

Corporate Liquidity: Evidence from Islamic and non-Islamic Countries

Naiwei Chen*

Tsai-Chen Yang**

Received: 09.11.2019

Accepted: 09.11.2020

DOI: 10.25272/ijisef.644501

Type: Research Article

Abstract

This study examines whether and how Islam has bearings on corporate liquidity (cash holdings). A review of 34,895 non-financial firms from 68 countries (12 Muslim majority countries and 56 other countries, which consist of 26 developing and 30 developed countries) from 1996 to 2011 reveals that cash holdings are lower in Muslim majority countries than in other countries, particularly developed countries. This phenomenon appears to be more pronounced when financial development is high or anti-director rights are weak in Muslim majority countries. The lower cash holdings in Muslim majority countries can be explained by the modifying effect of Islam and Sharia compliance (SC) on cash determination. Specifically, the negative effect of leverage on cash is stronger in Muslim majority countries than in other developing countries when financial development is high, financial structure is market-based, or national governance is strong in the former. Moreover, SC has a direct and negative effect on cash, which is more pronounced when financial development is low, financial structure is bank-based, or anti-director rights are weak in Muslim majority countries. Furthermore, SC negatively affects cash through growth opportunities and dividend payment. Specifically, SC weakens the positive effect of growth opportunities on cash when financial structure is market-based. SC also weakens the positive effect of dividend payment on cash, and such a modifying effect is stronger when anti-director rights are weak. Overall, the results suggest the uniqueness of the cash policy in Muslim majority countries compared with other countries.

Keywords: Corporate liquidity, Cash holding, Islam, Sharia compliance

Jel Codes: G00, G30

* Corresponding author, National Chiayi University, Chiayi City, Taiwan, nwctw@yahoo.com.tw, ORCID: 0000-0001-8844-7971

** Master Student, National Chung Cheng University, i_skom@hotmail.com, ORCID: 0000-0001-6096-6323

Introduction

Corporate liquidity (cash holdings) has been extensively analyzed in the existing literature. Prior research has explained corporate liquidity based on tradeoff, financing hierarchy, and agency theories (Opler et al. 1999). In recent years, the predominance of agency theory over other theories in explaining corporate liquidity has been observed. An increasing number of studies have probed how corporate governance (CG) influences corporate liquidity. Cultural factors also have been adjudged to play a role in determining corporate liquidity (Chang and Noorbakhsh, 2009; Chen et al. 2015). However, corporate liquidity in Muslim majority countries has remained minimally explored, thereby prompting the conduct of this study.

Given the uniqueness of Islam and its profound impact on Muslim majority countries, CG and culture in such countries should be different from those in other countries. The established relationship of cash to CG and culture makes it worthwhile to investigate how the cash policy of non-financial firms in Muslim majority countries compares with that in other countries. Notably, CG of non-financial firms in Muslim majority countries has also remained minimally explored and the existing literature merely provides theoretical arguments that lack empirical evidence to support any claims.¹ The analysis of corporate liquidity can further facilitate the understanding of CG in Muslim majority countries because cash has been proven to be a good channel to assess the quality of CG (Dittmar et al. 2003; Yun 2009; Chen and Yang, 2017). Therefore, the study results should provide insights into Islamic finance and help firms, particularly multinationals, better sustain their businesses in Muslim majority countries.

This study contributes to the existing literature by examining the cash holdings of non-financial firms in Muslim majority countries. Unlike prior research that evaluates CG in Muslim majority countries based solely on country-level governance ratings, this study analyzes CG of non-financial firms in such countries based on firm-level data through the channel of corporate liquidity (cash). The current study posits that cash is lower in Muslim majority countries than in other countries primarily because cash pileup is discouraged by Sharia (i.e., Islamic law) in Muslim majority countries. In addition, CG in Muslim majority countries is stakeholder-based and managers are expected to care for *falah* (i.e., the Arabic word for success, happiness, and well-being) of the entire society. Thus, profit maximization is not the sole corporate goal. Consequently, the propensity to hoard cash for upcoming growth opportunities should be weaker in Muslim majority countries than in other countries. Furthermore, given the stakeholder-based CG in Muslim majority countries, the interests of managers and shareholders are not as aligned, such that the room for improvement regarding mitigating the corresponding agency problem should be larger. Therefore, any means to reduce the corresponding agency cost, such as debt issuance and dividend payment, should be more effective in Muslim majority countries than in other countries. Thus, any negative effect of debt and dividend payment on cash should be stronger in Muslim majority countries than in other countries. Alternatively, CG should be good in Muslim majority countries

¹ Although CG in Islamic banks has been examined, CG in Islamic non-financial firms has remained unexplored.

because of the unique features of these states (e.g., strict law enforcement, high morality, and high religiosity) and established positive relationship between these features and CG (Doidge et al. 2007; Arjoon, 2005; Chen et al. 2016). Given the complementary relationship between CG mechanisms (Misangyi and Acharya, 2014), high effectiveness of debt and dividend payment in reducing agency cost, and strong negative effect of these two variables on cash are also predicted.

This study uses 68 countries (12 Muslim majority countries and 56 other countries, which are divided into 26 developing and 30 developed countries) from 1996 to 2011 as the study sample. The results strongly indicate a negative effect of Islam on cash holdings. Specifically, controlling for other variables, cash holdings are lower in Muslim majority countries than in other countries. This phenomenon is more pronounced when Muslim majority countries are compared with developed countries or when the former are financially developed or characterized by weak anti-director rights. The lower cash holdings in Muslim majority countries can be explained by Sharia compliance (SC), which affects cash holdings in such countries directly and negatively. This negative effect is also more pronounced when financial development is low, financial structure is bank-based, or anti-director rights are weak in Muslim majority countries. Given the established negative effect of CG on cash (Chen et al. 2012; Dittmar et al. 2013; Kalcheva and Lins, 2007), the results suggest that financial development and anti-director rights are substitutes for SC, whereas a bank-based financial structure is a complement for SC in Muslim majority countries. The results on the cash sensitivities further reveal that Islam and SC indirectly affect cash holdings in Muslim majority countries through the channels of leverage, growth opportunities, and dividend payment. Specifically, the negative effect of leverage on cash is stronger in Muslim majority countries than in other developing countries when financial development is high, financial structure is market-based, or national governance is strong in the former. Therefore, debt is more effective in mitigating the agency problems in Muslim majority countries than in other developing countries under such circumstances. Moreover, SC affects cash holdings indirectly and negatively through growth opportunities and dividend payment. Specifically, SC weakens the positive effect of growth opportunities on cash when financial structure is market-based, thereby confirming the notion that the ultimate goal of Islamic firms is to maximize the *falah* of an entire society. Therefore, management is less inclined to hoard cash to take advantage of the upcoming growth opportunities for profit maximization in Muslim majority countries under such circumstances. Furthermore, SC weakens the positive effect of dividend payment on cash when anti-director rights are weak, suggesting that SC and anti-director rights are substitutes in improving CG for Muslim majority countries. Overall, the results suggest the uniqueness of the cash policy in Muslim majority countries compared with other countries. In particular, shareholder wealth maximization is not the corporate goal in Muslim majority countries. CG in Muslim majority countries also proves to be good, if not better than that in other countries. Therefore, the results challenge the conventional wisdom that CG in Muslim

majority countries is worse than that in other countries based on the apparent observation of low transparency and poor governance at the country level in the former.

1. Literature Review

1.1. Corporate Liquidity

The existing literature has identified the firm- and country-specific determinants of corporate liquidity. Three theories, namely, tradeoff, financing hierarchy, and agency theories, have also been used to explain corporate liquidity. Tradeoff theory indicates that firms balance the marginal benefit and marginal cost of holding cash, thereby emphasizing the existence of an optimal level of cash. Financing hierarchy theory states that firms prefer cash in terms of financing, followed by debt and equity. Based on such a theory, an optimal level of cash is lacking because the cash level depends on variations in internal funds. Agency theory suggests that cash is a free cash flow and holding cash incurs an agency cost, the presence of which implicitly predicts the presence of the optimal cash level (Opler et al. 1999; Dittmar et al. 2003).

Recent studies shift the focus to CG and investigate how it has bearings on corporate liquidity. In addition, corporate liquidity has been shown to be influenced by cultural factors, such as risk avoidance, masculinity, preference for long-term orientation, and individualism (Chang and Noorbakhsh, 2009; Chen et al. 2015). Furthermore, religion should play a role in determining corporate liquidity because of the established relationship between religion and CG and the aforementioned relationship between CG and corporate liquidity (Kim and Daniel, 2016; Chen et al. 2016; McGuire et al. 2012).

1.2. Types of CG and Corporate Objectives

CG theories can be divided into shareholder- and stakeholder-based theories. The corporate objective based on shareholder-based theory, which applies to Anglo-Saxon countries, is shareholder wealth maximization. Agency problems resulting from the conflict of interests between managers and shareholders are the focus of this theory. By contrast, the corporate objective based on stakeholder-based theory, which is applicable to continental Europe and Japan, is considerably broad because it deals with the maximization of stakeholder wealth. The situation is apparently complicated under such circumstances because stakeholders involve several groups, such as managers, shareholders, creditors, employees, suppliers, consumers, and governments. Accordingly, shareholder wealth maximization is unlikely to be achieved under such circumstances because managers are supposed to care for all stakeholders.

The 2008 global financial crisis induced scholars to reconsider whether to continue promoting shareholder wealth maximization as the corporate objective (The Economist 2010). When shareholders' wealth is the only concern, managers are likely to adopt strategies that are highly risky to seek high short-term return. Consequently, firms under such circumstances are subject to financial distress or bankruptcy in economic meltdowns. Therefore, the focus should change from shareholders to other stakeholders. Although a few scholars promote the maximization

of a particular stakeholder group's wealth as the objective of firms, CG that is tailored toward all types of stakeholders is considered better than that serving particular group(s).² Under the stakeholder-based CG, the corporate objective is multifaceted rather than mere maximization of shareholder wealth. Firms should be concerned with the satisfaction of consumers and good relationship with employees and suppliers apart from the maximization of shareholder wealth.

The convergence of the two theories has been observed in recent years. Although determining CG that is purely stakeholder- or shareholder-based is difficult, the former seems to become trendy, particularly after the global financial crisis. This situation is evident in the awareness on and emergence of corporate social responsibility, which involves engagement in activities that benefit society rather than focusing on profit maximization or shareholder wealth maximization (Aguinis and Glavas, 2012).

1.3. CG in Muslim Majority Countries

Research on CG in Muslim majority countries remains scarce and inconclusive. A few studies indicate poor CG in Muslim majority countries. For example, a survey on CG in the Middle East and North Africa (MENA), where Muslim majority countries are concentrated, reveals that the independence of directors and auditors in this region is questionable. Board liabilities are also not clearly defined, thereby rendering it difficult for shareholders to file lawsuits against board members (Amico, 2005). However, any arguments on poor CG in Muslim majority countries are made from the Western perspective. Quantitative analysis on CG in Muslim majority countries remains lacking as well.^{3,4}

Islamic teachings and Sharia reign supreme in Muslim majority countries. For a system that is considerably unique and distinct from the rest of the world, the quality of CG in Muslim majority countries should be reconsidered and reevaluated using different approaches.⁵ Given the established positive relationship between national governance (NG) and CG (Stulz 2005), institutional environment outside the firms should be understood to probe the quality of CG. This idea is particularly true for Muslim majority countries where transparency is lacking and the true image of CG remains unveiled. Recent studies have also shown that religion has bearings on CG (Kim and Daniel, 2016; Chen et al. 2016; McGuire et al. 2012). Therefore, exploring CG necessitates the consideration of religion or religiosity in a given country,

² According to Arthur (1987), "a good corporate culture is also expected to satisfy the needs of stakeholders". Ljubojević and Ljubojević (2011) also argued that "Serving all stakeholders is the best way to create long-term results and developing, prosperity company."

³ According to Amico (2014), "the effectiveness of existing corporate governance frameworks has not been subject to analysis, and only a few regulators in the region such as Saudi Arabian and Omani CMAs as well as financial center regulators such as the DFSA, have taken a dynamic approach, amending existing rules to suit emerging corporate realities and global good governance practices."

⁴ Safieddine (2009) argued that CG of Islamic financial institutions is likely worse than that of conventional counterpart because it has a complicated structure (e.g., presence of investment account holders (IAHs)) and compliance with Sharia introduces additional agency costs, among other reasons.

⁵ Safieddine (2009) also suggested CG of Islamic financial institutions to be examined using a different approach due to its unique features.

particularly for countries characterized by high religiosity and unique religious doctrines, such as Muslim majority countries.⁶

Despite criticisms on CG in Muslim majority countries, several unique features associated with Islam and Sharia should contribute to good CG in these countries, if not better than that in other countries. First, CG in Muslim majority countries is stakeholder-based and conceptually broad because it considers stakeholders other than shareholders (Sulphrey, 2015).⁷ In particular, managers guided by Islamic economic principles operate their firms for the benefit of the entire society rather than mere shareholders. In theory, if firms are completely Sharia-compliant, then they should care for all stakeholders fairly, such that agency problems between any two parties are mitigated. This situation is unlike that in other countries where the maximization of shareholder wealth is the sole corporate objective. Even if the agency problems arising from the conflict of interests between managers and shareholders are lessened, such problems can still emerge or worsen between shareholders and debt holders and among any other groups of stakeholders. CG should be good in Muslim majority countries because the shareholders and other stakeholders are equally valued in these countries (García-Castro et al. 2013).

