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DETERMINANTS OF CORPORATE CASH HOLDINGS IN PUBLIC LISTED FIRMS IN MALAYSIA

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ABSTRACT

This study examines the determinants of corporate cash holdings of 265 public listed firms in Malaysia from 2006 to 2015. All sectors are included in this sample, except the financial and utility sectors due to their different business reporting nature. The motive of cash holdings is explained based on the transaction, precautionary, agency, and speculative motives. Corporate cash holdings is measured by cash and cash equivalents by the total asset, while the determinant variables are size, leverage, profitability, dividend, growth opportunity, net working capital, and capital expenditure. The data were collected from Thomson Reuters Datastream database and Bursa Malaysia website. The data were then analysed using Linear Regression through the IBM SPSS Software. This study found that the corporate cash holdings in Malaysian public listed firms are determined by leverage, profitability, growth opportunity, net working capital, and capital expenditure, while firm size and dividend payout do not influence the corporate cash holdings. The result also shows that leverage, net working capital, and capital expenditure negatively influence corporate cash holdings, while profitability and growth opportunity positively influence corporate cash holdings. This implies that companies with higher leverage, liquidity, and capital expenditure will hold lower cash, while more profitable firms and firms with higher growth rate will hold more cash and vice versa. This study contributes to the existing literature on the factors that determine the corporate cash holdings.

Keywords: corporate cash holdings, cash holdings, cash, public listed firms, Malaysia

ABSTRAK

Kajian ini mengkaji penentu pegangan tunai korporat bagi 265 syarikat tersenarai awam di Malaysia dari tahun 2006 hingga 2015. Sampel ini mengandungi semua sektor kecuali sektor kewangan dan utiliti kerana jenis perniagaannya adalah berbeza daripada sektor biasa. Motif memegang tunai dijelaskan dengan motif transaksi, motif berjaga-jaga, motif agensi dan motif spekulatif. Pegangan tunai korporat diukur dengan wang tunai dan kesamaan wang tunai dengan jumlah aset, manakala pembolehubah penentu adalah saiz, leveraj, keuntungan, dividen, peluang pertumbuhan, modal kerja bersih dan perbelanjaan modal. Data dikumpul daripada pangkalan data Thomson Reuters Datastream dan dari laman web Bursa Malaysia. Kajian ini menganalisis data menggunakan kaedah Linear Regression oleh IBM SPSS Software dan mendapati bahawa pegangan tunai korporat bagi syarikat tersenarai awam di Malaysia ditentukan dengan leveraj, keuntungan, peluang pertumbuhan, modal kerja bersih dan perbelanjaan modal manakala saiz firma dan pembayaran dividen tidak mempengaruhi pegangan tunai korporat. Hasil kajian juga menunjukkan bahawa leveraj, modal kerja bersih dan perbelanjaan modal mempengaruhi pegangan tunai korporat secara negatif manakala keuntungan dan peluang pertumbuhan mempengaruhi pegangan tunai korporat secara positif. Ini menunjukkan bahawa di Malaysia, syarikat yang mempunyai kadar leveraj yang tinggi, kecairan yang tinggi, perbelanjaan modal yang tinggi memegang tunai yang lebih rendah, manakala firma yang berkeuntungan tinggi dan syarikat yang mempunyai peluang pertumbuhan yang lebih tinggi memegang lebih banyak tunai dan begitu juga sebaliknya. Kajian ini menyumbang kepada ulasan karya dalam faktor-faktor yang menentukan pegangan tunai korporat.

Kata kunci: pegangan tunai korporat, pegangan tunai, tunai, syarikat tersenarai awam, Malaysia

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ASEAN	Association of Southeast Asian Nations
CAPEX	Capital Expenditure
CASH	Corporate Cash Holdings
CEO	Chief Executive Officer
DIVIDEND	Dividend Payout Ratio
EPS	Earnings per Share
FIRMSIZE	Firm size
GDP	Gross Domestic Product
GROWTH	Growth Opportunity
LEVERAGE	Leverage ratio
NPV	Net Present Value
NWC	Net Working Capital
P/E	Price to Earnings ratio
RM	Malaysian Ringgit
ROA	Return on Assets
ROE	Return on Equity
R&D	Research and Development
SMEs	Small and Medium-sized Enterprises
UK	United Kingdom
USD	United States Dollar

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CHAPTER 1

INTRODUCTION

1.1 Background of The Study

"Cash is King" is an old adage that is often used to describe the importance of having sufficient cash. In this light, a firm can fall into financial distress that leads to bankruptcy if it fails to manage the appropriate level of cash to defray its operation, investment, and financing purposes. Although cash is the least profitable asset, it is known as the most liquid and productive asset and even regarded as one of the key components in corporate finance. Cash holdings is one of the most important financial decisions that the manager of a firm has to make in the organisation. Every firm holds different levels of cash due to different financial policies in cash management of the company (Das, 2015).

Cash holdings can be defined as cash or cash equivalent that can be easily exchanged for cash to meet the needs of a firm for project investment, payment for suppliers, capital expenditure, or dividend distribution to shareholders. Cash, as the most important liquid asset, plays a crucial part in generating revenue and profit for a company (Gill and Shah, 2012). In this sense, cash holdings includes cash in hand, cash in banks, and short term investment in money market instruments such as certificates of deposit, fixed deposit, repurchase agreements, banker acceptance, and treasury bills.

Firms need to maintain optimal cash holdings with efficient cash management to create positive cash flow and fulfil its obligations particularly during financial crisis (Abushammala and Sulaiman, 2014); as well as to fund the firm's growth and future investment without relying on external funds (Mikkelson and Partch, 2003). According to the Modigliani Miller theorem, the optimal amount of cash is irrelevant in a perfect capital markets but a crucial aspect for a firm in an imperfect market in order to access the capital markets. As firms will have to pay external financing cost, the assessment will help the firms to avoid uncertainty and unexpected cost. The firm may have to revoke its plan to acquire profitable investment projects or take high interest loan from banks or any financial institutions in case of insufficient cash.

Despite the importance of having enough cash reserve, cash holdings will incur cost that needs to be considered by the managers during decision-making process. Maintaining the right amount of cash is the main catalyst which ensures the survival and prosperity of a business and avoid a firm from having insufficient cash and fall to financial distress during a crisis. Furthermore, Soh, Annuar, and Cheng (2015) suggested that management should vigilantly monitor market conditions in order to acquire the ability to liquidate the assets of the firm with good value; lower cash holdings will unfortunately force a firm to liquidate its productive assets in times of emergency.

In addition, cash holdings decisions must be done carefully and meticulously to maintain the appropriate cash level in order to avoid the potential cost from excessive cash holdings (Abushammala and Sulaiman, 2014). High cash holdings may have lower return that can only be earned from the interest rate that usually comes from money market, fixed deposit, or repurchase agreement. Another cost of cash holdings

is the payable taxes for the income earned from the interest of the cash holdings (Horioka and Terada-Hagiwara, 2013). Moreover, it may cause firms to lose the chance to gain higher profit (Soh et al., 2015) from better investment project.

Therefore, realising the importance of having appropriate cash for a firm in operating its business activity, the study on factors and determinants of cash holdings is considered as essential knowledge in the financial field. Thus, firm managers can arrange its financial strategy to reach the optimal cash level by concentrating on the determining factors of cash holdings (Rehman and Wang, 2015) which lead a firm to wisely utilise its cash to develop its business.

1.2 Problem Statement

Corporate cash holdings is one of the research areas in the corporate finance field. In this light, cash is the most liquid asset required by a firm to finance its operation and investment. Therefore, many studies have been conducted to investigate the determinants of cash holdings to ensure cash is kept at appropriate level to enhance a firm's profitability and performance.

Many studies have been conducted on the determinants of corporate cash holdings in term of firms' characteristics in developed countries such as the United States (Opler, 1999), United Kingdom (Ozkan, Ozkan, and Guney, 2003), German (Ali and Yousaf, 2013; Ozkan et al., 2003), Canada (Gill and Shah, 2012), France (Ozkan et al., 2003; Saddour, 2006), EMU (Ferreira and Vilela, 2004), Europe (Akguc and Choi, 2013; Martinez-Carrascal, 2010), and Japan (Nguyen, 2006; Ozkan et al., 2003).

Similar studies have also been conducted in several developing countries such as in Singapore (Kusnadi, 2003), Pakistan (Afza and Adnan, 2007; Shah, 2011; Shabbir, Hashmi, and Chaudhary, 2016; Anjum and Malik, 2013), China (Lian, Sepehri, and Foley, 2011; Rehman and Wang, 2015), Bangladesh (Islam, 2012), Ghana (Yeboah and Agyei, 2012), Jordan (Abushammala and Sulaiman, 2014), India (Das, 2015), and Ethiopia (Mesfin, 2016).

However, only a few studies have been conducted in Malaysia in term of firms characteristics (Rahayu Izwani and Pok, 2011; Wasiuzzaman, 2014). Study by Rahayu Izwani and Pok (2011) which consists of 276 public listed firms in Malaysia from 2002 to 2005 focused on the effect of corporate governance on the relationship between cash holdings and leverage but also included leverage, cash flow variability, liquidity, growth, size, and capital expenditure as the determinants. The study found that size, growth and cash flow volatility had a significantly positive relationship with cash holdings while leverage had a significantly negative relationship with cash holdings. Meanwhile, the recent study by Wasiuzzaman (2014) on 192 public listed firm in Malaysia from 2000 to 2007 examined the relationship between firms characteristics and cash holdings in term of growth opportunities, cash flows, dividend, liquid substitutes, capital expenditures, R&D expenditures, leverage and board independence. The study found that cash holdings had positively influenced by growth opportunities, cash flows, and dividend but negatively influenced by liquid substitutes, capital expenditures, R&D expenditures and leverage and board independence. In addition, firm size, cash flow volatility and board size did not influence cash holdings. He emphasised that his study did not include other board characteristics and ownership as the determinants because these variables already show a strong relationship towards cash holdings in previous studies.

There are some studies in Malaysia on cash holdings that consider another factor instead of firm characteristics. Horioka and Terada-Hagiwara (2013) analysed the corporate cash holdings in 11 countries, namely Australia, China, Hong Kong, Indonesia, Japan, Korea, Philippines, Singapore, Thailand, Vietnam, and Malaysia. The study focused on cash flow sensitivity on firm size during and after a financial crisis. Besides, another study by Kin and Cheng (2009) on five ASEAN countries - namely Malaysia, Philippines, Indonesia, Singapore, and Thailand examined the relationship between cash holdings with corporate governance and firm valuation.

In another study, Al-dhamari and Ku Nor Izah (2015) conducted a study on public listed firms in Malaysia to investigate the relationship between cash holdings, political connections, and earnings quality. Another study in Malaysia by Azira Hanani and Siti Fariha (2013) investigated the relationship between cash holdings and corporate governance in public listed firms in Malaysia based on board size, board independence, and CEO duality as the independent variables.

In line with the results highlighted from the above literature, it can be concluded that studies on the determinants of corporate cash holdings in term of firm characteristics in Malaysia are scarce compared to other countries. Besides, findings of previous studies on corporate cash holdings are mixed and different results were obtained based on different countries. Moreover, most of the studies used data from older time period which may change with the passage of time. Therefore, this study will use the latest data that were collected for a period of ten years from 2006 to 2015. This study also uses more sample from the public listed firms and will not only focus on selected industries.

1.3 Research Questions

The research questions formulated to answer the above issues are as follow:

1. What is the relationship between firm size and corporate cash holdings in Malaysian Public Listed firms?

2. What is the relationship between leverage and corporate cash holdings in Malaysian Public Listed firms?

3. What is the relationship between profitability and corporate cash holdings in Malaysian Public Listed firms?

4. What is the relationship between dividend and corporate cash holdings in Malaysian Public Listed firms?

5. What is the relationship between growth opportunity and corporate cash holdings in Malaysian Public Listed firms?

6. What is the relationship between net working capital and corporate cash holdings in Malaysian Public Listed firms?

7. What is the relationship between capital expenditure and corporate cash holdings in Malaysian Public Listed firms?

1.4 Objective of the Study

The research objectives are developed to answer the research questions. The objective of the study is to identify the factors that determine the level of cash in Malaysian public listed firms from 2006 to 2015, and the specific research objectives are as follow:

1. To examine the relationship between firm size and corporate cash holdings in Malaysian Public Listed firms.

2. To examine the relationship between leverage and corporate cash holdings in Malaysian Public Listed firms.

3. To examine the relationship between profitability and corporate cash holdings in Malaysian Public Listed firms.

4. To examine the relationship between dividend and corporate cash holdings in Malaysian Public Listed firms.

5. To examine the relationship between growth opportunity and corporate cash holdings in Malaysian Public Listed firms.

6. To examine the relationship between net working capital and corporate cash holdings in Malaysian Public Listed firms.

7. To examine the relationship between capital expenditure and corporate cash holdings in Malaysian Public Listed firms.

1.5 Significance of the Study

Considering the scarcity of literatures focusing on the determinants of cash holdings in Malaysia, this study is expected to contribute to the in term of knowledge on developing country, specifically Malaysia. This study will focus on factors that influence the cash holdings in public listed firms. Moreover, this study will not only focus on certain sectors but data will be collected from all sectors in public listed firms, except from the financial and utilities sectors.

Furthermore, this study will also collect more data in order to obtain more precise and accurate results compared to previous studies. Data of ten years period, from 2006 to

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2015, will be obtained to analyse the determinants of corporate cash holdings in public listed firms in Malaysia. Inclusion of 265 public listed firms from various sectors is believed to produce better and more significant results, ultimately provide clearer picture of the determinants of cash holdings in public listed firms in Malaysia.

Findings from this study are also expected to provide the relevant information and knowledge in regards to the significant factors that determine the level of corporate cash holdings. In addition, as public listed firms are required to issue presentable interim and annually financial reports to please their external shareholders and gain more investments, the manager have to provide reporting that is in line with shareholders' goal. Therefore, this study is expected to give managers some ideas in deciding the optimal cash that they should keep to strategize and increase its profitability. Such strategies are by increasing the company's ability to value any investment opportunity and avoid costly external financing in order to achieved a firm's goal of maximising the shareholders' wealth.

