




“Debts and corporate cash holdings: Evidence from ASEAN-5”

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ARTICLE INFO	Thi Huong Giang Vuong, Thuy Hang Dao, Thi Thuy Hang Le and Huu Manh Nguyen (2022). Debts and corporate cash holdings: Evidence from ASEAN-5. <i>Investment Management and Financial Innovations</i> , 19(1), 186-200. doi: 10.21511/imfi.19(1).2022.14
DOI	http://dx.doi.org/10.21511/imfi.19(1).2022.14
RELEASED ON	Wednesday, 23 February 2022
RECEIVED ON	Tuesday, 28 December 2021
ACCEPTED ON	Wednesday, 16 February 2022
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

43



NUMBER OF FIGURES

0



NUMBER OF TABLES

9

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BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 28th of December, 2021
Accepted on: 16th of February, 2022
Published on: 23rd of February, 2022

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Conflict of interest statement:
Author(s) reported no conflict of interest

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DEBTS AND CORPORATE CASH HOLDINGS: EVIDENCE FROM ASEAN-5

Abstract

This paper investigates the impact of debts on corporate cash holding levels and how this impact varies through five large markets of the ASEAN economic community due to different business environment features, namely, macroeconomic factors and legal characteristics. Using the Generalized Method of Moments for dynamic panel models to analyze mega data of non-financial ASEAN-5 firms from 2009 to 2018, this study examined that ASEAN-5 firms maintain relatively high cash after the financial crisis. Second, macroeconomic policies strongly affect the adjustment speed of corporate cash holdings and corporate cash reserve levels in ASEAN-5 firms. Besides, the estimates indicate that there is an alternative nexus between debts and cash reserves in ASEAN-5 firms. Finally, the impact of debts on corporate cash holdings is sustainably influenced by the macroeconomic conditions and the specific characteristics of the legal environment. This paper provides a rational framework for decision-making by corporate managers and macro-policymakers to solve the agency problems related to the alternative nexus between free cash flow and debt.

Keywords

debts, corporate cash holdings, ASEAN-5, dynamic panel model, business environment

JEL Classification

G33, F30, F40

INTRODUCTION

Managers are motivated to increase firm size due to their prestige and compensation, and to achieve their aim, they may undertake sub-optimal projects (Jensen, 1986). Financing these projects with external funds imposes the scrutiny of the capital market agents. However, if a firm has sufficient internal funds, corporate managers are free to invest in any unprofitable project without supervising investors and regulatory agents (Jensen, 1986). This argument implies that firms with plentiful cash normally undertake unprofitable investments. To prevent wasting advantages of cash, these firms should employ higher debt levels. The usage of debt increases external repayments, thus reducing the firm's free cash flow. This substitution effect is an inevitable consequence of agency costs regarding free cash flows (Jensen, 1986). Because debts decrease the agency costs due to reducing the available cash flow for the discretionary spending decisions of corporate managers.

The influence of corporate debts on cash reserves is explored in a variety of studies using different empirical models, such as a cross-sectional model (Guney et al., 2007), a panel model (Chen & Mahajan, 2010; Maheshwari & Rao, 2017), and a dynamic panel model (Venkiteshwaran, 2011; Uyar & Kuzey, 2014) in the pre-2008 period. Some recent studies focus on the impact of corporate factors, including debts, on the adjustment speed to target cash holdings by applying the Generalized Method of Moments (GMM) estimation (Venkiteshwaran, 2011; Uyar & Kuzey, 2014; Anand et al., 2018; Ngoc et al., 2020) and put on the similar findings.

Cash usage is still dominant in the ASEAN market, while the cash reserve ratio tends to increase in Asian firms (Horioka & Terada-Hagiwara, 2014). Hence, modeling the relationships between debts and cash holding of the ASEAN firms under internal and external factors is an important issue, especially for investors and policymakers. Further, this paper indicates how this effect varies through five large markets (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) of the Association of Southeast Asian Nations (ASEAN) region because these countries have differences in macroeconomic factors and legal-specific characteristics.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The ability to issue corporate debt is expressed by the leverage degree that is predicted to have an inverse relation to corporate cash holdings, meaning that used debts play an alternative role for reserving cash in firms. Moreover, firms hold more cash or maintain a low degree of leverage in the case of their flexible finance, suggesting the existence of an inverse linkage between debts and cash holdings in firms (Graham & Harvey, 2001). The negative relationship is primarily found in EMU's firms (Ferreira & Vilela, 2004), Japanese firms (Nguyen, 2005), US firms (Hardin et al., 2009), China's privatized firms (Meggison & Wei, 2014). Surveying factors influence the impact of debts on corporate cash holdings.

Many determinants of the external environment have been shown to influence cash holdings explicitly. For example, Chen et al. (2012) suppose that business environments also determine corporate cash reserves. Wang et al. (2014) prove that the inflation rate influences cash holding of Chinese firms. Some studies point out that corruption in emerging markets (Thakur & Kannadhasan, 2019), government quality in China countries (Chen et al., 2014), national culture in the US market (Chen et al., 2015); Corporate Social Responsibility Disclosure (Lu et al., 2017), air pollution (Li et al., 2021); R&D investment (Liu et al., 2021), and CEO demographics (Orens & Reheul, 2013) influence cash holding of firms. In general concepts, macroeconomic factors and legal-specific characteristics are considered baseline factors of the business environment, significantly impacting corporate cash holdings.

Investigating the determinants of corporate cash holdings in multi-markets is a significant concern in the context of commercial liberalization and

regional cooperation. Additionally, these analyses are based on a multi-national database with substantial variations in business environments, allowing more diverse examinations to explain corporate cash holdings (Dittmar & Mahrt-Smith, 2007; Kalcheva & Lins, 2007; Yung & Nafar 2014). Macro factors are closely related to financial markets where firms operating are more likely to directly influence cash flows and corporate liquidity. Natke (2001) indicates that interest rates affect the liquidity of Brazilian firms and insist on the role of the economic scale in specifying corporate liquidity ratio. Baum et al. (2008) prove that US non-financial firms reserve more cash in the increased macroeconomic uncertainty. In addition, the influence of macroeconomic factors on corporate cash holdings of multi-national firms is comparatively notable. Another side, the effect of leverage on cash holdings is sensitive to GDP growth rates and the government deficit (Chen & Mahajan, 2010). Anand et al. (2018) developed Chen and Mahajan's (2010) study in a specific market. They indicated that some macro conditions in the Indian market significantly affect target cash holdings of Indian firms. They are the macro factors introduced in the current articles of Chen and Mahajan (2010) and Anand et al. (2018).

