MACROECONOMIC UNCERTAINTY, CEOS' CORPORATE DISTRESS EXPERIENCE AND CORPORATE CASH HOLDINGS

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UNIVERSITI SAINS MALAYSIA

2024

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by

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Thesis submitted in fulfilment of the requirements
for the degree of
Doctor of Philosophy

September 2024

ACKNOWLEDGEMENT

First, I would like to express my gratitude to my main supervisor, Professor Dr. Hooy Chee Wooi, and my co-supervisor, Professor Dr. Janice How, who lend me their time and efforts in supporting me and guiding me patiently throughout my PhD study. My sincere thanks for their constructive suggestions and prompt responses to my queries all time times in spite of their busy schedule. I would also like to extend my appreciation to Dr. Abdul Hadi Zulkafli and Assoc. Prof. Dr. Zamri Ahmad for their selfless sharing of knowledge to enhance the quality of this thesis. Finally, I would take this opportunity to thank my also like to thank my family and friends who show their continous supports throughout the whole journey.

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ABSTRAK

Wabak pandemik COVID-19 dan perang Ukraine kebelakangan ini telah mencetus kebimbangan tentang kesan ketidaktentuan makroekonomi ke atas aktiviti korporat, terutamanya pegangan tunai korporat disebabkan tunai sebagai aset yang paling berharga kepeda firma berdasarkan fungsi dan kecairannya. Menggunakan sampel firma tersenarai di Amerika Syarikat dari 1992 hingga 2021, dapatan kajian ini menyokong teori *tradeoff*, kesan *real-option*, dan kesan *risk-averse*, yang mencadangkan bahawa firma menyimpan lebih banyak wang tunai sebagai tindak balas atas ketidaktentuan makroekonomi. Selain itu, berdasarkan kesusasteraan *upper echelons* yang mendedahkan bahawa keputusan Ketua Pegawai Eksekutif (CEO) sebahagian besarnya dipengaruhi oleh pengalaman mereka, kajian ini juga menyiasat sama ada pengalaman kesusahan korporat CEO penting atas keputusan pemegangan tunai firma apabila berhadapan dengan ketidaktentuan makroekonomi. Keputusan kajian ini mendapati bahawa CEO yang mempunyai pengalaman kesusahan korporat menunjukan kesan interaksi yang ketara ke atas hubungan ketidaktentuan makroekonomi dengan pegangan tunai korporat. Tambahan pula, kajian ini selanjutnya mendapati bahawa kesan ketidaktentuan makroekonomi terhadap pegangan tunai korporat lebih besar dalam firma yang diuruskan oleh CEO yang mengalami kesusahan korporat tidak lama dahulu atau berbilang kali. Penemuan ini selaras dengan undang-undang *recency*, hipotesis *reinforcement*, dan hipotesis *saliency* yang mendakwa bahawa pengalaman yang tidak lama dahulu atau berbilang pengalaman mempunyai kesan yang lebih teguh berbanding pengalaman yang jauh

atau sekali pengalaman atas pembuatan keputusan individu. Secara keseluruhan, kajian ini memberikan pandangan baru tentang kesan asas ketidakpastian makroekonomi ke atas pegangan tunai korporat, saluran yang mengukuhkan kesan ini melalui lensa sifat peribadi CEO, dan sama ada variasi dalam sifat peribadi CEO itu penting.

MACROECONOMIC UNCERTAINTY, CEOS' CORPORATE DISTRESS EXPERIENCE AND CORPORATE CASH HOLDINGS

ABSTRACT

The recent outbreak of the COVID-19 pandemic and the Ukraine war have spurred a growing concern about the impact of macroeconomic uncertainty on corporate activities, particularly corporate cash holdings as cash represents the most valuable asset of a firm given its functions and liquidity. Using a sample of listed firms in the United States from 1992 to 2021, the finding of this study supports the tradeoff theory, the real-option effect, and the risk-averse effects, which suggest that firms hoard more cash in response to macroeconomic uncertainty. Besides, drawing from the upper echelons literature, which reveals that decisions made by CEOs are largely influenced by their past experiences, this study also investigates whether corporate distress experiences of CEOs matter to cash holdings decisions of firms when dealing with macroeconomic uncertainty. It is found that CEOs with corporate distress experience has a significant interaction effect on the macroeconomic uncertainty-corporate cash holdings relationship. Furthermore, this study further discovers that the impact of macroeconomic uncertainty on corporate cash holdings is greater in firms which managed by CEOs with recent or multiple corporate distress experience. This findings in line with the recency law, the reinforcement hypothesis, and the saliency hypothesis which claim that recent or multiple experience has a more robust impact than distant or single experience on an individual's decision making. Overall, this study provides novel insights into the underlying effect of macroeconomic uncertainty on corporate cash holdings, the channel that reinforce this effect through the lens of CEOs' personal trait, and whether the variation in the CEOs' personal trait matters.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Cash holdings decision is one of the most critical decisions of the firm, in fact, it is the heart of the firm policies. It is the firm's decision on the amount of cash to be reserved to fund daily operations, finance investments, and hedge risk (Opler, Pinkowitz, Stulz, & Williamson, 1999; Almeida, Campello, & Weisbach, 2004; Acharya, Almeida, & Campello, 2007). Sufficient cash reserves allow firms to avoid expensive external financing costs and capture investment opportunities, whereas a cash shortage could cause firms to face financial distress (Opler et al., 1999). However, holding excessive cash may incur carrying costs, agency costs, and taxes for firms (Faulkender & Wang, 2006), or cause firms to forgo the opportunities for value creation (Ozkan & Ozkan, 2004; Minton & Schrand, 1999).

Cash management is thus a crucial yet challenging task to maintain the financial health of the firm. In real practice, firms typically try to maintain the optimal level of cash based on different motives and determinants (Opler et al., 1999; Bates, Kahle, & Stulz, 2009; Dittmar, Mahrt-Smith, & Servaes, 2003). Since cash represents a strategic and valuable asset, understanding the cash policy of a firm helps enhance our knowledge regarding the firm's investment and financing choices, and their implications for the firm's risk, profitability, and growth (Kim & Bettis, 2014; Almeida, Campello, Cunha, & Weisbach, 2014; Graham & Leary, 2018; Acharya, Almeida, Ippolito, & Perez, 2014).

