Financial Liberalization via Market Openness and Corporate Cash Policy

Yenn-Ru Chen*, National Chengchi University
Robin K. Chou, National Chengchi University
Jhong-Hao Li, National Cheng Kung University

August 2015

ABSTRACT

This paper examines the impact of financial liberalization on corporate cash holdings. According to the trade-off theory, firms have low incentive to build high level of cash when they can easily access to capital markets for the funds needed. As predicted, our findings show that corporate cash holdings decrease with the level of financial liberalization. In particular, the effect of financial liberalization on cash holdings is stronger for financial constrained firms than for unconstrained firms, and is slightly higher for high-growth firms than for low-growth firms. In addition, we find that the effect of liberalization is more significant when the degree of financial development is also higher, because the market openness would also make financial market with low degree of financial development unstable. Last, financial liberalization not only lowers the corporate cash holdings, but also slows the cash saving behavior, especially from external sources.

Keywords: financial liberalization; cash holdings; cash saving; financial constraint; growth opportunity; financial development

JEL: G15, G32, G38

*Yenn-Ru Chen (Contact Author)
Department of Finance, National Chengchi University (yrchen@nccu.edu.tw)
No. 64, Chih-Nan Road, Section 2, Taipei, 11623, Taiwan
+886-2-29393091x81246

1. Introduction

The distortion of investments due to the insufficient financing feasibility increases firms' precautionary motive of cash holdings. Not only saving cash from internal operations, but recent studies identify that firms increasingly save cash from equity issuances for their precautionary needs (Kim and Weisbach, 2008; McLean, 2011). To make saving-cash-from-equity-issuance possible, not only one firm's capability of accessing to capital is important (Faulkender and Wang, 2006), but also whether the capital market has sufficient capital supply is also critical. Given that financial liberalization integrates the domestic capital market to international markets (Mckinnon, 1973) and thus alleviates the liquidity problem in domestic capital market (Stulz, 1999), financial liberalization would then play a critical role in corporate cash holdings. Therefore, in this study, we intend to examine the impact of financial liberalization on corporate cash holdings.

The way that financial liberalization affects corporate cash holdings is different from how corporate governance affects cash holdings examined in the literature (e.g., Dittmar, Mahrt-Smith, and Servaes; 2003). The effect of corporate governance on cash holdings emphasizes the agency motive of cash holdings. With better corporate governance, measured by the investor protections index, the firms are less likely to hold excessive cash assets. This finding is consistent with the corporate governance literature that dividend payment is higher in countries with better investor protection (e.g., La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2000). That is, this stream of studies focuses on whether corporate managers would overspend the corporate assets expropriating shareholders' value. Differently, our study emphasizes the capital supply environment that directly affects firms' financing feasibility and cash holding policy. Although the prior study shows that firms who intend to attract international capital flows would increase their information disclosure (Stulz, 1999), without the market openness to the foreign investors, firms would not be able to reach sufficient capital for their investments and then may not necessarily change their governance condition. That is, before addressing the effect of investor protection on corporate cash holdings, it is necessary to examine the effect of financial liberalization on corporate cash policy, which is however underexplored.

Kaya, Lyubimov and Miletkov (2012) show that countries with the need of financial aids are likely to liberalize their financial markets to international investors, highlighting the importance of market openness in counties with capital scarcity. Financial liberalization is to

open the market for foreign investors through the relaxation of government decree, and the introductions of depositary receipts and country funds (Obstfeld, 1994; Bekaert and Harvey, 2000; Christoffersen, Chung and Errunza, 2006; Bae, Bailey and Mao, 2006). Financial liberalization via market openness shows several critical effects onto domestic capital markets. First, the supply of funds increases along with financial liberalization. Bekaert, Harvey, and Lumsdaine (2002) document that financial liberalization increases the market capitalization. Second, the investment risk decreases along with financial liberalization. Based on the portfolio theory, integrating domestic market to international markets allow risk sharing through portfolio diversification across countries (Stulz, 1999; Buch et al., 2005). Third, the information asymmetry decreases along with financial liberalization. In order to attract international capital inflows, after liberalizations, firms would disclose more information to foreign investors (Stulz, 1999). Through the risk diversification and improvement of information transparency, firms could lower the cost of capital (Stulz, 1999, Henry, 2000).

Corporate cash holdings are associated with external financing. According to the trade-off theory of cash holdings, the high transaction cost of external financing motivates firms to hold cash (Keynes, 1936; Opler et al., 1999). When firms can easily access to capital markets, then the lower transaction cost would then lower the needs of building cash balance. In addition, the precautionary motive shows that firms with more growth opportunities tend to hold more cash for valuable investments. McLean (2011) further identifies that the precautionary motive becomes the main motive for firms to accumulate cash from external market. Therefore, this study would examine how financial liberalization affects the motives of cash holdings.

We start the empirical analysis by testing the direct impact of financial liberalization on corporate cash holdings. We adopt the model of Bates et al. (2009) for our international sample over the period 1987-2011. We find that financial liberalization increases firms' financial accessibility reducing the external financing cost and the future cash flow concerns, and then reduces the incentive to build large cash holdings. This finding is consistent with the transaction and precautionary motives.

We then examines whether financial liberalization shows different impact on corporate cash holdings between financially constrained firms and unconstrained firms. We perform this analysis because the constrained firms have higher incentive to accumulate cash than unconstrained firms (Faulkender and Wang, 2006). The previous studies use different criteria

to measure financial constraint in discussing the cash policy between financially constrained and unconstrained firms (Faulkender and Wang, 2006; Han, Qiu, 2007). We apply firm size and interest coverage ratio to be the proxy of financial constraint. We predict that the firms with higher difficulty of raising external funds would show stronger reactions on cash holdings following financial liberalization because liberalization increases their capability to access external financing. We find that small firms and firms with low interest coverage ratio (low borrowing capability) show stronger reaction to financial liberalization in reducing the level of cash holdings. Because large firms and firms with borrowing capability are on average easier to access to external funds before financial deregulation, market openness facilitating firms to access external market will have less impact on them. Similar to the findings of Goles and Werner (2002) that large firms usually have stronger political connections than smaller firms for the credit needed.

We also test whether the effect of financial liberalization differs between firms with high growth opportunity and those with low growth opportunity. Firms with higher level of investment and with high hedging needs tend to hold more cash than low-growth firms (Denis and Sibikov, 2010). We apply the ratio of market value of assets to book value of assets to measure the growth opportunity. We find that the high-growth firms react more to financial liberalization in reducing cash holdings than low-growth firms. High-growth firms have high incentive to build large cash for their investments needs before the market openness. When local capital markets are integrated to international markets, high-growth firms would then lower their needs to keep building such large cash as they used to because their growth opportunities allow them able to attract more international capital flows than low-growth firms.

The financial liberalization is not costless. The market openness makes financial market with low degree of financial development unstable, so thus financial liberalization may not bring the benefits for low developed financial markets (Stiglitz, 2000). To address this issue, we further examine whether the financial development, reflecting financial depth and financial system development, is a key factor to influence the effect of financial liberalization on corporate cash holdings. Our finding suggests that financial liberalization decreases the corporate cash holdings only when the countries are relatively financially developed. This is, when a financial market is not deep enough or financial system is not well developed, foreign investors are still concerned with the investment environment and investor protection in local markets after market openness. This is consistent with the finding of Eichengreen, Gullapalli

and Panizza (2011) that the positive effect of liberalization is only limited to countries with well-developed financial markets.

In summary, our result suggests that when a country's financial market is deep enough, financial liberalization decreases corporate cash balances with an increase in the financial accessibility, especially, for firms with lower financial capability to access financial market and for firms with high growth opportunity.

This paper contributes to the literature in several ways. First, our findings supplement the literature of cash holdings by providing the evidence from the aspect of capital supply that directly affects the corporate accessibility to external financing. Given that most studies of cash holdings discuss corporate cash balances from the needs of cash on capital spending or from investor protection (e.g., Dittmar, Smith and Servaes, 2003; Kusnadi and Wei, 2011), we provide evidence that the capital supply in financial markets can affect firms' motives of holding cash and further change the corporate cash policy and, extensively, corporate cash saving behavior. The related studies like Kim and Weisbach (2008) and McLean (2011) only emphasize on the trend of cash saving behavior.

Second, our findings enhance the findings of recent researches that posit the precautionary motive to be the main motive of cash holdings. Opler et al. (1999) show the firms with strong growth opportunity hold relatively higher cash ratio supporting that precautionary motive dominates the financing hierarchy theory and the agency theory. Bates et al (2009), Kim and Weisbach (2008) and McLean (2011) also suggest that increasing precautionary motive is the best explanation of saving cash from more expensive equity issuance rather than internal cash flows.

This paper also enhances the limited number of studies linking financial liberalization to the firm-level analysis. Henry (2000) and Bekaert et al. (2000) suggest that market openness reduces the corporate cost of capital by sharing the portfolio risk. Laeven (2003) argues that financial liberalization reduces the financial constraints of small firms. Extending from these studies, we completely discuss the role of financial liberalization on corporate financing policy and consequently examine the impact on corporate cash policy by linking the capital supply side to the capital demand side.

This paper proceeds as follows. Section 2 reviews the related literatures and develops our empirical hypotheses. Section 3 describes our sample construction and financial liberalization measures used in this article. Section 4 shows our empirical analysis for the

corporate cash holdings policy. Additional analysis regarding corporate cash saving behavior is discussed in Section 5 and Section 6 concludes the study.

2. Literatures Reviews and Development of Hypotheses

In this section, we first discuss the trade-off theory of cash holdings and further discuss how the financial liberalization of country influence the firm's financing. After that, we develop the hypotheses.

2.1 The Trade-off Theory of Cash Holdings

The trade-off theory of cash holdings includes the transaction motive and the precautionary motive. The transaction motive, introduced by Keynes (1936), suggests that firms need the liquid assets to maintain the operations; this is, firms hold cash to bridge the interval between the time of cost and time of the receipt of sale proceeds. In a world with the perfect capital market, the transaction motive would not exist because holding liquid assets does not have the opportunity cost and external financing is also costless. In reality, the costly external financing triggers the transaction cost due to market imperfection and investors' adverse selection (Myer and Majluf, 1984). Firms can raise funds from capital market, sell existing assets, and reduce dividends, or combine these actions, but these actions are very costly to firms, especially those who have difficulty in fund raising (Opler et al., 1999). Therefore, firms tend to hold cash as buffer to avoid expensive transaction cost. Nevertheless, holding cash has a lower return and an opportunity cost increasing with interest rate, which would then lower shareholders' welfare (Opler et al., 1999, Kim, Mauer, Sherman, 1998). In other words, firms have a tradeoff between the lower return earned from cash and the benefits of minimizing the external financing cost. If the cost of firms liquidating assets is lower or firms access to capital unlimitedly, they would prefer to use capital market (Opler et al., 1999, Bates et al, 2009, Kusnadi, Wei, 2011). Opler et al. (1999) suggest that firms will hold more cash when facing higher cost of liquidating assets or higher probability of short of liquid assets. According to the transaction cost motive, a firm with higher cost of external financing tends to hold more cash than the one with lower cost of external financing (Kim et al., 1998).

Firms holding cash are not only to avoid the transaction cost but also to hedge against the uncertainty of funds in the future. Firms prefer to invest valuable projects, even when they cannot finance these investments with internal cash. When the external financing is

costly, the cash holdings can avoid losing investment opportunities. Especially, when the access to financial market is limited, it is more important for firms to build up cash on hand. This behavior is the precautionary motive of cash holdings. Almeida, Campello and Weisbach (2004) demonstrate the relation between financial constraints and firms' liquidity demand. They find that the financially constrained firms with growth opportunity have a positive cash flow sensitivity of cash, reflecting firms' propensity to save cash out of cash flows when they have difficulty to locate sufficient funds for investment. The higher cash flow volatility lowers firms' financial accessibility and thus lead to underinvestment, which is worsen during the economic downturn. Therefore, firms with high cash flow volatility would build up cash holdings, especially for those with high growth opportunity, to avoid the underinvestment problem (Kim et al., 1998; Oper et al., 1999). However, this relationship is not found in financial-unconstrained firms. Han and Qiu (2007) extend the model of Almeida et al. (2004) by including the uncertainty of future cash flow. They show that financially constrained firms face an intertemporal tradeoff between the current and future investments, and thus they would increase their cash holdings in response to the increasing cash flow volatility. Nevertheless, the cash flow volatility for cash holdings is not sensitive for unconstrained firms. The finding is because financially constrained firms cannot fully diversify their cash flow risk as unconstrained firms, and thus they have strong incentive to increase the cash holdings for the precautionary motive. In short, both results of Almeida et al. (2004) and Han and Qiu (2007) support the precautionary motive. In addition, McLean (2011) shows that the trend of increasing share issuing of cash saving is motivated by the precautionary needs of investment.

2.2 The Effect of Financial Liberalization on Corporate Cash Holdings

Financial liberalization influences corporate financing in several ways. The direct effect of financial liberalization is to increase the capital supply to domestic firms for their investments. Mckinnon (1973) argues that a country with growth needs tend to fund its investments through saving. Nonetheless, it is discouraged to accumulate capital in developing markets due to higher inflation and lower nominal interest rate. The negative real interest rate could trigger the capital scarcity. Financial liberalization could integrate the worldwide financial markets and help countries with capital scarcity to reach the fund needed. Bekaert, Harvey, and Lumsdaine (2002) find that the increasing degree of financial liberalization increases the capital inflows to domestic market from foreign markets. The role

of financial liberalization in capital supply is clearly identified. Firms' accessibility to external financing increases with the supply in capital markets.

