-0.03808	-0.0364	-0.36	0.72
Gov_Own	0.61972	0.64789	-0.6	0.547
CEO_Own	0.15493	0.16901	-0.39	0.694
IND_BSIZE	0.65617	0.64774	0.27	0.788
BSIZE	2.075	2.0944	-0.94	0.346
AGE	2.9009	2.9296	-0.44	0.658

Panel B: PSM results

	OLS		
	Cash_TA	Cash_NA	Cash_LN
	Propensity Match Scoring Using Gaussian kernel function without replacement		
	(1)	(2)	(3)
IC_D	0.0188*	0.0420	0.1647**
	(1.74)	(1.54)	(2.10)
SIZE	0.0005	-0.0137	0.0864***
	(0.12)	(-1.18)	(2.72)
Q	0.0157**	0.0354***	0.0815**
	(2.16)	(2.87)	(2.37)
LEV	-0.1101***	-0.2393**	-0.3273
	(-3.01)	(-2.40)	(-1.25)
NWC	-0.1894***	-0.3748***	-1.7527***
	(-15.16)	(-13.41)	(-15.88)
CFO	-0.0320	-0.0622	1.5752***
	(-0.51)	(-0.39)	(3.09)
CAPX	-0.1358	-0.7920***	-0.5716
	(-1.52)	(-4.15)	(-0.99)
DIV	-0.1775	0.0520	-0.5865
	(-1.20)	(0.15)	(-0.62)
Gov_Own	-0.0216	0.0516*	0.0321
	(-0.76)	(1.67)	(0.29)
CEO_Own	0.2347***	0.1051***	-0.0744
	(2.62)	(2.64)	(-0.71)
IND_BSIZE	-0.0180	0.0153	-0.1052
	(-1.08)	(0.32)	(-0.76)
BSIZE	0.0344	-0.0338	0.6449**
	(0.92)	(-0.44)	(2.57)
AGE	-0.0267***	-0.0645***	-0.2125***
	(-3.21)	(-2.75)	(-3.52)
Year FE	YES	YES	YES
IND FE	YES	YES	YES
Country FE	YES	YES	YES
Constant	0.3967***	0.9910***	-2.0831***
	(4.39)	(4.97)	(-3.86)
N	372	426	426
Adj.R-sq	0.616	0.486	0.614

Variable definitions are described in the Appendix. Coefficient estimates with t-statistics reported in parentheses. The statistical significance of the estimates is denoted with asterisks: ***, ** and * correspond to 1%, 5% and 10% levels of significance, respectively.