The extant literature indicates that firms around the world generally hold a substantial amount of cash. For instance, Dittmar et al. (2003) document that the largest

firms around the world listed in the Global Vantage database overall held $1.5 trillion of cash and cash equivalents at the end of 1998, which is around 9% of their assets or market value of equity. The Institute of International Finance estimated that firms in the United States, the United Kingdom, European Union, and Japan reserved approximately $7.75 trillion in cash or cash equivalents.[1] Over the period 1989 to 2009, Chen, Dou, Rhee, Truong, and Veeraraghavan (2015) find that the median of cash to total assets varies from 16.6% for Hong Kong, 13.7% for Singapore, 10.1% for Sweden, 9.9% for the U.S., 8% for Finland, 5.2% for Australia, 3.6% for Russia, to 2.3% for New Zealand.

The amount of cash holdings by companies has also increased drastically over the years. In Almeida et al. (2014), cash holdings among non-financial S&P 500 firms have increased about fivefold from 1996 to 2012, reaching $1.3 trillion. Looking at a longer period, Bates et al. (2009) find that the average cash to assets of U.S. firms has risen more than double over 26 years from 10.5% (in 1980) to 23.2% (in 2006) with 0.46% of increment per year. Using a different database - the S&P Global Capital IQ, with an extended period, this study found similar statistics as previous studies. Figure 1 shows that the average cash-to-total assets ratio among non-financial and non-utilities listed firms in the U.S. has increased by 150% from 0.10 to 0.25 over the periods 1989 to 2021. The significant amount of cash held by firms over the past decades has spurred much research to examine what factors motivate firms to increase their cash holdings.

[1] The Wall Street Journal (March 23, 2012).

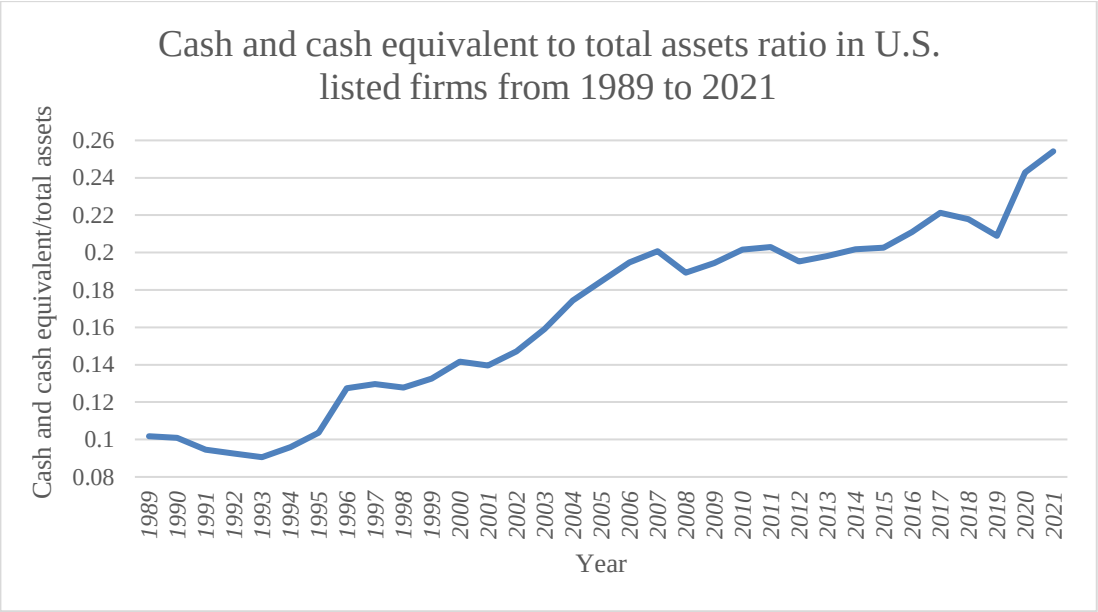

Figure 1 The average cash and cash equivalent to total assets ratio of U.S. listed firms from 1989 to 2021

Source: S&P Global Capital IQ database

Research on cash holdings can be traced back as early as Keynes (1936), who describes the benefits of holding cash. A notable growth in research interest on this topic occurred in the mid-1990s and in recent years, the research focus has shifted to understanding the motivations for corporate cash holdings. Opler et al. (1999) classify these motivations under two broad theories, which are the tradeoff theory and the financing hierarchy theory. The tradeoff theory underlines the tradeoff between the benefits and costs of holding cash to decide the optimal amount of cash to be reserved. The theory not only considers the transaction costs of fundraisings in the case of cash shortfall, which explains the transaction costs motive of cash holdings (Dittmar et al., 2003; Ozkan & Ozkan, 2004; Guizani, 2017), but also suggests the precautionary motive of firms to hold cash due to information asymmetries (Antunovich, 1996; Ozkan & Ozkan, 2004; Myers & Majluf, 1984), financial constraints (Almeida, Campello, & Weisbach, 2002; Almeida et al., 2002; Dittmar et al., 2003; Han & Qiu, 2007), and agency costs (Myers, 1977; Ozkan & Ozkan, 2004; Jensen, 1986; Stulz, 1998; Dittmar

et al., 2003; Gao, Harford, & Li, 2013). The financing hierarchy theory, in contrast, suggests that there is no optimal level of cash and that the amount of cash is merely the outcome of a firm's financing and investment decisions, similar to the assumption of pecking order theory. For instance, the financing hierarchy theory assumes leverage is a substitute for cash implying firms that rely on debt financing tend to reserve less cash (John, 1993; Dittmar et al., 2003; Ozkan & Ozkan, 2004).

Building upon these two theories and the motives of cash holdings, existing studies investigated a broad range of determinants that affect the cash holdings decision of firms. The determinants vary from firm-specific, industry-specific, to country-specific characteristics. However, less attention has been paid to the macroeconomic-specific and Chief Executive Officer (CEO)-specific characteristics. This thesis aims to fill this void by exploring the macroeconomic and CEO-related factors that potentially influence corporate cash holdings.

1.1.1 Corporate cash holdings in response to macroeconomic uncertainty

A strand of the literature claims that macroeconomic factors play a significant role in determining the level of corporate cash reserves. For example, interest rates, inflation, GDP growth, tax rates, market volatility, financial crisis, policy uncertainty, and macroeconomic ambiguity are proven to have significant influence on the cash holdings decision of firms (Graham & Leary, 2018; Nason & Patel, 2016; Bliss, Cheng, & Denis, 2015; Duong, Nguyen, Nguyen, & Rhee, 2020; Phan, Nguyen, Nguyen, & Hegde, 2019; Neamtiu, Shroff, White, & Williams, 2014). Among various macroeconomic factors, the impact of macroeconomic uncertainty on corporate cash holdings is underexplored.