Moreover, this study is expected to come up with findings that will benefit public firms' financial managers based on the characteristics of the variables under study, especially on future operations and performance. This study choose some variables that represent the financials aspects of a firm such as firm size, leverage, profitability, dividend, growth opportunity, net working capital, and capital expenditure. The managers can identify the most influential variables towards their cash holdings and enable them to make better decisions. In this light, the variables chosen for this study have been proven by past studies to have significant relationship with cash holdings in other countries as well as in Malaysia.

Finally, this study aims to contribute to the body of knowledge by providing new basis that is believed to become a root for future research. Such research could facilitate and provide references for academician, financial manager, financial analyst, economist, financial experts and consultant, training institution, and also government.

1.6 Scope and Limitation of the Study

This study investigates the determinants of cash holdings in public listed companies in Malaysia. In order to answer the research objectives, this study uses a sample of public listed firms from all sectors in Malaysia. This study will study on the financial data for the period of 2006 to 2015. These data will be retrieved from Thomson Reuters DataStream.

However, this study encounters several limitations in term of data collection. In this light, some companies do not have enough data in its financial statement to be used in this study. Some companies have also changed their accounting year and excluded from the sample due to inconsistent financial year. Thirdly, this study excluded all financial and utilities firms from the sample selection as these firms employ different accounting styles and structures.

Another limitation of this study is the exclusion of other independent variables as macroeconomic, board characteristics, ownership, and corporate governance. This study is structured to focus on the determinants of corporate cash holdings in term of firm characteristics as the study strives to provide a preliminary view of the cash holdings decision of firms in a developing country such as Malaysia.

The last limitation of this study is concerning the sample of this study, which is limited to Malaysian public listed firms. Hence, the result cannot be generalised to private firms and enterprise companies in Malaysia. Consequently, the results could not be used to illustrate the corporate cash holdings determinants in other countries.

1.7 Organisation of the Study

Chapter 1 is an introductory chapter of this study where it reports the background of the study, problem statement, research questions and objectives, significance of the study, and also the scope and limitation of the study. Chapter 2 reviews the previous literature and related studies about cash holdings as the main focus of the study. Chapter 3 develops the research framework, hypotheses and research design, and discusses the selected variables, data collection, sampling method, and appropriate analysis technique to achieve the research objectives. Chapter 4 presents the results and analysis of the findings, and Chapter 5 concludes the study by presenting the implications, limitations, and suggestions and recommendation for future study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theoretical underpinning of corporate cash holdings and the empirical results from previous literatures regarding the determinants of corporate cash holdings.

2.2 Theoretical Underpinning

The main function of cash management is to maintain short- firm operation, manage resources, and strengthen firm's liquidity. There are a few underpinning theories on the general motives for a firm to keep cash; such as the transaction motive, precautionary motive, agency motive, and speculative (Bates, Kahle, and Stulz, 2009; Keynes, 1936; Shabbir et al., 2016; Opler, 1999; Zhou, 2014).

2.2.1 Transaction Motive

The transaction motive explains that a firm holds cash for its daily operation in order to meet its payment to the suppliers and other expenses, such as labour payment, factory expenses, maintenance, utilities, administrative and sales, inventory purchase, tax, and interest expenses. The expenses depend vastly on the nature of the business. A firm also generates more cash from its business activity. However, cash outflow may exceed the cash inflow, especially if the firm has weak credit control policy or

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just starts a new project or investment that will take long period to generate income. Therefore, firms prefer to hold cash as buffer to avoid transaction costs during excessive cash outflow because external financing costs more than internal funds (Myers and Majluf, 1984). Higher cash holdings may also avoid the firm from liquidating its assets to fulfil its obligations (Keynes, 1936). The amount of cash held by a firm often depends on the nature of its business. In this light, retailer or restaurant business usually hold higher amount of cash compared to a service company.

2.2.2 Precautionary Motive

The precautionary motive states that a firm needs to hold cash to hedge against risks of unexpected expenses and undetermined contingencies, especially in unstable and volatile economy. Cash is held as an emergency fund for future unexpected expenses and unpredictable events. For instance, a firm may have to face unexpected costs such as increasing cost of supplies, wages, and lower market demand due to change of trend and time, and technological advancements. Factors influencing a firm to reserve the required amount of cash are based on its predicted future cash flows. Takahashi and Yamada (2015) added a firm usually reserves some standby cash if it predicts exogenous liquidity in the future. Hence, a firm can hold lower cash if it predicts higher future cash flow. Consequently, a firm's capability to obtain external financings would generally affect the cash flow of the firm. Smaller firm faces relatively more difficulties in obtaining external financing, forcing it to keep relatively higher level of cash holdings. Meanwhile, larger firm with better access to capital markets may hold lower cash (Martinez-Carrascal, 2010).

2.2.3 Agency Motive

The third reason is the agency motive which is related to managers' control over the cash management decisions; the cash can be paid to the shareholders or held for the firm itself. Managers of public listed firms may prefer to hold higher cash holdings either because they are not willing to risk its position in the firm, or due to the privileges in securing future investments (Bigelli and Sánchez-Vidal, 2012). Higher cash holdings will also increase its managerial diplomacy, even though it might not be in-line with a firm's goals of maximising shareholders' wealth (Das, 2015). Consequently, the management should decide on the optimal amount of cash holdings to maximise the shareholders' wealth and simultaneously protect its interest.

2.2.4 Speculative Motive

The speculative motive is the fourth reason which refers to the need to hoard cash. Cash holdings provides advantage for any future investment opportunity, impressive interest rates, favourable exchange rate fluctuations, and also the sudden unpredicted price reduction of inventories that requires cash on delivery or advance payment. Firms with available cash holdings will have more flexible investment opportunities and better opportunities for profitable investment deals, especially during financial crisis. Therefore, firms dealing with financing constraints are encouraged to keep more cash to protect them from the possibility of inadequate cash and unsuccessful investment projects. Meanwhile, firm without any financing constraints does not need to reserve certain amount of cash for future investment needs (Martinez-Carrascal, 2010).

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2.3 Literature and Evidence of The Empirical Studies

2.3.1 Cash Holdings

Many studies have been conducted in developed countries on cash holdings in various fields of knowledge. There are studies about the determinants of cash holdings in term of firm characteristics, board characteristics, and other factors such as financial crisis and political issues.

Studies on the determinants of cash holdings in term of firm characteristics are vast, especially the studies focusing on developed countries. Saddour (2006) conducted a study using 297 French firms from 1998 to 2002 and divided the sample into mature firm and growth firm. Firms with higher P/E ratio than the median value is considered as growth firm, while firms with lower P/E ratio than its median is categorised as mature firm. This study found negative relationships between cash and firm size, liquid asset substitutes of cash and short-term debt for growth companies. On the other while, the mature companies show positive relationships between cash holdings with firm size, investments level, and dividend payout to their shareholders, but a negative relationship with trade credit and research and development expenses.

A study in term of firm characteristic by Gill and Shah (2012) on a sample of 166 Canadian firms from 2008 to 2010 found that market-to-book ratio, cash flow, net working capital, leverage and firm size have significant relationships with cash holdings. This study also included board characteristic such as board size and CEO (Chief Executive Officer) as the independent variables and found that larger board size and CEO duality will increase cash holdings and lead to agency problem.

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Martinez-Carrascal (2010) conducted a study on European firms in finding the determinants of corporate cash holdings as a function of firm size. This study found that smaller firms have higher relationship with cash flow, cash flow variability and leverage. This study also suggested that smaller firms may have lower access to external finance due to stronger negative relationship with leverage which caused the firms to have lesser chance for investment opportunity. Therefore, these firms have to finance its investment by cash. Besides, stronger negative relationship between cash holdings with tangible assets of smaller firms showed that firms may have to use the assets as collateral in getting external finance.

Moreover, there are study that investigated the differences in cash holdings between public and private firms in the United States (Gao, Harford, and Li, 2013; Akguc and Choi, 2013). Gao, Harford, and Li (2013) studied the corporate cash policy while Akguc and Choi (2013) studied the cash level of public and private firms during financial crisis. Akguc and Choi (2013) found that European public firms held more cash than private firms and both firms had significant cash flow sensitivity to cash holdings. Anagnostopoulou (2013) also compared the private and public listed firms in the United Kingdom (UK) in 2001 to 2009, focusing on the determinants of cash holdings and its impact on future operating performance which was measured by Return on Equity (ROE). Consistent with Akguc and Choi (2013), the study also found that private firms had lower cash holdings compared to public firms, even though the profit margin for public firms was lower. The low profit margin in public firms was probably due to the difficulties of public firm to generate cash and obtain external financing. This study found that high cash holdings had a positive relationship with future operating performance for private firms, but was not a significant determinant for public firms. In addition, this study also discovered that cash holdings has a positive

relationship with the size of shareholders for public firms, while in contrast cash holdings has negatively related with shareholder size in private firms. Furthermore, Takahashi and Yamada (2015) investigated cash holdings in Japanese firm during the banking crisis between 1996 and 1999, and showed that the shock in the financial sector caused difference influences towards the public and private firms. The study discovered that private firms increased their cash holdings in the Japanese bank sector during the crisis period. Private firms held less cash than the public firms before and after the shock, while there was no difference during the financial crisis period between these two firms, indicating that private firms increased their cash amount during financial distress.

Horioka and Terada-Hagiwara (2013) analysed the corporate cash holdings in 11 countries, namely Australia, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Thailand and Vietnam countries from 2002 to 2011. They found that cash holdings was positively influenced by cash flow. They suggested that Asian firms were facing borrowing constraints and had to raise cash from their cash flow to finance future investments.

Besides, Arata, Sheng, and Lora (2015) conducted a study on the determinants of corporate cash holdings in term of internalisation degree in multinational companies in Brazil and Mexico from 2006 to 2010. The study discovered that internationalisation which was defined as percentage of export sales had a positive relationship with cash holdings and firms with higher degree of internalisation had different cash holdings behaviours compared to domestic companies.

There were also studies conducted on the developing countries, although the number was not as much as the studies on developed countries. A study by Das (2015) focused

on 5 popular companies from IT sector in India for the period of 2002 to 2011 and attested that cash holdings had a positive relationship with firm size. Bigger firm had higher level of cash holdings. A study by Abushammala and Sulaiman (2014) pointed that firm's profitability had a positive relationship with corporate cash holdings. The study of 65 firms listed in the Amman Stock Exchange (ASE) from 2000 to 2011 indicated that Jordanian firms' managers believed that ineffective liquidity management will cause shortages and lead to difficulties in paying obligations and eventually affect the firms' profitability.

Islam (2012) had studied the manufacturing firms in Bangladesh and found that net working capital and cash flow volatility did not have any significant relationship with cash holdings. However, current assets, operating income, cash flow, firm size, leverage, intangible assets were found to be significant determinants towards cash holdings.

Anjum and Malik (2013) had done a study on Pakistani listed firms and found that firm size, leverage, net working capital, and cash conversion cycles were the major determinants of cash holdings in Pakistan. Their finding was consistent with the earlier study by Shah (2011). However, Shah (2011) also discovered that dividend ratio was positively significant to cash holdings in Pakistani firms. Meanwhile, Anjum and Malik (2013) found that firms with high ownership concentration structure held lower cash which led to agency problem. The latest study in Pakistani firms was by Shabbir et al. (2016) who added that profitability also had a significant relationship with cash holdings.

Rehman and Wang (2015) found that net working capital, capital expenditure and leverage have negative relationships with cash holdings, based on their study on 1632

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public listed firms in China for 2001 to 2013. The study also revealed that growth opportunity had a positive relationship with cash holdings, which explained why the factors of cash holdings decreased when investment need was higher than the retained earnings.

Kin and Cheng (2009) did a study on a sample consisted of 1,061 firms from 2001 to 2005 on five ASEAN countries namely Malaysia, Philippines, Indonesia, Singapore and Thailand. The study found that firms with higher board independence, smaller boards, and lower expected managerial entrenchment had lower cash holdings. They also found that firm value had negative relationship with cash holdings, while firms with higher cash holdings had lower subsequent profitability, and the negative relationship between subsequent profitability and cash holdings was stronger in firms with weaker board structure.

In another study, Al-dhamari and Ku Nor Izah (2015) studied the public listed firms in Malaysia for 2007 to 2011 to investigate the relationship between cash holdings, political connections, and earnings quality. Another study in Malaysia by Azira Hanani and Siti Fariha (2013) investigated the relationship between cash holdings and corporate governance of 512 listed firms in Malaysia in 2009 based on board size, board independence and CEO duality as the independent variables.

Furthermore, Rahayu Izwani and Pok (2011) conducted a study using a sample consisted of 276 public listed firms in Malaysia from 2002 to 2005. The study focused on the relationship between cash holdings, leverage, ownership concentration, and board independence, and found that leverage was significantly negative towards cash holdings while size, growth and cash flow volatility had significant positive relationship with cash holdings. Meanwhile, the recent study by Wasiuzzaman (2014)

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in 192 public listed firms in Malaysia from 2000 to 2007 found that cash holdings had a positively significant relationship with growth opportunities, cash flows, and dividend. However, cash holdings was also found to have a negatively significant relationship with liquid substitutes, capital expenditures, R&D expenditures, leverage and board independence.

2.3.2 Firm Size

Size is one of the variables that is usually correlated with the level of corporate cash holdings. Many scholars suggested that large firms usually kept lower cash because of the economies of scale and due from its extensive ways to get more external finance (Bover and Watson, 2005) compared to smaller firms that may have more borrowing constrains.

Furthermore, smaller firms usually kept higher cash compared to larger firm as smaller firms were more easily affected by information asymmetries and financial distress (Yeboah and Agyei, 2012). Smaller firms had lower access to external financing and depend more on collateral availability. They are more influenced by precautionary motive than large firms which caused them to have higher level of cash (Martinez-Carrascal, 2010). In contrast, larger firm had wider opportunity to obtain external financing due to its market reputation (Rehman & Wang, 2015). Other previous studies (Akguc & Choi, 2013; Ali & Yousaf, 2013; Ferreira & Vilela, 2004; Gill & Shah, 2012; Horioka & Terada-Hagiwara, 2013; Nguyen et al., 2006; Opler, 1999) also found similar result and agreed that cash holdings was negatively related with firm size.

The research by Ozkan, Ozkan, and Guney (2003) consisted of 3,989 companies from UK, France, German and Japan throughout the year 1983 to 2000 showed different results according to each country; larger firms held lower cash in UK and German but larger firms in Japan held higher cash than smaller firm. Meanwhile, the sample from France indicated no significant relationship between firm size and cash holdings.