Another effect of financial liberation on external financing is through risk sharing in integrating international portfolios. Before liberalization, the correlation of domestic capital market with foreign capital markets is low. After the relaxation of capital controls, the capital inflows from foreign investors would then diversify the risk in domestic capital market via the integration of international capitals (Stulz, 1999; Buch, Doepke, Pierdzioch, 2005; Henry, 2000). Such the risk sharing from capital integration then lowers the market risk premium and then firms' cost of capital (Bekaert and Harvey, 2000).

Furthermore, the financial liberalization can also decrease the information asymmetry. Domestic firms may be requested to disclose more information by law or regulations (Stulz, 1999). Firms would disclose information for external capital even if they do not required to do so. Bae et al. (2006) provide the direct evidence that domestic firms provide more information or adopt higher standard of law, regulation or disclosure to attract foreign investors, analysts, brokerages or traders to participant in domestic market, because failure to provide adequate information would make funds from capital market expensive. The increase of analyst coverage and the scrutiny of foreign investors effectively transmit the higher disclosure quality and regulation to developing country to reduce the information asymmetry. The higher quality of information disclosure enhances the investor protection, and thus also lowers firms' cost of capital.

In addition, financial liberalization is often accompanied with financial reform in many countries. The financial reform simultaneously enhances firms' accessibility to external financing from capital markets. For example, competing with international capital from financial liberalization, the local financial institutions may reduce financing requirements, like lowering firms' liquidity constraints and increasing the number of firms with potentially eligible for credit (Gelos and Werner, 2002).

These effects ease the obstacles of capital available from the external markets. In other words, financial liberalization increases the firms' financial accessibility. According to the trade-off theory, when a firm becomes easier to reach the external capital, the precautionary motive and the transaction motive regarding to cash holdings will decrease with the lower cash flows risk in future and lower external financing cost (Opler et al., 1999; Almeida et al., 2004; Han and Qiu, 2007). In other words, other things being equal, we expect that financial

market liberalization increase firm's accessibility to external capital, which further lowers the firm's cash flow concerns and thus makes the firm hold less cash on hand. Therefore, we develop our first hypothesis as follows:

Hypotheses1: The level of corporate cash holdings decreases with the level of financial liberalization.

According to Faulkender and Wang (2006) and Denis and Sivikov (2010), it's more difficult for financially constrained firms to raise funds from external markets than unconstrained firms, and thus have stronger incentive to maintain higher level of cash holdings. Unconstrained firms are more capable to access external financing than constrained firms even before or at low degree of financial liberalization, and thus the impact of financing capability is less important to their cash policy than other determinants of cash holdings. However, the constrained firms are often face more difficulty to find sufficient funds for their growth and thus have to maintain a higher level of cash holdings in order to avoid the underinvestment problem, especially when the supply of capital is limited before or at low degree of financial liberalization. Without holding large cash, the constrained firms may have to give up investment opportunity and then lose the competitive advantage. The financing capability is a very important cause to the excess cash holdings of constrained firms.

The degree of financial liberalization decreases the cost of external financing for constrained firms, increasing their financing capability for their growth and then lowering their incentive of cash holdings. As the role of financing capability on cash policy is much more important to financially constrained firms than unconstrained firms, the trade-off theory suggests that the degree of financial liberalization shows smaller impact on the cash policy for unconstrained firms than for constrained firms.

Similarly, Laeven (2003) finds that financial liberalization would only relax the financial constraints for small firms rather than for large firms. Among the measurements of financial constraints, firm size is highly addressed. Both Faulkender and Wang (2006) and Denis and Sivikov (2010) show that small firms are financially constrained because they are often young and less well known. When the benefits of financial liberalization is more pronounced for constrained firms than unconstrained firms, the trade-off theory predicts that financially constrained firms would experience stronger impact from the degree of financial

liberalization on their cash holdings policy than unconstrained firms.

Furthermore, as the precautionary motive of cash holdings suggests that cash holdings can avoid firms from the underinvestment problem, the investment opportunity faced the firms is critical in determining corporate cash policy. Thus, in addition to analyzing the impact of financial constraints, Denis and Sibikov (2010) also examine the impact of firms' investment opportunities on their cash holdings. They suggest that firms with more growth opportunities hoard more cash for the future investments. The high-growth firms often need a large amount of capital for investments in order to avoid the underinvestment problem and maintain their competitive advantages. When financial liberalization increases the capital supply through the market integration, high-growth firms then would be more capable to raise funds from external markets than before. In addition, their growth prospects are more attractive to international investors than low-growth firms. When local capital markets open to the foreign investors, the increasing accessibility to capital market may not necessarily change the incentive of cash holdings for low-growth firms. That is, the impact of financial liberalization on corporate cash policy is greater for high-growth firms than for low-growth firms. Therefore, we expect that the effect of financial liberalization on cash holdings would be significantly different between low-growth firms and high-growth firms. Our hypotheses are as follows:

Hypotheses2a: The decreasing extent of cash holding with financial liberalization is more significant for financially constrained firms than for unconstrained firms.

Hypotheses2b: The decreasing extent of cash holding with financial liberalization is more significant for firms with high growth opportunity than for those with low growth opportunity.

Financial liberalization often comes along with other structure change in many emerging markets, such as domestic financial reforms, trade liberalization, macro-economic stabilization programs, and large-scale privatizations (Bakaert and Harvey, 2000; Bekaert et al., 2002). With these structure changes, the financial development in local markets would be deep enough to realize the benefits of financial liberalizations. Although financial liberalization is correlated with financial development, they are not simultaneously co-existed. The institutions in high-developed financial markets normally can overcome the information

asymmetry with financing, but in the undeveloped financial market, firms face the problematic external financing with low financial depth (Khurana, Martin and Pereira, 2006). Stiglitz (2000) argues that if an underdeveloped financial market liberalizes hurriedly, the economics of this market would become vulnerable. These arguments suggest that, even if opening capital markets, countries with low degree of financial development are still unable to improve the financing environments for the corporation in the nations. That is, firms in the underdeveloped markets could still be unable to experience more capital supply and lower financing difficulty because foreign investors are still concerned with the depth of the local markets although the restrictions to the international investors are relaxed in the markets. Klein and Olivei (2001) find that with financial market liberalization, only the originally highly developed countries experience a larger increase in financial depth by the international competition than the countries with closed capital accounts. This positive relationship is not for the countries with low-developed financial markets. In other words, only the financial liberalization in countries with high-developed financial markets would attract foreign investors to invest in local markets and then consequently lead to a significant reduction of corporate cash holdings in the nations. Therefore, we develop our third hypothesis as follows:

Hypotheses3：The decreasing level of corporate cash holdings caused by financial liberalization is larger for firms in high-developed financial markets than those in low-developed financial markets.

3. Data and Financial Liberalization Measures

3.1 Data and Sample Selection

In this paper, the major objective is to examine whether the financial liberalization affect corporate cash holdings. We adopt the determinants of cash holding model of Bates et al. (2009) to examine how financial liberalization alter the determinants of cash holdings and the cash saving model of McLean (2011) to investigate how financial liberalization affect the corporate cash saving behavior. This study is a firm-level analysis, and the data and sample are mainly at firm level although the proxy of financial liberalization is measured at country level.

The main sources of firm-level data are the Compustat Global and the Compustat North American databases; the later is included because the Global database does not consist of

Canada samples. The financial liberalization measures are archived from the webpage of each authors, which will be discussed in the following session in details. To construct our sample, we set several criteria. The sample firms are required to have positive assets and positive sales. Financial firms (SIC codes between 6000-6999) and utility firms (SIC codes 4900-4999) are excluded, because the investment and financing activities (which further affect cash holdings) in these firms are highly regulated. To fully reflect a country's financial liberalization on firm level condition, we also exclude the country with less than 5 firms or with less than 10 firm-year observations. Since the Compustat Global database begins from 1987 and liberalization indexes are only available by the end of 2011, our final period of samples is from1987 to 2011. Finally, the full panel samples of cash determinants model are 21,167 firm-year observations. For the cash saving behavior analysis, we follow McLean's (2011) requirements to exclude missing data share issuance, share repurchase, debt issuance and debt redemption. The sample of cash saving model consists of 14,365 firm-year observations.

3.2 Measures of Financial Liberalization

In this study, we adopt four different financial liberalization measures in two classes: *de jure* and *de facto* measures. Kaopen, Fin_Cur and CAPITAL are *de jure* index and TOTAL is *de facto* index. These indexes are available from each authors personal website. Kaopen is construed by Chinn and Ito (2006, 2008) using the Annual Report on Exchange Arrangement and Exchange Restrictions (AERAER) of International Momentary Fund to identify an extensive financial liberalization index. Chinn and Ito (2006, 2008) rank the scores of current account restrictions, export proceeds surrender requirements and presence of multiple exchange rates for each item, and combine these three items and SHARE, which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year, for component analysis. Kaopen is a comprehensive measure of overall *de jure* financial liberalization; it includes the information of financial current account and capital account. The Kaopen data are available to the end of 2011 and matched 36 countries to the firm-level data.

In order to specifically analyze the financial liberalization effect, we also adopt the indexes from Quinn (2008). Based on the regulation of AREAER, Quinn (2008) structures two liberalization indexes: the capital account, CAPITAL, and the financial current account,

Fin_Cur. CAPITAL reflects the information of capital flows by residents and nonresidents, scored ranking from 0-4. Fin_Cur includes the information of imports payment, receipts from exports, invisibles payment and receipts from invisibles and scored ranking from 0-8. The period of available data of Fin_Cur and CAPITAL are only to 2004 and matched 36 countries to the firm-level data.

There is a disadvantage in the *de jure* indexes. They implicitly assume that all categories of indicators are equally important and those regulations cannot be reversed once they are released, which however may not always be true in practice. In order to reflect the actual capital flows, we also include the *de facto* measure, which emphasizes the real degree of financial interrelation and comparability across different years. Lane and Milesi-Ferretti (2007) structure a *de facto* measure, TOTAL, which is calculated as the sum of a country's aggregate assets and liabilities over its gross domestic product. The assets and liabilities include foreign direct investment (FDI), equity investments, external debt and financial derivatives. The higher ratio of TOTAL means more level of financial liberalization and higher liquidity of capital in a country. The TOTAL data is available to 2011 and matched 38 countries to firm-level data in this paper.

Four indexes are rescaled to be from 0 to 1 for the interpretation comparability across different measures. To test whether the firms' attitudes toward cash holdings changes with financial liberalization, we construct the sample by the liberalization index in quartile at each year, which can reflect the liberalization of a country in relative rather than absolute to other countries. To reflect the real capital inflows from foreign markets to domestic markets, the following analysis will be more emphasized on the *de facto* index.

Table 1 exhibits the summary statistics of country-level median of liberalization indexes. It shows the *de jure* and *de facto* indexes capture the different information about the degree of liberalization. For example, according to the *de jure* index, Greece and Ireland are in the high degree of liberalization, but in the *de facto* index, Ireland is more liberalized than Greece. Although the Canada observations dominate all sub-samples, the testing results still remain the same after excluding the Canada observations.

4. Empirical Analyses: the Impact of Financial Liberalization on Corporate Cash Holdings

We adapt the cash determinates models of Bates et al. (2009) and Opler et al. (1999) to

perform the empirical analyses of corporate cash holdings policy.

$$Cash_{it} = \alpha_{1j} + \alpha_{2t} + \beta_1 {}^{M}\!/_{B_{it}} + \beta_2 Cashflow_{it} + \beta_3 NWC_{it} + \beta_4 RealSize_{it} + \beta_5 Capex_{it} + \beta_7 Leverage_{it} + \beta_8 IndustrySigma_{it} + \beta_9 Div_{it} + \beta_{10} R\&D_{it} + \beta_{11} Acquistion_{it} + \beta_{12} NEI_{it} + \beta_{13} NDI_{it} + \beta_{14} Liber_{it} + \varepsilon_{it} \quad (1)$$

Following Bates et al. (2009), we use the cash-to-assets ratio to be the dependent variable rather than the cash-to-net assets ratio to avoid generating extreme outliers, which mainly are firms with large portion of assets in cash. In order to control the industry and year effects, we apply the fixed effect analysis. α_{1j} are industry-specific intercepts and α_{2t} are year-specific intercepts. We add the liberalization index to examine the effects of liberalization on corporate cash holdings. The liberation indexes are country-level data and thus using these indexes also control for country effect.