In academic research, the concept of uncertainty is often related to the concept of risk (Castelnuovo, Lim & Pellegrino, 2017; Greenspan, 2004; Bloom, 2014) and is proven to be countercyclical (Bloom, 2014). Despite uncertainty being known to be amorphous, prior studies using various proxies of uncertainty unanimously show that uncertainty spikes in recession times. These studies explain that uncertainty could rise during recessions due to noise (Taschereau-Dumouchel, Schaal, & Fajgelbaum, 2013); loss of information to predict future outcomes (Orlik & Veldkamp, 2014); changes to policies (Pástor & Veronesi, 2013; Baker, Bloom & Davis, 2016); or tragedy events (Bloom, 2009). The rise in uncertainty influences firms' economic activities, which collectively affect aggregate economic growth.

Prior studies also show that uncertainty affects the firms' activities through four channels: (i) the real options effect (e.g., McDonald & Siegel, 1986; Bloom, 2009), which suggests that the option value of waiting and postponing firms' investments and expenditures is higher during uncertain periods; (ii) the risk premium and risk aversion effect (e.g., Christiano, Motto, & Rostagno, 2014; Bloom, 2014; Panouse & Pananikolaou, 2012), which explains that managers are more conservative when uncertainty is high; (iii) the growth options effect (e.g., Segal, Shaliastovich, & Yaron, 2015; Bloom, 2014), which denotes that "good" uncertainty such as uncertainty on the internet's evolution encourage investments of firms, and (iv) Oi-Hartman-Abel effect (e.g., Abel, 1983; Lee & Shin, 2000), which states that firms with greater ability to substitute labor for capital have greater elasticity on their investment during uncertain times. Of these channels, the real options effect and the risk aversion effect are the most cited channels that explain the impact of macroeconomic uncertainty on firms' decisions, including their demand for liquidity. In fact, most studies confirm the real options effect and the risk aversion effect by showing that macroeconomic uncertainty

indeed limits firms' activities, such as in acquisitions (e.g., Nguyen & Phan, 2017), innovations (e.g., Bhattacharya, Hsu, Tian, & Xu, 2017), investments and financings (e.g., Gulen & Ion, 2016). Based on the real options effect, the risk aversion effect, and the tradeoff theory, this thesis aims to examine how macroeconomic uncertainty affects firms' cash holdings behavior.

1.1.2 The role of CEOs' corporate distress experiences in influencing corporate cash holdings during macroeconomic uncertainty

In addition, this study further investigates another underexamined area, which is the role of CEOs' corporate distress experiences in the association between macroeconomic uncertainty and corporate cash holdings. Hambrick and Mason's (1984) upper echelons theory, as cited by many studies that investigate the influence of CEOs' characteristics on firms' capital structure decisions, suggests that firm-level decisions made by CEOs are largely affected by their experiences. Compared to personal life experiences, CEOs' career experiences are claimed to be more recent and relevant to firms' settings, and hence, require more attention, particularly on firms' decisions (Wang, Holmes, Oh, & Zhu, 2016; Faulkner & Garcia-Feijoo, 2020).

Previous studies have intensively examined different types of CEO career experiences such as the experience in starting a career during recession times (Schoar & Zuo, 2017) and career experiences in different divisions, industries, or countries (Xuan, 2009; Custódio & Metzger, 2013; Khavul, Benson, & Datta, 2010). CEOs' experiences, as measured by prior corporate outcomes, are still underexplored, particularly in relation to how those experiences influence firm policies. The exception is Dittmar and Duchin (2016). Citing the "hot-stove" effect (Denrell & March, 2001; March, 1996; Denrel, 2007), they demonstrate that CEOs who had prior experience of working in firms with negative outcomes, such as bankruptcy and negative shocks to

cash flows, bond rating, and stock returns, are more conservative in their current firm's policies. The authors label these negative experiences as "professional experience". This thesis uses the label "corporate distress experience", which is more pertinent to the definition.

Based on the "hot-stove" effect and the extant evidence, this thesis argues that corporate cash holdings in periods of high macroeconomic uncertainty is influenced by CEOs' corporate distress experiences. It further argues that variation in CEOs' corporate distress experiences, both in the timing and frequency of corporate distress experiences, matter in the relationship between macroeconomic uncertainty and corporate cash holdings. This argument is premised on the reinforcement learning hypothesis and the recency laws argument, which suggest that recent experience has a greater influence than distant experience on one's decision making (Erev & Roth, 1998; Watson, 1930), and on the saliency hypothesis, which proposes that repeated salient experiences influence the decision making of an individual more significantly than those who only experience once. Therefore, this study further investigates if recent and multiple corporate distress experiences matter in the association between macroeconomic uncertainty and corporate cash holdings.

1.2 Problem statement

The issue of uncertainty has been getting attention since the publication of the book "Risk, Uncertainty and Profit" in 1921 written by Frank Knight. Since then, many significant events that occurred in every corner of the world are covered by the media and academicians to highlight the uncertainty caused to the economy and financial world due to those events. In fact, several major challenges have emerged recently, causing uncertainty to rise unprecedentedly. Figure 2 shows the World Uncertainty

Index spiked around major events like the Gulf Wars, the U.S. recession, the 9/11 terrorist attack, the Iraq war, the SARS outbreak, the Euro debt crisis, the Brexit, the U.S. presidential elections, and the U.S.-China trade tensions. The recent outbreak of COVID-19 brought global uncertainty to unprecedented levels. Despite falling sharply subsequently, the index surged again as the war in Ukraine unfolded. Likewise, the U.S. macroeconomic uncertainty index constructed by Jurado, Ludvigson, and Ng (2015) based on the forecast errors in hundreds of macroeconomic series shows a similar pattern as presented in Figure 3.

The heightened uncertainty was proven to cause adverse profound impacts on economic growth. For instance, Bloom (2009) demonstrates that the jump in uncertainty that occurred during the Global Financial Crisis has caused a severe total output loss in the 2007-09 recession. The Wall Street Journal (April 28, 2013) also reveals that the economic policy uncertainty in the U.S. has led to more than one-percentage-point drop in the country's real gross domestic product (GDP) and a total loss of over one million jobs over the periods of 2011 to 2012.