Saddour (2006) who conducted a more specific research by dividing the sample of French firms into mature and growth firms stated that there was negative relationship between cash holdings and firm size. However, in contrast, he found the cash level of matured firms increased with their size.

On the contrary, some studies documented contradicting results from those of other studies. Afza and Adnan (2007) found that firm size had a positive relationship with cash holdings by focusing on the level of cash holdings in Pakistani firm for the period of 1998 to 2005. Das (2015) who focused on IT sector in India attested that bigger organisation held higher cash holdings, while Lian et al. (2011) found small firms tended to save less from cash flow compared to large firms. The tendency might be due to the newly established nature of the small firms, thus their incapability to put aside as much cash as large firms. In addition, they were also financially constrained and faced higher cost of capital from external capital markets. Furthermore, large firms were normally more profitable because of its economies of scale and bigger market share, hence, they can easily keep higher cash reserves (Shah, 2011).

Rahayu Izwani and Pok (2011) also agreed that firm size had positively influenced cash holdings based on the results from sample taken from public listed firms in Malaysia. Nevertheless, Wasiuzzaman (2014) who studied the public listed firms in Malaysia claimed that size of the firm did not influence the level of cash holdings.

Other studies (Kusnadi, 2003; Mesfin, 2016; Shabbir et al., 2016; Anjum and Malik, 2013) also found that size of firm positively influenced the level of cash holdings in a firm.

2.3.3 Leverage

Leverage is one of the financial instruments or borrowed capitals to finance a firm's operations and investment. Leverage ratio is used to determine the capability of the firm to payback its debt from its assets. A firm with significantly more debt than equity is considered to be highly leveraged. In addition, firms also tend to be highly levered due to insufficient internal funding (Islam, 2012) and also to prevent superior managerial control in the firm (Afza and Adnan, 2007). Thus, leverage practice is beneficial for shareholders (Saddour, 2006).

However, highly levered firms may have greater possibility to suffer from financial distress or bankruptcy, thus highly levered firm may need to keep more cash for precautionary motive (Deloof, 2003). Meanwhile, Attaullah Shah (2011) attested that Pakistani firms did not hold higher cash despite signals of a possible financial distress and bankruptcy due to inefficient judicial and court process. Therefore, the managers that acted on the interest of shareholders could create moral hazards for the creditors by holding lower cash.

Furthermore, Ogundipe et al., (2012) conducted a study on 54 Nigerian firms listed on the Nigerian Stock Exchange from 1995 to 2010 and suggested a positive relationship between cash holdings and leverage. The positive relationship was because highly leveraged firm will have to save more cash as the cost of debts was expensive and it was difficult to increase additional funds and renegotiate existing debts. This result

was supported by Gill and Shah (2012) from their observation on 166 Canadian firms listed on the Toronto Stock Exchange from 2008 to 2010. They found that leverage has a positive relationship with corporate cash holdings in Canadian firms.

In contrast, Saddour (2006) indicated that both of mature and growth French firms will decrease their cash holdings when they are highly leveraged. Other previous studies (Ali and Yousaf, 2013; Afza and Adnan, 2007; Rehman and Wang, 2015; Akguc and Choi, 2013; Shah, 2011; Ferreira and Vilela, 2004; Kusnadi, 2003; Shabbir et al., 2016; Nguyen et al., 2006; Opler, 1999; Ozkan et al., 2003; Anjum and Malik, 2013; Islam, 2012; Wasiuzzaman, 2014; Lian et al., 2011) agreed that leverage had a negative relationship with cash holdings. In this light, firms will have lower cash holdings when the financial leverage is increased, due to the increasing funding costs to invest in liquid assets as financial leverage gets higher. Therefore, a firm with high cash holding usually bear lower debt and small interest payments (Soh et al., 2015).

In addition, Rahayu Izwani and Pok (2011) discovered that public firms in Malaysia showed negative relationship between cash holdings and leverage, indicating that leverage may substitute cash holdings and influential on a firm's cash holdings decisions.

2.3.4 Profitability

A profitable firm will have comparatively high net income from its operating activities. The proxy for profitability is denoted by Return on Assets. Most of previous studies (Abushammala and Sulaiman, 2014; Nguyen et al., 2006; Ogundipe et al., 2012; Shabbir et al., 2016) discovered that profitability had positive relationship with cash holdings. A firm's manager approximately considered on past profit of the company

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to reserve the cash, instead of targeting an optimal cash level that would be independent of internally generated cash flows (Nguyen, 2006). Moreover, a firm's profitability will be in a better position to accumulate cash (Shah, 2011) generated from its business.

2.3.5 Dividend

A firm which pays dividend or cash distributions regularly to the shareholders from its profit or reserves would send a strong signal about the firm's future prospects and bright performance. The positive outlook is because a firm's net profits can be distributed to shareholders as dividend or can be kept within the company as retained earnings. The firm's capability to pay dividends consistently and increasingly over time will provide a positive signal and attract more investors.

The firm who pays dividend can also hold lower cash as they can get more funds by reducing the dividend payment for that particular year. Opler (1999), supported by Kusnadi (2003) and Afza and Adnan (2007), found that dividend has a negative relationship with cash holdings. Ammann, Oesch, and Schmid (2011) stated that dividend payout can positively affect the valuation of cash holdings by reducing the feasibility to spend cash for negative net present value (NPV) projects.

On the contrary, the study by Saddour (2006) discovered that dividend payout to shareholders of mature companies positively influenced corporate cash holdings. The more current study by Wasiuzzaman (2014) also claimed that firm which pay dividend will hold more cash, consistent with a few previous studies (Ali and Yousaf, 2013; Nguyen, 2006; Ozkan et al., 2003; Shah, 2011). Ozkan et al. (2003) found that dividend payout had a positive relationship with cash holdings in Germany firms.

Meanwhile, other samples taken from UK, Japan, and France, and another study by Gill and Shah (2012) in Canada showed no significant relationship between cash holdings and dividend payout.

In addition, another previous study on Omani a firms explained that a firm in Oman distributed most of its profit as dividend following stable dividend policies although the firm is highly leveraged (Al-Yahyaee, Pham, and Walter, 2010). Meanwhile, Kighir, Normah, and Norhayati (2015) took a sample from Bursa Malaysia for a period of 1999 to 2012 mentioned that a firm will consider current year's earnings as more important than current cash flow while making dividend payout decisions. This may be one of the factors that explained the relationship between cash holdings and dividend payout; as the firms would consistently pay dividend without considering their amount of cash and will resort to external financing if the available cash is insufficient.

2.3.6 Growth Opportunity

A firm with better growth opportunities may want to raise more capital to finance its investment, and it may need to bear the cost of leverage if the cash is insufficient. The firm even needs to issue more expensive equity if it fails to obtain external financing (Islam, 2012). Therefore, the firm may reserves higher cash to prevent it from insufficient cash to finance profitable investments (Ali and Yousaf, 2013) and prevent from financial distress (Wasiuzzaman, 2014).

Most previous studies such as Opler et al. (1999); Ferreira and Vilela (2004); Ozkan et al. (2003); Ali and Yousaf, (2013); Rehman and Wang (2015); Wasiuzzaman (2014); Shah (2011); Saddour (2006); Kusnadi (2003); Mesfin (2016); Shabbir et al.

(2016); and Rahayu Izwani and Pok (2011) agreed that existence of growth opportunities is an essential factor that positively influences cash holdings.

However, Afza and Adnan (2007), Gill and Shah (2012) and Islam (2012) did not agree with this notion and claimed that growth opportunity had a negative relationship with cash holdings. Afza and Adnan (2007) explained that based on their research in Pakistani firms, a firm with poor investment opportunity held higher cash to ascertain enough funding for future investment in growth projects as these projects may earn a negative NPV that would not increase the shareholders' wealth. Therefore, firm managers' wanted to hide the investment information from shareholders by financing the projects by cash instead of obtaining external financing since firms with higher leverage are easily monitored by outside shareholders.

2.3.7 Net Working Capital

Net working capital can be a substitute for cash as net working capital can be diluted if there is a need for additional cash that leads the company to hold lower cash (Ferreira and Vilela, 2004).

Anjum and Malik (2013) conducted a study on Pakistani listed firms and explained that firms with higher liquid assets regularly kept higher cash. Thus, net working capital had a positively significant relationship with cash holdings.

Lian et al. (2011) studied a sample of Chinese firms for the period of 1999 to 2009, covering the financial crisis episode. They found that net working capital negatively influenced cash holdings as liquid assets in the form of inventory and account receivable can be used as substitutes for cash.

Most previous studies such as Ozkan et al. (2003); Afza and Adnan (2007); Rehman and Wang (2015); Gill and Shah (2012); Ogundipe et al. (2012); Islam (2012); Akguc and Choi (2013); Mesfin (2016); Shabbir et al. (2016); Wasiuzzaman (2014); Rehman and Wang (2015) and Opler (1999) agreed that the net working capital had a negative significant relationship with cash holdings.

2.3.8 Capital Expenditure

Some companies such as manufacturing, cyclical industries, and production company usually bear higher capital expenditure as the firms need to invest in machinery, equipment, and inventory that must be regularly maintained and expanded. These companies need to keep high cash holdings in order to maintain the facility. Having high cash holdings can be beneficial to cover such expenses as internal financing costs less than external financing (Mikkelson and Partch, 2003).

Mesfin (2016) stated that capital expenditure was one of the essential determinants of cash holdings in manufacturing companies in Ethiopia based on its study from 2009 to 2014. He discovered that capital expenditure had a negative relationship with cash holdings because capital spending will reduce a firm's cash amount.

A majority of previous studies found that companies with higher capital expenditure will have lower cash holdings (Rehman and Wang, 2015; Kim, Kim, and Woods, 2011; Mesfin, 2016; Wasiuzzaman, 2014; Lian et al., 2011). In contrast, some studies stated that capital expenditure positively influenced cash holdings (Ali and Yousaf, 2013; Kusnadi, 2003; Opler, 1999) in order to avoid any potential future underinvestment. Ozkan et al., (2003) found that capital expenditure had a negative

relationship with cash holdings in Japan and France but positively related with cash

holdings in German.

Table 2.1
Summary of Arguments for the Relationship of Independent Variables with
Dependent Variable

Variables	Positive	Negative
Firm Size	Smaller firms incapable to save cash compared to larger firms (Lian et al., 2011)	Economies of scale and extensive way of get external financing for larger firms (Bover and Watson,2005)
Leverage	Highly leveraged firms have to save more cash as the cost of debts is expensive (Ogundipe et al.,2012)	Substitute for cash holdings (Rahayu Izwani and Pok,2011)
Profitability	Higher income more chance to save more cash (Attaullah Shah,2011)	
Dividend	Firms that pay dividend usually have more cash (Wasiuzzaman, 2014)	Firms that pay dividend can reduce or do not pay the dividend if need additional fund (Opler, 1999) Reducing the chance for managers to finance the negative NPV (Ammann et al.,2011)
Growth Opportunity	To finance its future investment (Ali and Yousaf, 2013)	Firm with lower investment opportunity hold higher cash to finance the future project that may have lower NPV by cash to hide the info from shareholder (Afza and Adnan,2007)
Net Working Capital	Higher liquid firms usually keep higher cash (Anjum and Malik, 2013)	Inventory and Account receivable can be substitute for cash holdings (Lian et al., 2011)
Capital Expenditure	Firms will keep higher cash to pay for CapEx (Mikkelson and Partch, 2003)	Capital spending will reduce firm's cash (Mesfin, 2016)

2.4 Conclusion

This chapter discussed the theoretical underpinnings and previous literature for cash holdings as the dependent variable and the independent variables in this study namely firm size, leverage, profitability, dividend, growth opportunity, net working capital, and capital expenditure. The discussion also included the theoretical frameworks in the relationship between the dependent and independent variable. In this regard, past studies found that firm-specific characteristics influencing the corporate cash holdings may have different relationships across different countries and period of time. Table 2.2 summarises the findings of previous literature that are related to the determinants of corporate cash holdings.

Table 2.2

Summary of Findings on Previous Literature on Independent Variables for Determinants of Cash Holdings

Author(s)	Year	Sample	Firm Size	Leverage	ROA	Dividend	Growth Opportunity	Net Working Capital	Capital Expenditure
Opler et al.	1999	US	-ve	-ve		-ve	+ve	-ve	+ve
Ozkan et al.	2003	UK	-ve	-ve			+ve	-ve	
Ozkan et al.	2003	Japan	+ve	-ve			+ve	-ve	-ve
Ozkan et al.	2003	France		-ve			+ve	-ve	-ve
Ozkan et al..	2003	German	-ve	-ve		+ve		-ve	-ve
Kusnadi	2003	Singapore	+ve	-ve		-ve	+ve		+ve
Ferreira and Vilela	2004	EMU	-ve	-ve			+ve		
Nguyen et al.	2006	Japan	-ve	-ve	+ve	+ve			
Saddour	2006	France(growth)	-ve	-ve					
Saddour	2006	France(mature)	+ve	-ve		+ve	+ve		
Afza and Adnan	2007	Pakistan	+ve	-ve		-ve	-ve	-ve	
Martinez-Carrascal	2010	Europe	-ve						
Rahayu Izwani and Pok	2011	Malaysia	+ve	-ve			+ve		
Lian et al.	2011	China	+ve	-ve				-ve	-ve

-ve : Negative relationship with Corporate Cash Holdings

+ve : Positive relationship with Corporate Cash Holdings

Table 2.2

Summary of Findings on Previous Literature on Independent Variables for Determinants of Cash Holdings (Continued)

Author(s)	Year	Sample	Firm Size	Leverage	ROA	Dividend	Growth Opportunity	Net Working Capital	Capital Expenditure
Shah	2011	Pakistan	+ve	-ve		+ve	+ve		
Islam	2012	Bangladesh	-ve	-ve			-ve	-ve	
Yeboah and Agyei	2012	Ghana	-ve						
Gill and Shah	2012	Canada	-ve	+ve			-ve	-ve	
Ogundipe et al.	2012	Nigeria		+ve	+ve			-ve	
Ali and Yousaf	2013	German	-ve	-ve			+ve	+ve	+ve
Horioka and Terada-Hagiwara	2013	11 countries	-ve						
Akguc and Choi	2013	Europe	-ve	-ve				-ve	
Anjum and Malik	2013	Pakistan	+ve	-ve				+ve	
Rehman and Wang	2014	China	-ve	-ve			+ve	-ve	-ve
Wasiuzzaman	2014	Malaysia		-ve		+ve	+ve	-ve	-ve
Abushammala and Sulaiman	2014	Jordan			+ve				
Das	2015	India	+ve						
Shabbir et al	2016	Pakistan	+ve	-ve	+ve		+ve	-ve	
Mesfin	2016	Ethiopia	+ve				+ve	-ve	-ve

-ve : Negative relationship with Corporate Cash Holdings

+ve : Positive relationship with Corporate Cash Holdings

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology used in this study. A methodology is very important to produce reliable, valid, and accurate results. Moreover, the variables used in this study should be defined clearly so that the relationships among the variables can be determined by the framework designed in accordance to the scope of the study. Other elements of research methodology such as the research framework, hypotheses development, operational definition and measurement, data collection, and data analysis technique are also discussed.