The other explanatory variables are consistent with Opler et al. (1999) and Bates et al. (2009). Market-to-Book ratio (*M/B*): We measure Market-to-Book ratio as the book value of assets minus the book value of equity plus the market value of equity, divided by the book value of total assets. Firms will hold more cash for their growth opportunity to avoid the underinvestment problem. Cash Flows (*Cashflows*): earnings after interest, taxes and dividends but before depreciation, divided by the book value of total assets. Other thing being equal, more cash inflows would increase the cash level. Net Working Capital (*NWC*): It is as the substitute for cash, and is calculated as the working capital not of cash to the book value of total assets. Real Size (*RealSize*): the logarithm of book assets in the 2011 dollars. Small firms are prone to face difficulties in financing than large firms. There are economies of scale to cash holdings. Capital Expenditures (*Capex*): the ratio of capital expenditures to the book value of total assets. If capital expenditures can create assets, which are used as collateral, the capital expenditures will increase the debt capacity and firms reduce demand of cash on hand. In contrast, the static tradeoff theory suggests that firms hold more cash with more capital expenditures. Leverage (*Leverage*): the long-term debt plus debt in current liabilities divided by the book value of total assets. If a firm is at the situation of significant debt constrained, the firms will use the cash to replace the debt, which shows a negative relationship. In contrast, Acharya, Almeida and Campello (2007) argue that it is a positive relationship between cash holding and leverage with hedging needs. Industry Cash Flow Risk (*Industry*

Sigma): the mean of the standard deviations of (cash flow/total assets) over 10 years for firms in the same two-digit SIC code industry. A greater industry cash flow risk will make firms hold more precautionary cash. Dividend payout (*Dividend dummy*): We define a dummy variable equal to one in the year when a firm pays a common dividend, and zero otherwise. A firm with lower cash flow risk is more likely to pay dividend, and thus it will hold less cash with precautionary motive. R&D (*RD*): R&D to sales as a proxy for growth opportunities and financial distress could be a positive relation between the cash ratio and R&D spending. Acquisition expenses (*Acquisitions*): Acquisition expenses, scaled by the book value of total assets, would consider as a substitution of capital expenditures. We predict acquisition to assets has the same sign on coefficient with capital expenditures. Net equity issuance (*NEI*): We calculate net equity issuance as equity sales minus equity purchases, scaled by the book value of total assets. A firm's cash level goes up and down when it raises the capital and spends the capital raised. Net debt issuance (*NDI*): Net debt issuance is defined as debt issuance minus debt retirement scaled by the book value of total assets. We predict it the same relationship between net equity issuance and cash holding. We winsorize the market to books ratio of assets at the 99% level and the cash flows to assets and NWC to assets ratios at 1% level. Leverage is winsorized to be between 0 and 1. The other variables are winorized at 1% level and 99% level.

Table 2 exhibits the summary statistics of key variables in the cash determinants model of Bates et al. (2009) in Panel A. The distributions of key variables are similar to those in the international studies of Dittmar, Smith, Servaes (2003) and Huang, Elkinawy, Jain (2013), validating the sample selection in this study. The distributions of the country level *de jure* liberalization indexes are uniform, which reflects the disadvantage of nonreversible legal regulations assumption of the *de jure* liberalization measures.

4.1 Univariate Analysis: High-liberalized vs. Low-liberalized

Table 3 reports the results of univariate analysis for the determinants of cash holdings. The findings are consistent across different financial liberalization measures. Firms in high-liberalized countries tend to have lower cash holdings, higher MB ratio, smaller cash flows, higher net working capital, higher capital expenditure, higher industry sigma, higher R&D and higher acquisitions. These results indicate that firms in countries with higher liberalization level have more investment activities; this finding is consistent with the finding

in the liberalization literature that financial liberalization increases the aggregate investment in the countries (e.g., Bekaert, Harvey, and Lundblad, 2005). A lower level of cash holdings could be due to lower incentives of accumulating cash and more investment activities. As the liberalization literature indicates that the higher investment after liberalization is due to the increased capital supply, such increased capital supply not only encourages firms to undertake more investment projects but also lowers firms' motive of building large cash holdings. Accordingly, financial liberalization has both of the short term and long-term effects on capital markets to support firms' investment activities, current and future. This is consistent with the finding of Bakaert et al. (2002) that financial liberalization shows a permanent impact on capital markets, lowering the cost of capital.

In addition to the investment activities, the financing activities are also different for firms in different liberalization levels. Firms in countries with higher liberalization level tend to have lower leverage but not highly significant across all liberalization indexes. The difference of net debt issuance between firms in low-liberalized and in high-liberalized countries is small, although statistically significant in TOTAL, since debt financing is usually a major source to support the firms' financing in most countries. In contrast, net equity issuance is significantly higher for firms in countries with higher liberation level across all liberalization indexes. This finding indicates that financial liberalization significantly increases the capital supply especially from equity market. The higher net equity issuance in firms of high-liberalized countries corresponds well to the higher growth opportunities in these firms. In addition, firms in high-liberalized countries tend to payout less than firms in low-liberalized countries, corresponding to the higher investment activities in these firms. The finding of lower cash holdings, lower payout, higher investment, higher growth opportunity, and higher equity financing suggesting that the impact of financial liberalization is different from the impact of corporate governance on cash holdings. The corporate governance literature identifies that better corporate governance lowers cash holdings and increases dividend payout, in which the demand of capital for investments is not fully considered simultaneously. Although financial liberalization would also improve the level of investor protection, the ultimate goal is to allocate sufficient capital for investment activities and therefore the impact of financial liberalization on cash holdings should be explicitly examined.

4.2 The Impact of Financial Liberalization on Corporate Cash Holdings

We perform two empirical analyses to demonstrate the impact of financial liberalization on corporate cash holdings. First, we include the liberalization measures to the cash determinants model of Bates et al. (2009); i.e., our equation (1). Second, we contrast the cash determinants model of Bates et al. (2009) between the high-liberalized and low-liberalized firms. The first analysis allows us to directly examine the effect of liberalization on cash holdings, while the second analysis allow us to understand the difference of the cash determinants between firms operating in countries with different levels of liberalization. The second analysis is necessary because firm characteristics are likely to be different under different market condition, and then could affect corporate cash policy differently. Table 4 reports the results of our Eq. (1), the effect of financial liberalization on corporate cash holdings. Table 5 shows the results of the cash determinants between firms in high-liberalized countries and those in low-liberalized countries.

In Table 4, Model (1) is the basic model as in Bates et al. (2009) that examines the effect of cash determinants on corporate cash holdings. The result, consistent with Bate et al. (2009), shows the market to book ratio of assets, cash flows, R&D, net equity issuance and net debt issuance variables are significantly positive related with the cash balances, and the net working capital, capital expenditures, leverage, dividend, and acquisition variables are also significantly negative related with cash levels as we discussed earlier. The positive coefficients of cash flows, net equity issuance, and net debt issuance demonstrate the sources to corporate cash holdings. Positive coefficients of *MB* and *RD* verify the precautionary motive of cash holdings. Negative coefficients of *NWC*, *Capex*, *Acquisitions* indicate a substitution effect between current investments and future investments. Negative coefficient of dividend also shows a substitute effect with cash holdings. The coefficient of industry sigma reflecting the cash flow risk is positive but insignificant due to the control for the industry fixed effect in our regressions. In model (2), we add the *de facto* liberalization index to investigate the impact of financial liberalization on corporate cash holdings. The coefficient of TOTAL is significantly negative, indicating that the higher degree of financial liberalization in a country increases its financial accessibility and thus lowers the incentive of holding large cash for firms in the country. With liberalized financial markets, the domestic firms needing large capital funds would attract foreign investors by adapting higher disclosure standards to reduce asymmetry information, which then could reduce their cost of external financing. This result is consistent with the trade-off theory (discussed in Opler et al.,

1999) that the firms facing increasing financing accessibility would lower the transaction cost and precautionary motives of cash holdings. In order to test whether the *de jure* liberalization measures have the same impact, we apply different *de jure* liberalization indexes in models (3), (4) and (5), and the results are statistically significant, verifying our prediction that financial liberalization reduces the motive of maintaining large corporate cash holdings.

From Table 5, comparing to firms in low-liberalized countries, firms in high-liberalized countries have smaller impact of the market to book ratio on cash holdings. The signs of coefficients remain consistent with those identified in Table 4, in both high-liberalized and low-liberalized groups but with different significance. Among the variables associated with corporate investment activities, only those demonstrating future investment opportunities (*MB* and *RD*) show significant differences between the two samples. That is, the liberalization is especially important to firms with capital needs for future investments rather than current investments. When capital is sufficient and can be funded after liberalization, firms lower the precautionary motive of cash holdings for their future investment opportunities. The negative impact of leverage on cash holdings is significantly higher for firms in low-liberalized countries than in high-liberalized countries, indicating that financial liberalization lowers not only the debt financing but also the impact of leverage on cash holdings. Real size shows a significantly larger impact on cash holdings of firms in high-liberalized countries; this is, no matter small firms or large firms would not need to maintain higher cash ratio in the sufficient capital-supplied markets.

The cash outflows of variables including net working capital, capital expenditure, dividends and R&D are less sensitive in high degree of liberalization. Since getting funds from market becomes easier, firms have less sensitivity in direct cash outflows of short-term and long-term investments. Though only net working capital is significantly different, there are still the economic implications. Industry sigma is not significantly different between low and high-liberalized countries although the coefficient is smaller in high-liberalized country firms.

We further look into the cash inflows variables. The cash flows variable is not significantly different between low and high degree of liberalization countries. In terms of external financing of firms, due to risk sharing and easy to raise funds from capital market in high-liberalized market, the financing cost becomes lower and higher financing accessing reduces the precautionary and transaction cost motives of corporate cash holdings (Bekaert and Harvey, 2000; Opler et al, 1999). Since firms can easily raise the needed capital in

high-liberalized market, the accumulation of cash from external financing shows a small contribution to cash holdings, especially the equity financing. We find that financial liberalization significantly lowers the effect of net equity financing on cash holdings but not the effect of net debt financing. This finding indicates that the relaxation of capital control shows a stronger impact on firms' accessibility to equity market than debt market. Firms have higher flexibility in raising funds from equity market when the level of liberalization increases than from debt market. Given debt financing is a major source of external financing, firms would not necessarily significantly change their debt issuing along with the change of liberalization.

The above findings are consistent among *de facto* and *de jure* liberalization indexes. Overall, the liberalization decreases the cash holdings by reducing the sensitivity of determinants of cash holdings; this is, the corporate cash holdings of the static tradeoff theory including the precautionary and transaction cost motives will decrease when the liberalization level of the capital market increases. Our first and main hypothesis is thus verified.

4.3 The Influence of Financial Constraints

After understanding how financial liberalization changes cash holdings, we further test whether liberalization shows different impact on cash holdings between financially constrained firms and unconstrained firms. We apply firm sizes (Faulkender and Wang, 2006) and interest coverage ratio (Kaplan and Zingales, 1997) to measure the level of financial constraints.

Firm size: Larger firms usually have higher accessibility to capital markets for their investments than small firms. According to Faulkender and Wang (2006), we rank firm size by sales in each year from 1987 to 2011. Firms with sales less (larger) than or equal to the sales in the bottom (top) three deciles of annual size distribution are classified as small firms (large firms) in a given year.

Interest coverage ratio: Firms with higher interest coverage reflecting the lower financial distress are more capable to raise funds from external sources. According to Kaplan and Zingales (1997), interest coverage ratio is defined as earnings before interest, taxes and depreciation and amortization divided by interest expense. Firms with interest coverage ratios less (larger) than or equal to the interest coverage ratios in the bottom (top) three deciles of annual financial capability distribution are classified as with low financing capability (high

financing capability) in a given year.

Panel A of Table 6 reports, among different firms size, the effects of financial liberalization on corporate cash holdings. In columns (1) and (2), under the *de facto* liberalization index, the coefficients of TOTAL liberalization are significantly negative, reflecting both small firms and large firms would hold less cash due to increasing financing accessibility with market openness. The difference of coefficients of TOTAL is statistically significant between two groups of samples, -0.0564 vs. -0.0280; financial liberalization shows a greater impact in lowering the motive of cash holding in small firms. In low liberalization, only larger firms are capable to raise funds externally as their assets can be pledged, but smaller firms are unable to do so. Thus, small firms have stronger incentive to build up cash holdings than larger firms in low-liberalized markets. When capital control is relaxed, the financial accessibility increases to firms that had difficulty of fund raising before. The higher supply and lower financing cost lowers the motive of holding large cash assets to these firms. The results are consistent across different *de jure* liberalization measures, from columns (3) to (8). This finding is similar to the finding of Laeven (2003) that financial liberalization relaxes the financial constraints of small firms rather than large firms, since large firms already had better access to directed credit and had stronger political connection before market openness.

Panel B of Table 6 shows the effects of financial liberalization on corporate cash holdings between firms with different financing capability, measured by the interest coverage ratio. In columns (1) and (2) with *de facto* liberalization index, coefficients of TOTAL are consistently negative, showing that financial liberalization reduces cash holdings in all cases. The coefficient of TOTAL for the group of low financing capability is significantly lower that that for the group of high financing capability. This result indicates that financial liberalization shows a stronger impact on firms with higher prior difficulty of accessing capital markets, consistent with the results of the size effect discussed earlier. According to Opler et al. (1999) and Kusnadi and Wei (2011), when a firm encounters a higher cost of external financing, it would actively manage cash by building up cash assets. On the other hand, when a firm can access to capital markets unlimitedly, it does not manage its cash holdings out of internal cash flows. Therefore, our results are consistent to that other things being equal, the low-financing-capability firms show strong reaction to cash holdings policy when financial liberalization brings in the capital from foreign markets and reduces the credit requirements.