The issue of uncertainty in the U.S. is very much concerned by the media, policy makers, investors and academicians as it is found any uncertainty that emerged from the key systemic economies like the U.S. or the European Union would spill over to other countries and cause the uncertainty in other countries to rise and consequently, affect their economic activities. For example, Figure 4 shows that the average uncertainty ratio in other countries has increased by about 23% from the historical mean due to the U.S.-related uncertainty during the periods 2001 to 2003. In addition, Ahir, Bloom, and Furceri (2022) assert that the U.S. related uncertainty has contributed to about 13% of uncertainty in other countries in the past four years with an approximately 20% increase in the world uncertainty from the historical mean. Other previous studies

found that the uncertainty shock in the U.S. would significantly affect the inflation and output of European countries (Colombo, 2013), the unemployment rate in the G7 countries (Caggiano, Castelnuovo, & Figueres, 2016), and the economy of some major countries and New Zealand (Kamber, Karagedikli, Ryan, & Vehbi, 2016). Based on the evidences above, it implies that one should be aware of the uncertainty related to the U.S. as it could create considerable influences on the uncertainty and economic activities of other countries.

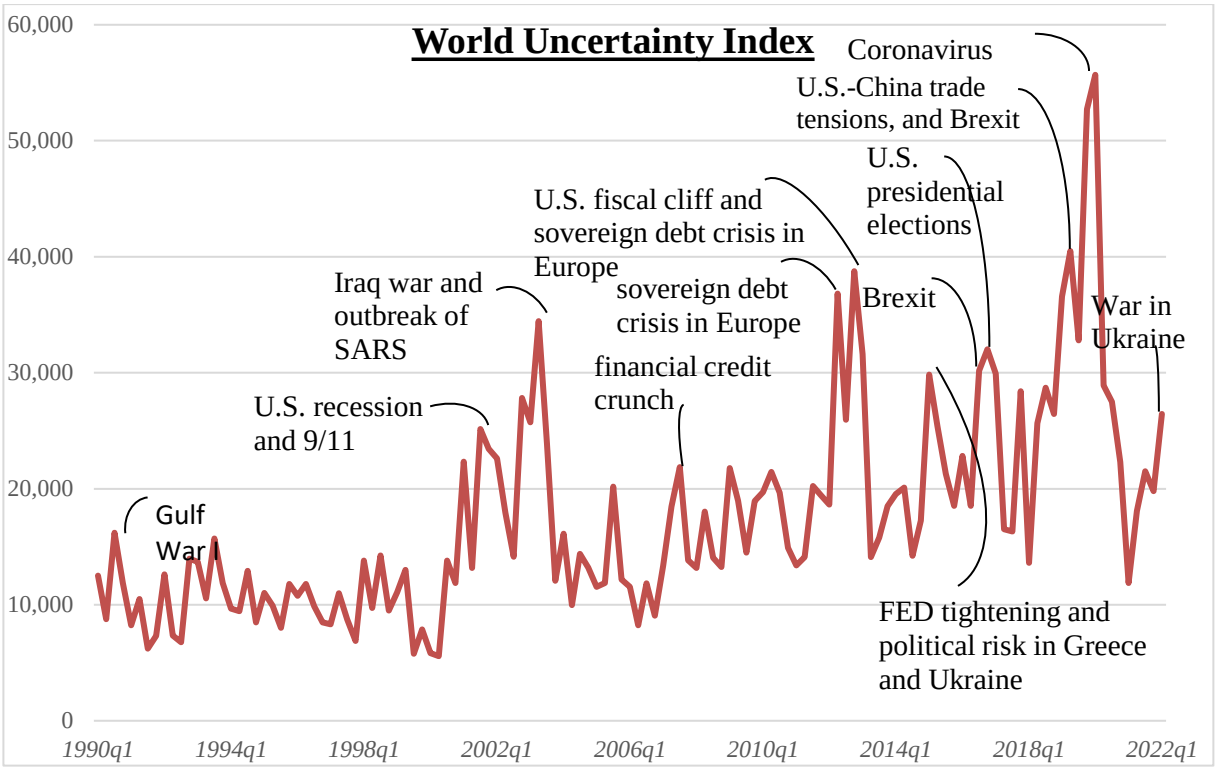

Figure 2 World Uncertainty Index

Source: Ahir, H., Bloom, N., & Furceri, D. (2022). The world uncertainty index (No. w29763). National Bureau of Economic Research.