Regarding characteristics of the legal environment aspect, conflicts in interests between managers and controlling shareholders and outside investors agency generate agency costs, leading to an increase in external financing costs. Managers prefer to hold more cash because they may easily access cash with less supervision and use it discretionarily (Tong, 2011). On the other hand, shareholder incentives to avoid managers investing in low profitable projects will force managers to disburse cash (Harford et al., 2008). Gao et al. (2013) assert that the rise of agency conflicts owing to more information asymmetry related to investment opportunities leads to a prominent existence of cash

in firms. Some specific characteristics of a legal environment play a vital role in reducing agency conflicts. La Porta et al. (1997) argue that agency costs change corresponding to the protection level that outside investors received, implying the firm's capability to issue more debt financing and equity financing. Countries with a weak protection level of outside investors lead to higher agency costs and make it difficult for firms to access external funding (La Porta et al., 1998). Hence, managers tend to reserve more cash.

Specifically, firms are more likely to hold less cash in countries with solid shareholder protection because of the lower expected agency costs, hence, the lower external equity financing costs. Jiraporn and Gleason (2007) point out corporate leverage is inversely associated with shareholder rights. The influence of creditor protection on cash holdings is opposite to the effect of shareholder protection on cash holdings. Firms operating in countries with high creditor rights may increase the bankruptcy probability when they are in a difficult financial situation. This context leads managers to be more conservative regarding their cash holding level. Thence, firms reserve more cash to decrease the probability of bankruptcy by the pressures of creditors in the context of financial distress. At the same time, debt ratios in firms have a positive linkage with creditor protection (Gungoraydinoglu & Öztekin, 2011). The legal law system is a critical proxy for agency costs. The more substantial shareholder rights compel managers to disgorge more cash in countries applying common law (Dittmar et al., 2003). The ownership concentration is also related to agency problems. The effectiveness of monitoring managers could solve agency problems between managers and shareholders. Shleifer and Vishny (1986) suppose that agency costs are likely to be lower when the presence of large shareholders might restrict manager rights. As a result, the firm's external financing costs are likely to be lower with large shareholders, thus no need to reserve a large proportion of cash in firms.

Al-Najjar (2013) investigates BRIC firms and finds that firms own a higher cash ratio to total assets in a country with lower shareholder protection. Cho et al. (2014) find that strong creditor protection reduces the target cash holdings ratio. Dittmar et al. (2003) indicate that corporate managers operating

in countries where shareholders are taken poor protection are less likely to disgorge more cash; however, they force to hold less cash when firms use in the country applying common law. Yung and Nafar (2014) indicate that creditor rights positively correlate with cash holding levels; nonetheless, this relationship lightens more substantial shareholder rights. Guney et al. (2007) test the non-monotonic effect of leverage on cash holdings according to country characteristics of five countries (US, UK, Germany, France, and Japan). Their results are more consistent with the non-monotonic impact of leverage on cash holdings. In contrast, the variations in the relationship between leverage and cash holdings across the specific characteristics of the legal environment are not investigated.

From the above analysis, the following hypotheses are proposed:

- H1: *Debts are negatively associated with cash holdings of ASEAN-5 firms.*
- H2: *Macroeconomic factors in ASEAN-5 significantly affect the cash holdings of ASEAN-5 firms.*
- H3: *The condition of ASEAN-5 macroeconomics is a driving factor or limiting factor in the alternative relationship between debts and cash holdings of ASEAN-5 firms.*
- H4: *The specific characteristic of ASEAN-5 legal environment is a motivating factor or restricting factor in the alternative relationship between debts and cash holdings of ASEAN-5 firms.*

2. DATA AND RESEARCH METHODOLOGY

2.1. Data

The financial statements of non-financial firms of five ASEAN countries from the World Scope/ Thomson Reuters Eikon were collected to determine firm characteristics from 2009 to 2018. The sample includes 2,831 ASEAN-5 firms consistent with 542 Indonesia's firms, 882 Malaysian firms,

206 Philippines' firms, 563 Singaporean firms, and 638 Thai firms. Macroeconomic variables for each country are downloaded from the macroeconomic indicators in DataStream. KPMG's corporate tax Rate Survey database is used to determine the Corporate tax rate for each country over ten years. According to La Porta et al. (1997, 1998), specific characteristics of the legal environment are obtained for each country, that contain creditor rights, shareholder rights, ownership concentration, and the legal law system.

2.2. Research methodology

First, two dynamic panel models are employed to test the effects of debts and macroeconomic factors on cash holding degrees, respectively:

$$\begin{aligned} CASHHOLDINGS_{i,t} = & \alpha_0 + \\ & + \alpha_1 CASHHOLDINGS_{i,t-1} + \alpha_2 LEV_{i,t} + \\ & + \alpha_3 SIZE_{i,t} + \alpha_4 CF_{i,t} + \alpha_5 GRTA_{i,t} + \\ & + \alpha_6 CAPTA_{i,t} + \alpha_7 DIV_{i,t} + \pi_{i,t} + \sum_{t=2009}^{2018} y_t, \end{aligned} \quad (1)$$

$$\begin{aligned} CASHHOLDINGS_{i,t} = & \alpha_0 + \\ & + \alpha_1 CASHHOLDINGS_{i,t-1} + \alpha_2 LEV_{i,t} + \\ & + \alpha_3 SIZE_{i,t} + \alpha_4 CF_{i,t} + \alpha_5 GRTA_{i,t} + \\ & + \alpha_6 CAPTA_{i,t} + \alpha_7 DIV_{i,t} + \alpha_8 MACRO_{x,t} + \\ & + \kappa_{i,t} + \sum_{t=2009}^{2018} y_t, \end{aligned} \quad (2)$$

where α_1 coefficient is the adjustment speed to the target of corporate cash holdings, the α_1 coefficient value ranges from 0 to 1. Corporate cash holdings (*CASHHOLDINGS*) are the cash and cash equivalents scaled by total assets. The firm characteristics in the models comprise the following factors. Leverage (*LEV*) is the total debts divided by total assets. Firm scale (*SIZE*) is the logarithm of total assets. Cash flow (*CF*) is the pre-tax profit plus depreciation scaled by total assets. Firm growth (*GROWTH*) is the total asset growth. Firm capital expenditure (*CAPTA*) is capital expenditure divided by total assets. Dividend paid (*DIV*) is the cash dividend scaled by total assets. All corporate variables are defined for the firm (*i*) at the time (*t*).

MACRO_{x,t} variables are macroeconomic factors of a country (*x*) at time (*t*), consisting of GDP growth rate (*GDP*), Inflation rate (*INFLA*), Real interest rate (*INTEREST*), Credit spread (*SPREAD*), Corporate tax rate (*TAX*), Government budget deficit (*BUDGET*), Variation in the exchange rate (*EXRATE*), Variation in stock market price (*STOCK*), Government bond rate (*BOND*), $\pi_{i,t}$ and $\kappa_{i,t}$ are error terms in Models (1) and (2), respectively.