4.4 The Influence of Growth Opportunity

As the demand of cash holdings is for future investments, then a firm's growth opportunity should be taken into account when analyzing the impact of financial liberalization on corporate cash holdings. A firm's growth opportunity is often measured by the market value of assets to the book value of assets (MB) (e.g., Kaplan and Zingales, 1997), we thus apply the market to book ratio to analyze the effect of financial liberalization (a supply prospect) on cash policy from the demand prospect of cash holdings. Firms with higher growth opportunity have greater incentive to hoard up cash for investments because the funds needed are larger and the risk involved is higher. Firms with the market to book ratio larger (less) than or equal to the market to book ratio in the top (bottom) three deciles of annual growth opportunity distribution are considered firms with high growth opportunity (low growth opportunity). We then perform the equation (1) for both high-growth and low-growth firms, and contrast the different between the two groups of sample firms. The results are reported in Table 7.

For both high-growth and low-growth firms, the financial liberalization shows negative impact on cash holdings across all measures, indicating that the effect of financial liberalization on lowering the incentive of building large cash holdings is significant across different levels of investment opportunities. The negative coefficients of the financial liberalization indexes tend to be stronger in high-growth firms than in low-growth firms, although the significance is lower in the *de facto* liberalization index. High-growth firms have greater incentive to build cash than low-growth firms. When the accessibility to financial markets is limited, high-growth firms have to maintain a large position of cash even higher than the level needed in order to avoid the underinvestment problem that could lower their competitive capability. When financial liberalization lowers the barriers of external financing, the needs of cash buildings would thus be decreased, stronger for high-growth firms than low-growth firms because the increased accessibility to external capital lower the incentive to build the expensive cash to the high-growth firms. This finding is consistent with the precautionary motive of the trade-off theory.

While the high-growth firms are more capable to raise fund from equity markets than low-growth firms, they also have higher likelihood to build cash from equity issuances for their precautionary demand according to McLean (2011). Although the financial

liberalization lowers the incentive of build large cash, it also provides growing firms with a larger pool of equity financing than before. Accordingly, the financial liberalization may meanwhile encourage growing firms to build cash from equity issuance when it lowers the incentive of building large cash. This may explain why the difference of TOTAL between two samples of firms is not statistically significant. We therefore will further analyze the cash building behavior in later session.

4.5 The Influence of Financial Development

Finally, to further examine whether financial development would alter the effect of financial liberalization on corporate cash holdings, we incorporate the financial development data from the Work Bank database and follow Love (2003) and Khurana et al. (2006) to measure financial development as the sum of market capitalization over the GDP, total value traded over the GDP, and total value traded over market capitalization. Countries with the financial development measure less (larger) than or equal to the financial development measure in the bottom (top) three deciles of annual financial depth distribution are considered countries with low (high) degree of financial development. We then perform the equation (1) for both high-development and low-development groups, and contrast the different between the two groups of sample firms. The results are reported in Table 8.

In columns (1) and (2) with the *de facto* liberalization index, the coefficient of TOTAL is significantly negative in the sample with high degree of financial development markets but insignificant in the sample of low degree of financial development markets. For the *de jure* indexes, the results are similar with the Kaopen and Capital indexes, only firms in the countries with high financially developed markets experience the benefits from financial liberalization and then lower their cash holdings. Such result indicates that even though liberalizing financial market can attract the foreign capital inflows to domestic financial market, the low financial depth still is a problem for external financing. As argued by Eichengreen, Gullapalli and Panizza (2011), the benefits of liberalization are limited to countries with relatively well-developed financial market. The *de jure* liberalization measures show the similar results. Even though the coefficient of Fin_Cur in low degree of financial development markets is significant, the effect of liberalization in high financial depth markets is still larger.

5 Additional Tests: The Cash Saving Behavior

According to the relationship of financial liberalization and cash balances, financial liberalization reduces the firms' incentive to hoard up cash. In order to identify how liberalization to influence the cash holdings, we further apply cash saving model of McLean (2011) to test its impact on firms' accumulation behaviors.

The cash saving model of McLean (2011) showing cash sources of firms are from the different ways. We further base on cash saving model to test how liberalization to change the firms' cash saving behaviors by sampling.

$$\Delta Cash_{it} = \alpha_{1j} + \alpha_{2t} + \alpha_{3c} + \beta_1 Issue_{it} + \beta_2 Debt_{it} + \beta_3 Cashflow_{it} + \beta_4 Other_{it} + \beta_5 Assets_{it} + \varepsilon_{it} \quad (2)$$

where ΔCash is the different cash at the end of year and the cash at the beginning of year. α_{1j} are industry-specific intercept, α_{2t} are year-specific intercept and α_{3c} are country-specific intercept. Issue is the cash proceeds from equity issuance. Debt is the proceeds from debt sales. Cash flow is the sum of net income, depreciation and amortization. Other is cash from all other sources that include the source of others' funds and sales of PPE and investment. Asset is the logarithm of total assets. These measures are scaled by the lagged value of total assets. These variables are winsorized at 1st and 99th level.

Panel B of Table 2 exhibits the summary statistics of key variables in cash saving mode1 of McLean (2011) to describe the source of capital raised. The mean of dCash is 0.0293, which displays firms increasing their cash holdings on average each year. It also shows the external financing funds more than internal financing, which is consistent with the findings of McLean (2011).

Table 9 exhibits the univariate analysis of key variables of cash saving model. dCash is significantly different between low liberalized countries and high liberalized countries in each liberalization index. We further find firms' saving behaviors are different between low liberalized counties and those in high-liberalized counties. Due to insufficient capital in low liberalized countries, raising funds from capital market is more difficult. Equity financing and Debt financing are statistically significant between low and high-liberalized counties but the

differences of Debt financing are small. The result is similar to the in determinants of cash model.

Table 10 reports the effects of financial liberalization on cash saving. In model (1), we follow McLean (2011) to test how firms accumulate cash from the different sources. It is consistent with McLean (2011), indicating the share issuance increasingly becomes a important source of cash saving. In model (2)-(5), we add the different measurements of liberalization indexes to test the effects liberalization on cash accumulations. We can find variables of liberalization index are significant toward cash accumulations, which is consistent with univariate analysis. However, we more focus on how liberalization to influence cash saving behaviors. Also, due to the multi-collinearity problem, we avoid adding the interaction of liberalization index and other sources of cash. We further test cash saving behaviors change with liberalization by sampling with degree of financial liberalization.

Table 11 exhibits the effects of financial liberalization on cash saving behaviors by different sampling. In low liberalized countries and high-liberalized countries, share issuance is still the primary sources of cash saving. However, in column (1) and (2) of TOTAL, a de facto liberalization measure, share saving rate in low liberalized countries is significantly larger than those in high-liberalized countries. Since firms in low liberalized countries face limited capital supplied in financial market and hard to access to market, firms would accumulate cash over needs once they catch the opportunity to do external financing, which implies that precautionary motive to save cash for valuable investments following the finding of McLean (2011). This result is also consistent the transaction cost of cash holdings. Firms in high-liberalized countries reduce the expensive share issuance and increase the cash saving from debt and cash flows since financial liberalization increases the financing accessibility. We can find the similar results in de jure liberalization indexes, Kaopen, Fin_Cur and CAPIAL.

6 Conclusion

The research of Opler et al. (1999) identifies that the trade off theory (consisting of the transaction cost and precautionary motives) dominates the pecking order theory and the agency theory in explaining corporate cash holdings. The findings of Bates et al. (2008) and McLean (2011) also verify the importance of the precautionary motive beyond the agency motive. The related literature identifies the especially importance of the trade off theory in

explaining corporate cash holdings. Based on this implication, in this paper, we examine whether financial liberalization shows impact on corporate cash holdings with the transaction cost and precautionary motives. The result of this paper is consistent with our hypothesis that financial liberalization reduces firms' cash holdings, because financial liberalization increases the financial accessibility and further reduces firms' concerns of difficulty in funding for future investment needs. Moreover, we find that the effect of financial liberalization on cash holdings is especially stronger for firms with higher difficulty to access to capital markets. Firms with growth opportunity would still reduce more cash holdings after the financial liberation than low-growing firms, because liberalizing financial markets make growing firm more capable to attract international investors than low-growing firms.

The financial liberalization could be very costly to the countries without a certain level of financial development because underdeveloped markets could make the economies vulnerable after relaxing the control of international capitals (Stiglitz, 2000). Thus, we further investigate whether financial development is a key factor to influence whether financial liberalization could bring the effects on corporate cash holdings. Our result consistently suggests that only when financial market is developed, financial liberalization can demonstrate the effect on firms' cash policy.

The findings in this paper contribute to the literature in several ways. First, we extend the cash holdings literature. We bring together macro level of capital supply and micro level of cash demand and provide direct evidence showing that financial market condition is associate with cash holdings motive of transaction cost and precautionary motive. Also, we enhance the growth opportunity is still a strong motive to hoard up cash, supporting previous studies findings (e.g. Opler et al., 1999; Bates et al., 2009; Almeida et al.2004). Second, we enhance the financing role of financial liberalization. We look into the effects of liberalization from the capital supply role to the role of capital usage for corporate investment to provide a more completed view of role of liberalization on financing. Last, our result also enhances the finding of Henry (2000) and Bekaert et al. (2001) that market openness reduce the cost of capital and finding of Laeven (2003) that financial liberalization can relax financial constraints of small firms.

REFERENCE

Acharya, V. V., H. Almeida, and M. Campello. (2007). Is cash negative debt? A hedging perspective on corporate financial policies. Journal of Financial Intermediation 16(4), 515-554.

Almeida, H., M. Campello, and M. S. Weisbach. (2004). The cash flow sensitivity of cash. The Journal of Finance 59(4), 1777-1804.

Bae, K. H., W. Bailey, and C. X. Mao. (2006). Stock market liberalization and the information environment. Journal of International Money and Finance 25 (3), 404–428.

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

Bekaert, G., and C. R. Harvey. (2000). Foreign speculators and emerging equity markets. Journal of Finance 55 (2): 565–613.

Bekaert, G., C. R. Harvey, and R. L. Lumsdaine. (2002). The dynamics of emerging market equity flows. Journal of International Money and Finance 21(3), 295-350.

Bekaert, G., C. R. Harvey and C. Lundblad. (2005). Does financial liberalization spur growth?. Journal of Financial Economics 77(1), 3-56.

Buch, C. M., J. Döpke, and C. Pierdzioch. (2005). Financial openness and business cycle volatility. Journal of International Money and Finance 24(5), 744-765.

Chinn, M. D. and H. Ito. (2006). What matters for financial development? Capital controls, institutions, and interactions. Journal of Development Economics 81(1), 163-192.

Chinn, M.D. and H. Ito. (2008). A new measure of financial openness. Journal of Comparative Policy Analysis 10(3), 309-322.

Christoffersen, P., H. Chung, and V. Errunza. (2006). Size matters: the impact of financial liberalization on individual firms. Journal of International Money and Finance 25(8), 1296-1318.

Denis, D. J. and V. Sibilkov. (2010). Financial constraints, investment, and the value of cash holdings. Review of Financial Studies 23(1), 247-269.

Dittmar, A., J. Mahrt-Smith, and H. Servaes. (2003). International corporate governance and corporate cash holdings. Journal of Financial and Quantitative analysis 38(01), 111-133.

Eichengreen, B., R. Gullapalli, and U. Panizza. (2011). Capital account liberalization, financial development and industry growth: A synthetic view. Journal of International Money and Finance 30(6), 1090-1106.

Faulkender, M. and R. Wang. (2006). Corporate financial policy and the value of cash. Journal of Finance 61 (4), 1957–1990.

Gelos, R. G., and A.M. Werner. (2002). Financial liberalization, credit constraints, and collateral: investment in the Mexican manufacturing sector. Journal of Development Economics 67(1), 1-27.

Han, S. and J. Qiu. (2007). Corporate precautionary cash holdings. Journal of Corporate Finance 13(1), 43-57.

Henry, P. B. (2000). Stock market liberalization, economic reform and emerging market prices. Journal of Finance 55 (2), 529–564.

Huang, Y., S. Elkinawy, and P.K. Jain. (2013). Investor protection and cash holdings: Evidence from US cross-listing. Journal of Banking & Finance 37(3), 937-951.

Kaplan, S. N. and L. Zingales. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints? The Quarterly Journal of Economics 112(1), 169-215.

Kaya, I., K. Lyubimov, and M. Miletkov. (2012). To liberalize or not to liberalize: Political and economic determinants of financial liberalization. Emerging Markets Review, 13(1), 78-99.

Keynes, J. M. (1936). The General Theory of employment, interest and money: Macmillan Cambridge University Press, for Royal Economic Society.

Khurana, I. K., X. Martin, and R. Pereira. (2006). Financial development and the cash flow sensitivity of cash. Journal of Financial and Quantitative Analysis 41(04), 787-808.

Kim, W. and M.S. Weisbach. (2008). Motivations for public equity offers: An international perspective. Journal of Financial Economics 87(2), 281-307.

Kim, C. S., Mauer, D. C., & Sherman, A. E. (1998). The determinants of corporate liquidity: Theory and evidence. Journal of Financial and Quantitative Analysis, 33(03), 335-359.

Klein, M. W. and G. P. Olivei. (2008). Capital account liberalization, financial depth, and economic growth. Journal of International Money and Finance 27(6), 861-875.