Second, devout Muslim managers are concerned with the utility of stakeholders in this life and in the afterlife. In particular, these managers have a strong conviction that they and all stakeholders should do good deeds in this life for a rewarding afterlife. Such a belief and the accompanying foresight (i.e., dual worldviews that value this world and the Hereafter equally) should facilitate the reduction of agency costs and improvement of CG. The reason is that with the eternal perspective, managers should look and think beyond before making any business decisions, such that they strive to maximize the benefit of the entire society in an infinite perspective. By contrast, in other countries where the worldview is secular (care for this life only) or religious (care for the afterlife only), managers are likely to be myopic or irresponsible, such that they merely pursue short-term benefits at the cost of the stakeholders.⁸ In fact, *falah*

⁶ Kim and Daniel (2016) provided evidence indicating a positive relationship between a country's proportion of Protestants and the quality of CG. However, as acknowledged by the authors, their empirical work was conducted based on the country-level data and the CG variable (i.e., GMI ratings) is measured using the same standard to the entire world. These limitations might render their results not applicable to all firms, particularly for Muslim majority countries where Sharia likely overwhelms all other things.

⁷ By the Islamic economic principles, Islamic firms aim to maximize not only the profit for shareholders but also the welfare for other kinds of stakeholders such as consumers and employees (Azid et al. 2007).

⁸ The western worldview is secularism whereas the Christian worldview is religious (Asri and Mohamed 2004).

and awareness of accountability in the Hereafter are considered two factors that contribute to good CG in the Muslim point of view (Htay, 2012).^{9,10}

Third, Sharia is a highly religion-based law and well-known for its strict rules and regulations. The penal code of Sharia is considered the strictest in the world. That is, people who violate the law in Muslim majority countries often receive more severe punishments than in other countries (Ghassemi, 2009). Therefore, people in Muslim majority countries are less likely to challenge and violate the law and corporate managers are no exceptions. Apart from the strict laws that limit criminal behavior, firms are prohibited from engaging in such businesses related to gambling, alcohol, pork, arms, and conventional banking that involves interest-bearing or speculative investment. Moreover, firms are discouraged from holding high levels of cash and debt via taxation because Sharia expects firms to engage in businesses that produce real output rather than keeping idle cash or its equivalents. Sharia also expects firms to hold no interest-bearing debt (Farooq and Alahkam, 2016). Therefore, CG should be good in a setting where corporate operations are strictly regulated by law. Such good CG should further be reinforced by an external legal environment that is also strict given the established positive relationship between country- and firm-level governance (Doidge et al. 2007; Dittmar et al. 2003).

Fourth, the high moral code to which Sharia belongs is deeply rooted in Muslim majority countries and strongly affects the daily lives of Muslims. This situation is evident in the low crime rates in Muslim majority countries compared with other countries (Fish, 2011). In fact, the content of the religion (i.e., Islam) that Sharia is based upon, rather than Sharia itself, has been shown to contribute to the low crime rates in Muslim majority countries (Fish, 2011; Serajzadeh, 2001). Any prohibitive effect of the Islamic penal law or Sharia on crime can be traced back to the content of Islam (Serajzadeh, 2001). After all, a law is legislated based on the social norms in a country and is a synopsis of the ethical code in a society. That is, the law is the moral bottom line. People are prone to violate the moral code without breaking the law when morality is not valued in society. However, people in Muslim majority countries are generally self-disciplined and unlikely to challenge the law not only because of strict law enforcement, but also because of the underlying high moral standard that is deeply rooted in their culture. They are prone to moral guilt because of any wrongdoings, such that they are less likely to engage in any criminal behavior that leads to legal punishment compared with people in other countries. Corporate managers in Muslim majority countries are no exceptions.

⁹ CG in Muslim majority countries stresses accountability for not only this life but also afterlife. Such a broader horizon should ensure good quality of CG (Abu-Tapanjeh 2009). This is because managers in Muslim majority countries should be more careful in making any business decisions for the benefit of entire society in this life and afterlife, compared to those who are myopic and eager to pursue short-term returns in the rest of the world.

¹⁰ The principles of social fairness, contract and property right are all well defined in Muslim majority countries (Iqbal and Mirakhor 2004). They should therefore facilitate good practice of CG, unlike other stakeholder-based CG that is subject to scrutiny because the rights and obligations of stakeholders are not clearly defined in other countries.

These managers are also strongly influenced by their belief, which highly emphasizes morality. Accordingly, agency problems resulting from any conflict between stakeholders and managers (fiduciaries) should be less severe in Muslim majority countries than in other countries. CG should be good where morality is highly valued and strongly backed by law, such as in Muslim majority countries. This situation is evident in the relatively few occurrences of corporate scandals in Muslim majority countries compared with other countries.¹¹ In sum, in a setting where morality is highly valued, any corporate misconduct should be highly intolerable and unlikely to happen. Any business risk should also be effectively under control, such that the agency cost is low under such circumstances. More importantly, ethical compliance has proven to be more capable of promoting the effectiveness of CG than legal compliance.¹²

Fifth, compared with other countries, Muslim majority countries are characterized by high religiosity (nearly 100% in a few countries), thereby contributing to good CG because of the established positive relationship between religiosity and CG (Chen et al. 2016; McGuire et al. 2012).

1.4. CG and Corporate Liquidity

Ample evidence has indicated that corporate liquidity (cash) is a good channel through which the quality of CG can be assessed (Dittmar et al. 2003; Yun 2009; Chen 2011; Kalcheva and Lins, 2007). In particular, cash and its sensitivity to the CG variables can be used to infer the severity of agency problems or CG quality because CG has been shown to directly and indirectly affect cash. For example, cash level is determined to be lower when CG is better because the agency and external financing costs are lower. Thus, the precautionary motive for holding cash is reduced under such circumstances. Any means to reduce agency costs, such as debt issuance and dividend payment, are also determined to be more effective when CG is better, thereby rendering the expected negative effects of debt and dividend payment on cash more pronounced under such circumstances (Dittmar et al. 2003; Chen and Yang, 2017).¹³

1.5. Hypotheses

Willsdon (2008) indicated that the trade participants in Muslim majority countries are not expected to profit simply by lending. They are supposed to interact by sharing risk in the

¹¹ None of the world's biggest business scandals occurred in Muslim majority countries. Refer to the following website for details. <http://list25.com/25-biggest-corporate-scandals-ever/5/>

¹² Muslim majority countries emphasize ethics and morality that Sharia is based upon. According to Azid et al. (2007), "ethical principles (trust, trustworthiness and cooperativeness) are the basic ethos of the Islamic culture and a significant attribute of the Islamic firm." For example, Muslims consider excessive profit sinful such that they feel obligated to make "normal" profit rather than maximize their profit as other conventional firms. Al-Zuhayli (2003) also pointed out that "The Maliki scholars defined excessive disadvantage as a profit of one third or more, since that corresponds to the rules of limited will. Therefore, a profit rate of one third or less is considered acceptable."

¹³ Debt is an effective tool of market discipline in the sense that managers are constrained by the debt contract such that managerial expropriation of outside shareholders is less likely when there is debt (Jensen and Meckling 1976). Agency costs also have been shown to decrease with debt (Opler et al. 1999; Gamba and Triantis 2014). Dividend payout likewise has been found a substitute for CG and able to reduce cash held for managerial discretion in prior studies (Benjamin and Zain 2015; Jiraporn et al. 2011).

investment that needs their financing. Less lending and more real investments translate into lower cash holdings in Muslim majority countries. In addition, cash holdings are taxed regardless of whether they are used for investments (Mills and Presley, 1999). Therefore, cash holdings should be lower in Muslim majority countries because taxation discourages cash pileup. Furthermore, prior studies have established a negative relationship between CG and cash because when CG is good, the agency and external financing costs are low. Therefore, the precautionary motive for holding cash weakens (Dittmar et al. 2003; Chen 2011; Kalcheva and Lins, 2007). Given the aforementioned good CG in Muslim majority countries, the cash level should be low in such countries (Chen et al. 2011), particularly for Sharia-compliant firms. Thus, the first hypothesis is formulated as follows.

Hypothesis 1. Cash is lower in Muslim majority countries than in other countries; such a phenomenon is more pronounced for Sharia-compliant firms in Muslim majority countries.

Islamic firms are expected to make “normal” profit rather than the highest possible one based on economic theory (Yusof and Amin, 2007). To verify such a claim, this study examines whether firms are less inclined to hoard cash to take advantage of any upcoming growth/investment opportunities in Muslim majority countries than in other countries. The reason is that holding cash is admittedly the best method to grasp any investment projects. Firms that are profit-driven in other countries should be sensitive to any upcoming growth opportunities, such that they tend to hoard cash to increase the likelihood of taking up any growth opportunities. By contrast, firms in Muslim majority countries are not as profit-oriented. Thus, they should be less inclined to hoard cash for upcoming growth opportunities than those in other countries. Alternatively, a lower cash sensitivity to growth opportunities in Muslim majority countries is also predicted because CG in these countries is stakeholder-based. Managers in Muslim majority countries are expected to maximize the wealth of all types of stakeholders rather than shareholders alone compared with other countries. Given the managers’ aim to serve the interests of all stakeholders in Muslim majority countries, managerial and shareholders’ interests should be less aligned. Thus, managers are less inclined to hoard cash for upcoming growth opportunities in Muslim majority countries than in other countries where shareholder-based CG dominates.¹⁴ Nevertheless, if CG is better in Muslim majority countries than in other countries, interests between management and stakeholders, including shareholders, should be more aligned such that the propensity to hoard cash for upcoming growth opportunities should be greater. Given the opposing effects of Islam on the cash sensitivity to growth opportunities, the net effect is uncertain. However, if the negative effect outweighs the positive effect, the cash sensitivity to growth opportunities should be lower in Muslim majority countries than in other countries. This phenomenon

¹⁴ Dittmar et al. (2003) found that the sensitivity of cash to growth/investment opportunities is higher when shareholder rights are stronger, suggesting that the interests of managers and shareholders are more aligned when shareholders are better protected such that managers are inclined to hoard cash to take advantage of greater investment opportunities under such circumstances.

should also be more pronounced for Sharia-compliant firms than for other firms in Muslim majority countries. Thus, the second hypothesis is formulated as follows.

Hypothesis 2. The positive effect of growth opportunities on cash is weaker in Muslim majority countries than in other countries; such a phenomenon is more pronounced for Sharia-compliant firms than for other firms in Muslim majority countries.

When firms issue debt or pay out dividends, agency problems can be mitigated. Thus, the agency and external financing costs decrease, thereby resulting in the precautionary motive for holding cash to weaken (Gamba and Triantis, 2014; La Porta et al. 2000b). Therefore, debt and dividend payment should negatively affect cash. Given that CG in Muslim majority countries is stakeholder-based, the interests of managers and shareholders should be less aligned to provide extensive opportunities for improvement in terms of mitigating the agency problem between managers and shareholders. Therefore, debt and dividend payment that are intended to mitigate agency problems should be more effective in reducing agency costs in Muslim majority countries than in other countries where shareholder-based CG prevails and interests of managers and shareholders are more aligned. Alternatively, prior studies have determined a positive effect of NG on the effectiveness of CG (Dittmar et al. 2003; Doidge et al. 2007; Chen and Yang, 2017). The CG mechanisms also have a complementary relationship to one another (Misangyi and Acharya, 2014).¹⁵ Given the strict legal and institutional environment outside the firms and the aforementioned good CG in Muslim majority countries, any means intended to reduce agency costs (e.g., debt and dividend payment) should be more effective in Muslim majority countries than in other countries. The two arguments translate into a stronger negative effect of debt and dividend payment on cash for Muslim majority countries than for other countries. Such a phenomenon should also be more pronounced for Sharia-compliant firms than for other firms in Muslim majority countries. The third hypothesis is formulated as follows.

Hypothesis 3. Any negative effect of debt and dividend payment on cash is stronger for Muslim majority countries than for other countries; such a phenomenon is more pronounced for Sharia-compliant firms than for other firms in Muslim majority countries.

The abovementioned hypotheses may be subject to the effects of country characteristics, which have been proven to have an overriding impact on CG (Doidge et al. 2007). Specifically, the improvement of CG needs the backing of quality institutional environment to ensure its effectiveness. For example, economic development should contribute to good CG because economic resources are more sufficient to support CG improvement when economic development is high than when it is low. That is, CG reform should be effective and feasible in the presence of a well-established infrastructure, which is usually accompanied by a high

¹⁵ Since no particular CG mechanism alone is sufficient to ensure good CG for a firm, the relationship between different CG variables should be complementary rather than substitutable (Hill 1999).

level of economic development (McGee, 2009).¹⁶ Similarly, financial development should matter because disclosure and transparency, which are the key factors contributing to good CG, come with financial development. Financial structure is related to financial development. Countries or economies can be classified into bank- and market-based financial systems (Demirgüç-Kunt and Levine, 1999). Most developing countries adopt a bank-based system, which is considered optimal for such countries (Arestis et al. 2001; Rajan and Zingales, 1998, 2001; Tadesse 2002 Chakraborty and Ray 2006).¹⁷ Countries seem to evolve naturally into a market-based financial system when their economic development exceeds a certain level (Demirgüç-Kunt and Levine, 1999).¹⁸ However, which system is better in terms of CG improvement has been a debate, and empirical evidence has remained inconclusive in this regard (Levine, 2002). Shareholder protection should promote CG because CG improvement is highly effective when the outside legal environment grants shareholders strong rights (La Porta et al. 2000a). National governance should positively affect CG because strong national governance facilitates CG improvement as supported by ample evidence (Stulz, 2005; Coglianesi 2007; Doidge et al. 2007; Judge et al. 2008; Chen 2011; Filatotchev et al. 2013; Chen and Yang, 2017).