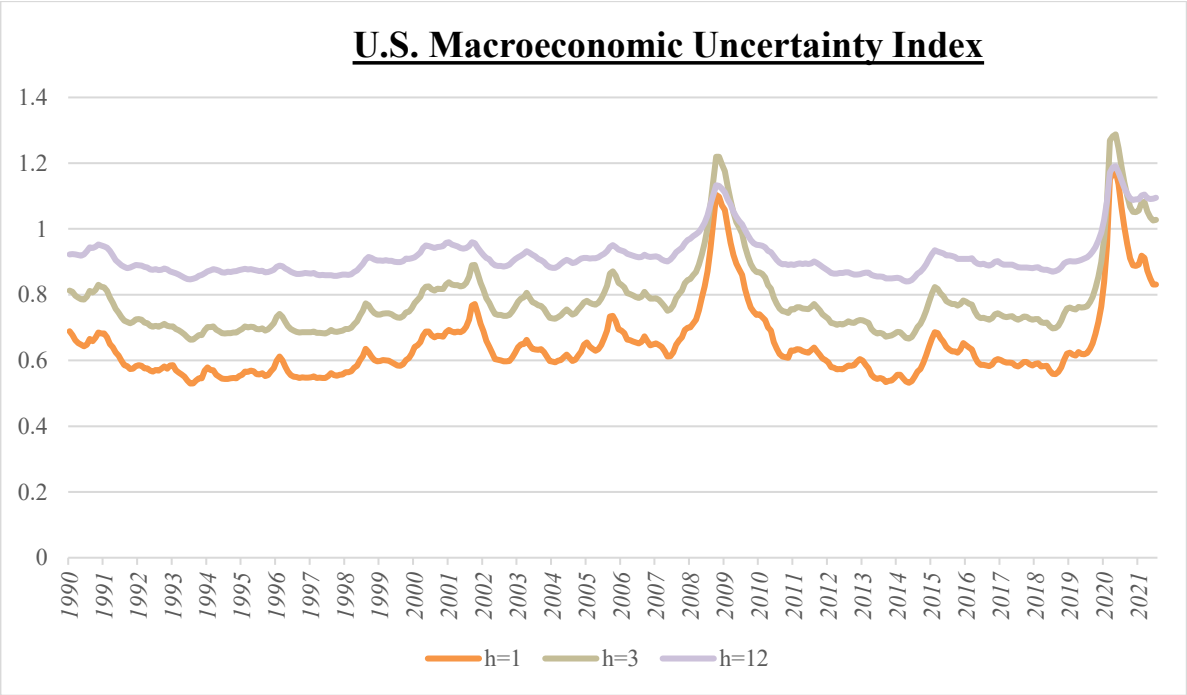

Figure 3 U.S. Macroeconomic Uncertainty Index

Source: Jurado, K., Ludvigson, S. C., & Ng, S. (2015). Measuring uncertainty. American Economic Review, 105(3), 1177-1216.
Note: h=1, 3, and 12 represent the uncertainty about the U.S. macroeconomic for one month, three months, and twelve months ahead respectively.

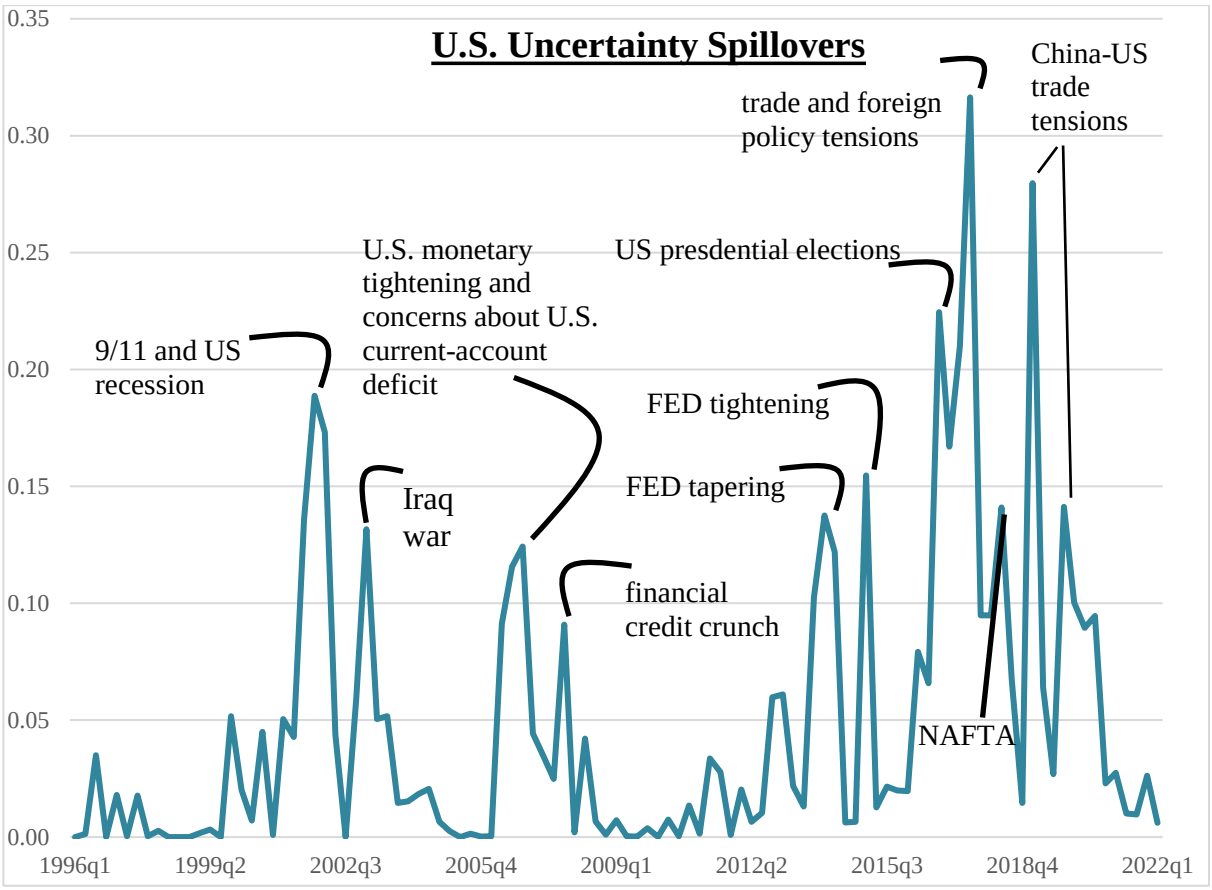

Figure 4 U.S. Uncertainty Spillovers

Source: Ahir, H., Bloom, N., & Furceri, D. (2022). The world uncertainty index (No. w29763). National Bureau of Economic Research.

Given the unfavorable impacts of macroeconomic uncertainty, it is important to understand how the macroeconomic uncertainty is likely to influence the financial decisions of the U.S. firms as the aggregate firms' activities could decide the trend of the U.S. economy, which possibly influence other countries. Prior studies have researched the potential impact of uncertainty on various firms' activities such as capital investment (Kang, Lee, & Ratti, 2014; Gulen & Ion, 2016; Bernanke, 1983; Bloom, 2009; Julio & Yook, 2012; Wang, Chen, & Huang, 2014), R&D investment (Wang, Wei, & Song, 2017), leverage ratios (Zhang, Han, Pan, & Huang, 2015), debt and equity issuances (Gulen & Ion, 2016), innovation activities (Bhattacharya et al., 2017), and corporate merger and acquisition activities (Nguyen & Phan, 2017; Bonaime, Gulen &

Ion, 2018). Yet, studies on the cash holdings policy in the response to macroeconomic uncertainty remain underexplored.