3.2 Research Framework

A research framework is developed to identify the relationship among the several variables for this study. Hence, the dependent variable in this study is cash holdings which is measured by ratio of cash and cash equivalent to total assets. On the other while, the independent variables are firm size, leverage, profitability, dividend, growth opportunity, net working capital, and capital expenditure. The measurement for independent variables will be explained in the next sub chapter.

Table 3.1
Research Framework

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┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│   ┌──────────────────────┐                                        │
│   │   INDEPENDENT         │                                        │
│   │   VARIABLES           │                                        │
│   │                       │         ┌──────────────────┐           │
│   │   Firm Size           │         │   DEPENDENT       │          │
│   │   Leverage            │  ═══>    │   VARIABLE        │          │
│   │   Profitability       │         │   Cash Holdings   │          │
│   │   Dividend            │         └──────────────────┘           │
│   │   Growth              │                                        │
│   │   Net Working Capital │                                        │
│   │   Capital Expenditure │                                        │
│   └──────────────────────┘                                        │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
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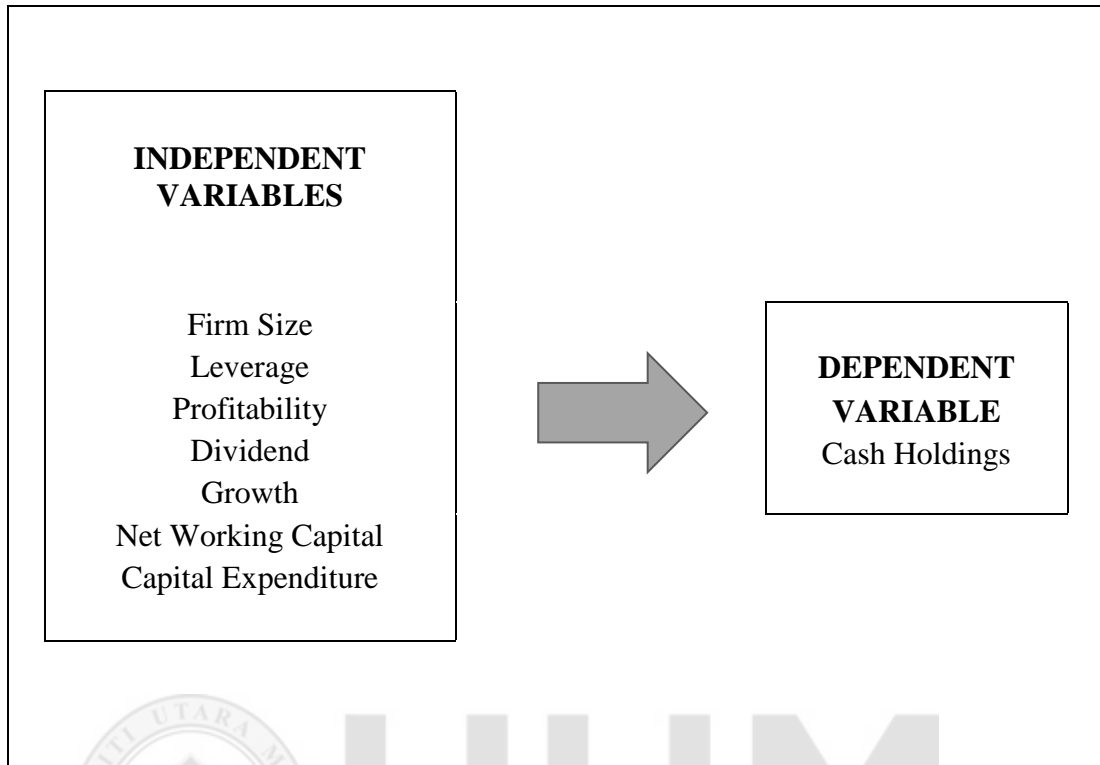
3.3 Hypotheses Development

3.3.1 Relationship of Firm Size with Corporate Cash Holdings

Studies such as Opler et al (1999), Islam (2012), Gill and Shah (2012), Ali and Yousaf (2013), Horioka and Terada-Hagiwara (2013), Rehman and Wang (2014), Akguc and Choi (2013), Ferreira and Vilela (2004), Martinez-Carrascal (2010), Nguyen et al. (2006), and Yeboah and Agyei (2012) agreed that firm size had negative relationship with corporate cash holdings. Meanwhile, Afza and Adnan (2007), Rahayu Izwani and Pok (2011), Anjum and Malik (2013) and the recent study by Mesfin (2016) and Das (2015) disagreed with the opinion and stated that firm size had a positive relationship with corporate cash holdings. Saddour (2006) stated that mature firms in France was positively related with cash holdings while growth firms had a negative relationship

with corporate cash holdings. Therefore, this study hypothesises that firm size has a negative relationship with corporate cash holdings and the hypothesis 1 is as follows:

H1: There is a negative relationship between firm size and corporate cash holdings in Malaysian public listed firms.

3.3.2 Relationship of Leverage with Corporate Cash Holdings

Previous studies from Opler et al., (1999), Saddour (2006), Afza and Adnan (2007), Islam (2012), Ali and Yousaf (2013), Rehman and Wang (2014), Wasiuzzaman (2014), Ferreira and Vilela (2004), Kusnadi (2003), Nguyen et al. (2006), Ozkan et al. (2003), Rahayu Izwani and Pok (2011), Akguc and Choi (2013), Anjum and Malik (2013) agreed that leverage had a negative relationship with corporate cash holdings. However, Gill and Shah (2012) and Ogundipe et al (2012) claimed that leverage had a positive relationship with corporate cash holdings. Therefore, this study hypothesises leverage has a negative relationship with corporate cash holdings and hypothesis 2 is as follows:

H2: There is a negative relationship between leverage and corporate cash holdings in Malaysian public listed firms.

3.3.3 Relationship of Profitability with Corporate Cash Holdings

Abushammala and Sulaiman (2014), Nguyen et al. (2006), Ogundipe et al. (2012) and Shabbir et al., (2016) agreed that profitability that was measured by Return on Assets had a positive relationship with corporate cash holdings. Hence, this study

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hypothesises that profitability has a positive relationship with corporate cash holdings and hypothesis 3 is as follows:

H3: There is a positive relationship between profitability and corporate cash holdings in Malaysian public listed firms.

3.3.4 Relationship of Dividend with Corporate Cash Holdings

Saddour (2006), Ali and Yousaf (2013), Nguyen et al. (2006) and Wasiuzzaman (2014) stated that dividend had a positive relationship with corporate cash holdings in in its respective research. Meanwhile, Opler et al (1999), Afza and Adnan (2007) and Kusnadi (2003) stated that dividend had a negative relationship with corporate cash holding in its respective research. Therefore, this study hypothesises that dividend has a negative relationship with corporate cash holdings and hypothesis 4 is as follows:

H4: There is a negative relationship between dividend and corporate cash holdings in Malaysian public listed firms.

3.3.5 Relationship of Growth Opportunity with Corporate Cash Holdings

Studies by Opler et al. (1999), Ferreira and Vilela (2004), Ozkan and Ozkan (2004), Saddour (2006), Ali and Yousaf (2013), Rehman and Wang (2014), Wasiuzzaman (2014), Rahayu Izwani and Pok (2011), Kusnadi (2003), and Mesfin (2016) agreed that growth opportunity had a positive relationship with cash holdings decision. In contrast, Afza and Adnan (2007), Islam (2012) and Gill and Shah (2012) found that growth opportunity had a negative relationship with a firm's cash holdings decision.

Therefore, this study hypothesises that growth opportunity has a positive relationship with corporate cash holdings and hypothesis 5 is as follows:

H5: There is a positive relationship between growth opportunity and corporate cash holdings in Malaysian public listed firms.

3.3.6 Relationship of Net Working Capital with Corporate Cash Holdings

Opler et al. (1999), Afza and Adnan (2007), Islam (2012), Gill and Shah (2012), Ogundipe et al (2012), Rehman and Wang (2014), Wasiuzzaman (2014), Akguc and Choi (2013), Mesfin (2016) and Ozkan et al. (2003) claimed that net working capital had a negative relationship with the cash holdings decision in its respective research, while Anjum and Malik (2013) found contradicting results. Therefore, this study hypothesises that net working capital has a negative relationship with corporate cash holdings and hypothesis 6 is as follows:

H6: There is a negative relationship between net working capital and corporate cash holdings in Malaysian public listed firms.

3.3.7 Relationship of Capital Expenditure with Corporate Cash Holdings

Opler et al. (1999), Ali and Yousaf (2013), Kusnadi (2003) claimed that capital expenditure had a positive relationship with cash holdings decision in its respective research, while Rehman and Wang (2015), Mesfin (2016) and Wasiuzzaman (2014) found the opposite result. Therefore, this study hypothesises capital expenditure has a negative relationship with corporate cash holdings and hypothesis 7 is as follows:

H7: There is a negative relationship between capital expenditure and corporate cash holdings in Malaysian public listed firms.

Table 3.2 summarises the hypotheses developed for this study.

Table 3.2
Summary of Hypotheses

Variables	Hypotheses	Relationship with Cash Holdings
Firm Size	H1	Negative
Leverage	H2	Negative
Profitability	H3	Positive
Dividend	H4	Negative
Growth opportunity	H5	Positive
Net Working Capital	H6	Negative
Capital Expenditure	H7	Negative

3.4 Research Design

3.4.1 Type of Study

This research followed the quantitative method in examining the relationship among variables (Creswell, 2013). This study obtained a random sample from the population and the results from the analyses of the sample were used to illustrate the whole population.

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3.4.2 Sources of Data

The data for all variables in this study consisted of secondary data taken from the Thomson Reuters DataStream and the list of public listed firms in Malaysian was taken from the main board of Bursa Malaysia website. These resources are reliable and provide greater accuracy and validity of the collected data. The samples were randomly chosen from all sectors excluding the financial and utilities sectors. Besides, only firms with complete data for the required variables from 2006 to 2015 will be chosen for the study.

3.5 Operational Definition and Variable Measurement

This sub section explains the operational definition and measurement of dependent variables and independent variables used in the analysis of this study.

The dependent variable of this study is cash holdings which is measured by cash ratio, as a measurement of corporate cash holdings. Meanwhile, independent variables of this study are firm characteristics such as firm size, leverage, profitability, dividend, growth opportunity, net working capital, and capital expenditure.

3.5.1 Cash Holdings

Cash holdings includes cash in hand and bank, and short time investments in the money market instruments such as treasury bills and fixed deposits. Cash is important because it is the most liquid asset to cover a firm's expenses, obligations, investment, and business expansion

The dependent variables used in the regression analysis were the cash ratio as a proxy for corporate cash holdings. The ratio could be defined in different ways; the simplest method is to divide the cash and cash equivalent by the total assets of the firm (Ali and Yousaf, 2013; Takahashi and Yamada, 2015; Rehman and Wang, 2015). Meanwhile, others studies such as Saddour (2006), Opler et al (1999), Mesfin (2016), Pouraghajan et al (2015), Gill and Shah (2012), Afza and Adnan (2007), Ogundipe et al (2012), and Al-Amarneh (2015) defined cash ratio as the cash and cash equivalent which is divided by the total assets minus the cash and cash equivalent. There are also some studies that used cash and marketable securities as proxies for corporate cash holdings (Wasiuzzaman, 2014).

This study followed the cash ratios formula as a proxy for corporate cash holdings, in which the cash and cash equivalent was divided by the total assets of the firm (Ali and Yousaf, 2013; Takahashi and Yamada, 2015).

3.5.2 Firm Size

The size of a firm can be determined by the value of the firm's total assets. Larger firms usually have to keep large cash for emergency as large firms can easily obtain external financial assistance. Most studies such as Ali and Yousaf (2013), Wasiuzzaman (2014), Islam (2011), Gill and Shah (2012), Saddour (2006), Afza and Adnan (2007), Ferreira and Vilela (2004), Mesfin (2016), and Pouraghajan et al (2015) agreed that firm size can be measured by the natural logarithm of total assets. However, study by Al-Amarneh (2015) measured firm size by the natural logarithm of total assets minus the cash and equivalents. Hence, this study used the formula of natural logarithm of total assets to measure the firm size.

3.5.3 Leverage

Leverage ratio presents the debt structure of this firm. Firm with high capability to enter into the capital market at larger scale usually keeps lower cash as it can easily obtain external financing for future investment. However, a firm with more amount of debt can also potentially keep large cash to pay the debts costs as it is difficult to renegotiate existing debt agreements in order to prevent bankruptcy.

There are several methods used by previous studies to measure leverage. This study used the most common method where the total debt was divided by total assets (Gill and Shah, 2012; Pouraghajan et al., 2015; Ogundipe et al. 2012). Another measurement for leverage used by previous study was total debt divided by total assets minus cash and equivalents (Saddour, 2006; Afza and Adnan, 2007; Opler et al., 1999; Ferreira and Vilela, 2004).

3.5.4 Profitability

Return on Assets (ROA) is one of the most commonly used profit measurements in previous studies to investigate a firm's efficiency and productivity by determining the firm's ability to utilise its assets to generate profit. Abushammala and Sulaiman (2014) used Return on Assets (ROA), Return on Equity (ROE), and Earning per Share (EPS) as the dependent variables in their study.

ROA can be measured by net income divided by total assets (Mesfin, 2016; Bashir, 2014; Ogundipe et al., 2012; Al-dhamari and Ku Nor Izah, 2015; Saleem and Rehman, 2011).

3.5.5 Dividend

Dividend is a distribution of profit that was earned by a firm to its shareholders with the approval by the board of directors. Basically, a firm which usually pays dividend and suddenly experiences inadequate cash can decrease the dividend or do not pay any dividend at all for that particular year (Opler, 1999). Thus, a firm does not have to hold high level of cash.