The discussion thus far indicates that the country-level governance-related variables positively affect CG except for financial structure. Thus, these variables are considered the complements to CG mechanisms. However, governance mechanisms need not be complements; they can sometimes be substitutes (Aslan and Kumar, 2014; Misangyi and Acharya, 2014). That is, the abovementioned complementary effect of country-level governance variables on CG can turn substitutionary under certain circumstances. Thus, the hypothesized effects of Islam and SC on cash and its sensitivities to growth opportunities, leverage, and dividend payment can be reinforced or weakened by these country-level governance-related variables. As a result, the modifying effects of these country-level variables are ambiguous, depending on the relative magnitudes of the opposing effects. However, if the complementary effect overwhelms (underwhelms) the substitution effect, the hypothesized effects of Islam and SC in H1–H3 should strengthen (weaken).

The modifying effects of the country-level variables on CG and cash are unclear and deserve deep thoughts. In particular, economic development should have an overriding impact when considering the modifying effects of other country-level variables on cash and its determination. For example, financial development and a market-based financial structure should drive better CG in developing countries because their accompanying high

¹⁶ According to McGee (2009), “Corporate governance issues are especially important in developing economies, since these countries do not have a strong, long-established financial institution infrastructure to deal with corporate governance issues.”

¹⁷ Arestis et al. (2001) found that “bank-based financial systems may be more able to promote long-term growth than capital-market-based ones.”

¹⁸ According to Demirgüç-Kunt and Levine (1999), “Looking at financially underdeveloped economies, we see that they are disproportionately bank-based as expected, since financial structures become more market-based as countries develop.”

transparency and disclosure should help ensure and facilitate CG improvement (Dutta and Mukherjee, 2018; Fung, 2014).¹⁹ As a result, any negative effect of Islam on cash should be stronger in the presence of high financial development or a market-based financial structure in developing countries.²⁰ However, a bank-based financial structure should be preferable and conducive to good CG for developing countries compared with developed countries because this financial structure is optimal for developing countries (Chakraborty and Ray, 2006).²¹ As a result, the negative effect of Islam on cash should be stronger when Muslim majority countries are bank-based rather than market-based. Regarding the modifying effect of shareholder protection, at least two possibilities can be considered. First, shareholder protection at the national level should positively affect that at the firm level given the established positive relationship between national governance and CG (Stulz 2005). Although anti-director rights, a proxy of shareholder protection, negatively affect cash (Dittmar et al. 2003; Kalcheva and Lins, 2007), they also likely positively affect cash. The underlying reason is that, when shareholder protection is strong, managers are less inclined to spend cash quickly on capital expenditure and acquisitions. Shareholders can also allow managers to hold more cash to take advantage of investment opportunities because they are better protected, agency problems are less severe, and the agency cost of cash is lower (Harford et al. 2008). Thus, the effect of shareholder protection on cash is ambiguous, depending on the relative magnitudes of the opposing effects. Second, shareholder protection at the national level can be a substitute for CG. It follows that, when shareholder protection is strong, the original hypothesized negative effect of Islam on cash may become weaker instead of stronger.

The same logic applies to the effect of SC on cash and its determination. That is, whether and how the abovementioned country-level governance variables modify the effect of SC on cash and its determination is also an empirical question that calls for further investigation. In particular, financial structure's modifying effect on CG and transitively cash and its determination may be difficult to predict. Specifically, the results of prior research are mixed in terms of financial structure's effect on economic growth. Thus, the exact modifying effect of

¹⁹ Dutta and Mukherjee (2018) found that financial development positively affects information and overall transparency. A well-functioning market, a feature of the market-based financial structure, is said to contribute to good CG (Levine 2002). Transparency also tends to be higher in a market-based financial system (Kwok and Tadesse 2006). According to Fung (2014), transparency and disclosure (T&D) are fundamentals of CG, meaning that T&D contributes to good CG.

²⁰ Love (2003) found a negative relationship between financial development and cash holdings of firms.

²¹ According to Chakraborty and Ray (2006), "although there may not be distinct growth advantages to having a particular financial regime, bank-based systems have an edge along other dimensions. Intermediated finance confers certain benefits for economic development. Two different financial structures may lead to similar growth rates, but a bank-based system has a level effect on per capita income and leads to a faster structural transformation. Moreover, developing countries contemplating financial sector reforms to reduce agency problems in the loanable funds market will obtain higher economic payoffs under bank-based systems due to the structural transformation that results."

financial structure on CG is uncertain even though economic growth should positively affect CG.²²

2. Methodology

2.1. Data

The sample consists of 34,895 non-financial firms from 68 countries for the period 1996–2011. Non-financial firms that belong to the public administration division are excluded because these are government-related and their cash management is different from other private firms (Opler et al. 1999; Dittmar et al. 2003). Firm-specific annual financial data are gathered from the *Worldscope* database. Country-level data are collected from a variety of sources. Specifically, the classification of countries into developed and developing countries is based on IMF (2012). Data on financial development and financial structure are from Demirgüç-Kunt and Levine, (1999). The revised anti-director rights index is from Djankov et al. (2008). World Governance Indicators are from World Bank's Databank. The raw data obtained are manipulated to obtain the variables used in this study.

Table 1 presents the cross-country descriptive statistics of the variables used in this study for Muslim majority countries and other countries. Countries that are member states of Organization of Islamic Cooperation (OIC) are classified as Muslim majority countries whereas other countries are classified as non-Muslim majority countries to serve as a control group.²³, ²⁴ Non-Muslim majority countries are further classified into developing and developed countries based on IMF (2012). For consistency, the statistics for the observations effectively used in regression analysis are reported. The sample then consists of 278,134 firm-year observations.²⁵ The selection and derivation of financial variables used in this study essentially follows the work of seminal liquidity studies (Dittmar et al. 2003; Kalcheva and Lins 2007; Opler et al., 1999).

Cash holding (cash) is defined as cash plus its equivalents plus short-term investments (CH) divided by total assets net of cash (i.e., net assets (NA)). Firm size (Size) is the book value of total assets in millions of USDs. Size is included to take into account the economy of scale, thereby a negative relationship between Size and cash is expected. Profitability is measured by cash flow (CF) divided by NA, where CF is earnings before interest and taxes, depreciation and amortization, less interest, taxes, and common dividends. Given that managers are incentivized to hold cash under their discretion, a positive relationship between CF/NA and cash is expected. Additional liquid assets are measured by net working capital (NWC) divided

²² Levine (2002) indicated irrelevance of financial structure in economic growth whereas Arestis et al. (2001) indicated that it is relevant for economic growth.

²³ For detailed member states of OIC, please visit <http://www.oic-oci.org/home/?lan=en>.

²⁴ There are 12 OIC countries in this study, where Muslim population range from 63.7% (Malaysia) to more than 99% (Morocco).

²⁵ British Virgin Islands and Faroe Islands are not included in Table 1 because they are not classified based on economic development by IMF (2012). The number of firm-year observations for the benchmark model in Column 1 of Table 3 is 278167, which is higher than that reported in Table 1 because these two countries are included in estimation.

by NA, where NWC is total current assets less cash less total current liabilities. Since NWC is a substitute of cash, a negative relationship between cash and NWC/NA is expected. Growth or investment opportunities are measured by capital expenditure (CAPX) divided by NA, where CAPX is additions to fixed assets. Since cash is the readiest form of fund that can be used to grasp growth opportunities, assuming that the interests of management and outside shareholders are aligned, firms are inclined to hoard cash for upcoming growth opportunities such that a positive relationship between CAPX/NA and cash is expected. A positive effect of CAPX on cash is also predicted in that growth opportunities as measured by CAPX signify information asymmetry. Higher information asymmetry incurs higher agency costs such that firms hoard cash in response to higher external financing costs under such circumstances. Sales growth (SG) is defined as the geometric mean growth rate of sales over the three-year period. SG has been used to substitute CAPX/NA (i.e., a proxy for growth opportunities) in La Porta et al. (2002) and Kalcheva and Lins, (2007).²⁶

²⁶ SG is used to substitute CAPX/NA in estimating the model and it also exhibits a positive effect on cash, consistent with the finding of Kalcheva and Lins (2007). However, the results are not reported for brevity. Another reason for not reporting the results based on SG is that the sample size decreases when including this variable because it takes three years' observations to compute the growth rate.

Table 1. Cross-Country Descriptive Statistics of Variables Used in This Study by Country Groups

Country	CH/NA	Size	CF/NA	NWC/NA	CAPX/NA	SG	LEV	DIV	RD/NA	SC	FD	FS	ARI	NG	N
Muslim majority countries															
Bahrain	0.209	898.774	0.103	0.025	0.055	0.117	0.119	0.793	0.000	0.828	.	.	.	0.135	29
Egypt	0.203	609.181	0.082	-0.007	0.068	0.164	0.218	0.762	0.000	0.605	0	1	3.0	-0.520	575
Indonesia	0.153	370.395	0.044	-0.100	0.070	0.117	0.401	0.421	0.000	0.438	0	1	4.0	-0.669	3172
Jordan	0.108	68.840	0.017	0.020	0.042	0.058	0.177	0.424	0.000	0.856	1	1	1.0	0.001	132
Kuwait	0.184	769.928	0.068	-0.018	0.062	0.274	0.301	0.541	0.000	0.541	.	.	.	0.236	61
Malaysia	0.166	345.891	0.027	-0.015	0.056	0.097	0.277	0.582	0.001	0.607	1	0	5.0	0.360	9392
Morocco	0.155	636.240	0.078	0.135	0.070	0.101	0.149	0.857	0.000	0.750	.	.	2.0	-0.306	224
Pakistan	0.125	194.854	0.069	-0.049	0.073	0.091	0.347	0.563	0.000	0.433	0	1	4.0	-0.981	1758
Qatar	0.175	2680.543	0.100	-0.016	0.100	0.424	0.227	0.717	0.000	0.687	.	.	.	0.551	99
Saudi Arabia	0.124	2434.549	0.108	0.063	0.110	0.165	0.234	0.724	0.000	0.653	.	.	.	-0.349	366
Turkey	0.126	677.334	0.068	0.044	0.072	0.119	0.252	0.395	0.004	0.670	0	0	3.0	-0.122	2224
United Arab Emirates	0.189	1832.251	0.089	0.047	0.083	0.222	0.180	0.705	0.000	0.697	.	.	.	0.482	234
Total	0.155	461.652	0.044	-0.021	0.064	0.108	0.296	0.543	0.001	0.575	0.552	0.327	4.329	-0.057	18266
Non-Muslim majority countries															
<i>Developing countries</i>															
Argentina	0.091	978.542	0.057	-0.006	0.059	0.059	0.237	0.399	0.001	0.700	0	1	2.0	-0.207	892
Bermuda	0.265	1239.983	-0.019	-0.081	0.122	0.326	0.348	0.393	0.015	0.367	.	.	.	1.095	349
Brazil	0.172	2410.096	0.046	-0.069	0.078	0.140	0.311	0.695	0.002	0.525	0	0	5.0	0.005	3073
Bulgaria	0.099	63.903	0.047	0.056	0.039	0.059	0.184	0.227	0.000	0.758	.	.	3.0	0.213	913
Cayman Islands	0.260	1873.096	0.045	0.047	0.095	0.243	0.229	0.261	0.041	0.620	.	.	.	1.125	92
Chile	0.146	1169.363	0.033	0.033	0.063	0.107	0.222	0.839	0.000	0.683	0	0	4.0	1.146	1825
China	0.323	885.626	0.089	-0.072	0.091	0.238	0.241	0.514	0.006	0.576	.	.	1.0	-0.514	8667
Colombia	0.079	1308.679	0.050	0.004	0.048	0.137	0.141	0.745	0.000	0.906	0	1	3.0	-0.541	329
Cyprus	0.107	246.451	0.002	-0.017	0.044	0.072	0.292	0.388	0.000	0.551	1	1	.	1.074	379
Ghana	0.091	93.421	0.092	-0.018	0.121	0.052	0.226	0.707	0.000	0.653	.	.	5.0	0.052	75