Kusnadi, Y. and K.C. Wei. (2011). The determinants of corporate cash management policies: Evidence from around the world. Journal of Corporate Finance 17(3), 725-740.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. W. Vishny. (2000). Agency Problems and Dividend Policies around the World. The Journal of Finance 55(1), 1–33.

Laeven, L. (2003). Does financial liberalization reduce financing constraints?. Financial Management, 32(1), 5-34.

Lane, P. R. and G. M. Milesi-Ferretti. (2007). The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004. Journal of International Economics 73(2), 223-250.

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

McKinnon, R. I. (1973). Money and capital in economic development. Brookings Institution Press.

McLean, R. D. (2011). Share issuance and cash savings. Journal of Financial Economics 99 (3), 693–715.

Myers, S. C., and N.S. Majluf. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13(2), 187-221.

Obstfeld, M. (1994). Risk-taking, global diversification, and growth. American Economic Review 84(5), 1310-29.

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

Quinn, D. P. and A. M. Toyoda. (2008). Does capital account liberalization lead to growth? Review of Financial Studies 21(3), 1403-1449.

Stiglitz, J. E. (2000). Capital market liberalization, economic growth, and instability. World Development 28(6), 1075-1086.

Stulz, R. M. (1999). Golbalization, corporate finance, and the cost of capital. Journal of Applied Corporate Finance 12(3), 8-25.

Table 1
Summary Statistic of Country-Level Median Cash Variables and Financial Liberalization Index

Cash/Assets is ratio of holdings of cash and marketable securities to total assets. dCash/Assets is the different cash at the end of year and the cash at the beginning of year to lag assets. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents.

	Cash Holdings Model			Cash Saving Model			Liberalization Index			
							De facto	De jure		
Country	No. of Firm-Years	Average No. of Firms	Cash/Assets Median	No. of Firm-Years	Average No. of Firms	dCash/Assets Median	TOTAL Median	Kaopen Median	Fin_Cur Median	CAPITAL Median
Argentina	90	11	0.0537	65	5	0.0009	0.0766	0.0485	1.0000	1.0000
Australia	287	38	0.0854	132	16	0.0017	0.1777	0.0900	0.1520	0.1571
Belgium	31	6	0.2734				0.9181	0.2076	1.0000	1.0000
Brazil	151	25	0.1383	107	15	0.0046	0.0345	0.0518	0.0235	0.0423
Canada	13762	2076	0.0555	10298	1740	0.0000	0.8325	1.0000	1.0000	1.0000
Chile	179	17	0.0593	84	7	0.0008	0.1648	0.0978	0.0878	0.0884
China	165	17	0.0669	139	14	0.0026	0.0340	0.0312	0.0105	0.0411
Denmark	72	7	0.1230				0.8476	1.0000	1.0000	1.0000
Finland	60	8	0.1178				0.8547	1.0000	1.0000	1.0000
France	274	46	0.1439	119	19	0.0030	0.8647	1.0000	0.1990	1.0000
Germany	207	30	0.1053	41	6	0.0033	0.8520	1.0000	1.0000	1.0000
Greece	36	7	0.0942				0.1552	1.0000	1.0000	1.0000
Hong Kong	131	15	0.2242	85	8	0.0066	0.9744	1.0000	1.0000	1.0000
India	107	13	0.2680	70	9	0.0316	0.0080	0.0312	0.0346	0.0435
Indonesia	47	5	0.1119				0.0495	0.0908	0.0495	0.0856
Ireland	310	33	0.1512	259	25	0.0042	0.9898	1.0000	1.0000	1.0000
Israel	1139	138	0.2719	870	97	0.0036	0.1534	0.1475	0.1658	0.1508
Italy	129	18	0.0936	85	7	0.0019	0.1810	1.0000	1.0000	1.0000
Japan	562	41	0.1781	303	22	0.0027	0.0886	1.0000	0.1520	0.1957
Korea	77	10	0.1128	51	5	0.0018	0.0483	0.0513	0.0561	0.0706
Liberia	97	9	0.0525				0.9839	0.1186	0.1561	1.0000
Luxembourg	116	16	0.1234	48	9	0.0019	1.0000			
Malaysia	110	64	0.0683	82	56	0.0026	0.2158	0.1550	0.1524	0.1465
Mexico	340	40	0.0606	144	16	0.0022	0.0322	0.0900	0.2025	0.0856
Netherlands	424	54	0.1124	222	28	0.0067	0.9142	1.0000	1.0000	1.0000
NewZealand	30	6	0.0235				0.1975	1.0000	1.0000	1.0000
Norway	83	10	0.0724				0.8124	1.0000	1.0000	1.0000
Panama	74	6	0.0716				0.8662	1.0000	0.1859	1.0000
Philippines	54	6	0.0533				0.0529	0.0645	0.0562	0.0884
Russian Federation	79	10	0.0510				0.0661	0.0478	0.0415	0.0435
Singapore	126	35	0.2399	111	31	0.0093	0.9757	1.0000	1.0000	1.0000
South Africa	169	19	0.0761	104	13	0.0031	0.0597	0.0312	0.0142	0.0411
Spain	85	26	0.0831	24	5	0.0014	0.1983	1.0000	1.0000	0.2014
Sweden	126	19	0.1031	73	7	0.0017	0.8620	1.0000	1.0000	0.1539
Switzerland	268	24	0.0992	194	16	0.0053	0.9609	1.0000	1.0000	1.0000
Taiwan	78	7	0.1875	77	7	0.0144	0.8275			
Turkey	32	15	0.2144	19	7	0.0194	0.0212	0.0449	0.0620	0.0856
United Kingdom	1060	152	0.1253	559	68	0.0021	0.9547	1.0000	1.0000	1.0000
Total	21167	3079		14365	2258					

Table 2
Summary Statistic of Determinants of Cash Model

This tables reports summary statistics of variables of models of determinants of cash holdings and model of cash saving in Panel A and Panel B, respectively. The following denominator of variables in Panel A are total assets, except R&D scaled by sales and liberalization indexes. Cash is the cash and marketable securities. Market to book is the book value of assets minus the book value of equity plus the market value of equity, divided by assets. Cash flows is the earnings after interest, taxes and dividends but before depreciation. NWC is working capital without cash. Real Size is the logarithm of book assets in 2011 dollars with million units. Leverage is the long-term debt plus debt in current liabilities to book assets. Industry sigma is Capital expenditures is the mean of the standard deviations of cash flow/assets over 10 years for firms in the same two-digit SIC code industry. Payout to shareholders is the sum, of common dividend and stock repurchases over assets. Net equity issuance is equity sales minus equity purchases. Net debt issuance is debt issuance minus debt retirement. The other variables displayed include measure of capital expenditures, research and development, and acquisitions. The variables in Panel B are scaled by the lagged value of total assets, except and liberalization indexes. dCash is the different cash at the end of year and the cash at the beginning of year. Issue is the cash proceeds from equity issuance. Debt is the proceeds from debt sales. Cash flow is the sum of net income, depreciation and amortization. Other is the source of others' funds and sales of PPE and investment. Asset is the logarithm of total assets. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents.

Panel A: Case Balance Model

Variables	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	N
Cash/assets	0.1614	0.1995	0.0185	0.0835	0.2268	21167
Market to book ratio	1.9641	1.9379	1.0418	1.3706	2.0534	21167
Cash flows/assets	0.0001	0.2749	0.0016	0.0674	0.1121	21167
NWC/assets	0.0006	0.2153	-0.0732	0.0040	0.1096	21167
Real size	5.2581	2.5839	3.5133	5.0215	6.9866	21167
Capital expenditures/assets	0.0893	0.1059	0.0237	0.0533	0.1098	21167
Leverage	0.2259	0.2090	0.0402	0.1978	0.3420	21167
Industry sigma	0.1197	0.1793	0.0338	0.0619	0.1397	21167
Payout to shareholders	0.0187	0.0385	0.0000	0.0001	0.0196	21167
R&D/sales	0.0809	0.2434	0.0000	0.0000	0.0273	21167
Acquisitions/assets	0.0228	0.0644	0.0000	0.0000	0.0053	21167
Net equity issuance	0.0817	0.1995	0.0000	0.0011	0.0526	21167
Net debt issuance	0.0122	0.0909	-0.0142	0.0000	0.0247	21167
TOTAL	0.7166	0.2936	0.8126	0.8312	0.8545	21167
Kaopen	0.8719	0.3154	1.0000	1.0000	1.0000	20935
Fin_Cur	0.8366	0.3427	1.0000	1.0000	1.0000	13551
CAPITAL	0.8572	0.3244	1.0000	1.0000	1.0000	13551

Panel B: Cash Saving Model

Variables	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	N
dCash	0.0293	0.2029	-0.0205	0.0000	0.0343	14365
Issue	0.1417	0.4429	0.0000	0.0028	0.0497	14365
Debt	0.0790	0.1690	0.0000	0.0023	0.0815	14365
Cash flows	0.0190	0.2925	-0.0150	0.0832	0.1498	14365
Other	0.0250	0.0732	0.0000	0.0011	0.0122	14365
Assets	5.3629	2.4630	3.6413	5.0690	7.0072	14365
TOTAL	0.7542	0.2871	0.8521	0.8655	0.8723	14365
Kaopen	0.8937	0.2930	1.0000	1.0000	1.0000	14212
Fin_Cur	0.8574	0.3270	1.0000	1.0000	1.0000	8484
CAPITAL	0.8792	0.3069	1.0000	1.0000	1.0000	8484

Table 3
Univariate Analysis of Firm Characteristics by Financial Liberalization Indexes

The denominator of the following variables is the value of total assets, except R&D scaled by sales. Cash is the cash and marketable securities. Market to book is the book value of debt plus the market value of equity over assets. Cash flows is the operating cash flows. NWC is working capital without cash. Real Size is the logarithm of book assets in 2011 dollars. Leverage is the long-term debt plus debt in current liabilities over assets. Industry sigma is the mean of the standard deviations of cash flows/assets over 10 years for firms in the same two-digit SIC codes industry. Payout to shareholders is the dividend plus stock repurchases over assets. Net equity issuance is equity sales minus equity purchases. Net debt issuance is debt issuance minus debt retirement. The other variables include measure of capital expenditures, research and development, and acquisitions. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents. The low liberalization is the first quartile and high liberalization is the fourth quartile at annual liberalization rank. The t-statistic is for the different from low lib to high lib of mean test.

	TOTAL			Kaopen			Fin_Cur			CAPITAL		
Variables	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)
Cash/ assets	0.1931	0.1542	11.06	0.1790	0.1585	5.17	0.1948	0.1413	12.58	0.1777	0.1463	6.90
	[0.1257]	[0.0717]	(0.0000)	[0.1084]	[0.0769]	(0.0000)	[0.1265]	[0.0616]	(0.0000)	[0.1175]	[0.0653]	(0.0000)
Market to book ratio	1.8455	1.9912	-4.25	1.8973	1.9767	-2.06	1.8785	1.9936	-2.65	1.8753	1.9904	-2.49
	[1.3740]	[1.3696]	(0.0000)	[1.3740]	[1.3677]	(0.0390)	[1.3335]	[1.3536v	(0.0081)	[1.3426]	[1.3513]	(0.0129)
Cash flows/ assets	0.0419	-0.0094	10.60	0.0406	-0.0078	8.89	0.0380	0.0000	6.79	0.0493	-0.0008	8.43
	[0.0738]	[0.0659]	(0.0000)	[0.0782]	[0.0656]	(0.0000)	[0.0696]	[0.0670]	(0.0000)	[0.0732]	[0.0663]	(0.0000)
NWC/assets	-0.0085	0.0027	-2.93	-0.0062	0.0018	-1.85	0.0006	0.0217	-4.63	0.0095	0.0194	-2.03
	[-0.0071]	[0.0065]	(0.0034)	[-0.0066]	[0.0057]	(0.0637)	[-0.0069v	[0.0176]	(0.0000)	[0.0018]	[0.0145]	(0.0422)
Real size	5.9014	5.1114	17.42	5.6091	5.1772	8.46	5.9900	4.8493	20.99	5.9852	4.8876	18.90
	[5.8470]	[4.8667]	(0.0000)	[5.5447]	[4.9179]	(0.0000)	[5.8033]	[4.6674]	(0.0000)	[5.9331]	[4.6701]	(0.0000)
Capital expenditures/ assets	0.0666	0.0945	-14.94	0.0725	0.0921	-9.34	0.0693	0.0989	-12.61	0.0729	0.0972	-9.70
	[0.0516]	[0.0537]	(0.0000)	[0.0550]	[0.0529]	(0.0000)	[0.0516]	[0.0603v	(0.0000)	[0.0560]	[0.0587]	(0.0000)
Leverage	0.2307	0.2248	1.59	0.2413	0.2227	4.51	0.2382	0.2335	1.03	0.2457	0.2323	2.75
	[0.2144]	[0.1943]	(0.1108)	[0.2293]	[0.1914]	(0.0000)	[0.2259]	[0.2085]	(0.3033)	[0.2337]	[0.2068]	(0.0060)
Industry sigma	0.1141	0.1210	-2.20	0.0907	0.1248	-9.60	0.0654	0.0638	1.42	0.0546	0.0658	-8.91
	[0.0627]	[0.0619]	(0.0282)	[0.0560]	[0.0627]	(0.0000)	[0.0541]	[0.0514]	(0.1559)	[0.0477]	[0.0535]	(0.0000)
Payout to shareholders	0.0201	0.0184	2.45	0.0196	0.0185	1.45	0.0158	0.0153	0.72	0.0164	0.0152	1.56
	[0.0066]	[0.0000]	(0.0143)	[0.0060]	[0.0000]	(0.1471)	[0.0046]	[0.0000]	(0.4710)	[0.0055]	[0.0000]	(0.1197)
R&D/ sales	0.0784	0.0814	-0.69	0.0747	0.0826	-1.64	0.0824	0.0754	1.32	0.0674	0.0785	-1.97
	[0.0026]	[0.0000]	(0.4884)	[0.0000]	[0.0000]	(0.1006)	[0.0055]	[0.0000]	(0.1878)	[0.0012]	[0.0000v	(0.0489)
Acquisitions/ assets	0.0118	0.0254	-11.95	0.0116	0.0247	-10.33	0.0099	0.0276	-11.90	0.0115	0.0268	-9.61
	[0.0000]	[0.0000]	(0.0000)	[0.0000]	[0.0000]	(0.0000)	[0.0000]	[0.0000]	(0.0000)	[0.0000]	[0.0000]	(0.0000)
Net equity issuance/ assets	0.0384	0.0915	-15.15	0.0475	0.0881	-10.26	0.0515	0.0943	-9.67	0.0540	0.0925	-8.16
	[0.0000]	[0.0019]	(0.0000)	[0.0000]	[0.0016]	(0.0000)	[0.0000]	[0.0025]	(0.0000)	[0.0000]	[0.0023]	(0.0000)
Net debt issuance/ assets	0.0096	0.0128	-2.01	0.0115	0.0122	-0.42	0.0109	0.0138	-1.43	0.0150	0.0129	0.94
	[0.0000]	[0.0000]	(0.0445)	[0.0000]	[0.0000]	(0.6780)	[0.0000]	[0.0000]	(0.1519)	[0.0000]	[0.0000]	(0.3496)
N	3931	17236		2977	17958		2525	11026		2151	11400	