This study will use the dividend payout ratio to measure the relationship between dividend and corporate cash holdings. Dividend payout ratio is the common dividend which is divided by net income (Benjamin, Mazlina, and Effiezal Aswadi, 2016; Benjamin, Wasiuzzaman, Mokhtarinia, and Nejad, 2016). This measurement calculates the percentage of dividend payout from the net income.

Most previous studies (Afza and Adnan, 2007; Gill and Shah, 2012; Wasiuzzaman, 2014) used a dummy dividend as measurement. However, such measurement is not suitable for this study as this study analysed the data from 10 years period

3.5.6 Growth Opportunity

A firm which has high growth potential may want to raise their capital to finance new investments. In this regard, the cost of bond will increase if the firm has to obtain external financing. The firm may plan to increase its cash holdings in order to reserve for future investment. On the other hand, the firm may have to issue an expensive equity if both leverage and cash options are not available.

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This study used the market to book ratio as a proxy for growth opportunity. The market to book ratio can measure the future investment opportunities of the company. The measurement for market to book ratio is market capitalisation divided by total equity (Ali and Yousaf, 2013; Pouraghajan, Pourali, and Akbari, 2015).

Another measurement that was used to measure growth opportunity by previous studies is market value that is divided by the total of assets (Afza and Adnan, 2007; Al-Amarneh, 2015; Gill and Shah, 2012; Islam, 2012; Ogundipe et al., 2012; Wasiuzzaman, 2014).

3.5.7 Net Working Capital

The measurement for net working capital used for this study is obtained by subtracting cash and cash equivalents from net current assets, and divide it by the total assets. Meanwhile, the net current assets is the current assets minus the current liabilities (Opler, 1999; Ozkan et al., 2003; Wasiuzzaman, 2014).

Some studies measured net working capital by current assets minus cash and cash equivalents, before dividing the value by the total assets minus cash and cash equivalents (Afza and Adnan, 2007; Al-Amarneh, 2015; Gill and Shah, 2012; Islam, 2012; Martinez-Carrascal, 2010; Mesfin, 2016; Ogundipe et al., 2012).

3.5.8 Capital Expenditure

Capital expenditure (Capex) is the amount invested to acquire or improve a fixed asset such as machines, equipment, transportations or buildings. The cost is usually recorded as Property, Plant, and Equipment in the balance sheet. Capex is the expenses invested

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to maintain or upkeep the existing fixed assets and regarded as a capital for new investment to expand a business. Therefore, capex can be defined as an expense that is spent by a firm as a form of capital to get more return and profit in the future.

Capital expenditure was calculated as capital expenditure to total assets. Capital expenditure is the annual change of fixed assets (Rehman and Wang, 2015; Kusnadi, 2003; Rahayu Izwani and Pok, 2011; Wasiuzzaman, 2014).

Table 3.3
Measurement of Variables

Variables	Measurement	Reference
Cash	Cash and cash equivalents to Total Assets ratio	Ali andYousaf (2013), Takahashi and Yamada (2015), Rehman and Wang (2015)
Firm Size	Natural Logarithm of Total Assets	Ali and Yousaf (2013), Wasiuzzaman (2014), Islam (2011), Gill and Shah (2012), Saddour (2006), Afza and Adnan (2007), Ferreira and Vilela (2004), Mesfin (2016), Abbas Ali et al (2015)
Leverage	Long Term Debt and Short Term debt to Total Assets ratio	Gill and Shah (2012), Abbas Ali et al (2015), Ogundipe et al (2012)
ROA	Net income to Total Assets ratio	Saleem and Rehman (2011), Mesfin (2016), Ogundipe et al (2012), Bashir (2014), Al-dhamari and Ku Nor Izah (2015)
Dividend	Common Dividend to Net Income ratio	Benjamin, Mazlina, and Effiezal Aswadi (2016), Benjamin, Wasiuzzaman, Mokhtarinia, and Nejad (2016)
Growth opportunity	Market Capital to Total Equity ratio	Pouraghajan et al (2015), Ali and Yousaf (2013),
Net Working Capital	Net current assets less Cash and cash equivalents to Total Assets ratio	Opler et al (1999),Ozkan and Ozkan (2004), Wasiuzzaman (2014)
Capital Expenditure	Capital expenditures to Total Assets ratio	Rehman and Wang, (2015), Kusnadi (2003), Rahayu Izwani and Pok (2011), Wasiuzzaman (2014)

3.6 Data Collection Sampling and Procedure

This study used the companies' financial data that were extracted from balance sheet, cash flow statement, and ratio summary. Each company's financial information related to the dependent and independent variables were obtained from the Thomson Reuters Datastream.

The period of analysis is from 2006 to 2015. For data analysis, regression analysis was conducted by using IBM SPSS Software. 265 out of 806 companies listed in the main market of Bursa Malaysia were selected as a sample. The companies are from all sectors except the financial and utilities sectors. The appropriate sample quantity was calculated based on the sampling table presented by Krejcie and Morgan (1970).

Financial companies were excluded (insurance, banks, and other miscellaneous financial companies) as the accounting practices for banks and financial companies are different from industrial companies. Furthermore, cash requirements for financial firms are quite different from non-financial firms (Ali and Yousaf, 2013). Utilities companies were also excluded from the sample because they are regulated and there is only a small difference between the costs of internal and external funds (Soh et al., 2015).

Moreover, the companies should have complete data for all the variables to be measured (firm size, leverage, profitability, dividend, growth opportunity, and net working capital and capital expenditure) for the period between 2006 and 2015.

3.7 Linear Regression Analysis

The data were analysed using IBM SPSS Software to measure the relationship and difference between variables in this study. This study applied the linear regression method to test the hypotheses, considering the main purpose of this study is to examine the hypotheses regarding the relationship between company characteristics and the determinants of corporate cash holdings. The relationship was measured through cash ratio, regardless whether the determinants will positively or negatively affect the corporate cash holdings.

The data collected for the variables run from 2006 to 2015, and were averaged and uploaded into the IBM SPSS software. The average did not seem to affect the main objective of this research, which aims to find out the relationship between the dependent variables and the independent variables. This is because a firm normally have similar and consistent cash management trends under long period.

The static model by Opler et al. (1999) was modified and used to test the relationship of the identified variables with the level of cash holdings, the

$$CASH_{it} = \beta_0 + \beta_1 FIRMSIZE_{it} + \beta_2 LEVERAGE_{it} + \beta_3 ROA_{it} + \beta_4 DIVIDEND_{it} + \beta_5 GROWTH_{it} + \beta_6 NWC_{it} + \beta_7 CAPEX_{it} + e_{it}$$

where,

$CASH_{it}$ is the cash and cash equivalents to total assets ratio of firm $_i$ at time $_t$

$FIRMSIZE_{it}$ is the natural logarithm of total assets of the firm $_i$ at time $_t$

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LEVERAGE$_{it}$ is the total debts to total assets ratio of firm $_i$ at time $_t$

ROA$_{it}$ is the net income to total assets of the firm $_i$ at time $_t$

DIVIDEND$_{it}$ is the common dividend to net income ratio of the firm $_i$ at time$_t$

GROWTH$_{it}$ is the ratio of the market capital of the firm to the total equity of the firm $_i$ at time $_t$

NWC$_{it}$ is the net current less cash and cash equivalent to total assets of firm $_i$ at time $_t$

CAPEX$_{it}$ is capital expenditure to total assets of the firm $_i$ at time $_t$

e$_{it}$ is the error term

$_t$ is covered time from period year 2006 to 2015.

3.8 Conclusion

Chapter 3 presented a discussion on the methodology used in this study. It also discussed the research frameworks indicating the dependent and independent variables studied in this paper. The hypothesis development was explained to show how the hypothesis was developed and elaborate the relationship between the dependent and independents variables. This chapter further discussed the operational definition and measurement, followed by data collection sampling and procedure. Finally, the chapter briefed on the data analysis techniques used to conduct this study.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides a discussion on the findings of the study. The sample of the study consists of 265 public listed companies for the period of 2006 to 2015. Subsequently, Section 4.2 discusses the descriptive statistics, Section 4.3 discusses the correlation analysis, while Section 4.4 discusses the multicollinearity and Section 4.5 discusses the linear regression results.

4.2 Descriptive Statistics

Table 4.1 presents the descriptive statistics for all variables in the study. The table shows that the average cash holdings (CASH) for Malaysian public listed firms is 14% of its total assets. The range of cash holdings is from 0.25% to 87.61% with median value of 11.17%. Generally, a firm does not hold large cash compared to its total assets. This is in line with findings of previous study by Wasiuzzaman (2014) that found public listed firms in Malaysia hold cash amount that is equivalent to 8% of its total assets on average for year 2000 to 2007, which is considered as lower than previous study by Al-dhamari and Ku Nor Izah (2015) which showed the average cash holdings of Malaysian public listed firms from year 2007 to 2011.

Table 4.1
Descriptive Statistics

Variables	Minimum	Maximum	Mean	Median	Std. Deviation
CASH	0.00252	0.87610	0.14132	0.11168	0.11396
FIRMSIZE	2.51286	9.57873	5.55703	5.41634	1.20974
LEVERAGE	0.00000	0.57025	0.19623	0.18734	0.14404
ROA	-0.35198	0.83211	0.03152	0.03571	0.08054
DIVIDEND	-12.63710	5.63076	0.25749	0.20393	0.96521
GROWTH	-0.15797	7.28124	1.09820	0.83954	0.88124
NWC	-0.46088	0.56662	0.10357	0.07721	0.15693
CAPEX	0.00078	0.18537	0.04077	0.03369	0.02960

The statistics are based on the sample of 265 a firm' observation for period 2006 to 2015

The mean of firm size (FIRMSIZE) which is measured by the natural logarithm of the average total assets 5.557, equivalent to RM 259 million and its median value is 5.41634 which is equivalent to RM 225 million. The minimum value of firm size is 2.51286, equivalent to RM 12 million and its maximum value is 9.57873, equivalent to RM 14,454 million. Consequently, the average cash holdings is 14% of the total assets of RM 259 million which is equivalent to RM 36 million.

The firms' leverage (LEVERAGE) is 19.62% of the average total assets. In this light, some firms do not have any leverage while the highest leverage ratio is 57.03% which is slightly more than half of its total assets and its median value is 18.73%. The figures indicate that public listed firms in Malaysia have a relatively lower debt level that shows a firm prefers to use cash rather than obtaining external financing and the firms have a strong capability to payback the debts. The result is considered lower compared to the study by Wasiuzzaman (2014) that showed firms' leverage average of 25.9%

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and another study by Al-dhamari and Ku Nor Izah (2015) that showed the average leverage of 43.60%.

The average ROA is 3.15%, the highest ROA is 83.21% and the lowest ROA is -35.20%. The average ROA of 3.15% is in line with previous study by Nguyen et al., (2006) who also obtained an average ROA of 3.26% from the sample consisted of Japanese firms from 1992 to 2002. However, lower finding was reported by Al-dhamari and Ku Nor Izah that showed an average ROA of 10%.

Meanwhile, the firms' dividend payout ratio (DIVIDEND) is 25.75% on average, and the median value is 20.39%. This ratio indicates that on average, the firms paid roughly quarter of its income for dividend. The minimum ratio value is -12.63714 and the maximum value is 5.63076. The negative value of the minimum value is due to the measurement of the dividend payout ratio that divides the dividend payment by net income. Therefore, the negative value denotes the net loss of the company. The mean of the dividend payout ratio of 25.75% is slightly lower than previous study by Benjamin, Wasiuzzaman, Mokhtarinia, and Nejad (2016) whose sample consisted of 160 Malaysian public listed firms from year 2005 to 2010 that showed the mean value of the dividend payout ratio of 33%.

The mean value for the firms' growth opportunity (GROWTH) is 109.82%, the median value is 83.95%, minimum value is -15.80%, and maximum value is 728.12%. The mean of 109.82% is considered as high compared to the study by Al-dhamari and Ku Nor Izah (2015) that only obtained 15.40% average growth.

The mean value for net working capital (NWC) is 10.36%, the median value is 7.72%, its minimum value is -46.09%, and its maximum value is 56.66%. The mean for net

working capital is slightly lower compared to previous study by Wasiuzzaman (2014) who found the average firms' net working capital was 13%.

The mean for capital expenditure is 4.08%, its median value is 3.37%, its minimum value is 0.078%, and its maximum value is 18.54%. This shows that public firms in Malaysia have very low allocation on capital expenditure, consistent with previous study by Wasiuzzaman (2014) who reported low mean for capital expenditure at 2.2%.

4.3 Correlation Analysis

Pearson Correlation matrix of variables is shown in Table 4.2. The table shows the correlation between each variable tested in this study. CASH has positive correlation with ROA, DIVIDEND, GROWTH, and NWC, while its correlations with FIRMSIZE, LEVERAGE, and CAPEX are negative.

The variables that are significantly correlated with CASH in this table are LEVERAGE, ROA, GROWTH, and NWC. CASH shows a strong negative relationship with LEVERAGE of 0.510. The result also shows that all variables are not highly correlated, ranging from 0.017 to 0.534. NWC has a negative strong relationship with LEVERAGE at 0.534, showing that firms with higher liquid assets will have lower leverage. FIRMSIZE has a significant relationship with LEVERAGE, ROA, NWC, and CAPEX, while LEVERAGE has a significant relationship with CASH, FIRMSIZE, ROA, NWC, and CAPEX. Furthermore, ROA has a significant relationship with CASH, FIRMSIZE, LEVERAGE, GROWTH, and CAPEX. GROWTH has a significant relationship with CASH, ROA, and CAPEX. NWC has a significant relationship with CASH, FIRMIZE, LEVERAGE, and CAPEX. As for the

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Table 4.2
Correlation Analysis

	CASH	FIRMSIZE	LEVERAGE	ROA	DIVIDEND	GROWTH	NWC	CAPEX
CASH	1	-0.12	-0.510**	0.336**	0.073	0.394**	0.139*	-0.08
FIRMSIZE		1	0.362**	0.231**	0.024	0.096	-0.302**	0.238**
LEVERAGE			1	-0.217**	-0.079	-0.116	-0.534**	0.137*
ROA				1	0.101	0.338**	0.066	0.176**
DIVIDEND					1	0.113	0.082	-0.017
GROWTH						1	-0.108	0.187**
NWC							1	-0.177**
CAPEX								1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

last variable, CAPEX has a significant relationship with FIRMIZE, LEVERAGE, ROA, GROWTH, and NWC.