Hong Kong	0.371	812.287	-0.024	-0.068	0.064	0.125	0.223	0.501	0.008	0.615	1	0	5.0	1.320	8736	
Hungary	0.101	789.702	0.073	0.055	0.111	0.095	0.196	0.398	0.005	0.741	.	.	2.0	0.883	332	
India	0.096	416.774	0.075	0.086	0.091	0.179	0.328	0.618	0.003	0.489	0	1	5.0	-0.242	15133	
Lithuania	0.045	55.503	0.098	-0.022	0.097	0.176	0.310	0.313	0.000	0.188	.	.	4.0	0.692	16	
Malta	0.122	488.855	0.092	-0.026	0.048	0.101	0.239	0.569	0.000	0.667	.	.	.	1.205	51	
Mexico	0.090	2802.580	0.065	0.030	0.055	0.086	0.253	0.418	0.000	0.683	0	0	3.0	-0.102	1405	
Peru	0.092	345.054	0.088	0.052	0.060	0.134	0.235	0.554	0.000	0.690	0	0	3.5	-0.329	870	
Philippines	0.118	569.830	0.042	-0.100	0.064	0.086	0.285	0.357	0.001	0.530	0	0	4.0	-0.390	1300	
Poland	0.193	411.786	0.071	0.047	0.083	0.191	0.172	0.376	0.000	0.771	.	.	2.0	0.634	2172	
Russia	0.114	2119.516	0.089	0.015	0.069	0.158	0.265	0.215	0.000	0.626	.	.	4.0	-0.728	2684	
South Africa	0.232	704.706	0.074	0.016	0.079	0.149	0.179	0.618	0.003	0.762	1	0	5.0	0.346	3374	
Sri Lanka	0.116	64.508	0.068	0.022	0.061	0.112	0.245	0.607	0.000	0.662	0	1	4.0	-0.383	961	
Thailand	0.135	337.306	0.050	-0.056	0.064	0.094	0.343	0.605	0.000	0.503	1	0	4.0	-0.035	5167	
Venezuela	0.076	2350.850	0.059	0.033	0.048	0.085	0.143	0.674	0.000	0.937	0	1	1.0	-0.922	221	
Vietnam	0.162	47.238	0.125	0.059	0.088	0.179	0.280	0.038	0.000	0.539	.	.	.	-0.530	2254	
Zimbabwe	0.004	57.560	0.027	-0.006	0.009	.	0.002	0.000	0.000	1.000	0	1	4.0	-1.579	1	
Total	0.192	805.354	0.057	0.000	0.078	0.150	0.268	0.525	0.003	0.584	0.404	0.410	3.894	0.070	61271	
<i>Developed countries</i>																
Australia	0.379	723.699	-0.094	-0.096	0.097	0.218	0.222	0.470	0.014	0.623	1	0	4.0	1.596	8046	
Austria	0.224	1449.143	0.057	0.017	0.077	0.143	0.261	0.686	0.023	0.559	1	1	2.5	1.618	986	
Belgium	0.199	1844.634	0.067	0.011	0.078	0.130	0.264	0.638	0.024	0.566	1	1	3.0	1.328	1240	
Canada	0.351	1400.875	-0.069	-0.117	0.110	0.202	0.264	0.320	0.043	0.599	1	0	4.0	1.621	7571	
Czech Republic	0.082	1203.623	0.072	-0.034	0.094	0.102	0.156	0.570	0.001	0.842	.	.	4.0	0.798	342	
Denmark	0.287	1072.469	0.053	0.034	0.080	0.094	0.263	0.650	0.029	0.544	0	0	4.0	1.842	1679	
Finland	0.219	1555.036	0.056	0.047	0.076	0.104	0.256	0.801	0.043	0.598	1	1	3.5	1.882	1690	
France	0.200	3547.708	0.065	0.012	0.060	0.128	0.238	0.651	0.019	0.658	1	1	3.5	1.217	7182	
Germany	0.257	2828.546	0.040	0.069	0.068	0.121	0.214	0.516	0.027	0.640	1	1	3.5	1.503	7793	
Greece	0.095	654.982	0.030	0.027	0.066	0.121	0.322	0.685	0.003	0.487	0	1	2.0	0.631	1872	
Iceland	0.057	659.237	0.061	-0.001	0.045	0.152	0.450	0.438	0.012	0.163	.	.	4.5	1.704	80	

Corporate Liquidity: Evidence from Islamic and non-Islamic Countries

Ireland	0.312	1497.824	0.015	-0.057	0.069	0.163	0.279	0.514	0.031	0.528	0	1	5.0	1.531	769
Israel	0.404	649.645	0.017	0.006	0.048	0.115	0.299	0.430	0.063	0.429	1	1	4.0	0.564	2147
Italy	0.161	3241.734	0.048	0.017	0.056	0.132	0.267	0.641	0.007	0.583	1	1	2.0	0.697	2827
Japan	0.231	1755.926	0.044	-0.016	0.045	0.046	0.255	0.833	0.015	0.582	1	1	4.5	1.138	40806
Korea, South	0.212	1033.741	0.044	0.005	0.070	0.107	0.272	0.571	0.012	0.540	1	0	4.5	0.685	13443
Luxembourg	0.119	16942.650	0.087	-0.001	0.045	0.217	0.203	0.660	0.007	0.720	.	.	2.0	1.712	50
Netherlands	0.145	3575.087	0.071	0.020	0.068	0.109	0.252	0.631	0.016	0.635	1	0	2.5	1.743	2165
New Zealand	0.144	583.131	0.022	0.033	0.067	0.130	0.268	0.731	0.007	0.623	1	1	4.0	1.766	1125
Norway	0.352	1461.051	0.017	-0.043	0.110	0.191	0.316	0.474	0.021	0.420	1	1	3.5	1.701	1858
Portugal	0.069	2092.792	0.057	-0.065	0.056	0.104	0.348	0.610	0.000	0.460	1	1	2.5	1.160	720
Singapore	0.263	449.140	0.043	0.014	0.069	0.125	0.222	0.606	0.003	0.624	1	0	5.0	1.481	6231
Slovakia	0.069	634.684	0.062	-0.013	0.062	0.064	0.173	0.414	0.005	0.886	.	.	3.0	0.689	70
Slovenia	0.116	3.197	0.048	-0.054	0.066	0.069	0.305	0.717	0.000	0.478	.	.	.	0.970	138
Spain	0.131	4512.366	0.069	-0.018	0.060	0.132	0.256	0.713	0.004	0.606	1	1	5.0	1.054	1628
Sweden	0.287	1376.077	-0.001	0.044	0.056	0.165	0.195	0.548	0.036	0.656	1	0	3.5	1.745	3519
Switzerland	0.309	2461.889	0.061	0.068	0.057	0.099	0.227	0.704	0.038	0.654	1	0	3.0	1.748	2533
Taiwan	0.249	426.883	0.070	0.063	0.070	0.125	0.226	0.506	0.033	0.619	.	.	3.0	0.848	14231
United Kingdom	0.267	1577.215	-0.009	-0.052	0.069	0.155	0.214	0.628	0.031	0.688	1	0	5.0	1.526	16895
United States	0.391	2451.963	-0.071	-0.100	0.074	0.140	0.312	0.293	0.072	0.511	1	0	3.0	1.347	48961
Total	0.285	1805.425	0.003	-0.030	0.067	0.118	0.261	0.552	0.034	0.580	0.976	0.395	3.795	1.269	198597

Notes: This table presents the mean values of variables used in the study. Cash holding (CH/NA) is the ratio of cash plus its equivalents plus short-term investment (cash) to net assets (NA), which are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization, less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Sales growth (SG) is the geometric mean growth rate of sales over the three-year period. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is a dummy variable that takes a value of 1 if a firm pays dividends and 0 otherwise. RD/NA is the ratio of expense on research and development to net assets. Sharia compliance (SC) is a dummy variable that returns a value of 1 if a firm is Sharia-compliant and 0 otherwise. Financial development (FD) is a dummy variable that returns a value of 1 (zero) if a country is classified as a financially developed (underdeveloped) economy. Financial structure (FS) is a dummy variable that returns a value of 1 (zero) if a country is classified as a bank-based (market-based) economy (Demirgüç-Kunt and Levine, 1999). ARI refers to the revised anti-director rights index constructed by Djankov et al. (2008) and its value ranges from 1 to 5. NG is the mean of all six World Governance Indicators, with values ranging from -2.5 to 2.5. Higher values indicate higher level of national governance (Kaufmann et al. 2010). All financial ratios are winsorized at the 1% and 99% level. *N* represents the number of firm-year observations.

Leverage (LEV) is total debt divided by total assets. The financing hierarchy theory predicts a negative relation between cash and debt. Such a negative relation is also predicted by agency theory. This is because issuing debt can mitigate the agency problem within the firm (Gamba and Triantis, 2014). Agency costs are therefore lower when leverage is higher such that the external financing cost decreases and the demand for cash weakens under such circumstance.^{27,28} Dividend (DIV) is a dummy variable that returns a value of 1 if a firm pays dividends and 0 otherwise. DIV is used as a proxy of CG given that a firm can mitigate agency problems and reduce agency costs by paying out dividends. Information asymmetry is measured by expense on research and development (RD) divided by NA (Dittmar et al. 2003). Since the precautionary motive for holding cash should be stronger when information asymmetry is higher and the external financing cost is higher, a positive relationship between RD/NA and cash is expected. Prior to model estimation, all financial variables are winsorized at the 1% and 99% levels to remove outliers.

Islam is a dummy variable that returns a value of 1 if a firm is in Muslim majority countries and 0 otherwise. Since not all firms in Muslim majority countries comply with Sharia, a dummy variable Sharia compliance (SC) is created to distinguish between Sharia compliant firms and other firms so as to account for the effect of Sharia compliance. SC equals 1 if the following two conditions are satisfied and 0 otherwise: one, a firm does not engage in the businesses prohibited by Islam such as those related to hogs, arms, and gambling; two, CH/TA and LEV are both less than 0.33 (Farooq and Alahkam 2016).²⁹

Given that this study covers multiple countries that likely have cross-country differences, country-level differences should be considered to make the estimation results reliable. Thus, key variables are considered, including financial development (FD), financial structure (FS), anti-director rights (AR), and national governance (NG). FD and FS are dummy variables derived based on country classification by Demirgüç-Kunt and Levine (1999). FD is a dummy variable that returns a value of 1 if a country is classified as a financially developed economy and 0 otherwise (i.e., a financially underdeveloped economy). FS is a dummy variable that returns a value of 1 if a country is classified as a bank-based economy and 0 otherwise (i.e., a market-based economy). AR is a dummy variable that returns a value of 1 if a country's revised anti-director rights index (ARI) ≥ 4 and 0 otherwise. ARI is constructed by Djankov et al. (2008), and its value ranges from 1 to 5.

²⁷ According to Jensen and Meckling (1976), debt is a tool to mitigate agency problems resulting from the conflict of interests between managers and shareholders. Increased debt means reduced equity and concentrated managerial equity, which strengthen the incentive of managers to work for shareholders. Debt issuance is also a market discipline, as mentioned previously in the present study.

²⁸ Chen et al. (2017) highlighted the importance of collateral-based debt capacity, which can be used to support future investment. Since debt capacity is similar to cash in terms of financing further investment, debt is a direct substitute for cash.

²⁹ SC is also calculated for non-Muslim majority countries. The mean values of SC are close among three country groups. However, firms in non-Muslim majority countries do not comply with Sharia although some of them meet the abovementioned two conditions. Thus, the current study focuses on the effect of SC on cash holdings for Muslim majority countries only to see if SC explains low cash holdings for these countries.

NG is derived by taking the simple average of all six Worldwide Governance Indicators, namely, voice and accountability, political stability and absence of violence or terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption (Kaufmann et al. 2010). The value for each of these indicators and NG ranges from -2.5 to 2.5. Higher values indicate a higher level of NG. Justification for including all these country-level variables has been provided in the Literature review section.

Based on Table 1, the mean value of cash (CH/NA) is lower for Muslim majority countries than for other developing and developed countries, with the mean values equal to 0.155, 0.192, and 0.285 respectively. The results support H1. The mean value of leverage (LEV) is higher for Muslim majority countries than for other developing and developed countries. Thus, there is a negative relationship between cash and debt, consistent with the prediction based on financing hierarchy theory and agency theory.

Table 2 presents the correlation matrix of all variables used in estimation and the variance inflation factors (VIFs) for the independent variables in the benchmark model in Column 1 of Table 3. Cash is highly correlated with its determinants, so their inclusion in the model is justified. All VIFs are also low, ranging from 1.01 to 1.56, so the concern about multicollinearity can be alleviated.³⁰

2.2. Model

Given that the data consist of multiple firms and span several years, the panel data model is selected. The study first estimates the random-effects panel data model to examine whether and how Islam and SC affect cash holdings because these two variables are not time-varying and can be retained with such a model. The fixed-effects panel data model is then estimated to examine whether and how Islam and SC modify the cash sensitivities to CAPX/NA, LEV, and DIV. The underlying reasons are that the fixed-effects model is selected based on the Hausman test results and that the focus is on the modifying effects of Islam and SC on the cash sensitivities rather than their standalone effects. This model is also used in prior liquidity studies to help mitigate the endogeneity problem (Bates et al. 2009; Dittmar and Mahrt-Smith, 2007; Cremers and Ferrell, 2014; Huang et al. 2013). More importantly, fixed-effects, such as firm- and country-specific effects that are not considered but may cause concerns in this cross-country study, can be effectively controlled using this model. Given the potential correlations within firms, the Huber/White/sandwich robust standard errors are estimated to perform statistical inference.³¹

³⁰ Other country-specific variables are not included in calculating VIFs because they are highly correlated such that they are included in the model one at a time in the subsequent analysis.

³¹ Variables that are not time-varying (e.g., industry dummies, country dummies, etc.) are not included in the fixed-effects panel data model because they get dropped with the fixed-effects panel estimation.