Next, a dynamic panel Model (3) is analyzed to examine the influence of macroeconomics factors on the sensitivity of debts to corporate cash holdings as follows:

$$\begin{aligned} CASHHOLDINGS_{i,t} = & \alpha_0 + \\ & + \alpha_1 CASHHOLDINGS_{i,t-1} + \alpha_2 LEV_{i,t} + \\ & + \alpha_3 SIZE_{i,t} + \alpha_4 CF_{i,t} + \alpha_5 GRTA_{i,t} + \\ & + \alpha_6 CAPTA_{i,t} + \alpha_7 DIV_{i,t} + \\ & + \alpha_8 LEV_{i,t} \cdot MACRO_{x,t} + \beta_{i,t} + \sum_{t=2009}^{2018} y_t, \end{aligned} \quad (3)$$

where Interaction variables are created to survey the influence of debts on corporate cash holdings according to macroeconomic factors across different countries over the years. The *LEV*·*MACRO* variables are determined by multiplying between *LEV_{i,t}* and *MACRO_{x,t}* variables, $\beta_{i,t}$ is error terms in Model (3).

Finally, a dynamic panel Model (4) is estimated to test the impact of the legal-specific characteristics on the sensitivity of debts to corporate cash holdings that are outlined as follows:

$$\begin{aligned} CASHHOLDINGS_{i,t} = & \alpha_0 + \\ & + \alpha_1 CASHHOLDINGS_{i,t-1} + \alpha_2 LEV_{i,t} + \\ & + \alpha_3 SIZE_{i,t} + \alpha_4 CF_{i,t} + \alpha_5 GRTA_{i,t} + \\ & + \alpha_6 CAPTA_{i,t} + \alpha_7 DIV_{i,t} + \\ & + \alpha_8 LEV_{i,t} \cdot LEGAL_x + \Omega_{i,t} + \sum_{t=2009}^{2018} y_t, \end{aligned} \quad (4)$$

where Interaction variables are built to investigate the influence of debts on corporate cash holdings according to specific characteristics of the legal environment across different countries. *LEGAL* variables include creditor rights (*CR*) variable, shareholder rights (*SR*) variable, concentrat-

ed ownership (*OWNER*) variable, and legal law (*COM/CIVIL*) variable in a country (*x*). *CR*, *SR*, and *OWNER* values are taken from La Porta et al. (1997, 1998). A dummy variable (*COM*) for each country is used, assuming that the country implements common law, *COM* variable equals 1, 0 otherwise. *LEV-LEGAL* variables are determined by multiplying between *LEV_{i,t}* and *LEGAL_x* variables, $\Omega_{i,t}$ is the error term in dynamic panel Model (4).

$\sum_{t=2009}^{2018} y_t$ is a dummy time variable for each year to capture unobserved firm-invariant and fixed-time in four dynamic panel models.

3. EMPIRICAL RESULTS AND DISCUSSION

3.1. Summary statistics

Table 1 briefly summarizes descriptive statistics, and Table 2 presents pair correlations for the corporate variables used in the whole sample.

In Table 1, at a glance, ASEAN-5 firms have maintained a comparatively high liquidity ratio since experiencing the crisis. The mean of corporate cash holdings (*CASHHOLDINGS*) is 14.88%. The

average financial leverage (*LEV*) is 21.74%. A mean firm size (*SIZE*) is calculated by the total assets (USD) logarithm as 18.74. Asset growth (*GRTA*) averagely represents a firm's growth opportunity at 13.90%. The mean cash flow (*CF*) is 2.94%. The average capital expenditure (*CAPTA*) is 4.79%, indicating insufficient signal growth. The average dividend paid ratio (*DIV*) in ASEAN-5 firms is relatively low, about 2.50%. In Table 2, the most notable is a negative correlation between cash holdings and leverage, meaning that firms with higher leverage ratios reserve less cash in their total assets. Cash holdings also have an inverse correlation with firm size, suggesting that larger firms reserve lower cash balances than smaller firms. Capital expenditures decrease cash balances in firms. Inversely, firms that hold a higher cash ratio tend to capture more excellent growth opportunities. The increased cash flows along with cash holdings are in line with the point that cash flow rises in liquidity firms. Firms with large cash balances pay more dividends, implying a positive correlation between dividends paid and cash holdings.

Table 3 shows descriptive statistics for the corporate variables for each country. The average of *CASHHOLDINGS* variable is the total cash and equivalents scaled by total assets, reaching the highest for Singaporean firms (20.36%), the low-

Table 1. Descriptive firm variables in the whole sample

Variable	Min	Mean	Q.75	Max	Std. dev	Obs.
CASHHOLDINGS	0.0000	0.1488	0.9966	0.9997	0.1483	22,880
LEV	0.0000	0.2174	1.3716	1.8090	0.1916	22,880
SIZE	11.0888	18.7409	30.4891	30.6120	1.8802	22,880
CF	-2.7555	0.0294	2.5370	19.6944	0.2197	22,880
GRTA	-0.9908	0.1390	9.6968	9.7668	0.4956	22,880
CAPTA	-0.0054	0.0479	0.9219	1.7389	0.0664	22,880
DIV	0.0000	0.0250	1.3613	2.1529	0.0618	22,880

Table 2. Pair correlations of firm variables in the whole sample

Variable	CASHHOLDINGS	LEV	SIZE	CF	GRTA	CAPTA	DIV
CASHHOLDINGS	1.0000	-	-	-	-	-	-
LEV	-0.4147	1.0000	-	-	-	-	-
SIZE	-0.1221	0.2892	1.0000	-	-	-	-
CF	0.0738	-0.0998	0.0825	1.0000	-	-	-
GRTA	0.0689	0.0161	0.0112	0.0836	1.0000	-	-
CAPTA	-0.0794	0.0893	0.0385	0.0385	0.1511	1.0000	-
DIV	0.1993	-0.1751	0.0053	0.2153	-0.0473	0.0529	1.0000

est for Indonesia's firms (11.46%). Regarding the Philippines firms and Malaysian firms, the mean of the *CASHHOLDINGS* variable is 14.69% and 15.15%, respectively. Land firms reserve the average cash accounting for 12.21% of their total assets. The high cash holding ratios of Singaporean and Malaysian firms suggest that firms operating in both of these markets are highly liquid. Furthermore, the ASEAN-5 firms own higher cash balances in total assets than US and European firms (Guney et al., 2007). Hence, corporate cash reserves are most likely to be significantly affected by business environment factors.

Table 4 reports all macrovariables used in the model for each country of the ASEAN region from 2009 to 2018. Macroeconomic variables are employed in the model, including *GDP*, *INFLA*, *INTEREST*, *SPREAD*, *TAX*, *BUDGET*, *EXRATE*, *STOCK*, *BOND* variables. Indonesia and the Philippines have higher GDP growth rates, inflation rates, and corporate tax rates than other countries. Malaysia has the highest budget government deficit. The exchange rate between the US dollar and Rupiah tends to increase. The bond rate of the Indonesian government reaches the highest rate.