Cash plays a crucial role in many aspects such as mitigating refinancing risk (Harford, Klasa, & Maxwell, 2014), capturing investment opportunities (Guzaini, 2017), or enhancing innovation efficiency (Lyandres & Palazzo, 2016). One can assume that cash is the heart of firm policies and could decide the extent of firms' activities. However, it does not mean that it would be advantageous to firms to hold as much cash as possible because cash holdings come with both benefits and costs. Therefore, cash management such as increase or decrease cash holdings can be a very challenging task as sub-optimal cash holdings decision may lead to unfavorable firm outcomes. For instance, holding too little cash could cause firms to sacrifice investment opportunities or involve in financial distress (Opler et al., 1999). According to a survey performed by Jessie Hagen of U.S. Bank and cited on the SCORE – a nonprofit organization and a partner of the U.S. Small Business Administration (SBA), the results indicate that 82 percent of small businesses fail due to cash flow problems either because of overspent or having little cash reserves.[2] On the other hand, previous studies claim that hoarding too much cash may incur substantial carrying costs associated with higher tax payments and lower expected returns (Amihud & Mendelson, 1986; Opler et al., 1999; Faulkender & Wang, 2006). For example, the tech giant Apple (AAPL) reported a $164.5 billion of cash, cash equivalents and marketable securities at the end of June 2014, with $137.7 billion of the money being held by its foreign subsidiaries. If Apple shifts its money back to the U.S., the company would have to pay a tremendous amount of tax to the

[2] Source: https://www.sorg/blog/1-reason-small-businesses-fail-and-how-avoid-it

Internal Revenue Service which could be a big problem for the company.[3] Besides, having too much cash may signal the shareholders that the management is too short-sighted and lack of ability to search out for investment opportunities.[4] Moreover, the stockpiles of cash being held by companies like Apple may also reduce the velocity of money in a country which may result in slower GDP growth.[5] The instances stated above imply that cash management is indeed challenging and corporate cash holding decision is crucial as it would eventually decide the firm value, affect the shareholder's wealth, and the economic growth of a country to a greater extent. Building upon this notion, this thesis would like to investigate the cash holdings decision of firms in the U.S. particularly during macroeconomic uncertainty. The findings could help us to better understand what kind of cash management (i.e., increase or reduce cash reserves) that firms generally prefer or believe would be more favorable to them following high uncertainty.

Additionally, this thesis investigates the role of CEOs on corporate policies in relation to cash holdings in response to macroeconomic uncertainty. The upper echelons theory suggests that corporate policies are the outcomes of the managerial traits of the CEO which are mostly determined by their personalities, background, and experiences (Hambrick & Mason, 1984; Beyer, Chattopadhyay, George, Glick, & Pugliese, 1997; Hambrick, 2007). It is found that the career experiences of CEOs play a major role in deciding the firm policies. In light of this notion, Dittmar and Duchin (2016) explore and find that CEOs' professional experiences, that is the work-related experiences based

[3] Source: https://www.theguardian.com/technology/2014/sep/07/apple-iphone-6-cash-pile-tax-avoidance-us
[4] Source: https://www.investopedia.com/articles/fundamental/03/062503.asp
[5] Source: https://www.managementstudyguide.com/why-are-corporations-hoarding-trillions-in-cash.htm

on the outcomes of prior firms such as bankruptcy, adverse shocks to stock returns, adverse shocks to bond ratings, or adverse shocks to operating cash flows, would affect the risk preferences of CEOs, that is they tend to be more conservative by holding more cash, borrowing less debt, and investing less compared to their counterparts. Following the previous studies, this study thus further examines whether CEOs' corporate distress experiences matter in the association between macroeconomic uncertainty and corporate cash holdings. In fact, this thesis finds some real-life related examples based on the sample firms extracted from the Compustat and Execucomp database. For example, it is found that the sample firms averagely increase their cash holdings to net assets ratio roughly about 1.42 times when macroeconomic uncertainty increases due to the outbreak of COVID-19 (i.e., from year 2019 to 2020). Among the sample firms, Sabre Corporation has increased its cash holdings to net assets ratio about 2.95 times, higher than the average. An interesting fact is that the current CEO of Sabre Corporation, Sean Menke, was the former CEO of Frontier Airlines, a firm that filed for Chapter 11 bankruptcy on April 10, 2008.[6] Besides, Kirkland's Inc. is another similar example. Kirkland's Inc. has increased its cash holdings to net assets ratio about 3.56 times, higher than the average, and its current CEO was Steve C. Woodward who was also a former executive of a bankruptcy firm – Bombay Company Inc.[7] Glancing through the examples above, CEOs' corporate distress experiences seems to affect corporate cash holdings decision particularly during macroeconomic uncertainty. Nonetheless, this issue will be clarified in the subsequent analyses.

[6] Source: https://en.wikipedia.org/wiki/Frontier_Airlines
[7] Bombay Company is an American furniture and home accessories retailer. It filed for Chapter 11 bankruptcy protection on September 20, 2007. Source: https://en.wikipedia.org/wiki/Bombay_Company

Upon investigating the role of CEOs' corporate distress experiences, this study also intends to observe whether variation in CEOs' corporate distress experiences in terms of timing (i.e., recent versus distant corporate distress experience) and frequency (i.e., multiple versus single corporate distress experience) matters in the relationship between macroeconomic uncertainty and corporate cash holdings.

1.3 Research question

Based on the discussion in the problem statement, this study hence intends to address the following research questions:

1) What is the impact of macroeconomic uncertainty on corporate cash holdings?

2) Does the CEOs' corporate distress experience affect the relationship between macroeconomic uncertainty and corporate cash holdings?

3) Does the variation of the CEOs' corporate distress experience in terms of timing and number matter in the relationship between macroeconomic uncertainty and corporate cash holdings?

1.4 Research objective

In line with the research questions above, the research objectives that this study intends to attain are as follows:

1) To investigate the impact of macroeconomic uncertainty on corporate cash holdings.

2) To investigate the interaction effect of CEOs' corporate distress experiences on the relationship between macroeconomic uncertainty and corporate cash holdings?

3) To investigate whether the variation of the CEOs' corporate distress experience in terms of timing and number matter in the relationship between macroeconomic uncertainty and corporate cash holdings.