Table 4
The Effects of Financial Liberalization on Corporate Cash Holdings

The dependent variable in all regressions is cash/assets, which is calculated as cash and marketable securities divided by book of assets. The denominator of the following variables is the value of total assets, except R&D scaled by sales. Cash is the cash and marketable securities. Market to book is the book value of debt plus the market value of equity over assets. Cash flows is the operating cash flows. NWC is working capital without cash. Real Size is the logarithm of book assets in 2011 dollars. Leverage is the long-term debt plus debt in current liabilities over assets. Industry sigma is the mean of the standard deviations of cash flows/assets over 10 years for firms in the same two-digit SIC codes industry. Dividend dummy is 1 if firm paid dividend, otherwise 0. Net equity issuance is equity sales minus equity purchases. Net debt issuance is debt issuance minus debt retirement. The other variables include measure of capital expenditures, research and development, and acquisitions. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents. All liberalization indexes are 0-1.The standard errors are clustered at the firm and year levels.

Variables	Predict Sign	Basic Cash/Assets (1)	TOTAL Cash/Assets (2)	Kaopen Cash/Assets (3)	Fin_Cur Cash/Assets (4)	CAPITAL Cash/Assets (5)
MB	+	0.0088***	0.0090***	0.0088***	0.0077***	0.0076***
		(8.81)	(9.05)	(8.82)	(6.52)	(6.42)
Cash flows	+	0.0574***	0.0538***	0.0550***	0.0626***	0.0631***
		(6.46)	(6.08)	(6.19)	(5.31)	(5.35)
NWC	-	-0.1321***	-0.1273***	-0.1299***	-0.1507***	-0.1539***
		(-16.24)	(-15.66)	(-15.94)	(-14.59)	(-14.87)
Real Size	-	-0.0002	0.0001	-0.0001	0.0015**	0.0019***
		(-0.49)	(0.10)	(-0.27)	(2.40)	(3.00)
Capex	+/-	-0.3819***	-0.3801***	-0.3808***	-0.3708***	-0.3724***
		(-23.30)	(-23.19)	(-23.00)	(-18.57)	(-18.62)
Leverage	+/-	-0.3329***	-0.3316***	-0.3340***	-0.3241***	-0.3258***
		(-44.26)	(-44.15)	(-44.14)	(-35.38)	(-35.46)
Industry Sigma	+	0.0062	0.0060	0.0066	0.0582	0.0670
		(0.72)	(0.71)	(0.77)	(1.32)	(1.50)
Dividend dummy	-	-0.0310***	-0.0346***	-0.0323***	-0.0273***	-0.0266***
		(-13.76)	(-15.20)	(-14.11)	(-9.65)	(-9.39)
RD	+	0.2520***	0.2506***	0.2521***	0.2592***	0.2592***
		(27.32)	(27.21)	(27.39)	(22.18)	(22.17)
Acquisitions	+/-	-0.3844***	-0.3701***	-0.3720***	-0.3407***	-0.3501***
		(-25.99)	(-24.98)	(-25.01)	(-19.04)	(-19.54)
NEI	+	0.1512***	0.1525***	0.1510***	0.1651***	0.1644***
		(14.54)	(14.69)	(14.52)	(12.99)	(12.91)
NDI	+	0.2406***	0.2373***	0.2350***	0.2426***	0.2437***
		(15.76)	(15.53)	(15.31)	(13.45)	(13.46)
TOTAL	-		-0.0393***			
			(-11.61)			
Kaopen	-			-0.0286***		
				(-9.33)		
Fin_Cur	-				-0.0426***	
					(-11.81)	
CAPITAL	-					-0.0311***
						(-8.62)
N		21167	21167	20935	13551	13551
Adjusted R-sq		0.477	0.479	0.480	0.491	0.489

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.

Table 5
The Effects of Financial Liberalization on Determinants of Cash Holdings

The dependent variable in all regressions is cash/assets, which is calculated as cash and marketable securities divided by book of assets. The denominator of variables is total assets, except R&D scaled by sales. Cash is the cash and marketable securities. Market to book is the book value of debt plus the market value of equity over assets. Cash flows is the operating cash flows. NWC is working capital without cash. Real Size is the logarithm of book assets in 2011 dollars. Leverage is the long-term debt plus debt in current liabilities over assets. Industry sigma is the mean of the standard deviations of cash flows/assets over 10 years for firms in the same two-digit SIC codes industry. Dividend dummy is 1 if firm paid dividend, otherwise 0. Net equity issuance is equity sales minus equity purchases. Net debt issuance is debt issuance minus debt retirement. The other variables include measure of capital expenditures, research and development, and acquisitions. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents. The low liberalization is the first quartile and high liberalization is the fourth quartile at annual liberalization rank. The standard errors are clustered at the firm and year levels.

	TOTAL			Kaopen			Fin_Cur			CAPITAL		
	Low Lib	High Lib	P-value for	Low Lib	High Lib	P-value for	Low Lib	High Lib	P-value for	Low Lib	High Lib	P-value for
Variables	Cash/Assets	Cash/Assets	difference	Cash/Assets	Cash/Assets	difference	Cash/Assets	Cash/Assets	difference	Cash/Assets	Cash/Assets	difference
	(1)	(2)		(3)	(4)		(5)	(6)		(7)	(8)	
MB	0.0130***	0.0075***	0.0149	0.0116***	0.0078***	0.1076	0.0128***	0.0059***	0.0072	0.0148***	0.0061***	0.0020
	(6.48)	(6.63)		(5.37)	(7.04)		(5.80)	(4.40)		(5.81)	(4.65)	
Cash flows	0.0679***	0.0543***	0.6108	0.0850***	0.0526***	0.2480	0.0871***	0.0594***	0.4191	0.0978***	0.0620***	0.3468
	(2.68)	(5.75)		(3.16)	(5.63)		(2.67)	(4.76)		(2.65)	(5.01)	
NWC	-0.1380***	-0.1074***	0.1661	-0.1626***	-0.1091***	0.0182	-0.1890***	-0.1352***	0.0288	-0.1987***	-0.1362***	0.0154
	(-6.75)	(-11.85)		(-7.66)	(-12.22)		(-8.53)	(-11.62)		(-8.38)	(-11.83)	
Real Size	-0.0005	-0.0054***	0.0001	0.0016	-0.0051***	0.0000	-0.0052***	-0.0005	0.0059	-0.0024	-0.0013	0.5473
	(-0.47)	(-6.77)		(1.26)	(-6.96)		(-3.53)	(-0.48)		(-1.47)	(-1.39)	
Capex	-0.4248***	-0.3663***	0.1816	-0.3414***	-0.3753***	0.4793	-0.3271***	-0.3632***	0.4940	-0.3788***	-0.3615***	0.7438
	(-10.41)	(-20.93)		(-7.53)	(-21.44)		(-6.67)	(-16.79)		(-7.65)	(-16.85)	
Leverage	-0.3630***	-0.3081***	0.0053	-0.3335***	-0.3186***	0.4971	-0.3869***	-0.3000***	0.0003	-0.3634***	-0.3071***	0.0266
	(-20.03)	(-37.07)		(-16.07)	(-39.10)		(-17.44)	(-29.54)		(-15.17)	(-30.71)	
Industry Sigma	0.0057	0.0011	0.8371	0.0373	0.0012	0.1661	0.1171	0.0555	0.5333	0.0569	0.0551	0.9862
	(0.28)	(0.12)		(1.49)	(0.14)		(1.35)	(1.10)		(0.63)	(1.13)	
Dividend dummy	-0.0327***	-0.0282***	0.4697	-0.0382***	-0.0281***	0.1126	-0.0394***	-0.0236***	0.0421	-0.0185***	-0.0262***	0.3154
	(-5.72)	(-10.86)		(-6.45)	(-11.02)		(-5.48)	(-7.29)		(-2.60)	(-8.08)	
RD	0.2680***	0.2488***	0.4934	0.2863***	0.2478***	0.1696	0.2003***	0.2675***	0.0338	0.1641***	0.2698***	0.0040
	(10.07)	(25.00)		(10.70)	(25.15)		(6.77)	(20.90)		(4.63)	(21.80)	
Acquisitions	-0.3229***	-0.3476***	0.6247	-0.3507***	-0.3473***	0.9539	-0.3070***	-0.3266***	0.7915	-0.2424***	-0.3299***	0.2031
	(-6.65)	(-22.07)		(-6.12)	(-22.28)		(-4.20)	(-17.26)		(-3.58)	(-17.48)	
NEI	0.2013***	0.1489***	0.0534	0.2066***	0.1474***	0.0365	0.2289***	0.1559***	0.0160	0.2283***	0.1571***	0.0238
	(8.05)	(13.22)		(7.80)	(13.18)		(8.34)	(11.11)		(7.86)	(11.34)	
NDI	0.2508***	0.2236***	0.4856	0.2378***	0.2271***	0.7958	0.2255***	0.2332***	0.8699	0.2056***	0.2388***	0.4853
	(7.00)	(13.46)		(6.17)	(13.73)		(5.14)	(11.96)		(4.60)	(12.43)	
N	3931	17236		2977	17958		2525	11026		2151	11400	
Adjusted R-sq	0.601	0.477		0.626	0.482		0.624	0.482		0.615	0.493	

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.

Table 6
The Effects of Financial Liberalization with Size Effect and Financing Capability on Corporate Cash Holdings

The dependent variable in all regressions is cash/assets. All variables are scaled by total assets, except R&D scaled by sales. Cash is the cash and marketable securities. Market to book is the book value of debt plus the market value of equity over assets. Cash flows is the operating cash flows. NWC is working capital without cash. Real Size is the logarithm of book assets in 2011 dollars. Leverage is the long-term debt plus debt in current liabilities over assets. Industry sigma is the mean of the standard deviations of cash flows/assets over 10 years for firms in the same two-digit SIC codes industry. Dividend dummy is 1 if firm paid dividend, otherwise 0. Net equity issuance is equity sales minus equity purchases. Net debt issuance is debt issuance minus debt retirement. The other variables include measure of capital expenditures, research and development, and acquisitions. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents. All liberalization indexes are 0-1. In Panel A, The sales of firms are less(larger) than or equal to the sales in the bottom(top) three deciles of annual size distribution as small firms(large firms). In Panel B, The interest coverage ratio of firms are less (large) than or equal to the interest coverage ratio in the bottom(top) three deciles of annual financial distress distribution as financial constraints(FC)(non financial constraints)(NFC). The standard errors are clustered at the firm and year levels.