Table 2. Correlation Matrix and Variance Inflation Factors

	ln(CH/NA)	ln(Size)	CF/NA	NWC/NA	CAPX/NA	LEV	DIV	RD/NA	Islam	SC	FD	FX	AR	NG	VIF
ln(CH/NA)	1.000														
ln(Size)	-0.090	1.000													1.240
CF/NA	-0.094	0.265	1.000												1.500
NWC/NA	-0.109	0.163	0.466	1.000											1.560
CAPX/NA	0.064	-0.027	-0.014	-0.077	1.000										1.010
LEV	-0.256	0.007	-0.262	-0.466	0.006	1.000									1.350
DIV	0.009	0.361	0.196	0.143	-0.023	-0.151	1.000								1.200
RD/NA	0.258	-0.137	-0.378	-0.225	0.042	0.012	-0.139	1.000							1.200
Islam	-0.060	-0.076	0.022	0.001	-0.017	0.033	-0.002	-0.059	1.000						1.010
SC	-0.062	0.002	0.143	0.223	-0.057	-0.539	0.142	-0.103	-0.003	1.000					
FD	0.179	0.080	-0.066	-0.042	-0.048	-0.059	-0.023	0.085	-0.222	0.032	1.000				
FS	0.022	0.088	0.100	0.059	-0.066	0.009	0.220	-0.084	-0.038	-0.017	-0.247	1.000			
AR	-0.004	-0.074	0.032	0.006	-0.026	-0.008	0.185	-0.125	0.129	0.008	-0.132	0.122	1.000		
NG	0.100	0.103	-0.105	-0.030	-0.018	-0.055	0.006	0.122	-0.368	0.030	0.709	-0.247	-0.145	1.000	

Notes: Cash holding (CH/NA) is the ratio of cash plus its equivalents plus short-term investment (cash) to net assets (NA), which are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization, less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is a dummy variable that takes a value of 1 if a firm pays dividends and 0 otherwise. RD/NA is the ratio of expense on research and development to net assets. Islam is a dummy variable that returns a value of 1 if a firm is in Muslim majority countries and 0 otherwise. Sharia compliance (SC) is a dummy variable that returns a value of 1 if a firm is Sharia-compliant and 0 otherwise. Financial development (FD) is a dummy variable that returns a value of 1 (0) if a country is classified as a financially developed (underdeveloped) economy. Financial structure (FS) is a dummy variable that returns a value of 1 (0) if a country is classified as a bank-based (market-based) economy (Demirgüç-Kunt and Levine 1999). AR is a dummy variable that returns a value of 1 if a country's revised anti-director rights index (ARI) ≥ 4 and 0 otherwise. ARI is constructed by Djankov et al. (2008) and its value ranges from 1 to 5. NG is the mean of all six World Governance Indicators, with values ranging from -2.5 to 2.5. Higher values indicate higher level of national governance (Kaufmann et al. 2010). All financial ratios are winsorized at the 1% and 99% level. VIFs indicate the variance inflation factors for the independent variables in the benchmark model in Column 1 of Table 3.

3. Results

3.1. Cash Holdings

Table 3 presents the results regarding the difference in cash holdings between Muslim majority countries and other countries after controlling for the benchmark cash determinants. Column 1 presents the results based on the full sample. Columns 2 to 5 present the results based on developing countries, including Muslim majority countries and other developing countries. Columns 6 to 9 present the results based on the sample that consists of Muslim majority countries and developed countries.³²

The coefficient of Islam is significantly negative in Column 1, indicating that corporate liquidity is generally lower in Muslim majority countries than in other countries. The results support H1 and concur with the findings in Table 1. The results are more revealing when Muslim majority countries are compared with other developing countries (Columns 2 to 5) and developed countries (Columns 6 to 9). In Column 2, the coefficient of Islam is insignificant though negative, indicating no significant difference in cash holdings between Muslim majority countries and other developing countries likely because of the missing variable problems. Considering the effect of financial development in Column 3, the effect of Islam on cash holdings is measured as $0.324 - 0.522 \text{ FD}$, which is negative (positive) when FD takes on the value of 1 (0). Thus, cash holdings are lower in Muslim majority countries than in other developing countries when financial development is high in the former. Considering the effect of financial structure in Column 4, the effect of Islam on cash holdings is measured as $-0.098 + 0.582 \text{ FS}$, which is negative (positive) when FS takes on the value of 0 (1). Thus, cash holdings are lower in Muslim majority countries than in other developing countries when the former has a market-based financial structure. Considering the effect of anti-director rights in Column 5, the effect of Islam on cash holdings is measured as $-0.72 + 0.997 \text{ AR}$, which is negative (positive) when AR takes on the value of 0 (1). Thus, cash holdings are lower in Muslim majority countries than in other developing countries when the former has weak anti-director rights. In summary, the results from Columns 2 to 5 indicate that cash holdings are lower in Muslim majority countries than in other developing countries when the former has high financial development, a market-based financial structure, or weak anti-director rights. Therefore, H1 is supported under these circumstances. The results suggest that financial development negatively affects agency costs such that the cost of external financing decreases and the precautionary motive for holding cash weakens when financial development increases in Muslim majority countries. The agency and external financing costs are also lower when financial structure is market-based because such financial structure is often accompanied by high financial development (Demirgüç-Kunt and Levine, 1999), which can contribute to low cash holdings. Stronger (weaker) anti-director rights signify more (less) severe conflicts between shareholders and other stakeholders (e.g., bondholders) such that the agency cost of debt is higher

³² Please note that all Muslim majority countries in the present study are developing countries.

(lower), resulting in a stronger (weaker) precautionary motive for holding cash (Opler et al. 1999; Stout, 2013).³³ Alternatively, given the established negative relationship between shareholder rights and debt financing (Wagner and Wenk, 2019) and the cost of debt being lower than that of equity, a positive relationship between shareholder rights and the cost of external financing is also predicted. Thus, when shareholder rights strengthen, the external financing cost increases such that the precautionary motive for holding cash strengthens.³⁴

Results are different and noticeable when Muslim majority countries are compared with developed countries. More specifically, the coefficient of Islam is significantly negative in Column 6, indicating that cash holdings are lower in Muslim majority countries than in developed countries. Considering the effect of financial development in Column 7, the effect of Islam on cash holdings is measured as -0.207 , indicating that cash holdings are lower in Muslim majority countries than in developed countries, regardless of the level of financial development. In Column 8, where the effect of financial structure is considered, the effect of Islam on cash holdings is measured as $-0.174-0.537 FS$, which is essentially negative and becomes more negative when FS takes on the value of 1. Therefore, the results suggest that cash holdings are always lower in Muslim majority countries than in developed countries. This phenomenon is more pronounced when the former has a bank-based financial structure. Considering the effect of anti-director rights in Column 9, the effect of Islam on cash holdings is measured as $-0.627+0.218 AR$, which is essentially negative but becomes less negative when AR takes on the value of 1. The results continue to indicate that cash holdings are lower in Muslim majority countries than in developed countries, regardless of the strength of anti-director rights. This phenomenon is more pronounced when anti-director rights are weak in the former. In summary, the results in Columns 6–9 are consistent and robust to different model specifications. Therefore, H1 is strongly supported.

The results on control variables are also consistent with the findings of prior studies. For example, the coefficient of NWC/NA is significantly negative, indicating the substitutability between cash and net working capital. The coefficient of CAPX/NA is significantly positive, indicating that firms are inclined to hoard cash in response to greater growth opportunities. The coefficient of LEV is significantly negative, indicating that cash and leverage are substitutes in terms of financing, which is consistent with the prediction of financing hierarchy and agency theories. The coefficient of DIV is significantly positive, indicating that the precautionary motive for holding cash for dividend payment outweighs the negative effect of dividend payment on cash associated with agency cost reduction. The coefficient of RD/NA is significantly positive, highlighting the

³³ Opler et al. (1999) asserted that cash holdings be higher when the agency cost of debt and transitively the external financing cost are higher. Stout (2013) highlighted the intensified conflict between managers and creditors when the conflict between managers and shareholders is improved.

³⁴ According to Nguyen et al. (2020), the net effect of increased debt financing that results from weakened shareholder rights on firm value is ambiguous, depending on the relative magnitude of two opposing effects, namely, the positive effect of increased tax shield and market discipline and the negative effect of aggravated agency problems and reduced disclosure. Similarly, the net effect of decreased debt financing resulting from strong shareholder rights on agency costs and cash holdings is uncertain and therefore deserves examination.

importance of precautionary motive for holding cash to pay for R&D. Alternatively, given that R&D can be a proxy of information asymmetry, the results indicate that managers are inclined to hold more cash under their discretion when information asymmetry and transitively the external financing cost increase.

Thus, H1 is firmly supported when Muslim majority countries are compared with developed countries, but the validity of H1 depends on the values of the abovementioned country-level variables when Muslim majority countries are compared with other developing countries. Moreover, the results in Columns 2 to 5 and Columns 6 to 9 are largely different in terms of the modifying effects of country-level variables, such as financial development, financial structure, and the strength of anti-director rights. Specifically, financial development and a market-based financial structure appear to reduce agency costs and transitively cash holdings for Muslim majority countries relative to other developing countries. By contrast, financial development does not seem important, and a bank-based financial structure happens to strengthen the negative effect of Islam on cash holdings when comparing Muslim majority countries with developed countries. The negative effect of Islam on cash holdings being reinforced by a bank-based financial structure can be attributed to the possibility that a bank-based financial structure is considered better for developing countries (including Muslim majority countries) than developed countries (Chakraborty and Ray, 2006). A market-based financial structure does not usually dominate until a country becomes highly developed economically and financially (Demirgüç-Kunt and Levine 1999). Strong anti-director rights appear to mitigate or counteract the negative effect of Islam on cash holdings whether Muslim majority countries are compared with other developing or developed countries. Such results support the view that CG in Muslim majority countries is essentially stakeholder-based such that an increase in anti-director rights or shareholder protection heightens the conflicts between shareholders and other stakeholders. Therefore, the agency and external financing costs are high such that the precautionary motive for holding cash strengthens. Moreover, anti-director rights and the practice of Islam could be substitutes in improving CG such that the negative effect of Islam on cash is weakened or reversed when anti-director rights strengthen.

Table 3. Islam and Cash Holdings

Dependent variable = ln(CH/NA) Independent variable	(1) Full sample	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Muslim majority countries vs. other developing countries				Muslim majority countries vs. developed countries			
Ln(Size)	-0.028*** (0.004)	0.047*** (0.008)	0.011 (0.009)	-0.009 (0.010)	0.042*** (0.008)	-0.062*** (0.004)	-0.063*** (0.005)	-0.068*** (0.005)	-0.062*** (0.004)
CF/NA	-0.001 (0.016)	0.316*** (0.046)	0.265*** (0.049)	0.271*** (0.049)	0.299*** (0.047)	-0.019 (0.017)	-0.034** (0.017)	-0.038** (0.017)	-0.021 (0.017)
NWC/NA	-0.500*** (0.013)	-0.535*** (0.028)	-0.479*** (0.030)	-0.471*** (0.030)	-0.512*** (0.028)	-0.489*** (0.014)	-0.481*** (0.014)	-0.480*** (0.014)	-0.489*** (0.014)
CAPX/NA	0.895*** (0.041)	0.848*** (0.068)	0.798*** (0.080)	0.816*** (0.080)	0.847*** (0.071)	0.889*** (0.049)	0.923*** (0.052)	0.940*** (0.052)	0.894*** (0.049)
LEV	-1.514*** (0.027)	-1.457*** (0.050)	-1.299*** (0.054)	-1.283*** (0.054)	-1.391*** (0.051)	-1.507*** (0.030)	-1.480*** (0.031)	-1.483*** (0.031)	-1.505*** (0.030)
DIV	0.083*** (0.008)	0.192*** (0.013)	0.219*** (0.016)	0.223*** (0.016)	0.204*** (0.014)	0.056*** (0.009)	0.038*** (0.010)	0.022** (0.010)	0.049*** (0.009)
RD/NA	1.619*** (0.058)	2.256*** (0.391)	1.799*** (0.367)	1.819*** (0.374)	2.220*** (0.390)	1.512*** (0.058)	1.467*** (0.058)	1.494*** (0.058)	1.525*** (0.058)
Islam	-0.260*** (0.026)	-0.013 (0.028)	0.324*** (0.045)	-0.098** (0.039)	-0.720*** (0.066)	-0.395*** (0.027)	-0.207*** (0.065)	-0.174*** (0.035)	-0.627*** (0.066)
FD			0.852*** (0.033)				0.362*** (0.049)		
Islam×FD			-0.522*** (0.061)				-0.038 (0.074)		
FS				-0.742*** (0.034)				0.390*** (0.016)	

Corporate Liquidity: Evidence from Islamic and non-Islamic Countries

Islam×FS				0.582*** (0.064)				-0.537*** (0.061)	
AR									0.139*** (0.015)
Islam×AR					0.997*** (0.073)				0.218*** (0.073)
Constant	-2.739*** (0.071)	-3.463*** (0.095)	-3.926*** (0.106)	-3.254*** (0.111)	-3.118*** (0.099)	-2.430*** (0.087)	-2.779*** (0.101)	-2.568*** (0.091)	-2.519*** (0.088)
<i>N</i>	278167	79537	60919	60919	75623	216863	200939	200939	215936
<i>n</i>	34895	11508	7516	7516	10666	25523	23489	23489	25344
<i>R</i> ²	0.180	0.142	0.188	0.171	0.146	0.201	0.197	0.212	0.206

Notes: Cash holding (CH/NA) is the ratio of cash plus its equivalents plus short-term investment (cash) to net assets (NA), which are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization, less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is a dummy variable that takes a value of 1 if a firm pays dividends and 0 otherwise. RD/NA is the ratio of expense on research and development to net assets. Islam is a dummy variable that returns a value of 1 if a firm is in Muslim majority countries and 0 otherwise. Financial development (FD) is a dummy variable that returns a value of 1 (0) if a country is classified as a financially developed (underdeveloped) economy. Financial structure (FS) is a dummy variable that returns a value of 1 (0) if a country is classified as a bank-based (market-based) economy (Demirgüç-Kunt and Levine 1999). AR is a dummy variable that returns a value of 1 if a country's revised anti-director rights index (ARI) ≥ 4 and 0 otherwise. ARI is constructed by Djankov et al. (2008) and its value ranges from 1 to 5. All financial ratios are winsorized at the 1% and 99% level. *N* represents the number of firm-year observations and *n* the number of firms. Year and industry dummies are included but results are not reported for brevity.