Table 3. Descriptive statistics for firm variables across five countries of the ASEAN region

Variables	Min	Mean	Q.75	Max	Std. dev	Obs.
Indonesia						
<i>CASHHOLDINGS</i>	0.0000	0.1146	0.8916	0.9485	0.1260	3,823
<i>LEV</i>	0.0000	0.2649	1.2259	1.8090	0.2112	3,823
<i>SIZE</i>	12.6681	18.9444	23.7298	23.9235	1.7322	3,823
<i>CF</i>	-2.0092	0.0378	0.7407	1.8069	0.1275	3,823
<i>GRTA</i>	-0.8508	0.2043	7.2311	9.6968	0.5676	3,823
<i>CAPTA</i>	0.0000	0.0606	0.6198	0.8884	0.0727	3,823
<i>DIV</i>	0.0000	0.0196	0.6803	1.0230	0.0576	3,823
Malaysia						
<i>CASHHOLDINGS</i>	0.0001	0.1515	0.9887	0.9928	0.1332	7,494
<i>LEV</i>	0.0000	0.1841	0.8746	0.9587	0.1597	7,494
<i>SIZE</i>	13.7121	18.4653	24.2249	24.3917	1.6248	7,494
<i>CF</i>	-2.7555	0.0273	0.6173	0.8832	0.1258	7,494
<i>GRTA</i>	-0.8220	0.0994	9.0050	9.7668	0.4087	7,494
<i>CAPTA</i>	0.0000	0.0379	0.5676	0.7737	0.0499	7,494
<i>DIV</i>	0.0000	0.0218	0.7061	2.1294	0.0561	7,494
Philippines						
<i>CASHHOLDINGS</i>	0.0000	0.1469	0.9944	0.9997	0.1666	1,621
<i>LEV</i>	0.0000	0.1958	0.8211	0.9908	0.1880	1,621
<i>SIZE</i>	11.0888	19.0429	24.1240	24.2523	2.1835	1,621
<i>ROA</i>	-2.0525	0.0324	0.5555	0.6270	0.1390	1,621
<i>GRTA</i>	-0.8670	0.1842	8.1409	9.7005	0.6243	1,621
<i>CAPTA</i>	-0.0004	0.0440	0.3486	0.4435	0.0545	1,621
<i>DIV</i>	0.0000	0.0197	0.4491	1.0067	0.0499	1,621
Singapore						
<i>CASHHOLDINGS</i>	0.0000	0.2036	0.9467	0.9985	0.1742	4,663
<i>LEV</i>	0.0000	0.2045	1.0471	1.4684	0.1903	4,663
<i>SIZE</i>	13.7260	19.2124	30.4891	30.6120	2.3570	4,663
<i>CF</i>	-2.7331	0.0011	1.6987	1.8147	0.2082	4,663
<i>GRTA</i>	-0.9908	0.1314	7.1768	9.2610	0.5626	4,663
<i>CAPTA</i>	0.0000	0.0457	0.6901	0.8205	0.0695	4,663
<i>DIV</i>	0.0000	0.0231	1.2576	2.1529	0.0738	4,663
Thailand						
<i>CASHHOLDINGS</i>	0.0001	0.1221	0.8581	0.9536	0.1385	5,279
<i>LEV</i>	0.0000	0.2485	1.0160	1.0937	0.2083	5,279
<i>SIZE</i>	13.2221	18.4754	24.9117	26.1409	1.6125	5,279
<i>CF</i>	-2.1968	0.0505	2.5370	19.6944	0.3600	5,279
<i>GRTA</i>	-0.9509	0.1407	6.2878	7.7003	0.4350	5,279
<i>CAPTA</i>	-0.0054	0.0560	0.9219	1.7389	0.0789	5,279
<i>DIV</i>	0.0000	0.0369	0.7140	0.9414	0.0625	5,279

Table 4. Macroeconomic factors across five countries in the ASEAN region over 10 years

YEAR	GDP	INFLA	INTEREST	SPREAD	TAX	BUDGET	EXRATE	STOCK	BOND
Indonesia									
2009	0.0463	0.0439	0.0575	0.1405	0.2800	-0.0160	0.0712	0.8698	0.1010
2010	0.0622	0.0513	-0.0175	0.1295	0.2500	-0.0070	-0.1251	0.4613	0.0760
2011	0.0617	0.0536	0.0459	0.1223	0.2500	-0.0110	-0.0352	0.0320	0.0602
2012	0.0603	0.0428	0.0775	0.1163	0.2500	-0.0190	0.0703	0.1294	0.0517
2013	0.0556	0.0641	0.0637	0.1153	0.2500	-0.0230	0.1145	-0.0098	0.0844
2014	0.0501	0.0639	0.0679	0.1250	0.2500	-0.0225	0.1342	0.2229	0.0785
2015	0.0488	0.0636	0.0835	0.1236	0.2500	-0.0258	0.1285	-0.1213	0.0887
2016	0.0503	0.0353	0.0922	0.1129	0.2500	-0.0246	-0.0061	0.1532	0.0794
2017	0.0507	0.0381	0.0652	0.0990	0.2500	-0.0251	0.0054	0.1999	0.0631
2018	0.0517	0.0320	0.0646	0.0829	0.2500	-0.0176	0.0640	-0.0254	0.0798
Malaysia									
2009	-0.0151	0.0058	0.1178	0.0463	0.2500	-0.0670	0.0566	0.4517	0.0409
2010	0.0742	0.0162	-0.0211	0.0470	0.2500	-0.0540	-0.0861	0.1934	0.0398
2011	0.0529	0.0317	-0.0047	0.0475	0.2500	-0.0480	-0.0500	0.0078	0.0388
2012	0.0547	0.0166	0.0375	0.0462	0.2500	-0.0450	0.0094	0.1034	0.0352
2013	0.0469	0.0211	0.0443	0.0448	0.2500	-0.0390	0.0201	0.1054	0.0372
2014	0.0601	0.0314	0.0207	0.0448	0.2500	-0.0340	0.0387	-0.0566	0.0401
2015	0.0509	0.0210	0.0333	0.0429	0.2400	-0.0320	0.1933	-0.0390	0.0405
2016	0.0445	0.0209	0.0284	0.0394	0.2400	-0.0310	0.0622	-0.0300	0.0384
2017	0.0574	0.0387	0.0078	0.0344	0.2400	-0.0300	0.0367	0.0945	0.0398
2018	0.0474	0.0088	0.0419	0.0268	0.2400	-0.0370	-0.0617	-0.0591	0.0408
Philippines									
2009	0.0115	0.0422	0.0564	0.0812	0.3000	-0.0370	0.0704	-0.0304	0.0800
2010	0.0763	0.0379	0.0331	0.0737	0.3000	-0.0350	-0.0570	0.4155	0.0720
2011	0.0366	0.0472	0.0254	0.0649	0.3000	-0.0200	-0.0415	0.1811	0.0630
2012	0.0668	0.0303	0.0364	0.0551	0.3000	-0.0230	-0.0257	0.2509	0.0520
2013	0.0706	0.0258	0.0365	0.0564	0.3000	-0.0140	0.0051	0.2383	0.0410
2014	0.0615	0.0360	0.0230	0.0542	0.3000	-0.0060	0.0439	0.0523	0.0400
2015	0.0607	0.0067	0.0620	0.0528	0.3000	-0.0090	0.0243	0.0822	0.0400
2016	0.0688	0.0125	0.0388	0.0504	0.3000	-0.0240	0.0419	-0.0157	0.0360
2017	0.0668	0.0285	0.0322	0.0446	0.3000	-0.0220	0.0578	0.0805	0.0430
2018	0.0624	0.0521	0.0227	0.0387	0.3000	-0.0320	0.0429	-0.0203	0.0600
Singapore									
2009	0.0012	0.0060	0.0235	0.0493	0.1800	-0.0050	0.0280	-0.3329	0.0266
2010	0.1453	0.0282	0.0423	0.0508	0.1700	0.0030	-0.0626	0.3343	0.0271
2011	0.0626	0.0525	0.0421	0.0521	0.1700	0.0200	-0.0775	0.1080	0.0163
2012	0.0445	0.0458	0.0487	0.0521	0.1700	0.0130	-0.0064	-0.0907	0.0130
2013	0.0482	0.0236	0.0583	0.0525	0.1700	0.0130	0.0013	0.1963	0.0256
2014	0.0390	0.0102	0.0560	0.0524	0.1700	0.0010	0.0126	-0.0491	0.0228
2015	0.0289	-0.0052	0.0213	0.0505	0.1700	-0.0120	0.0851	0.0582	0.0260
2016	0.0296	-0.0053	0.0453	0.0475	0.1700	-0.0120	0.0049	-0.2103	0.0247
2017	0.0370	0.0058	0.0266	0.0411	0.1700	0.0030	-0.0004	0.1935	0.0200
2018	0.0314	0.0044	0.0336	0.0308	0.1700	0.0040	-0.0232	0.0846	0.0204
Thailand									
2009	-0.0069	-0.0085	0.0457	0.0433	0.3000	-0.0470	-0.0452	0.6325	0.0391
2010	0.0751	0.0325	0.0024	0.0403	0.3000	-0.0200	-0.0951	0.4060	0.0360
2011	0.0084	0.0381	0.0128	0.0490	0.3000	-0.0140	0.0511	-0.0072	0.0369
2012	0.0724	0.0301	0.0322	0.0502	0.2300	-0.0240	-0.0334	0.3576	0.0353
2013	0.0269	0.0218	0.0322	0.0493	0.2000	-0.0160	0.0712	-0.0670	0.0380
2014	0.0098	0.0190	0.0346	0.0484	0.2000	-0.0250	0.0046	0.1532	0.0357
2015	0.0313	-0.0090	0.0398	0.0443	0.2000	-0.0250	0.0948	-0.1400	0.0273
2016	0.0336	0.0019	0.0196	0.0387	0.2000	-0.0270	-0.0071	0.1979	0.0218
2017	0.0402	0.0067	0.0231	0.0325	0.2000	-0.0270	-0.0879	0.1366	0.0260
2018	0.0413	0.0106	0.0270	0.0190	0.2000	-0.0240	-0.0071	-0.1082	0.0269