1.5 Contribution of the study

The contributions of this study are manifold. First, this study extends the corporate cash holdings literature by highlighting macroeconomic uncertainty as a potential determinant of corporate cash holdings. The majority of existing cash holdings research has emphasized numerous firm-, industry-, and country-specific factors, nonetheless, the research on the macroeconomic-specific factors are relatively scarce. Previous studies show that the macroeconomic environment could be an equally important determinant of firms' cash holdings decisions. For instance, the interest rate, inflation, GDP growth, tax rates, market volatility, macroeconomic ambiguity, and policy uncertainty are found to affect the corporate cash holdings behavior (Graham & Leary, 2018; Duong, Nguyen, Nguyen, & Rhee, 2020; Phan, Nguyen, Nguyen, & Hegde, 2019; Neamtiu, Shroff, White, & Williams, 2014). Given the surge of the recent significant events (e.g., the COVID-19 pandemic and the Ukraine war) and the potential impact of the macroeconomic factors on firm activities and the general economy, this study thus intends to extend the prior studies by investigating an under-researched macroeconomic factor, that is the influence of macroeconomic uncertainty on corporate cash holdings. The findings will provide timely implications for firm managers, investors, and policy makers regarding the cash holdings behavior of firms during high macroeconomic uncertainty periods so that the related parties could construct appropriate strategies and policies to reduce the adverse consequences. This is crucial especially during the recent hike in macroeconomic uncertainty.

Second, the investigation of the association between macroeconomic uncertainty and corporate cash holdings would also extend the uncertainty literature that focuses on the impact of uncertainty on firms' activities. Prior research has been concentrating on the potential impact of uncertainty on various firms' activities, such as M&A events (Nguyen & Phan, 2017; Bonaime et al., 2018), investment (Kang et al., 2014; Gulen & Ion, 2016), and financing activities (Gulen & Ion, 2016; Zhang et al., 2015). Nevertheless, the examination of the demand for liquidity in response to uncertainty is less. Therefore, this study will fill this gap by demonstrating the response of corporate cash policy during high macroeconomic uncertainty periods. Filling this gap is crucial given the essential role of cash in influencing the firm's activities and the increasing trend of the corporate cash holdings in the past decades.

Third, the existing evidence that examines the impact of uncertainty on firms' activities largely employ uncertainty indexes that consider only a single or few series to proxy the uncertainty, and some proxies are more likely to capture the reflections of journalists or forecasters' thoughts, tend to be delayed, and hence not necessarily represent the whole economy and the true uncertainty of the economy. Unlike the existing literature, the measure of the uncertainty index utilized in this study follows the forecast and estimation models developed by Jurado et al. (2015) that include hundreds of economic indicators and focuses on the common variation of forecast errors within the series, which is more pertinent and closer to the definition of uncertainty. Therefore, this study contributes to the existing uncertainty literature by adding empirical evidence that focuses on another insight, which is the impact of aggregate macroeconomic uncertainty on firms' activities, particularly the corporate cash holdings.

Fourth, following the upper echelons theory that suggests the importance of CEOs' characteristics in influencing firms' policy (Hambrick & Mason, 1984), this

study further considers the role of CEOs' corporate distress experiences in the relationship between macroeconomic uncertainty and corporate cash holdings. Prior studies that examine the relationship between uncertainty and corporate cash holdings generally consider the firm-level and industry-level interacting factors. For example, previous studies examine whether firms' growth opportunities (e.g., Demir & Ersan, 2017), firms' dependence on government (e.g., Duong et al., 2020), and industry cycle (e.g., Phan et al., 2019) enhance or mitigate the corporate cash holdings decision in response to uncertainty. However, the interacting effect of the characteristics of the firms' central decision-maker – the CEO – on these associations is rarely investigated. Therefore, this study contributes to the literature by showing an important aspect that may potentially affect the relationship between macroeconomic uncertainty and corporate cash holdings, that is the CEOs' corporate distress experiences. Evidence on the moderating effect of CEOs' corporate distress experiences would also contribute to the upper echelons literature and the behavioral finance literature by highlighting how CEOs' corporate distress experiences would influence their management style, particularly in cash management in periods of high macroeconomic uncertainty. This study further contributes to the literature by underlining whether the variation in CEOs' corporate distress experience matters within the association between macroeconomic uncertainty and corporate cash holding.

Finally, this study extends the theoretical cash holding model by considering macroeconomic factors (i.e., macroeconomic uncertainty) and CEO-specific factors (i.e., CEOs' corporate distress experiences), which are from different disciplines that potentially influence the cash holdings decision of firms. The last contribution of research hence can be assumed to bridge the gap between the discipline of macroeconomics, behavioral finance, and corporate finance.

1.6 Significance of the study

The macroeconomic uncertainty is largely beyond the control of a firm or investors and cannot be easily hedged through derivatives or financial contracting. Given the recent outbreaks of the COVID-19 pandemic and the Ukraine war and their consequences brought to the world, it is important to develop our knowledge of how the firms will coordinate their policy, especially cash holdings policy, to deal with the macroeconomic uncertainty. The findings of this thesis will provide a better understanding of the cash holdings behavior of the firms, and the influence of the CEOs' corporate distress experiences on corporate cash policy in response to macroeconomic uncertainty, which in turn has a significant implication for firms, investors, and policymakers.

First, macroeconomic uncertainty tends to be more exogenous and non-diversifiable as compared to firm-specific uncertainty that is easier to predict, hedge against, and/or diversify (Duong et al., 2020). Therefore, macroeconomic uncertainty may exert a distinct effect on corporate cash holdings relative to firm-specific uncertainty. It is thus important for firm managers to understand how macroeconomic uncertainty would generally affect the cash holding behavior of firms. Moreover, studies on the cash holdings behavior of firms are important as the cash balances of U.S. firms are enormous, making up approximately 20% of total firm assets, on average, and are increasing (Figure 1.1). In addition, cash reserves are relatively easier to access and be managed with little scrutiny, suggesting that firm managers more responsive in managing cash holdings than other long-term oriented forms of capital structure. Thus, the findings of this study have implications for firm managers who could react quickly to manage their valuable cash while dealing with high macroeconomic uncertainty. Further, this study also examines the interaction role of CEOs' corporate distress

experiences in the relationship between macroeconomic uncertainty and corporate cash holdings. The findings of this investigation have implications for the board of directors on how certain profile of CEO such as CEOs' corporate distress experience in particular, would affect corporate cash holdings in response to macroeconomic uncertainty. These findings are important as CEO is the decision maker and assume that if the corporate distress experience of CEO could affect the corporate cash holdings decision, this study would suggest the directors to look into the profile of the CEO, especially their career experience, and be aware of the decision made by the CEO. The directors may consider appropriate mechanism to monitor the CEO to avoid CEO making any suboptimal decision during uncertain periods that possibly influenced by their past experience.