After establishing that Islam negatively affects cash holdings and that this negative effect is modified by country-level variables, such as economic development, financial development, financial structure, and anti-director rights, exploring whether SC (i.e., acting according to Islamic law or Sharia at the firm level) contributes to lower cash holdings in Muslim majority countries than in other countries is worthwhile. Table 4 presents the results regarding whether and how SC affects cash holdings in Muslim majority countries. In Column 1, where the baseline model is estimated, the coefficient of SC is significantly negative, indicating that SC negatively affects cash holdings in Muslim majority countries. In Column 2, the effect of SC on cash holdings is measured as $-0.507+0.203$ FD, which is essentially negative but becomes less negative when FD takes on the value of 1. In Column 3, the effect of SC on cash holdings is measured as $-0.341-0.167$ FS, which is essentially negative but becomes more negative when FS takes on the value of 1. In Column 4, the effect of SC on cash holdings is measured as $-0.531+0.163$ AR, which is essentially negative but becomes less negative when AR takes on the value of 1. In summary, the results suggest that SC negatively affects cash holdings in Muslim majority countries, regardless of financial development, financial structure, and anti-director rights. Such a negative effect is weaker when these countries have high financial development, a market-based financial structure, or strong anti-director rights. The negative effect of SC on cash holdings is more pronounced under these circumstances to the extent that Muslim majority countries under examination are generally characterized by low financial development, a bank-based financial structure, and weak anti-director rights.³⁵ Moreover, given that high financial development and strong anti-director rights prove to attenuate the negative effect of SC on cash holdings in Muslim majority countries, financial development and anti-director rights can be substitutes for SC in improving CG and reducing agency costs.

3.2. Cash Sensitivity to Growth Opportunities, Leverage and Dividend Payment

The results thus far indicate that cash holdings are generally lower in Muslim majority countries than in other countries and that such a phenomenon is more pronounced when Muslim majority countries are compared with developed countries. Moreover, SC explains why cash holdings are lower in Muslim majority countries than in other countries. Thus, delving into the research question and further explaining lower cash holdings in Muslim majority countries from the perspective of the sensitivities of cash to its determinants are worthwhile. The objective is to see whether lower cash holding in Muslim majority countries can be attributed to lower cash sensitivities to variables such as growth opportunities, leverage, and dividend payment. These three cash determinants are selected because prior studies have shown that they consistently exhibit the expected effects and serve as good candidates to help probe the quality of CG (Dittmar et al. 2003; Chen and Yang, 2017). Given that Muslim majority countries under examination are

³⁵ The mean values of FD, FS, and ARI for Muslim majority countries are 0.333, 0.667, and 3.143, respectively. Hence, FD and ARI are generally lower whereas FS is generally higher for Muslim majority countries than for other countries (Table 1).

all developing countries, focusing on the comparison between Muslim majority countries and other developing countries is more appropriate primarily because the former share more similarities with the latter than with developed countries. To show the effect of Islam and SC on cash determination, using a control group similar to Muslim majority countries for comparison purposes is appropriate. In fact, as shown in Table 3, the contrast between Muslim majority countries and developed countries is noticeable, whereas the difference between Muslim majority countries and other developing countries is relatively small. Thus, focusing on the comparison between Muslim majority countries and other developing countries is valuable to see whether any significant difference in the cash sensitivities exist between these two country groups with high similarities.

Table 4. Sharia Compliance and Cash Holdings in Muslim Majority Countries

Dependent variable = ln(CH/NA) Independent variable	(1)	(2)	(3)	(4)
Ln(Size)	0.012 (0.019)	0.013 (0.020)	0.004 (0.020)	0.013 (0.020)
CF/NA	0.664*** (0.092)	0.662*** (0.093)	0.660*** (0.093)	0.657*** (0.093)
NWC/NA	-0.648*** (0.054)	-0.645*** (0.054)	-0.639*** (0.054)	-0.643*** (0.054)
CAPX/NA	0.624*** (0.136)	0.667*** (0.142)	0.655*** (0.142)	0.636*** (0.141)
LEV	-1.794*** (0.107)	-1.763*** (0.109)	-1.756*** (0.108)	-1.774*** (0.109)
DIV	0.288*** (0.028)	0.293*** (0.029)	0.302*** (0.029)	0.291*** (0.029)
RD/NA	0.531 (1.055)	0.601 (1.060)	0.586 (1.038)	0.593 (1.072)
SC	-0.410*** (0.036)	-0.507*** (0.053)	-0.341*** (0.041)	-0.531*** (0.072)
FD		0.221*** (0.068)		
SC×FD		0.203*** (0.064)		
FS			-0.097 (0.070)	
SC×FS			-0.167** (0.070)	
AR				0.211** (0.089)
SC×AR				0.163** (0.078)
Constant	-3.011*** (0.169)	-3.212*** (0.183)	-2.991*** (0.178)	-3.235*** (0.195)
<i>N</i>	18266	17253	17253	17477
<i>n</i>	2142	1945	1945	1992
<i>R</i> ²	0.194	0.199	0.198	0.202

Notes: Cash holding (CH/NA) is the ratio of cash plus its equivalents plus short-term investment (cash) to net assets (NA), which are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization, less interest,

taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. $CAPX/NA$ is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is a dummy variable that takes a value of 1 if a firm pays dividends and 0 otherwise. RD/NA is the ratio of expense on research and development to net assets. Sharia compliance (SC) is a dummy variable that equals one if a firm is Sharia compliant and 0 otherwise (Farooq and Alahkam 2016). Financial development (FD) is a dummy variable that returns a value of 1 (0) if a country is classified as a financially developed (underdeveloped) economy. Financial structure (FS) is a dummy variable that returns a value of 1 (0) if a country is classified as a bank-based (market-based) economy (Demirgüç-Kunt and Levine 1999). AR is a dummy variable that returns a value of 1 if a country's revised anti-director rights index (ARI) ≥ 4 and 0 otherwise. ARI is constructed by Djankov et al. (2008) and its value ranges from 1 to 5. All financial ratios are winsorized at the 1% and 99% level. N represents the number of firm-year observations and n the number of firms. Year and industry dummies are included but results are not reported for brevity.

Table 5 presents the results regarding whether and how the cash sensitivities to growth opportunities, leverage, and dividend payment differ between Muslim majority countries and other developing countries. In Columns 1–4, where the cash sensitivity to growth opportunities is examined, the coefficient of $CAPX/NA$ is significantly positive, whereas the coefficients of the interaction variables that consist of at least $CAPX/NA$ and Islam are all insignificant. Thus, growth opportunities positively affect cash, meaning that firms are inclined to hold more cash in response to greater growth opportunities, which is consistent with the findings of prior studies. However, such a positive effect is not significantly different between Muslim majority countries and other developing countries. Moreover, this positive effect is not influenced by country-level variables, such as financial development, financial structure, and national governance.

In Columns 5–8, where the cash sensitivity to leverage is examined, the coefficient of LEV is all significantly negative, whereas the significance of the coefficients of the interaction variables that consist of at least Islam and LEV depends on the model estimated. Specifically, in Column 5, the modifying effect of Islam on the cash sensitivity to LEV is measured as $0.381-0.717 FD$, which is negative (positive) when FD takes on the value of 1 (0). In Column 6, the modifying effect of Islam on the cash sensitivity to LEV is measured as $-0.296+0.783 FS$, which is negative (positive) when FS takes on the value of 0 (1). Considering the effect of AR in Column 7, the modifying effect of Islam on the cash sensitivity to LEV is measured as 0 because the corresponding coefficients are all insignificant. In Column 8, the modifying effect of Islam on the cash sensitivity to LEV is measured as $-0.774 NG$, which is negative (positive) when the value of NG is greater (less) than 0. In summary, the negative effect of LEV on cash for Muslim majority countries is reinforced when financial development is high, financial structure is market-based, or national governance is strong. The results are intuitive in the sense that advanced financial development and a market-based financial structure should contribute to high transparency, which transitively improves CG (Dutta and Mukherjee, 2018; Fung, 2014). Strong national governance also improves CG given the established positive relationship between NG and CG (Stulz, 2005). Improved CG then results in reduced agency costs and transitively external financing costs, which further weaken the precautionary motive for holding cash.

In Columns 9–12, where the cash sensitivity to dividend payment is examined, the coefficient of DIV is all significantly positive, whereas the significance of the coefficients of the interaction

variables that consist of at least Islam and DIV depends on the model estimated. Specifically, in Column 9, the modifying effect of Islam on the cash sensitivity to DIV is measured as 0.1, indicating that the positive effect of DIV on cash is stronger for Muslim majority countries than for other developing countries. The possible reason is that Muslim majority countries under examination are characterized by a bank-based financial structure, which is associated with low economic development, low transparency, and high agency costs, all of which should counteract the positive effect of Islam on CG. As a result, the hypothesized negative modifying effect of Islam on the cash sensitivity to DIV is non-existent. In Column 10, the modifying effect of Islam on the cash sensitivity to DIV is measured as 0.142 FS, indicating that the positive effect of DIV on cash is stronger for Muslim majority countries when financial structure is bank-based. A bank-based financial structure is associated with low transparency and high agency cost such that the expected negative modifying effect of Islam on the cash sensitivity to DIV is non-existent. Considering the effects of anti-director rights and national governance in Columns 11 and 12, the modifying effect of Islam on the cash sensitivity to DIV is measured as 0, indicating no significant difference in the effect of DIV on cash between Muslim majority countries and other developing countries, regardless of the strength of anti-director rights and the level of national governance.

Table 5. Islam and Cash Sensitivities to CAPX/NA, LEV and DIV in Developing Countries

Dependent variable: ln(CH/NA)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Independent variable												
Ln(Size)	-0.039** (0.017)	-0.039** (0.017)	0.007 (0.016)	0.007 (0.015)	-0.039** (0.017)	-0.041** (0.017)	0.007 (0.016)	0.005 (0.015)	-0.038** (0.017)	-0.039** (0.017)	0.007 (0.016)	0.007 (0.015)
CF/NA	0.276*** (0.048)	0.277*** (0.048)	0.292*** (0.045)	0.296*** (0.045)	0.268*** (0.048)	0.266*** (0.048)	0.293*** (0.045)	0.293*** (0.045)	0.277*** (0.048)	0.277*** (0.048)	0.293*** (0.045)	0.297*** (0.045)
NWC/NA	-0.439*** (0.033)	-0.439*** (0.033)	-0.457*** (0.030)	-0.464*** (0.030)	-0.448*** (0.033)	-0.444*** (0.033)	-0.452*** (0.030)	-0.465*** (0.030)	-0.438*** (0.033)	-0.439*** (0.033)	-0.457*** (0.030)	-0.465*** (0.030)
CAPX/NA	0.715*** (0.122)	0.887*** (0.155)	0.931*** (0.168)	0.757*** (0.081)	0.764*** (0.085)	0.771*** (0.085)	0.782*** (0.076)	0.773*** (0.072)	0.759*** (0.084)	0.765*** (0.084)	0.785*** (0.075)	0.765*** (0.072)
LEV	-1.137*** (0.059)	-1.136*** (0.059)	-1.210*** (0.056)	-1.242*** (0.055)	-1.166*** (0.089)	-1.144*** (0.081)	-1.661*** (0.121)	-1.312*** (0.064)	-1.136*** (0.059)	-1.135*** (0.059)	-1.209*** (0.056)	-1.241*** (0.055)
DIV	0.188*** (0.017)	0.188*** (0.017)	0.171*** (0.015)	0.175*** (0.015)	0.187*** (0.017)	0.188*** (0.017)	0.171*** (0.015)	0.176*** (0.014)	0.198*** (0.027)	0.187*** (0.025)	0.193*** (0.028)	0.163*** (0.017)
RD/NA	1.404*** (0.392)	1.401*** (0.391)	1.561*** (0.360)	1.563*** (0.355)	1.387*** (0.392)	1.393*** (0.392)	1.543*** (0.358)	1.547*** (0.355)	1.406*** (0.391)	1.408*** (0.394)	1.561*** (0.361)	1.566*** (0.355)
Islam×CAPX/NA	0.215 (0.247)	-0.122 (0.245)	0.112 (0.370)	-0.013 (0.170)								
FD×CAPX/NA	0.078 (0.206)											
Islam×FD×CAPX/NA	-0.328 (0.369)											
FS×CAPX/NA		-0.280 (0.198)										
Islam×FS×CAPX/NA		0.419 (0.377)										