Table 5 shows specific characteristics of the legal environment across five ASEAN countries. Each country's four specific factors are determined following La Porta et al. (1997, 1998).

Table 5. Specific characteristics of the legal environment across five countries in the ASEAN region

Country	CR	SR	OWNER	CIVIL	COM
Indonesia	0	2	0.58	x	
Malaysia	4	4	0.54		x
Philippines	4	3	0.57	x	
Singapore	4	4	0.49		x
Thailand	3	2	0.47		x

3.2. Influence of debts and macroeconomic factors on the adjustment speed to the target cash holdings

Table 6 presents the empirical results obtained by GMM estimation from both Model (1) and Model (2) for all ASEAN-5 firms. The impact of firm characteristics on corporate cash holdings is presented in Column (1). Column (2) to Column (10) contain estimates of the impact of macroeconomic factors on corporate cash holdings.

Table 6. Influence of debts and macroeconomic factors on corporate cash holdings in a dynamic model

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
lag. CASHHOLDINGS	0.4815*** (0.0000)	0.4518*** (0.0000)	0.4831*** (0.0000)	0.4557*** (0.0000)	0.4479*** (0.0000)	0.4833*** (0.0000)	0.4759*** (0.0000)	0.4793*** (0.0000)	0.4756*** (0.0000)	0.4577*** (0.0000)
LEV	-0.1349*** (0.0000)	-0.1280*** (0.0000)	-0.1357*** (0.0000)	-0.1278*** (0.0000)	-0.1375*** (0.0000)	-0.1348*** (0.0000)	-0.1358*** (0.0000)	-0.1343*** (0.0000)	-0.1335*** (0.0000)	-0.1371*** (0.0000)
SIZE	-0.0376*** (0.0000)	-0.0381*** (0.0000)	-0.0386*** (0.0000)	-0.0324*** (0.0000)	-0.0309*** (0.0000)	-0.0377*** (0.0000)	-0.0395*** (0.0000)	-0.0372*** (0.0000)	-0.0354*** (0.0000)	-0.0351*** (0.0000)
CF	-0.0010 (0.9462)	-0.0053 (0.7037)	-0.0008 (0.9581)	-0.0015 (0.9164)	-0.0034 (0.8091)	-0.0003 (0.9806)	0.0001 (0.9966)	-0.0005 (0.9703)	-0.0037 (0.7975)	-0.0021 (0.8837)
GRTA	0.0305*** (0.0000)	0.0298*** (0.0000)	0.0308*** (0.0000)	0.0283*** (0.0000)	0.0289*** (0.0000)	0.0305*** (0.0000)	0.0309 (0.0000)***	0.0303*** (0.0000)	0.0298*** (0.0000)	0.0291*** (0.0000)
CAPTA	-0.2653*** (0.0000)	-0.2663*** (0.0000)	-0.2659*** (0.0000)	-0.2631*** (0.0000)	-0.2629*** (0.0000)	-0.2657*** (0.0000)	-0.2684*** (0.0000)	-0.2655*** (0.0000)	-0.2646*** (0.0000)	-0.2610*** (0.0000)
DIV	0.0683 (0.1880)	0.0837* (0.0968)	0.0684 (0.1874)	0.0905* (0.0799)	0.0776 (0.1262)	0.0684 (0.1883)	0.0734 (0.1583)	0.0707 (0.1714)	0.0746 (0.1508)	0.0958* (0.0596)
GDP	-	0.7054*** (0.0001)	-	-	-	-	-	-	-	-
INFLA	-	-	-0.2821*** (0.0001)	-	-	-	-	-	-	-
INTEREST	-	-	-	-1.1293*** (0.0002)	-	-	-	-	-	-
SPREAD	-	-	-	-	6.5687*** (0.0009)	-	-	-	-	-
TAX	-	-	-	-	-	-0.1160** (0.0284)	-	-	-	-
BUDGET	-	-	-	-	-	-	-1.9720** (0.0358)	-	-	-
EXRATE	-	-	-	-	-	-	-	-0.0321** (0.0336)	-	-
STOCK	-	-	-	-	-	-	-	-	0.0622** (0.0171)	-
BOND	-	-	-	-	-	-	-	-	-	4.0610*** (0.0002)
AR(1) – m-statistic	-16.09***	-15.98***	-16.08***	-15.96***	-14.20***	-16.11***	-15.90***	-16.09***	-16.27***	-15.78***
Prob. (m-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00
AR(2) – m-statistic	-0.42	-0.58	-0.41	-0.88	-1.04	-0.40	-0.36	-0.43	0.00	-1.34
Prob. (m-statistic)	0.68	0.56	0.68	0.38	0.30	0.69	0.72	0.66	0.93	0.18
Sargan test – J-statistic	39.03	24.80	40.45	25.19	28.13	40.30	33.50	36.76	34.44	26.14
Prob. (J-statistic)	0.29	0.88	0.24	0.86	0.75	0.25	0.49	0.39	0.45	0.83
Time-fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Table 6 reports estimations from Model (1) using the GMM estimator for a dynamic panel model. P-values are reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% levels, respectively.