4.4 Multicollinearity Diagnostic

In statistics, the variance inflation factor (VIF) quantifies the severity of multicollinearity in a linear regression analysis. It provides an index that measures how much the variance (the square of the estimate's standard deviation) of an estimated regression coefficient was elevated due to collinearity. This variance is used to describe how much multicollinearity or the problematic mean because it can increase the variance of the regression coefficient and result in unstable and difficult findings to interpret.

Table 4.3: Variance Inflation Factor

Table 4.3
Collinearity Statistics[a]

Independent Variables	Tolerance	VIF
FIRMSIZE	0.742	1.347
LEVERAGE	0.594	1.683
ROA	0.758	1.320
DIVIDEND	0.972	1.028
GROWTH	0.828	1.207
NWC	0.669	1.495
CAPEX	0.893	1.120

a. Dependent Variable: CASH

Table 4.3 shows that all variables used in this study do not have multicollinearity problems, as VIF values for all variables ranged between 1.028 to 1.683 and less than 10. The highest tolerance value is 0.972 which is still above 0.1 and does not need further investigation. The small tolerance value (below 0.1) indicates that the variable under consideration has an almost perfect linear combination of the independent variables already in the equation and that it should not be added to the regression equation.

4.5 Linear Regression Analysis

Table 4.4 presents the regression results obtained from the regression of CASH as the dependent variable against several independent variables, namely FIRMSIZE, LEVERAGE, ROA, DIVIDEND, GROWTH, NWC, and CAPEX for public listed companies in Malaysian from 2006 until 2015.

Table 4.4
Model Summary of Regression[b]

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.642[a]	0.412	0.396	0.08857147	1.536

a. Predictors: (Constant), CAPEX, DIVIDEND, NWC, LEVERAGE, GROWTH, ROA, FIRMSIZE
b. Dependent Variable: CASH

Based on Table 4.4 above, the Adjusted R^2 of the regression is 0.396 and implies that the average variation of all the 7 independent variables are able to explain, on average, 39.60% of the variation in the dependent variable which is the cash holdings (CASH). This shows that 60.40% of the variation in the dependent variable (CASH) cannot be explained by the independent variables included in the model and may be explained

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by other extraneous variables not included in this study. The other variables that were not included in this study could possibly be macroeconomic, board characteristics, ownership and corporate governance variables. This study do not include the mentioned variables as this study intends to focus on the determinants of cash holdings based on firm characteristics. In addition, the Durbin-Watson statistic of 1.536 indicates no autocorrelation problem with the data used in the regression model.

Table 4.5
Linear Regression Results[a]

Independent Variables	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	0.207	0.030		6.857	0.000
FIRMSIZE	-0.002	0.005	-0.021	-0.381	0.704
LEVERAGE	-0.384	0.049	-0.485	-7.811	0.000*
ROA	0.236	0.078	0.167	3.030	0.003*
DIVIDEND	0.000	0.006	-0.006	-0.132	0.895
GROWTH	0.038	0.007	0.292	5.550	0.000*
NWC	-0.092	0.042	-0.126	-2.156	0.032*
CAPEX	-0.443	0.195	-0.115	-2.273	0.024*

a. Dependent Variable: CASH
**. Correlation is significant at 0.01 level (2-tailed).
*. Correlation is significant at 0.05 level (2-tailed).

Table 4.5 shows the regression results of cash holdings against the independent variables. The regression results show that LEVERAGE, ROA, GROWTH, NWC, and CAPEX are statistically significant in influencing the corporate cash holdings. GROWTH and LEVERAGE have the strongest relationship with the CASH as the

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significant level is below 0.01. The other two independent variables FIRMSIZE and DIVIDEND are not significant in explaining the determinant of corporate cash holdings. The results also indicate that LEVERAGE, NWC, and CAPEX negatively influence CASH while ROA and GROWTH positively influence CASH.

The regression results from the Table 4.5 shows the relationship of all significant variables in the model can also be presented by the following equation:

$$CASH = -0.384\ (LEVERAGE) + 0.236\ (ROA) + 0.038\ (GROWTH) - 0.092\ (NWC) - 0.443\ (CAPEX) + e_{it}$$

This equation can be used as a reference for researchers, firm managers, or analysts as an indication to estimate the general value of cash held by public firms in Malaysia. The complete equation is obtained by inserting the coefficient values of the significant variables into the above equation.

The equation shows that for every one percentage point increase in LEVERAGE, there will be an average of 38.40% decrease in CASH, assuming that other independent variables are constant. Meanwhile, every one percentage point increase in ROA will also increase CASH by an average 23.60%. Similarly, there will be an average increase of 3.80% in CASH for every one percentage point increase in GROWTH. On the other hand, CASH will decrease by 9.20% on average for every one percentage point increase in NWC. Meanwhile, one percentage point increase in CAPEX will result in an average of 44.30% decrease in CASH. All estimations are applicable if the other variables are in constant.

LEVERAGE was found to be negatively related with CASH and supported by most previous studies conducted on samples from developed countries such as German (Ali

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and Yousaf, 2013), US (Akguc and Choi, 2013; Opler, 1999), EMU (Ferreira and Vilela, 2004), France (Saddour, 2006), and Japan (Nguyen, 2006). Findings by Ozkan et al., (2003) which was conducted in multiple countries including UK, Japan, France, and German are also consistent with the result. Other previous studies that used samples from developing countries such as Pakistan (Afza and Adnan, 2007; Anjum and Malik, 2013), China (Rehman and Wang, 2015), Singapore (Kusnadi, 2003), Bangladesh (Islam, 2012) and Malaysia (Rahayu Izwani and Pok, 2011; Wasiuzzaman, 2014) also found that leverage has a negative relationship with cash holdings which is consistent with transaction motive.

NWC which is negatively influenced the CASH is also supported by previous studies on developed countries including US (Opler, 1999), Europe (Akguc and Choi, 2013), Canada (Gill and Shah, 2012), as well as the study by (Ozkan et al., 2003) which was conducted on samples consisting of multiple countries such as UK, Japan, France, and German. Similar results were also reported in developing countries such as Pakistan (Afza and Adnan, 2007), China (Rehman and Wang, 2015), Ethiopia (Mesfin, 2016), Nigeria (Ogundipe et al., 2012), Bangladesh (Islam, 2012) and also Malaysia (Wasiuzzaman, 2014).

On the other hand, not many studies have tested CAPEX as an independent variable to examine the determinant of cash holdings. In this light, significant negative relationship with CASH was reported in the study by Mesfin (2016) in Ethiopia, Rehman and Wang (2015) in China, and Wasiuzzaman (2014) in Malaysia.

Several studies reported GROWTH to have significant positive relationship with CASH, such as in German (Ali and Yousaf, 2013), China (Rehman and Wang, 2015),

Singapore (Kusnadi, 2003), and Malaysia (Rahayu Izwani and Pok, 2011; Wasiuzzaman, 2014).

Finally, the variable that has a positive significant relationship with CASH is ROA. This finding is supported by several previous studies by Mesfin (2016), Rehman and Wang (2015), and Wasiuzzaman (2014). The variables that are not significant are FIRMSIZE and DIVIDEND. The insignificant result for dividend payout is consistent with the recent study by Shabbir et al. (2016). Another variable that does not have significant relationship with CASH is FIRMSIZE, in parallel with research conducted by Wasiuzzaman (2014) where the samples of the study consisted of public listed firms in Malaysia.

4.6 Conclusion

This chapter provides answers to the research questions. The findings were obtained through the descriptive statistics, correlation analysis, Multicollinearity test, and Linear Regression Analysis. The results show that five out of the seven variables are the significant determinants of corporate cash holdings, while the other two variables are insignificant towards corporate cash holdings. The analysis results were also compared with evidences from previous studies.

In conclusion, the significant variables that can determine the cash holdings of public listed firms in Malaysia are leverage, profitability, growth opportunity, net working capital, and capital expenditure, where profitability and growth opportunity have a positive impact on cash holdings. Hence, higher profit and growth opportunity would increase the amount of cash held by a firm. It shows that profitable firms and firms with better growth opportunities tend to hold higher cash to prevent from foregoing

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valuable investment opportunities due to insufficient cash that is in line with the precautionary motive.

Firms will hold smaller amount of cash when it has higher leverage, net working capital, and capital expenditure. In contrast, firms will hold larger amount of cash when it has lower leverage, net working capital, and capital expenditures. Firms that have the ability to obtain external financial assistance will hold lower cash as it does not need to hold large amount of cash for emergency as the firm will have access to external financial assistance for future investments or projects. It also shows that a firm that has large net working capital management also holds small amount of cash as the currents assets exceed the current liabilities and the firm will have more current liquid assets. The firms would probably have large inventories or other current assets instead of keeping a large amount of cash, while firms with low net working capital will hold large cash since they have fewer assets that can function as a substitute for cash. Firms will also utilise higher cash to gain more profit by investing in capital assets such as new machines, equipment, transportation, and building to expand its business. Higher capital expenditure increases the value of the assets that can be used as collateral for obtaining external financing. The results of net working capital and leverage that negatively influence cash holdings are also in line with the transaction motive since net working capital and leverage can be considered as substitutes for cash.

A regression analysis of different firm characteristics on cash holdings leads to results that are very similar to Ozkan et al., (2003) who studied the firms in France, unless the study did not included profitability into the study.

The results are also in line with this study's hypotheses that were discussed in Chapter 3. Table 4.6 summarises the findings. The findings show that the size of firm and

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dividend payment are not significant towards corporate cash holdings. Hence, regardless of the firm size, the variables do not affect the amount of cash holdings of a firm. As dividend payout ratio also does not have any influence on corporate cash holdings, thus, dividend payment is not a main concern for firms when deciding on the amount of cash to hold.

Table 4.6
Summary of the Findings of The Study

| | | Relationship with Cash Holdings | |
Variables		Hypotheses	Findings
Firm Size	H1	Negative	Not significant
Leverage	H2	Negative	Negative
Profitability	H3	Positive	Positive
Dividend	H4	Negative	Not significant
Growth opportunity	H5	Positive	Positive
Net Working Capital	H6	Negative	Negative
Capital Expenditure	H7	Negative	Negative

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter concludes the findings and implications of this study on the determinants of corporate cash holdings in public listed firms in Malaysia from 2006 to 2015. This chapter will also explain the limitations of this study and recommendations for future research.

5.2 Conclusion of the Findings

The main objective of this study is to examine the determinants of corporate cash holdings in public listed firms in Malaysia and to identify which variable significant to corporate cash holdings, as well the significance of their relationship and whether these variables can positively or negatively influence corporate cash holdings. This study used a sample of 265 public listed firms from various sectors excluding the financial and utilities sectors. The data were collected from 2006 to 2015 and analysed using IBM SPSS Software employing the linear regression method.

The dependent variable for this study is cash holdings, while the independent variables are size of firm, leverage, profitability, dividend, growth opportunity, net working capital, and capital expenditures.

The results showed that five out of the seven variables are significant in determining the level of corporate cash holdings. The other two variables did not have any

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significant relationship with corporate cash holdings. The variables that significantly determine the cash holdings of public listed firms in Malaysia are leverage, profitability, growth opportunity, net working capital, and capital expenditure. In this regard, profitability and growth opportunity had positive impacts on cash holdings, thus higher profit and growth opportunity would lead to more cash held by a firm. Meanwhile, leverage, net working capital, and capital expenditures had negative relationships with cash holdings. The higher these variables, the lower cash holdings will be in these firms.

5.3 Implication of The Study

This study discovered that five variables significantly influenced the corporate cash holdings, namely leverage, profitability, growth opportunity, net working capital, and capital expenditure. Meanwhile, the other two variables which are size of firm and dividend did not have any influence on corporate cash holdings. This reveals that the size of a company is not related to the size of its cash holdings. In this light, the company may have other assets as its inventory and fixed assets, depending on the nature of its business. It can be seen from the negative relationship of cash against net working capital and capital expenditure. The positive relationships between cash and profitability and growth opportunity showed that profitable firms with great future investment potential will keep a large amount of cash to finance its future operation and investment.

In general, the results from the analyses in this study could have implications for academician, firm managers, financial analyst, economist, financial expert, consultants, and training institutions. They can use the results from this study as the

references and guidance for better illustration on the determinants of corporate cash holdings in public listed firms in Malaysia. The equation developed from this study can also be used as an indication to estimate and forecast the level of corporate cash holdings in the presence of significant independent variables. This study is expected to give financial managers in public listed firms some ideas to adjust its cash level in order to maximize the firms profitability since they have to provide convincing financial statements to the shareholders, as shareholders may withdraw their investments if they are not confident with the firms' performance. Investment withdrawal can lead to bankruptcy and the firm will be taken over by another shareholder that may threaten the career of the current management and staff.

Besides, academicians can also use the findings from this study as a foundation for further research in this area.

5.4 Recommendation for Future Research

Considering there are limited studies done on corporate cash holdings in Malaysia, this study can generally be regarded as one of the pioneers for research in this field. Based on the limitations and findings of the study, some ideas have been generated that are useful as a recommendation for future research in this area.

Firstly, this study involved a sample of 265 Malaysian's public listed firms. Therefore, future investigation on larger sample would provide more convincing and precise result. Future studies can also be more specific on this topic by analysing the determinants of corporate cash holdings based on industries, in order to have more understanding on the cash holdings behaviours of each industry. On the other hand, future studies may also conduct studies on cash holdings in other types of business

entities, such as private sector and Small Medium Enterprises. Furthermore, more studies can also be made to compare the level of corporate cash holdings in public firms and private firms that was largely conducted in other countries (Akguc and Choi, 2013; Gao et al., 2013; Goktan and Ucar, 2012), but limited in Malaysian context.

In addition, further studies can also include other control variables, such as board characteristics, ownership, and corporate governance to get more depth result. Besides, future study is suggested to develop new hypotheses, especially on the macroeconomic variables such as share price, gross domestic product (GDP), interest rates, and currency exchange rate as the Malaysian currency has dramatically depreciated against USD since 2015. Moreover, future research is encouraged to investigate on this issue to see the movement of corporate cash holdings during financial crisis. Besides, future researches can explore the impact of corporate cash holdings on firms' profitability and performance.