AR×CAPX/NA	-0.186 (0.194)					
Islam×AR×CAPX/NA	-0.151 (0.419)					
NG	0.198*** (0.060)			0.179*** (0.062)		0.219*** (0.063)
Islam×NG	-0.406*** (0.127)			-0.164 (0.135)		-0.410*** (0.130)
NG×CAPX/NA	0.211 (0.130)					
Islam×NG×CAPX/NA	-0.374 (0.310)					
Islam×LEV		0.381*** (0.147)	-0.296** (0.136)	0.322 (0.245)	0.053 (0.108)	
FD×LEV		0.017 (0.121)				
Islam×FD×LEV		-0.717*** (0.213)				
FS×LEV			-0.026 (0.128)			
Islam×FS×LEV			0.783*** (0.217)			
AR×LEV				0.515*** (0.132)		
Islam×AR×LEV				-0.292 (0.269)		
NG×LEV					0.132* (0.077)	

Corporate Liquidity: Evidence from Islamic and non-Islamic Countries

Islam×NG×LEV									-0.774*** (0.170)				
Islam×DIV									0.100* (0.055)	0.020 (0.044)	0.047 (0.082)	0.050 (0.034)	
FD×DIV									-0.068* (0.039)				
Islam×FD×DIV									-0.052 (0.074)				
FS×DIV										-0.060 (0.039)			
Islam×FS×DIV										0.142* (0.078)			
AR×DIV												-0.055 (0.034)	
Islam×AR×DIV												0.024 (0.091)	
NG×DIV													-0.023 (0.024)
Islam×NG×DIV													-0.060 (0.062)
Constant	-2.820*** (0.079)	-2.822*** (0.079)	-2.880*** (0.071)	-2.877*** (0.069)	-2.820*** (0.079)	-2.815*** (0.079)	-2.874*** (0.071)	-2.860*** (0.068)	-2.825*** (0.079)	-2.820*** (0.079)	-2.878*** (0.071)	-2.877*** (0.069)	
<i>N</i>	60919	60919	75623	79537	60919	60919	75623	79537	60919	60919	75623	79537	
<i>n</i>	7516	7516	10666	11508	7516	7516	10666	11508	7516	7516	10666	11508	
<i>R</i> ²	0.060	0.060	0.059	0.060	0.062	0.062	0.060	0.061	0.061	0.061	0.059	0.060	

Notes: Cash holding (CH/NA) is the ratio of cash plus its equivalents plus short-term investment (cash) to net assets (NA), which are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization, less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is a dummy variable that takes a value of 1 if a firm pays dividends and 0 otherwise. RD/NA is the ratio of expense on research and development to net assets. Islam is a dummy variable that returns a value of 1 if a firm is in Muslim majority countries and 0 otherwise. Financial development (FD) is a dummy variable that returns a value of 1 (0) if a country is classified as a financially developed (underdeveloped) economy. Financial structure (FS) is a dummy variable that returns a value of 1 (0) if a country is classified as a bank-based (market-based) economy (Demirgüç-Kunt and Levine 1999). AR is a dummy variable that returns a value of 1 if a country's revised anti-director rights index (ARI) ≥ 4 and 0 otherwise. ARI is constructed by Djankov et al. (2008) and its value ranges from 1 to 5. NG is the mean of all six World Governance Indicators, with values ranging from -2.5 to 2.5. Higher values indicate higher level of national governance. All financial ratios are winsorized at the 1% and 99% level. *N* represents the number of firm-year observations and *n* the number of firms. Year dummies are included but results are not reported for brevity.

Thus, the results in Table 5 fail to support H2 but lend partial support to H3. The failure to fully support H2 and H3 can be attributed to the fact that the sampled countries belong to the same country group (i.e., developing countries) such that Muslim majority countries and other developing countries share substantial commonalities, which cause differences in the cash sensitivities between these two kinds of countries to be indistinguishable.

Table 6 presents the results regarding whether and how SC has bearings on the cash sensitivities to growth opportunities, leverage, and dividend payment in Muslim majority countries. In Columns 1–4, where the modifying effect of SC on the cash sensitivity to CAPX/NA is examined, the results are significant only in Column 2. Specifically, the modifying effect of SC is measured as $-0.71+1.146 FS$, which is negative (positive) when FS takes on the value of 0 (1). That is, when firms in Muslim majority countries are Sharia-compliant, the propensity to hoard cash for upcoming growth opportunities is weaker (stronger) when financial structure is market-based (bank-based), suggesting that SC reduces agency costs and the precautionary motive for holding cash in the presence of a market-based financial structure, which is often characterized by high transparency and disclosure. The results also suggest that CG is stakeholder-based and that profit or shareholder wealth maximization may not be the only objective for Sharia-compliant firms in Muslim majority countries. Thus, the results support H2. Moreover, the results suggest the absence of the modifying effect of SC on the cash sensitivity to growth opportunities through the channels of financial development, anti-director rights, and national governance.

In Columns 5–8, where the cash sensitivity to leverage is examined, the coefficients of LEV are all significantly negative, whereas the coefficients of the interaction variables that consist of at least SC and LEV are all insignificant. Thus, the negative effect of leverage on cash is further confirmed, consistent with the findings of prior studies. However, such a negative effect is not significantly different between Sharia-compliant firms and other firms in Muslim majority countries after controlling for financial development, financial structure, anti-director rights, and national governance.

In Columns 9–12, where the modifying effect of SC on the cash sensitivity to dividend payment is examined, the coefficient of DIV is significantly positive, whereas the coefficients of the interaction variables that consist of at least SC and DIV are significant in Column 11 only. Specifically, SC plays no role in modifying the cash sensitivity to dividend payment through the channels of financial development, financial structure, and national governance. However, the results in Column 11 indicate that the modifying effect of SC on the cash sensitivity to dividend payment is measured as $-0.239+0.232 AR$, which is essentially negative but becomes more negative when AR takes on the value of 0. The results suggest that SC can improve CG and reduce agency costs in Muslim majority countries such that it weakens the positive effect of DIV on cash, meaning that the effectiveness of dividend payment in reducing agency costs is higher for Sharia-compliant firms than for other firms. The results support H3. This phenomenon is also more pronounced when anti-director rights are weak, suggesting that the interests of stakeholders are

more aligned and that agency costs are lower under such circumstances. By contrast, when anti-director rights are strong, any conflict between shareholders and other stakeholders is more severe, meaning that agency costs are higher such that SC, which is a kind of CG mechanism, becomes less functional in increasing the effectiveness of dividend payment in reducing agency costs.

Thus, the results in Table 6 lend partial support for H2 and H3. That is, lower cash holdings in Muslim majority countries can be explained by lower cash sensitivities to growth opportunities and dividend payment because of SC, particularly when financial structure is market-based and anti-director rights are weak, respectively.

Table 6. Sharia Compliance and Cash Sensitivities to CAPX/NA, LEV and DIV in Muslim Majority Countries

Dependent variable: ln(CH/NA)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Independent variable	X = CAPX/NA				X = LEV				X = DIV			
Ln(Size)	0.000 (0.037)	-0.004 (0.037)	0.000 (0.037)	0.000 (0.036)	0.001 (0.037)	-0.004 (0.037)	0.001 (0.037)	-0.005 (0.036)	0.003 (0.037)	-0.003 (0.037)	0.001 (0.037)	0.002 (0.036)
CF/NA	0.627*** (0.093)	0.632*** (0.093)	0.636*** (0.092)	0.639*** (0.092)	0.605*** (0.095)	0.594*** (0.095)	0.630*** (0.093)	0.610*** (0.094)	0.628*** (0.093)	0.627*** (0.093)	0.632*** (0.092)	0.636*** (0.092)
NWC/NA	-0.604*** (0.059)	-0.599*** (0.058)	-0.598*** (0.059)	-0.608*** (0.058)	-0.628*** (0.059)	-0.615*** (0.058)	-0.575*** (0.058)	-0.638*** (0.057)	-0.599*** (0.058)	-0.599*** (0.058)	-0.594*** (0.059)	-0.606*** (0.058)
CAPX/NA	0.739*** (0.261)	0.835*** (0.284)	1.041** (0.435)	0.647*** (0.214)	0.590*** (0.150)	0.608*** (0.150)	0.577*** (0.149)	0.567*** (0.144)	0.559*** (0.149)	0.572*** (0.149)	0.560*** (0.148)	0.526*** (0.143)
LEV	-1.537*** (0.115)	-1.525*** (0.115)	-1.518*** (0.115)	-1.571*** (0.114)	-1.275*** (0.138)	-1.819*** (0.169)	-2.091*** (0.264)	-1.692*** (0.137)	-1.529*** (0.116)	-1.530*** (0.115)	-1.510*** (0.116)	-1.567*** (0.115)
DIV	0.231*** (0.031)	0.232*** (0.031)	0.228*** (0.031)	0.231*** (0.030)	0.231*** (0.030)	0.233*** (0.030)	0.228*** (0.030)	0.234*** (0.029)	0.327*** (0.060)	0.242*** (0.054)	0.422*** (0.116)	0.247*** (0.042)
RD/NA	0.555 (0.879)	0.529 (0.922)	0.499 (0.861)	0.535 (0.907)	0.442 (0.910)	0.497 (0.929)	0.665 (0.858)	0.371 (0.929)	0.633 (0.885)	0.628 (0.915)	0.586 (0.885)	0.607 (0.903)
SC	-0.468*** (0.066)	-0.268*** (0.051)	-0.423*** (0.095)	-0.353*** (0.044)	-0.346*** (0.091)	-0.375*** (0.075)	-0.669*** (0.125)	-0.379*** (0.062)	-0.466*** (0.077)	-0.268*** (0.060)	-0.353*** (0.106)	-0.348*** (0.052)
SC×FD	0.223*** (0.083)				0.019 (0.122)				0.224** (0.098)			
SC×X	-0.035 (0.359)	-0.710** (0.339)	-0.624 (0.560)	-0.271 (0.258)	-0.301 (0.305)	0.026 (0.245)	0.463 (0.450)	-0.024 (0.200)	-0.020 (0.078)	-0.082 (0.062)	-0.239* (0.129)	-0.039 (0.051)
FD×X	-0.104 (0.424)				-0.555*** (0.212)				-0.143* (0.083)			
SC×FD×X	-0.455 (0.534)				0.287 (0.402)				-0.028 (0.103)			

Corporate Liquidity: Evidence from Islamic and non-Islamic Countries

SC×FS	-0.230** (0.090)				0.082 (0.133)				-0.254** (0.109)			
FS×X	-0.241 (0.416)				0.675*** (0.206)				0.033 (0.085)			
SC×FS×X	1.146** (0.554)				-0.398 (0.430)				0.170 (0.113)			
SC×AR	0.097 (0.104)				0.402*** (0.143)				0.016 (0.118)			
AR×X	-0.404 (0.490)				0.685** (0.284)				-0.198 (0.123)			
SC×AR×X	0.383 (0.632)				-0.752 (0.501)				0.232* (0.141)			
NG	-0.297** (0.134)				0.031 (0.158)				-0.266* (0.136)			
SC×NG	0.166** (0.079)				-0.148 (0.116)				0.195** (0.096)			
NG×X	0.041 (0.365)				-0.659*** (0.186)				-0.080 (0.073)			
SC×NG×X	-0.717 (0.496)				0.589 (0.377)				-0.109 (0.099)			
Constant	-2.483*** (0.170)	-2.475*** (0.170)	-2.484*** (0.170)	-2.451*** (0.168)	-2.482*** (0.173)	-2.455*** (0.173)	-2.474*** (0.175)	-2.397*** (0.171)	-2.491*** (0.169)	-2.475*** (0.170)	-2.492*** (0.170)	-2.451*** (0.167)
<i>N</i>	17253	17253	17477	18266	17253	17253	17477	18266	17253	17253	17477	18266
<i>n</i>	1945	1945	1992	2142	1945	1945	1992	2142	1945	1945	1992	2142
<i>R</i> ²	0.076	0.075	0.074	0.075	0.077	0.078	0.075	0.078	0.076	0.076	0.074	0.076

Notes: Cash holding (CH/NA) is the ratio of cash plus its equivalents plus short-term investment (cash) to net assets (NA), which are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization, less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is a dummy variable that takes a value of 1 if a firm pays dividends and 0 otherwise. RD/NA is the ratio of expense on research and development to net assets. Sharia compliance (SC) is a dummy variable that equals one if a firm is Sharia compliant and 0 otherwise (Farooq and Alahkam 2016). Financial development (FD) is a dummy variable that returns a value of 1 (0) if a country is classified as a financially developed (underdeveloped) economy. Financial structure (FS) is a dummy variable that returns a value of 1 (0) if a country is classified as a bank-based (market-based) economy (Demirgüç-Kunt and Levine 1999). AR is a dummy variable that returns a value of 1 if a country's revised anti-director rights index (ARI) ≥ 4 and 0 otherwise. ARI is constructed by Djankov et al. (2008) and its value ranges from 1 to 5. NG is the mean of all six World Governance Indicators, with values ranging from -2.5 to 2.5. Higher values indicate higher level of national governance. All financial ratios are winsorized at the 1% and 99% level. *N* represents the number of firm-year observations and *n* the number of firms. Year dummies are included but results are not reported for brevity.

Conclusion

Corporate liquidity in Muslim majority countries has remained minimally explored. CG in Muslim majority countries has also remained a mystery and a matter of debate, particularly for non-financial firms. However, no research has yet to provide firm-level evidence supporting any claim. The current study contributes to the existing literature by examining corporate liquidity and using the results obtained to infer CG of non-financial firms in Muslim majority countries.