In all columns of Table 6, the lag of the *CASHHOLDINGS* variable is positively related to the *CASHHOLDINGS* variable at a 1% significance level. The coefficients of *CASHHOLDINGS* at lag (1) are essential in determining the dynamic model choice for the panel sample is appropriate. In addition, the coefficients of *LEV* variables are negatively significant at 1% with the *CASHHOLDINGS* variable in all Columns (1-10). In the first column, the coefficient of *CASHHOLDINGS* at lag (1) is positively significant. It reaches the value of 0.4815, implying the speed adjustment (α_1) is 0.5185, which means ASEAN-5 firms get 51.85% of their corporate cash holding target for one year. In other words, it will take 1.9286 average years to reach the corporate cash holdings target for ASEAN-5 firms. This speed adjustment is relatively slow. It is likely to be impacted by high market friction in emerging markets.

More specifically, Table 7 presents the effect of firm characteristics on cash reserves for each market in the ASEAN-5 area. Singaporean firms have the lowest adjustment speed toward target cash holdings than firms in other markets, followed by Malaysian firms. It is possible due to a higher target of cash reserves of Singaporean firms and

Malaysian firms than other firms in the ASEAN-5 region. Most notably, the *LEV* variable is a proxy for corporate debts, which relates negatively to the *CASHHOLDINGS* variable at a 1% or 5% significance level in each market. These results are strongly accordant with the view of an inverse influence of debts on cash holdings.

From Column (2) to Column (10) in Table 6, the α_1 coefficient is different from the one in Column (1), meaning that the macro determinants force ASEAN-5 firms to change their adjustment speed to target cash holdings. In Column (2), the *GDP* variable is positively associated with the *CASHHOLDINGS* variable at a 1% significance level, implying that ASEAN-5 firms reserve a large amount of cash in a favorable economy. In Column (3), the negative coefficient of the *INFLA* variable is significant at a 1% level, which implies that as the inflationary condition increases, firms reserve fewer cash balances. The real interest rate (*INTEREST*) adversely influences corporate cash holdings in Column (4), suggesting ASEAN-5 firms decrease cash reserves, since the opportunity costs of holding more cash are higher, consistent with the prediction of money demand the-

Table 7. Influence of debts and macroeconomic factors on corporate cash holdings in a dynamic model for each country of the ASEAN region

ASEAN-5 countries	Indonesia	Malaysia	Philippines	Singapore	Thailand
Variables	(1)	(2)	(3)	(4)	(5)
<i>lag. CASHHOLDINGS</i>	0.3865*** (0.0000)	0.4406*** (0.0000)	0.2503*** (0.0000)	0.4882*** (0.0000)	0.3914*** (0.0000)
<i>LEV</i>	-0.4221*** (0.0000)	-0.1730*** (0.0000)	-0.1135** (0.0138)	-0.0737** (0.0323)	-0.2347*** (0.0000)
<i>SIZE</i>	-0.0174 (0.4476)	0.0012 (0.9046)	-0.0674*** (0.0000)	-0.0650*** (0.0000)	0.0034 (0.6665)
<i>CF</i>	0.0350 (0.5229)	0.0412 (0.1252)	-0.0784 (0.1787)	0.0162 (0.4601)	-0.0276 (0.1035)
<i>GRTA</i>	0.0231*** (0.0003)	0.0105** (0.0500)	0.0203** (0.0360)	0.0227*** (0.0022)	0.0450*** (0.0000)
<i>CAPTA</i>	-0.1484 (0.1253)	-0.2526*** (0.0000)	-0.0259 (0.6907)	-0.2703*** (0.0000)	-0.3056*** (0.0000)
<i>DIV</i>	0.0111 (0.8969)	0.0124 (0.8860)	-0.0961* (0.0681)	0.1116 (0.2246)	-0.0196 (0.6728)
AR(1) – m. statistic	-7.56	-9.39	-4.78	-8.32	-6.24
Prob. (m-statistic)	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
AR(2) – m. statistic	-1.44	-0.16	-0.42	-0.56	-0.20
Prob. (m-statistic)	0.15	0.87	0.68	0.58	0.84
Sargan test – J. statistic	44.04	49.19	35.32	41.95	34.84
Prob. (J-statistic)	0.14	0.16	0.45	0.19	0.48
Time-fixed effect	Yes	Yes	Yes	Yes	Yes

Note: Table 7 reports estimations from Model (1) for each country of the ASEAN region, using the GMM estimator for a dynamic model. P-value is reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% levels, respectively.

ory. Regarding Column (5), credit spread (*SREAD*) positively affects cash holdings, suggesting that firms reserve more cash reserves since the market liquid is poor. In addition, firms reserve more cash in the context of increased credit risks and more difficulty in borrowings.

Column (6) shows corporate tax rate (*TAX*) negatively affects cash holding levels, inferring that ASEAN-5 firms reserve less cash in the context of the increased corporate tax. Debts are used as a tax shield in firms. This empirical evidence on the negative relationship between debts and cash holdings might be interpreted by the direct inverse relationship between debts and corporate tax rate. For the *BUDGET* variable in Column (7), a negative impact of government budget deficit on corporate cash holdings is found. It is supposed that the increase in government budget deficit is a signal for the slowdown in the economy in the future, which leads to ASEAN-5 firms reserving fewer cash balances in expectation of the decreased investment opportunities in the context of an economic slowdown. Column (8) detects an adverse nexus between the exchange rate and cash reserves variation. The increase in the exchange rate drives ASEAN-5 firms inclined to reserve less cash due to domestic money's devaluation. In Column (9), the variation in stock market price (*STOCK*) is indicated that has a positive influence on cash holdings, implying that when market value increases, firms use fewer debts in their capital structure (Deesomsak et al., 2004), hence, ASEAN-5 firms hold more cash. Finally, the government bond rate (*BOND*) is positively related to Column (10) cash reserves. In our scope, the bond rate is calculated for ten years; since the 10-year government bond rate increases, that means the related liquidity risks rise so that ASEAN-5 firms prefer to remain large of cash balances. Acharya et al. (2012) argue that firms reserve significant cash since credit risk increases due to precautionary motivation.