Panel A Size Effect

	TOTAL		Kaopen		Fin_Cur		CAPITAL	
	Small Firms Cash/Assets	Large Firms Cash/Assets	Small Firms Cash/Assets	Large Firms Cash/Assets	Small Firms Cash/Assets	Large Firms Cash/Assets	Small Firms Cash/Assets	Large Firms Cash/Assets
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MB	0.0056***	0.0195***	0.0055***	0.0186***	0.0043***	0.0170***	0.0042***	0.0169***
	(3.99)	(9.96)	(3.94)	(9.96)	(2.67)	(7.12)	(2.59)	(7.11)
Cash flows	0.0222**	0.0536**	0.0237**	0.0593**	0.0399***	-0.0162	0.0390***	-0.0214
	(2.05)	(2.13)	(2.19)	(2.29)	(2.95)	(-0.42)	(2.88)	(-0.55)
NWC	-0.0674***	-0.1841***	-0.0681***	-0.1864***	-0.1165***	-0.1900***	-0.1172***	-0.1925***
	(-4.59)	(-14.30)	(-4.64)	(-14.33)	(-6.09)	(-11.98)	(-6.13)	(-12.10)
Real Size	0.0062***	-0.0005	0.0058**	-0.0000	0.0116***	-0.0005	0.0119***	0.0003
	(2.71)	(-0.62)	(2.54)	(-0.05)	(4.04)	(-0.45)	(4.15)	(0.24)
Capex	-0.4170***	-0.2629***	-0.4150***	-0.2633***	-0.3868***	-0.3233***	-0.3886***	-0.3188***
	(-15.90)	(-5.90)	(-15.82)	(-5.72)	(-12.03)	(-8.77)	(-12.09)	(-8.62)
Leverage	-0.3466***	-0.2061***	-0.3467***	-0.2074***	-0.3473***	-0.2020***	-0.3480***	-0.2040***
	(-23.55)	(-20.51)	(-23.55)	(-20.20)	(-19.45)	(-15.33)	(-19.49)	(-15.42)
Industry Sigma	-0.0032	0.0063	-0.0030	0.0047	0.0639	0.0197	0.0837	0.0319
	(-0.19)	(0.53)	(-0.18)	(0.39)	(0.57)	(0.44)	(0.75)	(0.70)
Dividend dummy	-0.0164*	-0.0163***	-0.0143	-0.0132***	-0.0127	-0.0053	-0.0129	-0.0047
	(-1.76)	(-5.51)	(-1.54)	(-4.50)	(-1.16)	(-1.42)	(-1.17)	(-1.26)
RD	0.1966***	0.4458***	0.1987***	0.4342***	0.2153***	0.4432***	0.2157***	0.4546***
	(17.40)	(10.99)	(17.63)	(10.64)	(15.10)	(7.74)	(15.09)	(7.91)
Acquisitions	-0.4757***	-0.2659***	-0.4753***	-0.2751***	-0.4578***	-0.2509***	-0.4603***	-0.2542***
	(-16.33)	(-10.75)	(-16.30)	(-11.03)	(-13.77)	(-8.43)	(-13.87)	(-8.48)
NEI	0.1422***	0.1466***	0.1411***	0.1448***	0.1575***	0.1524***	0.1563***	0.1510***
	(11.04)	(4.43)	(10.98)	(4.36)	(9.81)	(3.94)	(9.72)	(3.88)
NDI	0.1703***	0.1773***	0.1709***	0.1783***	0.1839***	0.1823***	0.1819***	0.1789***
	(6.00)	(7.62)	(6.03)	(7.58)	(5.33)	(6.88)	(5.26)	(6.71)
TOTAL	-0.0564***	-0.0280***						
	(-5.01)	(-7.59)						
Kaopen			-0.0490***	-0.0187***				
			(-5.48)	(-5.15)				
Fin_Cur					-0.0541***	-0.0338***		
					(-5.41)	(-8.05)		
CAPITAL							-0.0526***	-0.0337***
							(-4.99)	(-7.99)
N	6344	6348	6337	6217	4147	3956	4147	3956
Adjusted R-sq	0.446	0.393	0.446	0.393	0.463	0.390	0.463	0.389
P-value for Lib Variables Difference	0.0156		0.0015		0.0579		0.0926	

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.

Panel B Interest Coverage Ratio

	TOTAL		Kaopen		Fin_Cur		CAPITAL	
	FC Cash/Assets	NFC Cash/Assets	FC Cash/Assets	NFC Cash/Assets	FC Cash/Assets	NFC Cash/Assets	FC Cash/Assets	NFC Cash/Assets
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MB	0.0048***	0.0202***	0.0046***	0.0204***	0.0031*	0.0182***	0.0030*	0.0181***
	(3.26)	(14.51)	(3.09)	(14.59)	(1.76)	(11.70)	(1.69)	(11.61)
Cash flows	0.0094	0.0390	0.0110	0.0372	0.0181	0.0005	0.0185	-0.0012
	(0.85)	(1.13)	(1.00)	(1.07)	(1.22)	(0.01)	(1.24)	(-0.04)
NWC	-0.0333**	-0.2276***	-0.0350***	-0.2299***	-0.0563***	-0.2554***	-0.0584***	-0.2580***
	(-2.52)	(-20.86)	(-2.66)	(-20.91)	(-3.30)	(-19.05)	(-3.42)	(-19.23)
Real Size	0.0041***	-0.0032***	0.0036**	-0.0034***	0.0077***	-0.0027***	0.0081***	-0.0025***
	(2.63)	(-5.30)	(2.28)	(-5.55)	(4.08)	(-3.61)	(4.28)	(-3.31)
Capex	-0.3118***	-0.4449***	-0.3099***	-0.4456***	-0.2371***	-0.4640***	-0.2394***	-0.4643***
	(-9.89)	(-21.55)	(-9.82)	(-21.31)	(-5.93)	(-19.75)	(-5.99)	(-19.73)
Leverage	-0.3052***	-0.3150***	-0.3063***	-0.3153***	-0.3049***	-0.3175***	-0.3103***	-0.3165***
	(-23.74)	(-33.57)	(-23.82)	(-33.22)	(-18.95)	(-26.69)	(-19.26)	(-26.61)
Industry Sigma	-0.0099	0.0056	-0.0114	0.0061	0.0954	0.0218	0.1143	0.0262
	(-0.62)	(0.56)	(-0.71)	(0.61)	(0.96)	(0.42)	(1.14)	(0.50)
Dividend dummy	-0.0418***	-0.0211***	-0.0385***	-0.0196***	-0.0433***	-0.0121***	-0.0447***	-0.0112***
	(-6.36)	(-7.18)	(-5.84)	(-6.60)	(-5.60)	(-3.14)	(-5.74)	(-2.90)
RD	0.2202***	0.5830***	0.2226***	0.5820***	0.2382***	0.5541***	0.2385***	0.5576***
	(19.99)	(14.89)	(20.28)	(14.78)	(17.46)	(9.91)	(17.43)	(9.96)
Acquisitions	-0.3888***	-0.4528***	-0.3789***	-0.4621***	-0.3494***	-0.4439***	-0.3573***	-0.4533***
	(-13.02)	(-19.93)	(-12.66)	(-20.19)	(-10.13)	(-14.96)	(-10.32)	(-15.28)
NEI	0.1307***	0.2175***	0.1294***	0.2174***	0.1458***	0.2269***	0.1432***	0.2275***
	(9.72)	(12.68)	(9.63)	(12.62)	(8.64)	(10.79)	(8.46)	(10.78)
NDI	0.1524***	0.2987***	0.1489***	0.2985***	0.1746***	0.2835***	0.1744***	0.2837***
	(5.99)	(14.12)	(5.85)	(13.92)	(5.57)	(12.25)	(5.55)	(12.21)
TOTAL	-0.0691***	-0.0195***						
	(-5.95)	(-5.42)						
Kaopen			-0.0645***	-0.0078**				
			(-6.49)	(-2.33)				
Fin_Cur					-0.0745***	-0.0226***		
					(-6.72)	(-5.58)		
CAPITAL							-0.0555***	-0.0146***
							(-4.41)	(-3.71)
N	6366	10613	6344	10405	4129	6374	4129	6374
Adjusted R-sq	0.478	0.482	0.480	0.483	0.506	0.478	0.503	0.476
P-value for Lib Variables Difference	0.0000		0.0000		0.0000		0.0018	

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.

Table 7
The Effects of Financial Liberalization with High Growth and Low Growth Firms on Corporate Cash Holdings

The dependent variable in all regressions is cash/assets. All variables are scaled by total assets, except R&D scaled by sales. Cash is the cash and marketable securities. Market to book is the book value of debt plus the market value of equity over assets. Cash flows is the operating cash flows. NWC is working capital without cash. Real Size is the logarithm of book assets in 2011 dollars. Leverage is the long-term debt plus debt in current liabilities over assets. Industry sigma is the mean of the standard deviations of cash flows/assets over 10 years for firms in the same two-digit SIC codes industry. Dividend dummy is 1 if firm paid dividend, otherwise 0. Net equity issuance is equity sales minus equity purchases. Net debt issuance is debt issuance minus debt retirement. The other variables include measure of capital expenditures, research and development, and acquisitions. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. All liberalization indexes are 0-1. The market to book ratios of firms are larger (less) than or equal to the market to book ratio in the top(bottom) three deciles of annual growth opportunity distribution as high growth opportunity(low growth opportunity). The standard error estimations are clustered at the firm and year levels.

	TOTAL		Kaopen		Fin_Cur		CAPITAL	
	High Growth Cash/Assets	Low Growth Cash/Assets	High Growth Cash/Assets	Low Growth Cash/Assets	High Growth Cash/Assets	Low Growth Cash/Assets	High Growth Cash/Assets	Low Growth Cash/Assets
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MB	0.0051***	0.0358***	0.0050***	0.0370***	0.0043***	0.0204	0.0044***	0.0170
	(3.89)	(2.91)	(3.83)	(2.97)	(2.83)	(1.29)	(2.87)	(1.07)
Cash flows	0.0725***	-0.0958***	0.0747***	-0.0945***	0.0829***	-0.0740***	0.0832***	-0.0718***
	(6.02)	(-4.32)	(6.14)	(-4.25)	(4.91)	(-2.73)	(4.93)	(-2.63)
NWC	-0.1145***	-0.1226***	-0.1173***	-0.1258***	-0.1638***	-0.1301***	-0.1672***	-0.1372***
	(-7.85)	(-10.57)	(-7.98)	(-10.80)	(-8.53)	(-9.17)	(-8.67)	(-9.64)
Real Size	0.0013	-0.0009	0.0006	-0.0007	0.0051***	-0.0005	0.0058***	-0.0002
	(1.07)	(-1.06)	(0.51)	(-0.86)	(3.11)	(-0.49)	(3.50)	(-0.22)
Capex	-0.4962***	-0.2931***	-0.4936***	-0.2972***	-0.4646***	-0.3048***	-0.4665***	-0.3066***
	(-16.10)	(-10.11)	(-15.91)	(-10.16)	(-11.92)	(-8.47)	(-11.95)	(-8.51)
Leverage	-0.3257***	-0.3085***	-0.3300***	-0.3093***	-0.3463***	-0.2877***	-0.3500***	-0.2886***
	(-22.45)	(-26.60)	(-22.54)	(-26.59)	(-18.29)	(-21.02)	(-18.44)	(-21.04)
Industry Sigma	0.0168	0.0013	0.0183	0.0022	0.0157	0.1224*	0.0295	0.1358*
	(1.04)	(0.09)	(1.12)	(0.16)	(0.15)	(1.70)	(0.27)	(1.88)
Dividend dummy	-0.0532***	-0.0213***	-0.0495***	-0.0197***	-0.0526***	-0.0077*	-0.0525***	-0.0063
	(-9.06)	(-6.43)	(-8.41)	(-5.97)	(-6.98)	(-1.88)	(-6.94)	(-1.54)
RD	0.2061***	0.3489***	0.2080***	0.3498***	0.2183***	0.3498***	0.2180***	0.3525***
	(17.58)	(12.96)	(17.79)	(12.95)	(14.84)	(9.91)	(14.82)	(9.90)
Acquisitions	-0.4877***	-0.2362***	-0.4843***	-0.2412***	-0.4431***	-0.2318***	-0.4537***	-0.2428***
	(-15.55)	(-8.13)	(-15.36)	(-8.27)	(-11.95)	(-6.21)	(-12.21)	(-6.48)
NEI	0.1581***	0.0880***	0.1555***	0.0884***	0.1690***	0.1247***	0.1678***	0.1233***
	(12.00)	(3.03)	(11.80)	(3.02)	(10.47)	(3.14)	(10.37)	(3.08)
NDI	0.1995***	0.1675***	0.1933***	0.1684***	0.2424***	0.1589***	0.2430***	0.1603***
	(6.78)	(7.27)	(6.57)	(7.26)	(6.63)	(5.93)	(6.63)	(5.96)
TOTAL	-0.0532***	-0.0414***						
	(-7.08)	(-7.46)						
Kaopen			-0.0436***	-0.0283***				
			(-6.35)	(-6.02)				
Fin_Cur					-0.0700***	-0.0380***		
					(-8.85)	(-6.87)		
CAPITAL							-0.0594***	-0.0207***
							(-7.25)	(-4.03)
N	6360	6343	6295	6297	4057	4094	4057	4094
Adjusted R-sq	0.454	0.425	0.455	0.424	0.469	0.416	0.466	0.411
P-value for Lib Variables Difference	0.2029		0.0649		0.0008		0.0001	

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.