Thus, this study is expected to shed some light on this field and provide a foundation for future researches on the aforementioned issues. It is also expected to help develop and expand the knowledge on cash holdings in Malaysia.

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Appendix i

NO	INDUSTRIES	COMPANY'S NAME
1	AUTOMOBILES & PARTS	MINTYE INDUSTRIES BHD.
2	AUTOMOBILES & PARTS	SMIS CORPORATION BERHAD
3	AUTOMOBILES & PARTS	GPA HOLDINGS BERHAD
4	AUTOMOBILES & PARTS	NEW HOONG FATT HOLDINGS BERHAD
5	AUTOMOBILES & PARTS	PERMAJU INDUSTRIES BERHAD.
6	AUTOMOBILES & PARTS	APM AUTOMOTIVE HOLDINGS BERHAD
7	AUTOMOBILES & PARTS	UMW HOLDINGS BERHAD
8	AUTOMOBILES & PARTS	TAN CHONG MOTOR HOLDINGS BERHAD
9	CHEMICALS	SKP RESOURCES BHD.
10	CHEMICALS	TOYO INK GROUP BERHAD
11	CHEMICALS	PLASTRADE TECHNOLOGY BERHAD
12	CHEMICALS	SERSOL BERHAD
13	CHEMICALS	TEK SENG HOLDINGS BERHAD
14	CHEMICALS	BP PLASTICS HOLDING BHD.
15	CHEMICALS	DENKO INDUSTRIAL CORPORATION BHD.
16	CHEMICALS	POLY GLASS FIBRE (M) BHD.
17	CHEMICALS	IMASPRO CORPORATION BERHAD
18	CHEMICALS	CHEMICAL COMPANY OF MALAYSIA BHD
19	CHEMICALS	NYLEX (MALAYSIA) BERHAD.
20	CHEMICALS	JADI IMAGING HOLDINGS BERHAD
21	CONSTRUCTION & MATERIALS	KPS CONSORTIUM BERHAD
22	CONSTRUCTION & MATERIALS	SARAWAK CONSOLIDATED INDUSTRIES BERHAD
23	CONSTRUCTION & MATERIALS	GADANG HOLDINGS BERHAD
24	CONSTRUCTION & MATERIALS	MITRAJAYA HOLDINGS BERHAD
25	CONSTRUCTION & MATERIALS	DOLOMITE CORPORATION BERHAD
26	CONSTRUCTION & MATERIALS	MULTI-USAGE HOLDINGS BHD.
27	CONSTRUCTION & MATERIALS	MTD ACPI ENGINEERING BERHAD
28	CONSTRUCTION & MATERIALS	BINA PURI HOLDINGS BHD.
29	CONSTRUCTION & MATERIALS	WCT HOLDINGS BERHAD
30	CONSTRUCTION & MATERIALS	SYCAL VENTURES BERHAD.
31	CONSTRUCTION & MATERIALS	PLS PLANTATIONS BERHAD

32	CONSTRUCTION & MATERIALS	PRICEWORTH INTERNATIONAL BERHAD
33	CONSTRUCTION & MATERIALS	TSR CAPITAL BERHAD
34	CONSTRUCTION & MATERIALS	UNITED U-LI CORPORATION BERHAD
35	CONSTRUCTION & MATERIALS	YI-LAI BERHAD
36	CONSTRUCTION & MATERIALS	OKA CORPORATION BHD.
37	CONSTRUCTION & MATERIALS	SKB SHUTTERS CORPORATION BERHAD
38	CONSTRUCTION & MATERIALS	ENGTEX GROUP BERHAD
39	CONSTRUCTION & MATERIALS	TRC SYNERGY BERHAD
40	CONSTRUCTION & MATERIALS	NWP HOLDINGS BERHAD
41	CONSTRUCTION & MATERIALS	ASTINO BERHAD.
42	CONSTRUCTION & MATERIALS	PROTASCO BERHAD
43	CONSTRUCTION & MATERIALS	DOMINANT ENTERPRISE BERHAD
44	CONSTRUCTION & MATERIALS	PINTARAS JAYA BHD.
45	CONSTRUCTION & MATERIALS	ATURMAJU RESOURCES BERHAD
46	CONSTRUCTION & MATERIALS	LEBTECH BERHAD
47	CONSTRUCTION & MATERIALS	CYMAO HOLDINGS BERHAD
48	CONSTRUCTION & MATERIALS	EKOWOOD INTERNATIONAL BERHAD
49	CONSTRUCTION & MATERIALS	HEVEABOARD BERHAD
50	CONSTRUCTION & MATERIALS	EVERGREEN FIBREBOARD BERHAD
51	CONSTRUCTION & MATERIALS	MERCURY INDUSTRIES BHD.
52	CONSTRUCTION & MATERIALS	HO HUP CONSTRUCTION COMPANY BERHAD
53	CONSTRUCTION & MATERIALS	BINA DARULAMAN BERHAD
54	CONSTRUCTION & MATERIALS	KERJAYA PROSPEK GROUP KERJAYA
55	CONSTRUCTION & MATERIALS	BTM RESOURCES BERHAD
56	CONSTRUCTION & MATERIALS	PRINSIPTEK CORPORATION BERHAD
57	CONSTRUCTION & MATERIALS	KIA LIM BERHAD
58	CONSTRUCTION & MATERIALS	HOCK SENG LEE BERHAD
59	CONSTRUCTION & MATERIALS	NAIM HOLDINGS BERHAD
60	CONSTRUCTION & MATERIALS	QUALITY CONCRETE HOLDINGS BERHAD

61	CONSTRUCTION & MATERIALS	DKLS INDUSTRIES BERHAD
62	CONSTRUCTION & MATERIALS	AJIYA BERHAD
63	CONSTRUCTION & MATERIALS	CHUAN HUAT RESOURCES BERHAD
64	CONSTRUCTION & MATERIALS	LIEN HOE CORPORATION BERHAD
65	CONSTRUCTION & MATERIALS	LAFARGE MALAYSIA BERHAD
66	CONSTRUCTION & MATERIALS	MALAYSIAN RESOURCES CORPORATION BERHAD
67	ELECTRONIC & ELECTRICAL EQUIPMENT	FITTERS DIVERSIFIED BERHAD
68	ELECTRONIC & ELECTRICAL EQUIPMENT	INDUSTRONICS BERHAD
69	ELECTRONIC & ELECTRICAL EQUIPMENT	HO WAH GENTING BERHAD
70	ELECTRONIC & ELECTRICAL EQUIPMENT	TA WIN HOLDINGS BERHAD
71	ELECTRONIC & ELECTRICAL EQUIPMENT	COMINTEL CORPORATION BHD.
72	ELECTRONIC & ELECTRICAL EQUIPMENT	P.I.E. INDUSTRIAL BERHAD
73	ELECTRONIC & ELECTRICAL EQUIPMENT	UCHI TECHNOLOGIES BERHAD
74	ELECTRONIC & ELECTRICAL EQUIPMENT	JASA KITA BERHAD
75	ELECTRONIC & ELECTRICAL EQUIPMENT	IQ GROUP HOLDINGS BERHAD
76	ELECTRONIC & ELECTRICAL EQUIPMENT	BSL CORPORATION BERHAD
77	ELECTRONIC & ELECTRICAL EQUIPMENT	PNE PCB BERHAD
78	ELECTRONIC & ELECTRICAL EQUIPMENT	METROD HOLDINGS BERHAD
79	ELECTRONIC & ELECTRICAL EQUIPMENT	ABRIC BERHAD
80	ELECTRONIC & ELECTRICAL EQUIPMENT	V.S. INDUSTRY BERHAD
81	FOOD PRODUCERS	GOPENG BHD
82	FOOD PRODUCERS	LAY HONG BERHAD
83	FOOD PRODUCERS	FARM'S BEST BERHAD
84	FOOD PRODUCERS	XIAN LENG HOLDINGS BERHAD
85	FOOD PRODUCERS	LONDON BISCUITS BERHAD
86	FOOD PRODUCERS	NPC RESOURCES BERHAD
87	FOOD PRODUCERS	MHC PLANTATIONS BHD.
88	FOOD PRODUCERS	PWF CONSOLIDATED BERHAD
89	FOOD PRODUCERS	HUAT LAI RESOURCES BERHAD
90	FOOD PRODUCERS	THREE-A RESOURCES BERHAD
91	FOOD PRODUCERS	ORIENTAL FOOD INDUSTRIES HOLDINGS BERHAD
92	FOOD PRODUCERS	HUP SENG INDUSTRIES BERHAD
93	FOOD PRODUCERS	BLD PLANTATION BHD.
94	FOOD PRODUCERS	LTKM BERHAD

95	FOOD PRODUCERS	QL RESOURCES BERHAD
96	FOOD PRODUCERS	CAB CAKARAN CORPORATION BERHAD
97	FOOD PRODUCERS	D.B.E. GURNEY RESOURCES BERHAD
98	FOOD PRODUCERS	KIM LOONG RESOURCES BERHAD
99	FOOD PRODUCERS	COCOALAND HOLDINGS BERHAD
100	FOOD PRODUCERS	GUAN CHONG BERHAD
101	FOOD PRODUCERS	FAR EAST HOLDINGS BERHAD
102	FOOD PRODUCERS	SARAWAK OIL PALMS BHD.
103	FOOD PRODUCERS	KAWAN FOOD BERHAD
104	FOOD PRODUCERS	HWA TAI INDUSTRIES BERHAD
105	FOOD PRODUCERS	OCB BERHAD
106	FOOD PRODUCERS	GENTING PLANTATIONS GENP
107	FOOD PRODUCERS	MALAYAN FLOUR MILLS BHD
108	FOOD PRODUCERS	IJM PLANTATIONS BERHAD.
109	FOOD PRODUCERS	PPB GROUP BERHAD
110	HEALTH CARE EQUIPMENT & SERVICES	KPJ HEALTHCARE BERHAD
111	HEALTH CARE EQUIPMENT & SERVICES	COMFORT GLOVES BERHAD
112	HEALTH CARE EQUIPMENT & SERVICES	KOSSAN RUBBER INDUSTRIES BERHAD
113	HEALTH CARE EQUIPMENT & SERVICES	TOP GLOVE CORPORATION BHD.
114	HEALTH CARE EQUIPMENT & SERVICES	SUPERMAX CORPORATION BERHAD
115	HOUSEHOLD GOODS & HOME CONSTRUCTION	PARAGON UNION BERHAD
116	HOUSEHOLD GOODS & HOME CONSTRUCTION	CHEE WAH CORPORATION BERHAD
117	HOUSEHOLD GOODS & HOME CONSTRUCTION	CAM RESOURCES BERHAD
118	HOUSEHOLD GOODS & HOME CONSTRUCTION	JAYCORP BERHAD
119	HOUSEHOLD GOODS & HOME CONSTRUCTION	SYF RESOURCES BERHAD
120	HOUSEHOLD GOODS & HOME CONSTRUCTION	POH HUAT RESOURCES HOLDINGS BERHAD
121	HOUSEHOLD GOODS & HOME CONSTRUCTION	LII HEN INDUSTRIES BHD.
122	HOUSEHOLD GOODS & HOME CONSTRUCTION	SWS CAPITAL BERHAD
123	HOUSEHOLD GOODS & HOME CONSTRUCTION	EUROSPAN HOLDINGS BERHAD
124	HOUSEHOLD GOODS & HOME CONSTRUCTION	CLASSIC SCENIC BERHAD
125	HOUSEHOLD GOODS & HOME CONSTRUCTION	EURO HOLDINGS BERHAD
126	HOUSEHOLD GOODS & HOME CONSTRUCTION	TAFI INDUSTRIES BERHAD
127	HOUSEHOLD GOODS & HOME CONSTRUCTION	NI HSIN RESOURCES BERHAD
128	HOUSEHOLD GOODS & HOME CONSTRUCTION	KOMARKCORP BERHAD
129	INDUSTRIAL ENGINEERING	CHOO BEE METAL INDUSTRIES BERHAD

130	INDUSTRIAL ENGINEERING	KKB ENGINEERING BERHAD
131	INDUSTRIAL ENGINEERING	IDEAL UNITED BINTANG BERHAD
132	INDUSTRIAL ENGINEERING	WEIDA (M) BHD.
133	INDUSTRIAL ENGINEERING	HCK CAPITAL GROUP BERHAD
134	INDUSTRIAL ENGINEERING	PENTAMASTER CORPORATION BERHAD
135	INDUSTRIAL ENGINEERING	COASTAL CONTRACTS BHD.
136	INDUSTRIAL ENGINEERING	PMB TECHNOLOGY BERHAD
137	INDUSTRIAL ENGINEERING	UNIMECH GROUP BERHAD
138	INDUSTRIAL ENGINEERING	GE-SHEN CORPORATION BERHAD
139	INDUSTRIAL ENGINEERING	KEIN HING INTERNATIONAL BERHAD
140	INDUSTRIAL ENGINEERING	LCTH CORPORATION BERHAD
141	INDUSTRIAL ENGINEERING	DAYA MATERIALS BERHAD
142	INDUSTRIAL ENGINEERING	HIL INDUSTRIES BERHAD
143	INDUSTRIAL ENGINEERING	KOBAY TECHNOLOGY BHD.
144	INDUSTRIAL ENGINEERING	RAPID SYNERGY BERHAD
145	INDUSTRIAL ENGINEERING	CN ASIA CORPORATION BHD.
146	INDUSTRIAL ENGINEERING	YLI HOLDINGS BERHAD
147	INDUSTRIAL ENGINEERING	CME GROUP BERHAD
148	INDUSTRIAL METALS & MINING	LYSAGHT GALVANIZED STEEL BHD.
149	INDUSTRIAL METALS & MINING	LB ALUMINIUM BERHAD
150	INDUSTRIAL METALS & MINING	HIAP TECK VENTURE BERHAD
151	INDUSTRIAL METALS & MINING	CSC STEEL HOLDINGS BERHAD
152	INDUSTRIAL METALS & MINING	MALAYSIA STEEL WORKS (KL) BHD.
153	INDUSTRIAL METALS & MINING	A-RANK BERHAD
154	INDUSTRIAL METALS & MINING	EONMETALL GROUP BERHAD
155	INDUSTRIAL METALS & MINING	LION INDUSTRIES CORPORATION BERHAD
156	INDUSTRIAL METALS & MINING	PERUSAHAAN SADUR TIMAH MALAYSIA (PERSTIMA) BERHAD
157	INDUSTRIAL METALS & MINING	ANN JOO RESOURCES BERHAD
158	INDUSTRIAL METALS & MINING	YKGI HOLDINGS BERHAD
159	INDUSTRIAL METALS & MINING	LION CORPORATION BERHAD
160	INDUSTRIAL TRANSPORTATION	NATIONWIDE EXPRESS COURIER SERVICES BERHAD
161	INDUSTRIAL TRANSPORTATION	BINTULU PORT HOLDINGS BERHAD
162	INDUSTRIAL TRANSPORTATION	CENTURY LOGISTICS HOLDINGS BERHAD
163	INDUSTRIAL TRANSPORTATION	MALAYSIAN BULK CARRIERS BERHAD
164	INDUSTRIAL TRANSPORTATION	PERISAI PETROLEUM TEKNOLOGI BHD.