3.3. Influence of debts and corporate cash holdings according to macroeconomic factors

Columns (1-9) of Table 8 determine the role of macro-factors to the alternative nexus between debts and corporate cash holdings, respectively. *LEV_GDP* interact variable between leverage

and *GDP* growth rate positively relates to the *CASHHOLDINGS* variable at a 1% significance level in Column (1). The *LEV_INFLA* interaction between leverage and inflation rate correlates negatively with the *CASHHOLDINGS* variable at a 5% significance level in Column (2). These estimated results suggest that cash holdings and debts in ASEAN-5 firms are less alternative in the growing economy, conversely, more substitute during the slowdown economy. In the context of economic growth, firms access more easily to financing sources. On the other hand, in the context of an economic downturn, cash is more important in the firm's financing regarding debts when a credit crisis occurs.

In Column (3), the negative coefficient of *LEV_INTEREST* interaction variable between *LEV* and *REAL* variables is significant at a 5% level, suggesting that the substitute impact of debts on cash reserves tends to enhance when the real interest rate increases. The fact that the real interest rate is a proxy for accessing debts. The cost of debts rises since the real interest rate tends to increase so that firms hold less cash instead of enduring high debt costs. Credit spread is a proxy for the credit quality of the debt market. The *LEV_SPREAD* interaction variable between leverage and credit spread is positive at a 5% significance level in Column (4). Since the quality of the debt market tends to recession as spread credit increases, firms tend to hold more cash than borrowing debts due to higher risks. In addition, the coefficient of *LEV_BUDGET* interaction variable between leverage and government budget deficit is negatively significant at a 1% level in Column (6), referring that the substitute effect of debts on corporate cash holdings becomes stronger when the government budget deficit ratio arises. The government budget deficit anticipates a slower economy and a tighter expenditure in the future that makes the increased value of cash and the increased substitute influence of cash holdings for debts. In Column (9), the *LEV_BOND* interaction variable between leverage and government bond rate positively relates to the *CASHHOLDINGS* variable at a 5% significance level, indicating that the rise of government bond rate reduces the alternative effect of debts on corporate cash holdings. In the long term, the increased government bond rate relates to the higher liquidity risks of bonds; thus, firms reserve more cash.

Table 8. Influence of debts on corporate cash holdings according to macroeconomic factors in a dynamic model

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lag. CASHHOLDINGS	0.4649*** (0.0000)	0.4650*** (0.0000)	0.4791*** (0.0000)	0.4669*** (0.0000)	0.4815*** (0.0000)	0.4059*** (0.0000)	0.4816*** (0.0000)	0.4820*** (0.0000)	0.4692*** (0.0000)
LEV	-0.1286*** (0.0011)	-0.0481 (0.2569)	-0.0966*** (0.0000)	-0.1418*** (0.0016)	-0.1265** (0.0225)	-0.5280*** (0.0001)	-0.1345*** (0.0000)	-0.1353*** (0.0000)	-0.3634*** (0.0016)
SIZE	-0.0456*** (0.0000)	-0.0392*** (0.0000)	-0.0367*** (0.0000)	-0.0467*** (0.0000)	-0.0376*** (0.0000)	-0.0334*** (0.0038)	-0.0376*** (0.0000)	-0.0375*** (0.0000)	-0.0322*** (0.0000)
CF	0.1023 (0.3065)	-0.0025 (0.8592)	-0.0007 (0.9619)	0.1217 (0.2227)	-0.0009 (0.9503)	0.1441 (0.1580)	-0.0009 (0.9492)	-0.0010 (0.9435)	-0.0003 (0.9858)
GRTA	0.0279*** (0.0000)	0.0304*** (0.0000)	0.0302*** (0.0000)	0.0276*** (0.0000)	0.0305*** (0.0000)	0.0256*** (0.0000)	0.0305*** (0.0000)	0.0305*** (0.0000)	0.0294*** (0.0000)
CAPTA	-0.2416*** (0.0000)	-0.2605*** (0.0000)	-0.2648*** (0.0000)	-0.2394*** (0.0000)	-0.2653*** (0.0000)	-0.2104*** (0.0000)	-0.2651*** (0.0000)	-0.2654*** (0.0000)	-0.2643*** (0.0000)
DIV	0.0559 (0.3301)	0.0734 (0.1492)	0.0688 (0.1845)	0.0508 (0.3777)	0.0684 (0.1873)	0.0511 (0.3674)	0.0685 (0.1872)	0.0682 (0.1894)	0.0815 (0.1113)
LEV_GDP	0.5454*** (0.0098)								
LEV_INFLA		-3.2963** (0.0458)							
LEV_INTEREST			-1.0090*** (0.0256)						
LEV_SPREAD				0.7147** (0.0344)					
LEV_TAX					-0.0384 (0.8644)				
LEV_BUDGET						-7.6127*** (0.0019)			
LEV_EXRATE							-0.0185 (0.6120)		
LEV_STOCK								0.0080 (0.5479)	
LEV_BOND									5.7258** (0.0458)
AR(1) - m. statistic	-15.80***	-15.66***	-16.09***	-15.78***	-16.10***	-14.67***	-16.10***	-16.09***	-16.07***
Prob. (m-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) - m. statistic	-0.01	-0.59	-0.47	0.06	-0.42	-0.51	-0.42	-0.41	-0.64
Prob. (m-statistic)	0.99	0.55	0.64	0.95	0.68	0.61	0.68	0.68	0.52
Sargan test - J. statistic	33.70	45.07	37.21	33.73	39.03	25.88	38.95	39.02	36.86
Prob. (J-statistic)	0.48	0.12	0.37	0.48	0.29	0.81	0.30	0.29	0.34
Time-fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Table 8 reports estimations from Model (3) using GMM estimator for a dynamic panel model. P-value is reported in parentheses (). ***, ** and * indicate coefficient is significant at the 1 percent, 5 percent, and 10 percent levels, respectively.

3.4. Influence of debts and corporate cash holdings according to specific characteristics of the legal environment

Columns (1-4) of Table 9 show the influence of debts on cash holdings of ASEAN-5 firms according to creditor rights, shareholder rights, concentrated ownership, and legal law system, respectively.

For the creditor rights, the coefficient of *LEV_CR* interaction variable between leverage and the estimated value of creditor rights (*CR*) is

positive at a 5% significance level in Column (1), proving that creditor rights have a natural influence on the relationship between cash holdings and debts. Furthermore, the substitute effect of debts on corporate cash holdings becomes weaker in the countries with higher protection for creditors. In countries owning increased creditor protections, firms are necessary to hold a large of cash to hedge the pressure of creditors in the financial distress situation relative to debts.