Table 8
The Effects of Financial Liberalization on Corporate Cash Holdings under Different Degrees of Financial Development

The dependent variable in all regressions is cash/assets. The denominators of all variables are total assets, except R&D scaled by sales. Cash is the cash and marketable securities. Market to book is the book value of debt plus the market value of equity over assets. Cash flows is the operating cash flows. NWC is working capital without cash. Real Size is the logarithm of book assets in 2011 dollars. Leverage is the long-term debt plus debt in current liabilities over assets. Industry sigma is the mean of the standard deviations of cash flows/assets over 10 years for firms in the same two-digit SIC codes industry. Dividend dummy is 1 if firm paid dividend, otherwise 0. Net equity issuance is equity sales minus equity purchases. Net debt issuance is debt issuance minus debt retirement. The other variables include measure of capital expenditures, research and development, and acquisitions. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. All liberalization indexes are 0-1. Financial development(FD) is the sum of total value traded over the GDP, market capitalization over GDP and total value traded over market capitalization The financial development of countries are less(larger) than or equal to the financial development in the bottom(top) three deciles of annual financial depth distribution as low financial development(high financial development). The standard errors are clustered at the firm and year levels.

	TOTAL		Kaopen		Fin_Cur		CAPITAL	
	Low FD Cash/Assets	High FD Cash/Assets	Low FD Cash/Assets	High FD Cash/Assets	Low FD Cash/Assets	High FD Cash/Assets	Low FD Cash/Assets	High FD Cash/Assets
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MB	0.0141***	0.0083***	0.0135***	0.0082***	0.0124***	0.0070***	0.0123***	0.0070***
	(6.70)	(7.36)	(6.56)	(7.29)	(5.23)	(5.27)	(5.14)	(5.27)
Cash flows	0.0903***	0.0448***	0.1038***	0.0445***	0.0881**	0.0542***	0.0869**	0.0542***
	(3.59)	(4.75)	(4.12)	(4.71)	(2.57)	(4.28)	(2.54)	(4.28)
NWC	-0.1221***	-0.1184***	-0.1333***	-0.1185***	-0.1638***	-0.1417***	-0.1668***	-0.1421***
	(-6.63)	(-13.01)	(-7.18)	(-13.01)	(-7.59)	(-12.04)	(-7.71)	(-12.07)
Real Size	-0.0013	-0.0009	-0.0019**	-0.0009	-0.0018*	0.0022***	-0.0017*	0.0023***
	(-1.62)	(-1.33)	(-2.30)	(-1.37)	(-1.92)	(2.58)	(-1.76)	(2.78)
Capex	-0.3598***	-0.3749***	-0.3618***	-0.3740***	-0.3691***	-0.3599***	-0.3690***	-0.3597***
	(-7.83)	(-20.63)	(-7.81)	(-20.55)	(-6.79)	(-16.04)	(-6.76)	(-16.03)
Leverage	-0.3366***	-0.3276***	-0.3503***	-0.3275***	-0.3634***	-0.3175***	-0.3659***	-0.3176***
	(-20.22)	(-37.46)	(-20.76)	(-37.44)	(-16.24)	(-29.82)	(-16.30)	(-29.79)
Industry Sigma	0.0200	0.0040	0.0188	0.0038	0.1878*	0.0383	0.1966*	0.0383
	(0.93)	(0.43)	(0.86)	(0.41)	(1.68)	(0.76)	(1.75)	(0.75)
Dividend dummy	-0.0372***	-0.0311***	-0.0352***	-0.0309***	-0.0333***	-0.0270***	-0.0337***	-0.0268***
	(-7.81)	(-11.42)	(-7.33)	(-11.30)	(-5.46)	(-7.90)	(-5.51)	(-7.85)
RD	0.2758***	0.2447***	0.2816***	0.2446***	0.2138***	0.2648***	0.2145***	0.2647***
	(10.65)	(24.20)	(10.80)	(24.20)	(6.55)	(20.62)	(6.60)	(20.58)
Acquisitions	-0.4604***	-0.3540***	-0.4478***	-0.3544***	-0.3694***	-0.3340***	-0.3845***	-0.3353***
	(-9.10)	(-21.64)	(-8.71)	(-21.66)	(-5.35)	(-16.79)	(-5.62)	(-16.84)
NEI	0.2086***	0.1479***	0.2010***	0.1481***	0.2242***	0.1584***	0.2242***	0.1586***
	(7.49)	(12.90)	(7.19)	(12.92)	(6.72)	(11.11)	(6.71)	(11.11)
NDI	0.3132***	0.2128***	0.2993***	0.2127***	0.2678***	0.2250***	0.2694***	0.2251***
	(8.73)	(12.20)	(8.20)	(12.19)	(5.53)	(11.08)	(5.57)	(11.06)
TOTAL	0.0054	-0.0282***						
	(0.79)	(-4.59)						
Kaopen			0.0068	-0.0269***				
			(1.20)	(-4.57)				
Fin_Cur					-0.0180***	-0.0420***		
					(-2.72)	(-6.45)		
CAPITAL							-0.0046	-0.0365***
							(-0.67)	(-5.74)
N	3771	16296	3661	16268	2209	10363	2209	10363
Adjusted R-sq	0.567	0.474	0.576	0.474	0.602	0.487	0.601	0.486
P-value for Lib Variables Difference	0.0003		0.0000		0.0091		0.0006	

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.

Table 9
Univariate Analysis of Sources of Cash by Financial Liberalization Index

The following variables are scaled by lagged total assets. dCash is the different cash at the end of year and the cash at the beginning of year. Issue is the cash proceeds from equity issuance. Debt is the proceeds from debt sales. Cash flow is the sum of net income, depreciation and amortization. Other is the source of others' funds and sales of PPE and investment. Asset is the logarithm of total assets. . The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to GDP and compositions include FDI, equity investment, external debt and financial derivatives for each assets and liabilities. Kaopen is a component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents. The low liberalization is the first quartile and high liberalization is the fourth quartile at annual liberalization rank. The t-statistic is for the different from low lib to high lib of mean test.

	TOTAL			Kaopen			Fin_Cur			CAPITAL		
Variables	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)	Low Lib Mean [Median]	High Lib Mean [Median]	t-statistic (p-value)
dCash	0.0380	0.0277	2.22	0.0423	0.0277	2.74	0.0520	0.0259	4.25	0.0560	0.0260	4.53
	[0.0023]	[0.0000]	(0.0262)	[0.0022]	[0.0000]	(0.0061)	[0.0030]	[0.0000]	(0.0000)	[0.0032]	[0.0000]	(0.0000)
Issue	0.1048	0.1487	-4.35	0.1214	0.1457	-2.09	0.1522	0.1529	-0.05	0.1571	0.1521	0.33
	[0.0001]	[0.0036]	(0.0000)	[0.0002]	[0.0034]	(0.0368)	[0.0005]	[0.0036]	(0.9614)	[0.0004]	[0.0036]	(0.7381)
Debt	0.0845	0.0780	1.70	0.0949	0.0766	4.17	0.0765	0.0816	-1.02	0.0864	0.0800	1.21
	[0.0153]	[0.0009]	(0.0890)	[0.0184]	[0.0009]	(0.0000)	[0.0100]	[0.0044]	(0.3072)	[0.0165]	[0.0039]	(0.2280)
Cash flows	0.0695	0.0094	9.02	0.0687	0.0107	7.57	0.0506	0.0226	3.50	0.0623	0.0216	4.73
	[0.0929]	[0.0814]	(0.0000)	[0.0965]	[0.0811]	(0.0000)	[0.0843]	[0.0827]	(0.0005)	[0.0917]	[0.0813]	(0.0000)
Other	0.0382	0.0225	9.47	0.0332	0.0240	4.84	0.0339	0.0263	3.40	0.0304	0.0271	1.38
	[0.0038]	[0.0007]	(0.0000)	[0.0030]	[0.0008]	(0.0000)	[0.0036]	[0.0015]	(0.0007)	[0.0042]	[0.0015]	(0.1678)
Assets	6.6728	5.1152	28.49	6.4902	5.1779	20.79	6.2918	4.9563	19.67	6.5033	4.9633	21.16
	[6.7922]	[4.8855]	(0.0000)	[6.7169]	[4.9200]	(0.0000)	[6.3060]	[4.7536]	(0.0000)	[6.7184]	[4.7412]	(0.0000)
N	2284	12080		1658	12552		1360	7122		1141	7341	

Table 10
The Effects of Financial Liberalization on Cash Saving

The dependent variable in all regressions is dash/assets, which is calculated as the different cash at the end of year and the cash at the beginning of year to lag assets. The all independent variables is scaled by lagged assets. Issue is the cash proceeds from equity issuance. Debt is the proceeds from debt sales. Cash flow is the sum of net income, depreciation and amortization. Other is the source of others' funds and sales of PPE and investment. Asset is the logarithm of total assets. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to the gross domestic product and the compositions include FDI, equity investment, external debt and financial derivatives, as well as assets and liabilities for each. Kaopen is the component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE, which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents. All liberalization indexes are 0-1.The standard errors are clustered at the firm and year levels.

	Basic	TOTAL	Kaopen	Fin_Cur	CAPITAL
	dCash	dCash	dCash	dCash	dCash
Variables	(1)	(2)	(3)	(4)	(5)
Issue	0.3043***	0.3042***	0.3042***	0.2929***	0.2928***
	(29.28)	(29.29)	(29.28)	(23.13)	(23.11)
Debt	0.0185	0.0184	0.0185	0.0191	0.0188
	(1.22)	(1.21)	(1.21)	(1.01)	(1.00)
Cash flows	0.1324***	0.1321***	0.1318***	0.1296***	0.1297***
	(11.08)	(11.06)	(11.00)	(8.20)	(8.20)
Other	0.1052***	0.1022***	0.1034***	0.0697*	0.0718*
	(3.22)	(3.11)	(3.14)	(1.77)	(1.83)
Assets	0.0014*	0.0012	0.0012*	0.0025***	0.0026***
	(1.92)	(1.64)	(1.67)	(2.64)	(2.65)
TOTAL		-0.0088*			
		(-1.93)			
Kaopen			-0.0106**		
			(-2.28)		
Fin_Cur				-0.0155***	
				(-2.68)	
CAPITAL					-0.0164***
					(-2.76)
N	14365	14365	14212	8484	8484
Adjusted R-sq	0.374	0.374	0.375	0.385	0.385

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.

Table 11
The Effects of Financial Liberalization on Cash-Saving Behaviors

The dependent variable in all regressions is dash/assets, which is calculated as the different cash at the end of year and the cash at the beginning of year to lag assets. The all independent variables is scaled by lagged assets. Issue is the cash proceeds from equity issuance. Debt is the proceeds from debt sales. Cash flow is the sum of net income, depreciation and amortization. Other is the source of others' funds and sales of PPE and investment. Asset is the logarithm of total assets. The liberalization indexes are as follows: TOTAL is a country's aggregate assets plus liabilities to the gross domestic product and the compositions include FDI, equity investment, external debt and financial derivatives, as well as assets and liabilities for each. Kaopen is the component score of current account restrictions, export proceeds surrender requirements, presence of multiple exchange rates and SHARE, which is rolling average of the scores of AREAER table indicators converted to 0/1 over windows t to t-4 year. Fin_Cur is a score by AREAER text and include the imports payment, receipts from exports, invisibles payment and receipts from invisibles. CAPITAL is a score by AREAER text and includes capital flows by residents and by nonresidents. The low liberalization is the first quartile and high liberalization is the fourth quartile at annual liberalization rank. The standard errors are clustered at the firm and year levels.

	TOTAL			Kaopen			Fin_Cur			CAPITAL		
	Low Lib	High Lib	P-value for	Low Lib	High Lib	P-value for	Low Lib	High Lib	P-value for	Low Lib	High Lib	P-value for
Variables	dCash	dCash	difference	dCash	dCash	difference	dCash	dCash	difference	dCash	dCash	difference
	(1)	(2)		(3)	(4)		(5)	(6)		(7)	(8)	
Issue	0.4104***	0.2815***	0.0000	0.4064***	0.2857***	0.0000	0.3871***	0.2638***	0.0000	0.4038***	0.2642***	0.0000
	(28.34)	(23.81)		(26.49)	(24.50)		(19.21)	(17.68)		(29.67)	(17.81)	
Debt	-0.0042	0.0281*	0.3318	0.0028	0.0260	0.5279	-0.0166	0.0307	0.3452	-0.0696*	0.0348*	0.0099
	(-0.14)	(1.66)		(0.08)	(1.53)		(-0.35)	(1.49)		(-1.93)	(1.66)	
Cash flows	0.1509***	0.1214***	0.4306	0.1449***	0.1234***	0.6204	0.1036**	0.1243***	0.6509	0.0830*	0.1258***	0.3677
	(4.20)	(9.53)		(3.41)	(9.78)		(2.36)	(7.36)		(1.80)	(7.53)	
Other	0.0093	0.1331***	0.0665	0.0410	0.1173***	0.3217	0.0635	0.0819*	0.8321	0.0419	0.0904**	0.4651
	(0.17)	(3.34)		(0.59)	(3.14)		(0.83)	(1.81)		(0.81)	(2.06)	
Assets	0.0024	-0.0006	0.2555	0.0044	-0.0006	0.1238	0.0082**	0.0003	0.0294	0.0092**	0.0005	0.0468
	(0.98)	(-0.57)		(1.37)	(-0.64)		(2.34)	(0.22)		(2.12)	(0.39)	
N	2284	12080		1658	12552		1360	7122		1141	7341	
Adjusted R-sq	0.626	0.330		0.642	0.336		0.639	0.319		0.712	0.319	

The levels of significance of 1%, 5%, and 10% are denoted by ***, ** and *, respectively.