165	INDUSTRIAL TRANSPORTATION	FREIGHT MANAGEMENT HOLDINGS BHD.
166	INDUSTRIAL TRANSPORTATION	GD EXPRESS CARRIER BHD.
167	INDUSTRIAL TRANSPORTATION	PERAK CORPORATION BERHAD
168	INDUSTRIAL TRANSPORTATION	TIONG NAM LOGISTICS HOLDINGS BERHAD
169	INDUSTRIAL TRANSPORTATION	INTEGRATED LOGISTICS BERHAD
170	INDUSTRIAL TRANSPORTATION	HARBOUR-LINK GROUP BERHAD
171	INDUSTRIAL TRANSPORTATION	LINGKARAN TRANS KOTA HOLDINGS BERHAD
172	OIL AND GAS PRODUCERS	PETRON MALAYSIA REFINING & MARKETING BHD.
173	OIL AND GAS PRODUCERS	SHELL REFINING COMPANY (FED OF MALAYA) BHD
174	OIL EQUIPMENT & SERVICES	PERDANA PETROLEUM BERHAD
175	OIL EQUIPMENT & SERVICES	KNM GROUP BERHAD
176	OIL EQUIPMENT & SERVICES	TANJUNG OFFSHORE BERHAD
177	OIL EQUIPMENT & SERVICES	WAH SEONG CORPORATION BERHAD
178	OIL EQUIPMENT & SERVICES	SUMATEC RESOURCES BERHAD
179	OIL EQUIPMENT & SERVICES	DIALOG GROUP BERHAD
180	OIL EQUIPMENT & SERVICES	ALAM MARITIM RESOURCES BERHAD
181	PERSONAL GOODS	BONIA CORPORATION BERHAD
182	PERSONAL GOODS	DEGEM BERHAD
183	PERSONAL GOODS	ENG KAH CORPORATION BERHAD
184	PERSONAL GOODS	NTPM HOLDINGS BERHAD
185	MEDIA	STAR MEDIA GROUP BERHAD
186	MEDIA	PELANGI PUBLISHING GROUP BHD.
187	MEDIA	MEDIA PRIMA BERHAD
188	MEDIA	UTUSAN MELAYU (MALAYSIA) BHD
189	LEISURE GOODS	EG INDUSTRIES BERHAD
190	LEISURE GOODS	MARCO HOLDINGS BERHAD
191	LEISURE GOODS	GSB GROUP BERHAD
192	PERSONAL GOODS	PRG HOLDINGS BERHAD
193	PERSONAL GOODS	MAGNI-TECH INDUSTRIES BERHAD
194	PERSONAL GOODS	YEN GLOBAL BERHAD
195	PERSONAL GOODS	ESTHETICS INTERNATIONAL GROUP BERHAD
196	PERSONAL GOODS	WANG-ZHENG BERHAD
197	PERSONAL GOODS	PROLEXUS BERHAD
198	PERSONAL GOODS	FCW HOLDINGS BERHAD
199	PERSONAL GOODS	AMTEK HOLDINGS BERHAD
200	PERSONAL GOODS	O&C RESOURCES BERHAD
201	PHARMACEUTICALS & BIOTECHNOLOGY	KOTRA INDUSTRIES BERHAD
202	PHARMACEUTICALS & BIOTECHNOLOGY	CCM DUOPHARMA BIOTECH BERHAD

203	PHARMACEUTICALS & BIOTECHNOLOGY	APEX HEALTHCARE BHD.
204	PHARMACEUTICALS & BIOTECHNOLOGY	Y.S.P. SOUTHEAST ASIA HOLDING BHD.
205	PHARMACEUTICALS & BIOTECHNOLOGY	HOVID BERHAD
206	SUPPORT SERVICES	DKSH HOLDINGS (MALAYSIA) BERHAD
207	SUPPORT SERVICES	BRAHIM'S HOLDINGS BERHAD
208	SUPPORT SERVICES	PJBUMI BERHAD
209	SUPPORT SERVICES	ANALABS RESOURCES BERHAD
210	SUPPORT SERVICES	METRONIC GLOBAL BERHAD
211	SUPPORT SERVICES	JCBNEXT BERHAD
212	SUPPORT SERVICES	EFFICIENT E-SOLUTIONS BERHAD
213	SUPPORT SERVICES	SCICOM (MSC) BERHAD
214	SUPPORT SERVICES	COMPUTER FORMS (MALAYSIA) BERHAD
215	SUPPORT SERVICES	COMPUGATES HOLDINGS BERHAD
216	SUPPORT SERVICES	YONG TAI BERHAD
217	SUPPORT SERVICES	YINSON HOLDINGS BERHAD.
218	SOFTWARE & COMPUTER SERVICES	ACCSOFT TECHNOLOGY BERHAD
219	SOFTWARE & COMPUTER SERVICES	CUSCAPI BERHAD
220	SOFTWARE & COMPUTER SERVICES	DAGANG NEXCHANGE BERHAD
221	SOFTWARE & COMPUTER SERVICES	DATAPREP HOLDINGS BHD.
222	SOFTWARE & COMPUTER SERVICES	DIGISTAR CORPORATION BERHAD
223	SOFTWARE & COMPUTER SERVICES	EDARAN BERHAD
224	SOFTWARE & COMPUTER SERVICES	G NEPTUNE BERHAD
225	SOFTWARE & COMPUTER SERVICES	MESINIAGA BERHAD
226	SOFTWARE & COMPUTER SERVICES	MMAG HOLDINGS BERHAD
227	SOFTWARE & COMPUTER SERVICES	REXIT BERHAD
228	SOFTWARE & COMPUTER SERVICES	OPENSYS (M) BERHAD
229	SOFTWARE & COMPUTER SERVICES	M3 TECHNOLOGIES (ASIA) BERHAD
230	SOFTWARE & COMPUTER SERVICES	OMESTI BERHAD
231	SOFTWARE & COMPUTER SERVICES	PUC FOUNDER (MSC) BERHAD
232	SOFTWARE & COMPUTER SERVICES	PANPAGES BERHAD
233	SOFTWARE & COMPUTER SERVICES	JAG BERHAD
234	SOFTWARE & COMPUTER SERVICES	INSAS BERHAD
235	SOFTWARE & COMPUTER SERVICES	GRAND-FLO BERHAD

236	SOFTWARE & COMPUTER SERVICES	HEITECH PADU BERHAD
237	SOFTWARE & COMPUTER SERVICES	GHL SYSTEMS BERHAD
238	SOFTWARE & COMPUTER SERVICES	WILLOWGLEN MSC BERHAD
239	TECHNOLOGY HARDWARE & EQUIPMENT	KESM INDUSTRIES BERHAD
240	TECHNOLOGY HARDWARE & EQUIPMENT	PINEAPPLE RESOURCES BERHAD
241	TECHNOLOGY HARDWARE & EQUIPMENT	YTL E-SOLUTIONS BERHAD
242	TECHNOLOGY HARDWARE & EQUIPMENT	OPCOM HOLDINGS BERHAD
243	TECHNOLOGY HARDWARE & EQUIPMENT	KEY ALLIANCE GROUP BERHAD
244	TECHNOLOGY HARDWARE & EQUIPMENT	VIVOCOM INTL HOLDINGS BERHAD
245	TECHNOLOGY HARDWARE & EQUIPMENT	MALAYSIAN PACIFIC INDUSTRIES BHD
246	TECHNOLOGY HARDWARE & EQUIPMENT	HONG LEONG INDUSTRIES BHD.
247	TECHNOLOGY HARDWARE & EQUIPMENT	TURIYA BERHAD
248	TECHNOLOGY HARDWARE & EQUIPMENT	GLOBETRONICS TECHNOLOGY BHD.
249	FORESTRY & PAPER	MENTIGA CORPORATION BERHAD
250	FORESTRY & PAPER	MINHO (M) BERHAD
251	FORESTRY & PAPER	EKSONS CORPORATION BERHAD
252	FORESTRY & PAPER	SUBUR TIASA HOLDINGS BERHAD
253	FORESTRY & PAPER	TEKALA CORPORATION BERHAD
254	GENERAL INDUSTRIALS	ADVANCED PACKAGING TECHNOLOGY (M) BHD.
255	GENERAL INDUSTRIALS	D'NONCE TECHNOLOGY BHD.
256	GENERAL INDUSTRIALS	ORNAPAPER BERHAD
257	GENERAL INDUSTRIALS	CYL CORPORATION BERHAD
258	GENERAL INDUSTRIALS	CENTURY BOND BHD.
259	GENERAL INDUSTRIALS	JOHORE TIN BERHAD
260	GENERAL INDUSTRIALS	IRE-TEX CORPORATION BERHAD
261	GENERAL INDUSTRIALS	CAN-ONE BERHAD
262	GENERAL INDUSTRIALS	KYM HOLDINGS BHD.
263	GENERAL INDUSTRIALS	RALCO CORPORATION BERHAD
264	GENERAL INDUSTRIALS	UPA CORPORATION BHD.
265	GENERAL INDUSTRIALS	KUB MALAYSIA BERHAD

INDUSTRIES	QTY SAMPLES
AUTOMOBILES & PARTS	8
CHEMICALS	12
CONSTRUCTION & MATERIALS	46
ELECTRONIC & ELECTRICAL EQUIPMENT	14
FOOD PRODUCERS	29
HEALTH CARE EQUIPMENT & SERVICES	5
HOUSEHOLD GOODS & HOME CONSTRUCTION	14
INDUSTRIAL ENGINEERING	19
INDUSTRIAL METALS & MINING	12
INDUSTRIAL TRANSPORTATION	12
OIL AND GAS PRODUCERS	2
OIL EQUIPMENT & SERVICES	7
PERSONAL GOODS	13
MEDIA	4
LEISURE GOODS	3
PHARMACEUTICALS & BIOTECHNOLOGY	5
SUPPORT SERVICES	12
SOFTWARE & COMPUTER SERVICES	21
TECHNOLOGY HARDWARE & EQUIPMENT	10
FORESTRY & PAPER	5
GENERAL INDUSTRIALS	12
TOTAL	**265**

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
CASH	265	.00252	.87610	.1413155	.11395909	.013
FIRMSIZE	265	2.51286	9.57873	5.5570336	1.20974220	1.463
LEVERAGE	265	.00000	.57025	.1962349	.14403768	.021
ROA	265	-.35198	.83211	.0315238	.08053735	.006
DIVIDEND	265	-1.26371E1	5.63076	.2574855	.96520805	.932
GROWTH	265	-.15797	7.28124	1.0981970	.88123949	.777
NWC	265	-.46088	.56662	.1035692	.15693068	.025
CAPEX	265	.00078	.18537	.0407711	.02959944	.001
Valid N (listwise)	265					

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Correlations

Correlations

		CASH	FIRMSIZE	LEVERAGE	ROA	DIVIDEND	GROWTH	NWC	CAPEX
Pearson Correlation	CASH	1.000	-.120	-.510	.336	.073	.394	.139	-.080
	FIRMSIZE	-.120	1.000	.362	.231	.024	.096	-.302	.238
	LEVERAGE	-.510	.362	1.000	-.217	-.079	-.116	-.534	.137
	ROA	.336	.231	-.217	1.000	.101	.338	.066	.176
	DIVIDEND	.073	.024	-.079	.101	1.000	.113	.082	-.017
	GROWTH	.394	.096	-.116	.338	.113	1.000	-.108	.187
	NWC	.139	-.302	-.534	.066	.082	-.108	1.000	-.177
	CAPEX	-.080	.238	.137	.176	-.017	.187	-.177	1.000
Sig. (1-tailed)	CASH	.	.026	.000	.000	.118	.000	.012	.097
	FIRMSIZE	.026	.	.000	.000	.351	.060	.000	.000
	LEVERAGE	.000	.000	.	.000	.099	.030	.000	.013
	ROA	.000	.000	.000	.	.051	.000	.143	.002
	DIVIDEND	.118	.351	.099	.051	.	.033	.092	.389
	GROWTH	.000	.060	.030	.000	.033	.	.040	.001
	NWC	.012	.000	.000	.143	.092	.040	.	.002
	CAPEX	.097	.000	.013	.002	.389	.001	.002	.
N	CASH	265	265	265	265	265	265	265	265
	FIRMSIZE	265	265	265	265	265	265	265	265
	LEVERAGE	265	265	265	265	265	265	265	265
	ROA	265	265	265	265	265	265	265	265
	DIVIDEND	265	265	265	265	265	265	265	265
	GROWTH	265	265	265	265	265	265	265	265
	NWC	265	265	265	265	265	265	265	265
	CAPEX	265	265	265	265	265	265	265	265

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Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.642[a]	.412	.396	.08857147	.412	25.719	7	257	.000	1.536

a. Predictors: (Constant), CAPEX, DIVIDEND, LEVERAGE, GROWTH, ROA, FIRMSIZE, NWC

b. Dependent Variable: CASH

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	.207	.030		6.857	.000					
FIRMSIZE	-.002	.005	-.021	-.381	.704	-.120	-.024	-.018	.742	1.347
LEVERAGE	-.384	.049	-.485	-7.811	.000	-.510	-.438	-.374	.594	1.683
ROA	.236	.078	.167	3.030	.003	.336	.186	.145	.758	1.320
DIVIDEND	.000	.006	-.006	-.132	.895	.073	-.008	-.006	.972	1.028
GROWTH	.038	.007	.292	5.550	.000	.394	.327	.265	.828	1.207
NWC	-.092	.042	-.126	-2.156	.032	.139	-.133	-.103	.669	1.495
CAPEX	-.443	.195	-.115	-2.273	.024	-.080	-.140	-.109	.893	1.120

a. Dependent Variable: CASH