Second, the findings of this study may serve as an important reference to investors for their investment analyses. It is often that the investors and managers have different risk preferences because investors can reduce their portfolio risks through diversification whereas managers cannot diversify their employment risk and hence, they will prefer more conservative strategies. As a consequence, some investors who like to take risks may prefer to invest in firms managed by CEOs who dare to pursue riskier policies, such as investing cash in rare opportunities that are unlikely to be attempted by other firms during uncertain times. In contrast, if investors prefer more conservative firms, they may select the firms run by CEOs who had corporate distress experience. Thus, the CEOs' corporate distress experience examined by this study may serve as one of the indicators for the investors in selecting their preferred firms and constructing their portfolios.

Lastly, understanding the relationship between macroeconomic uncertainty and corporate cash holdings has important implications for policymakers in constructing

appropriate policies in response to the firm decisions during uncertain times. If the rise of macroeconomic uncertainty induces firms to hold more cash as precautionary, this may lead to a decline in firm investments and less money circulating in the market. This would eventually curb the aggregate economic growth and/or increases the unemployment rate. Therefore, by having a better understanding of how macroeconomic uncertainty affects corporate cash holdings behavior, policymakers can formulate better strategies through monetary or fiscal policies to maintain economic growth and ensure the economic health will not be much affected by the risk-averse behavior of firms during high uncertainty. Moreover, this study may serve as an important reference to the policymakers in other countries as well because this study focuses on the macroeconomic uncertainty that occurred in the U.S. and utilizes the U.S. firms as the targeted sample. In the majority of literature, the U.S. remains the most interesting country to be investigated given its largest GDP in the world and many global events originated from this country. Considering there is a possibility of uncertainty spillovers from the U.S. to other countries, especially the developing countries (Castelnuovo & Pellegrino, 2017), understanding how macroeconomic uncertainty in the U.S. affects the cash holding decision of U.S. firms may help policymakers in other countries to have some pictures of what to expect and prepare ahead to avoid any unfavorable outcomes. For instances, assume that macroeconomic uncertainty increases the cash holdings of the U.S. firms in general, this may imply lesser foreign investments from the U.S. firms. As a result, this could adversely impact the economy and the job employment of many developing countries that have very close relationship with the U.S. in terms of international businesses and transactions. However, the policymakers of the developing countries could mitigate the unfavorable consequences through establishing appropriate policies in advance such as subsidizing

or providing financial supports to firms if they expect the risk-adverse behavior of the U.S. firms during the uncertain periods.

1.7 Organizations of the study

This study is organized into five chapters. Chapter 1 presents a brief overview of the study, including the background of the study, problem statement, research questions, research objectives, contribution, and significance of this study. The next chapter, Chapter 2 provides a review of literature that is relevant to this study and discusses the hypothesis development. Chapter 3 will discuss the research and methodology utilized in this study. Chapter 4 reports the results of the analysis and the discussions on the findings. Finally, the last chapter, Chapter 5 concludes the whole study by including discussions, limitations of this study, and suggestions for future implications.

1.8 Definition of Key Terms

This section provides the definition of key terms used in this study.

- **Macroeconomic uncertainty** is defined as the uncertainty shocks in the macroeconomic activities, or in other words, the forecast errors or unforecastable components in the macroeconomic variables.
- **CEOs' corporate distress experience** is defined as an indicator equals to one if the incumbent CEO of the firm was previously hired as one of the top executives at firm(s) which filed bankruptcy, or had experience adverse shocks to its bond ratings, operating cash flows, or stock returns.
- **Corporate cash holdings** is defined as the amount of cash and marketable securities deflated by net assets.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature relevant to the three main subjects of this study: (i) corporate cash holdings, (ii) macroeconomic uncertainty, and (iii) CEOs' corporate distress experiences. This chapter starts with the review of literature on the theoretical background and determinants of corporate cash holdings in Section 2.2. This is followed by the discussion of the literature relevant to macroeconomic uncertainty (Section 2.3) and CEOs' characteristics (Section 2.4). The literature review related to the CEOs' corporate distress experiences is included in Section 2.4.2. Based on the review of literature, Section 2.5 develops the hypotheses relevant to the research objectives of this study. Lastly, this chapter ends with the research framework of this study in Section 2.6, followed by the summary of this chapter in Section 2.7.

2.2 Cash

It is commonly known that cash is one of the most valuable resources to maintain the liquidity of firms (Almeida et al., 2004). With sufficient liquidity, cash reserves could prepare firms to better deal with volatile cash flows, risk hedging, daily operation funding, and long-term investment financing (Opler et al., 1999; Almeida et al., 2004; Acharya et al., 2007). Given the essential roles of cash reserves, one would expect firms to hold as much cash as possible. Indeed, cash holdings in both U.S. and foreign firms have increased significantly since the mid-1990s (Bates et al., 2009; Phan et al., 2019; Bates, Chang, & Chi, 2018; Almedia et al., 2014). However, holding cash is not without cost. For example, the carrying cost, agency cost, and taxes would affect the value of cash held (Faulkender & Wang, 2006). Thus, following the increasing trend

of cash holding, the analysis of corporate cash holdings has gained a great deal of attention among researchers, particularly on the topics related to the motives and determinants of cash holdings. The following sections discuss the theoretical and empirical literature on corporate cash holdings.

2.2.1 Theoretical background

Keynes (1936) argues that holding cash saves firms from incurring transaction costs that arise from raising funds without having to liquidate assets to make payments. Further, firms could utilize cash to finance operations and investments when other sources of financing are expensive or not available. Extending from Keynes (1936), Opler et al. (1999) adopt two broad theories, tradeoff theory and financing hierarchy theory, to explain the motives for corporate cash holdings.

2.2.1(a) Tradeoff theory

The tradeoff theory emphasizes the tradeoff between the benefits and the costs of cash holdings to determine the optimal level of cash. Opler et al. (1999) further decompose the tradeoff theory into different perspectives by addressing the roles of (i) transaction costs, (ii) information asymmetries and financial constraints, and (iii) agency cost of holding cash.

2.2.1(a)(i) Transaction costs model

In the real world, the presence of financial market frictions makes it costly for firms to raise funds through either selling assets for issuing new securities when there is a shortage of internal resources. Both strategies of fundraising involve fixed and variable costs proportionate to the amount being raised. For instance, the classic models by Keynes (1936), Baumol (1952), and Miller and Orr (1966) define transaction costs as the costs associated with converting cash substitutes assets into cash. Opler et al.