Column (2) shows the influence of debts on corporate cash holdings according to the protection of shareholder rights. This impact is examined by

Table 9. Influence of debts on corporate cash holdings according to the legal-specific characteristics in a dynamic model

Variables	(1)	(2)	(3)	(4)
lag. CASHHOLDINGS	0.4344*** (0.0000)	0.4255*** (0.0000)	0.4331*** (0.0000)	0.4331*** (0.0000)
LEV	-0.2554*** (0.0001)	-0.6406 (0.1714)	-0.6011*** (0.0003)	-0.0806*** (0.0010)
SIZE	-0.0343*** (0.0000)	-0.0311*** (0.0000)	-0.0349*** (0.0003)	-0.0349*** (0.0000)***
CF	-0.0016 (0.9085)	-0.0094*** (0.5247)	-0.0017 (0.9023)	-0.0022 (0.8741)
GRTA	0.0294*** (0.0000)	0.0299*** (0.0000)	0.0296*** (0.0003)	0.0296*** (0.0000)
CAPTA	-0.2583*** (0.0000)	-0.2573*** (0.0000)	-0.2580*** (0.0003)	-0.2576*** (0.0000)
DIV	0.0968* (0.0523)	0.0870* (0.0880)	0.0971* (0.0515)	0.0964* (0.0532)
LEV_CR	0.0343** (0.0493)	-	-	-
LEV_SR	-	-0.2611* (0.0952)	-	-
LEV_OWNER	-	-	0.9015*** (0.0037)	-
LEV_COM	-	-	-	-0.0736** (0.0150)
AR(1) – m. statistic	-14.86***	-14.80***	-14.85***	-14.85***
Prob. (m-statistic)	0.00	0.00	0.00	0.00
AR(2) – m-statistic	-0.79	-1.05	-0.81	-0.80
Prob. (m-statistic)	0.43	0.30	0.42	0.42
Sargan test – J-statistic	31.21	28.43	31.86	31.66
Prob. (J-statistic)	0.65	0.74	0.62	0.63
Time-fixed effect	Yes	Yes	Yes	Yes

Note: Table 9 reports estimations from Model (4) using the GMM estimator for a dynamic panel model. P-value is reported in parentheses. ***, ** and * indicate the coefficient is significant at the 1 %, 5 % and 10 % levels, respectively.

an interaction variable between the leverage and the estimator value of the protection of rights (SR) variables. The interaction variable (*LEV_SR*) is negatively related to the *CASHHOLDINGS* variable at a 1% significance level. This empirical result is suitable for expecting agency costs to be lower in countries with more highly protected shareholders. Thus, firms in these countries are not necessarily reserved more cash to support the investment opportunities in the future because the decreased agency costs lead to lower external financing costs.

Column (3) presents the influence of debts on corporate cash holdings according to the degree of concentrated ownership. This impact has been examined by the interaction variable

between the estimator value of concentrated ownership (*OWNER*) and leverage variables. The coefficient of *LEV_OWNER* is positive at a 1% significance level, inferring that the negative influence of debts on corporate cash holdings decreases when concentrated ownership in firms increases. This result is consistent with the expectation that firms with focused ownership will likely reduce managerial agency costs. Hence, reserving a large of cash is not essential in firms. Moreover, large shareholders control administrative decisions using fewer debts (Filatotchev & Mickiewicz, 2001).

The protection of shareholder rights in a country applying common law is more robust than in another country implementing civil law (Dittmar &

Mahrt-Smith, 2003). Hence, in Column (4), the impact of legal law on the linkage between debts and corporate cash holdings is analyzed. A dummy variable is used for the legal law, defined by La Porta et al. (1998), namely, the *COM* variable representing countries applying common law instead of civil law. Column (4) reports empirical results of the influence of debts on corporate cash holdings according to the legal law system. This impact has been analyzed by the interaction variable between leverage and the value of legal law (*COM*). The *COM* variable equals one if a country uses the common law, and 0 otherwise. The coefficient of the *LEV_COM* variable is negative at a 5% significance level, meaning that the substitute influence of debts on corporate cash holdings is enhanced in firms activating in the countries with common law. The result in Column (4) is perfectly consistent with the empirical evidence in Column (2).

3.5. Robustness test for methodology selection

The entire empirical equations are dynamic panel models with dependent variables at lag (1). Therefore, this paper uses the GMM estimation proposed by Arellano and Bond (1991). The Sargan test is used to test the validity of the whole instruments. This testing gives the null hypothesis of the reality of over-identifying restrictions. The P-value of the Sargan test is more than 0.1, implying all instruments are valid and not over-identified. The second

test is for the first-order serial correlation AR (1) and the second-order serial correlation AR (2). Both the AR (1) and AR (2) tests for serial correlation suppose that there is no first/second-order serial correlation. If the P-value of the AR (1)/AR (2) test is less than 0.1, there is first/second differenced autocorrelation among error terms. The GMM difference estimate is valid in the presence of first-order serial correlation and no second-order serial correlation.

In Table 6, Table 7, Table 8, and Table 9, most first-order serial correlations are negatively significant at the 1% level. In contrast, the second-order serial correlations test is insignificant, suggesting the existence of the first-order correlations and the absence of the second-order serial correlations in all estimations. All Sargan test results fail to reject the null hypothesis. Thus, the instruments used in this paper's models are valid.

In general, all results obtained in Tables 6, 7, 8, and 9 largely clarify all 4 of our research hypotheses. Like the firm's internal factors, the macroeconomic factors show a considerable impact on the cash reserves of ASEAN companies. As an inevitable consequence of agency costs regarding free cash flows, the adverse relationship between debts and corporate cash holdings is found significantly and persistently in ASEAN firms. Nonetheless, this negative relationship is influenced by factors from the macroeconomic environment and legal characteristics of each country in different directions.

CONCLUSION

The primary aim of this paper is to investigate the nexus between debts and corporate cash holdings by analyzing a large panel sample from ASEAN-5 firms from 2009 to 2018. The Generalized Method of Moments (GMM) estimator is applied to overcome the endogenous concerns in the dynamic panel models. This paper's three vital contents will broaden readers' perception of cash holding decisions in the ASEAN-5 market in the post-financial crisis period. Firstly, this study emphasizes dynamic models' alternative impact of debts on cash reserves. Additionally, ASEAN-5 firms have cash balances at a high ratio in 2009–2018, implying that these firms own well comparative liquidity after the financial crisis. Secondly, the macro regulating policies directly impacted the corporate cash reserves target and corporate cash holdings of ASEAN-5 firms. Finally, empirical results show that the impact of debt on corporate cash holdings is relatively elastic to legal-specific characteristics, and external environment factors significantly affect agency costs that arise between corporate debt and cash reserves. Compared to the existing articles, this paper sheds light on the role of the external environment factors in determining corporate cash reserve levels and the alternative linkage between debts and corporate cash holdings in the ASEAN area. These findings provide an important rationale for decision-making by corporate managers and policymakers at both the micro and macro levels regarding both debt and free cash flow in firms.

AUTHOR CONTRIBUTIONS

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