This study uses 34,895 non-financial firms from 68 countries (12 Muslim majority countries and 56 other countries, which consist of 26 developing and 30 developed countries) from 1996 to 2011 as the study sample. The results indicate that, controlling for other variables, cash is lower in Muslim majority countries than in other countries and that such a phenomenon is more pronounced when compared with developed countries. This negative effect of Islam on cash is also stronger when Muslim majority countries are financially developed or have weak anti-director rights. The modifying effects of Islam and SC on cash determination prove to explain lower cash holdings in Muslim majority countries. More importantly, the negative effect of leverage on cash is stronger in Muslim majority countries than in other developing countries, particularly when the former have high financial development, a market-based financial structure, or strong national governance, suggesting higher effectiveness of debt in reducing agency costs in the former than in the latter. Moreover, SC directly and negatively affects cash, and this negative effect is stronger when Muslim majority countries have low financial development, a bank-based financial structure, or weak anti-director rights. Furthermore, SC indirectly and negatively affects cash through the channels of growth opportunities and dividend payment. Specifically, the positive effect of growth opportunities on cash is weakened by SC when Muslim majority countries have a market-based financial structure, suggesting that the inclination of firms to hoard cash to take advantage of any growth opportunities is lower in Muslim majority countries with a market-based system. This situation is likely because the corporate objective in Muslim majority countries is the maximization of stakeholder wealth rather than shareholder wealth as in other countries. The positive effect of dividend payment on cash is also weakened by SC, and this phenomenon is more pronounced when Muslim majority countries have weak anti-director rights, suggesting that dividend payment is more effective in reducing agency costs for Sharia-compliant firms than for other firms in Muslim majority countries. Overall, the results highlight the uniqueness of the cash policy and CG in Muslim majority countries. These results strongly suggest that CG in Muslim majority countries is stakeholder-based rather than shareholder-based. CG in Muslim majority countries also proves to be good, if not better than that in other countries. Therefore, the results of this study challenge the findings of prior studies on poor CG in Muslim majority countries, which have been solely based on country-level governance data.

The results provide implications for researchers, practitioners, and policymakers. For researchers, the results suggest that CG in Muslim majority countries is stakeholder-based and profit

maximization is not the corporate objective in Muslim majority countries. CG also proves to be good in Muslim majority countries, particularly for Sharia-compliant firms. Therefore, future related studies should consider all these findings. For practitioners, the results suggest that firms in Muslim majority countries should hold limited cash and care for the falah of the entire society instead of shareholders only. For policymakers, given the contribution of Sharia to good CG in Muslim majority countries, governments in these countries should effectively enforce Sharia for the benefit of firms.

References

- Abu-Tapanjeh, A. M. (2009). Corporate governance from the Islamic perspective: A comparative analysis with OECD principles. *Critical Perspectives on Accounting*, 20(5), 556-567.
- Aguinis, H., & Glavas, A. (2012). What we know and don't know about corporate social responsibility: A review and research agenda. *Journal of Management*, 38(4), 932-968.
- Al-Zuhayli, W. (2003). Financial Transaction in Islamic Jurisprudence: Volume 1, pp. 7. *Islamic Jurisprudence and Its Proofs, Dar Al-Fikr, Damascus*.
- Amico, A. (2005). *Survey on corporate governance frameworks in the Middle East and North Africa*. Working paper.
- Amico, A. (2014). *Corporate governance enforcement in the Middle East and North Africa: Evidence and Priorities*. OECD Corporate Governance Working Papers, No. 15, OECD Publishing.
- Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial development and economic growth: The role of stock markets. *Journal of Money, Credit and Banking*, 33(1), 16-41.
- Arjoon, S. (2005). Corporate governance: An ethical perspective. *Journal of Business Ethics*, 61(4), 343-352.
- Arthur, E. E. (1987). The ethics of corporate governance. *Journal of Business Ethics*, 6(1), 59-70.
- Aslan, H., & Kumar, P. (2014). National governance bundles and corporate agency costs: A cross-country analysis. *Corporate Governance: An International Review*, 22(3), 230-251.
- Asri, M., & Mohamed, F. (2004). Contribution of the Islamic worldview towards corporate governance. A paper at the International Islamic University, Malaysia, in.
- Azid, T., Asutay, M., & Burki, U. (2007). Theory of the firm, management and stakeholders: An Islamic perspective. *Islamic Economic Studies*, 15(1), 1-30.
- Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do US firms hold so much more cash than they used to? *The Journal of Finance*, 64(5), 1985-2021.
- Benjamin, S. J., & Zain, M. M. (2015). Corporate governance and dividends payout: Are they substitutes or complementary? *Journal of Asia Business Studies*, 9(2), 177-194.
- Chakraborty, S., & Ray, T. (2006). Bank-based versus market-based financial systems: A growth-theoretic analysis. *Journal of Monetary Economics*, 53(2), 329-350.
- Chang, K., & Noorbakhsh, A. (2009). Does national culture affect international corporate cash holdings? *Journal of Multinational Financial Management*, 19(5), 323-342.
- Chen, H., Huang, H. H., Lobo, G. J., & Wang, C. (2016). Religiosity and the cost of debt. *Journal of Banking & Finance*, 70, 70-85.

- Chen, K. C., Chen, Z., & Wei, K. J. (2011). Agency costs of free cash flow and the effect of shareholder rights on the implied cost of equity capital. *Journal of Financial and Quantitative Analysis*, 46(1), 171-207.
- Chen, N., & Yang, T. C. (2017). Democracy, rule of law, and corporate governance—A liquidity perspective. *Economics of Governance*, 18(1), 35-70.
- Chen, Q., Chen, X., Schipper, K., Xu, Y., & Xue, J. (2012). The sensitivity of corporate cash holdings to corporate governance. *The Review of Financial Studies*, 25(12), 3610-3644.
- Chen, T., Harford, J., & Lin, C. (2017). *Financial flexibility and corporate cash policy*. HKIMR Working Paper No. 05/2017.
- Chen, Y., Dou, P. Y., Rhee, S. G., Truong, C., & Veeraraghavan, M. (2015). National culture and corporate cash holdings around the world. *Journal of Banking & Finance*, 50, 1-18.
- Coglianesi, C. (2007). Legitimacy and corporate governance. *Delaware Journal of Corporate Law*, 32, 159-167.
- Cremers, M., & Ferrell, A. (2014). Thirty years of shareholder rights and firm valuation. *Journal of Finance*, 69(3), 1167-1196.
- Demirgüç-Kunt, A., & Levine, R. (1999). *Bank-based and market-based financial systems: Cross-country comparisons*. The World Bank.
- Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics*, 83(3), 599-634.
- Dittmar, A., Mahrt-Smith, J., & Servaes, H. (2003). International corporate governance and corporate cash holdings. *Journal of Financial and Quantitative analysis*, 38(1), 111-133.
- Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The law and economics of self-dealing. *Journal of Financial Economics*, 88(3), 430-465.
- Doidge, C., Karolyi, G. A., & Stulz, R. M. (2007). Why do countries matter so much for corporate governance? *Journal of Financial Economics*, 86(1), 1-39.
- Dutta, N., & Mukherjee, D. (2018). Can financial development enhance transparency? *Economic Change and Restructuring*, 51(4), 279-302.
- Farooq, O., & Alahkam, A. (2016). Performance of shariah-compliant firms and non-shariah-compliant firms in the MENA region: Which is better? *Journal of Islamic Accounting and Business Research*, 7(4), 268-281.
- Filatovchev, I., Jackson, G., & Nakajima, C. (2013). Corporate governance and national institutions: A review and emerging research agenda. *Asia Pacific Journal of Management*, 30(4), 965-986.
- Fish, M. S. (2011). *Are Muslims distinctive? A look at the evidence*. Oxford University Press.

- Fung, B. (2014). The demand and need for transparency and disclosure in corporate governance. *Universal Journal of Management*, 2(2), 72-80.
- Gamba, A., & Triantis, A. J. (2014). How effectively can debt covenants alleviate financial agency problems? *WBS Finance Group Research Paper No. 186*.
- García-Castro, R., Aguilera, R. V., & Ariño, M. A. (2013). Bundles of firm corporate governance practices: A fuzzy set analysis. *Corporate Governance: An International Review*, 21(4), 390-407.
- Ghassemi, G. (2009). Criminal punishment in Islamic societies: Empirical study of attitudes to criminal sentencing in Iran. *European Journal on Criminal Policy and Research*, 15(1-2), 159-180.
- Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. *Journal of Financial Economics*, 87(3), 535-555.
- Hill, J. G. (1999). Deconstructing Sunbeam—Contemporary issues in corporate governance. *University of Cincinnati Law Review*, 67, 1099–1127.
- Htay, S. N. N. (2012). *Towards Islamic worldview based corporate governance framework*. Universiti Putra Malaysia Press (UPM Press).
- Huang, Y., Elkinawy, S., & Jain, P. K. (2013). Investor protection and cash holdings: Evidence from US cross-listing. *Journal of Banking & Finance*, 37(3), 937-951.
- International Monetary Fund (IMF) (2012). Coping with high debt and sluggish growth. *World Economic Outlook October*, 41-43.
- Iqbal, Z., & Mirakhor, A. (2004). Stakeholders model of governance in Islamic economic system. *Islamic Economic Studies*, 11(2), 43-63.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Jiraporn, P., Kim, J. C., & Kim, Y. S. (2011). Dividend payouts and corporate governance quality: An empirical investigation. *Financial Review*, 46(2), 251-279.
- Judge, W. Q., Douglas, T. J., & Kutan, A. M. (2008). Institutional antecedents of corporate governance legitimacy. *Journal of Management*, 34(4), 765-785.
- Kalcheva, I., & Lins, K. V. (2007). International evidence on cash holdings and expected managerial agency problems. *The Review of Financial Studies*, 20(4), 1087-1112.
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The worldwide governance indicators: Methodology and analytical issues (World Bank Policy Research Working Paper No. 5430). Washington, DC: The World Bank.
- Kim, J., & Daniel, S. J. (2016). Religion and corporate governance: Evidence from 32 countries. *Asia-Pacific Journal of Financial Studies*, 45(2), 281-308.
- Kwok, C. C., & Tadesse, S. (2006). National culture and financial systems. *Journal of International*

business studies, 37(2), 227-247.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000a). Investor protection and corporate governance. *Journal of Financial Economics*, 58(1-2), 3-27.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2002). Investor protection and corporate valuation. *The Journal of Finance*, 57(3), 1147-1170.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (2000b). Agency problems and dividend policies around the world. *The Journal of Finance*, 55(1), 1-33.

Levine, R. (2002). Bank-based or market-based financial systems: Which is better? *Journal of Financial Intermediation*, 11(4), 398-428.

Ljubojević, Ć., & Ljubojević, G. (2011). Improving the stakeholder satisfaction by corporate governance quality. *Škola biznisa, br, 1*, 22-35.

Love, I. (2003). Financial development and financing constraints: International evidence from the structural investment model. *The Review of Financial Studies*, 16(3), 765-791.

McGee, R. W. (2009). Corporate governance in developing economies. In *Corporate Governance in Developing Economies* (pp. 3-22). Springer, Boston, MA.

McGuire, S. T., Omer, T. C., & Sharp, N. Y. (2012). The impact of religion on financial reporting irregularities. *The Accounting Review*, 87(2), 645-673.

Mills, P., & Presley, J. (1999). *Islamic finance: Theory and practice*. Springer.

Misangyi, V. F., & Acharya, A. G. (2014). Substitutes or complements? A configurational examination of corporate governance mechanisms. *Academy of Management Journal*, 57(6), 1681-1705.

Nguyen, N. H., Phan, H. V., & Lee, E. (2020). Shareholder litigation rights and capital structure decisions. *Journal of Corporate Finance*, 62, 101601.

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

Rajan, R. G., & Zingales, L. (1998). Which capitalism? Lessons from the east Asian crisis. *Journal of Applied Corporate Finance*, 11(3), 40-48.

Rajan, R. G., & Zingales, L. (2001). Financial systems, industrial structure, and growth. *Oxford Review of Economic Policy*, 17(4), 467-482.

Safieddine, A. (2009). Islamic financial institutions and corporate governance: New insights for agency theory. *Corporate Governance: An International Review*, 17(2), 142-158.

Serajzadeh, S. H. (2001). Islam and crime: The moral community of Muslims. *Journal of Arabic and Islamic Studies*, 4, 111-131.

- Stout, L. A. (2013). The toxic side effects of shareholder primacy. *University of Pennsylvania Law Review*, 161(7), 2003-2023.
- Stulz, R. M. (2005). The limits of financial globalization. *The Journal of Finance*, 60(4), 1595-1638.
- Sulphey, M. M. (2015). Corporate governance in Islam vis-à-vis the modern corporate world. *Management & Accounting Review*, 14(1), 81-97.
- Tadesse, S. (2002). Financial architecture and economic performance: International evidence. *Journal of Financial Intermediation*, 11(4), 429-454.
- The Economist (2010). Shareholders vs. stakeholders – A new idolatry. April 22, 2010.
- Wagner, A. F., & Wenk, C. (2019). Agency versus hold-up: benefits and costs of shareholder rights. *Swiss Finance Institute Research Paper*, 11-12.
- Willsdon, J. (2008). Islamic finance: Firms seeking a slice of the growing Muslim market would be well advised to learn of its complexities inside out. *Accountants Today* (April 2008), 34-36.
- Yun, H. (2009). The choice of corporate liquidity and corporate governance. *The Review of Financial Studies*, 22(4), 1447-1475.
- Yusof, S., & Amin, R. M. (2007). A survey on the objective of the firm and models of producer behavior in the Islamic framework. *Journal of King Abdul Aziz University: Islamic Economics*, 20(2), 3-16.