THE EMPIRICAL STUDY ON MARKET LIQUIDITY AND DETERMINANTS OF SUKUK IN MALAYSIA

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THE EMPIRICAL STUDY ON MARKET LIQUIDITY AND DETERMINANTS OF SUKUK IN MALAYSIA

By

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ABSTRACT

The purpose of this study is to examine the relationship between market liquidity and the determinants of sukuk in Malaysia's perspective. In this paper, sukuk's determinants are represented by variables; maturity, coupon rate, age, credit rating, number of trades and amount of trading. A sample of 933 issued sukuk in Malaysia is collected from secondary data of Bond Pricing of Agency Malaysia (BPAM) and Bond Info hub of Bank Negara Malaysia from period of 2005 to 2015. The sample of issued sukuk is based on Malaysian Ringgit denominated currency and these sukuk are actively traded in the secondary market of Malaysia. The sample is comprises five (5) sectors inclusive government, quasi-government, finance, Asset Backed Securities (ABS) and corporates. There are two (2) measurements of market liquidity used in this study which are the bid-ask spread and the amihud (2002) measure. The empirical results of this study show that age and maturity have positive relationship with sukuk market liquidity and they are significantly correlated. From the analysis, researcher concludes that investors prefer to hold their securities until meet its maturity rather than traded it in the secondary market as it makes the market to be illiquid.

Keywords : Sukuk, market liquidity, Malaysian Islamic capital market, types of sukuk structures

ABSTRAK

Tujuan kajian ini adalah untuk mengkaji perkaitan di antara kecairan pasaran dengan penentu-penentu sukuk dari perspektif Malaysia. Untuk kajian ini, penentu-penentu sukuk diwakili oleh beberapa pembolehubah; kematangan, kadar kupon, tempoh hayat, penarafan kredit, bilangan dagangan serta jumlah dagangan. Sampel adalah terdiri daripada 933 terbitan sukuk di Malaysia yang diperolehi daripada data sekunder melalui Agensi Harga Bon Malaysia (BPAM) serta hub maklumat tentang bon menerusi Bank Negara Malaysia dari tempoh 2005 hingga 2015. Sampel terbitan sukuk yang berkenaan adalah berdasarkan matawang berdenominasikan Ringgit Malaysia dan sukuk-sukuk ini diniagakan secara aktif dalam pasaran kedua di Malaysia. Sampel tersebut terdiri daripada lima (5) sektor termasuklah sektor kerajaan, sektor kuasi-kerajaan, sektor kewangan, Sekuriti Bersandarkan Aset (ABS) dan korporat. Terdapat dua jenis pengukuran yang digunakan untuk mengukur pasaran kecairan bagi kajian ini iaitu tawaran-perminataan spread dan pengukuran amihud (2002). Hasil keputusan kajian empirikal ini menunjukkan bahawa tempoh hayat dan kematangan mempunyai perkaitan yang positif dengan kecairan pasaran sukuk serta dikorelasikan secara signifikan. Dari analisis yang dijalankan, penyelidik mendapati bahawa para pelabur lebih cenderung memegang sekuriti mereka sehingga mencapai tempoh kematangan daripada meniagakannya ke dalam pasaran sekunder yang membuatkan pasaran tak cair.

Katakunci : Sukuk, kecairan pasaran, pasaran modal Islamik Malaysia, jenis struktur sukuk

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INTRODUCTION

1.1 Background of Study

Many market participants in an advanced and emerging market economies have shown their worried on market liquidity especially after the global financial crisis. This can be well understood because market liquidity affects the price and frequency of trading. When the market is liquid, the frequency of trading will increase as the result of active market. This market liquidity plays an important role for an effective market functioning. It facilitates in the effectiveness of monetary policy and financial stability. It enables efficient allocation of economic resources through productive allocation of capital and risk. In general, liquidity is when the asset can be easily converted into cash.

A market is known as liquid when the security or an asset can easily be bought or sold in a market without affecting the asset's price. In general, liquidity is the market's ability to perform a large amount of trades without having drastic price movements. For an asset's market liquidity (or asset's liquidity), it reflects the ability of an asset to be sold quickly without having to reduce its price level at a significant degree. In a liquid market, the trade-off is mild where the buyers and sellers are always ready and willing to perform the operations. Thus, selling quickly in liquid market will not affect the price as much as in the illiquid market.

Since investors deal with investment, they are concern with liquidity. Investors are more attracted to markets with higher levels of liquidity. The existence of liquidity in a market would increase the confidence level of investors that makes the market more resilient and efficient. Excessive liquidity would also prompt an issue especially in a highly leveraged economy that is exposed to economic bubbles. This is among the reasons why regulators are emphasizing to improve the overall market liquidity. Why? It can be understood as the more liquid a market, the more active the market it would be and outstanding transactions can be traded and negotiated well. This will lead for better chances of a favorable match. In other words, liquidity is important for the markets to grow and market to be developed (IOSCO, 2007).Therefore, it is important for the policy makers to ensure the right strategies are chosen to prevent disruptions in market liquidity.

Due to its importance, players and related authorities in either bond market or the sukuk market are getting more concerned with market liquidity especially when liquidity appears to decline. European bond market faced a reduction in the corporate bond trading volumes by more than 45 percent in years from 2010 to 2015. Hence, large trades are getting more difficult to execute without price movement, while market participants tend to break up larger trades into smaller ones. In US, the dealer inventories of corporate bond market show a drop for more than 60 percent from 2008 to 2015. This has led a decrease in the turnover ratios of corporate bond markets (PwC, 2015).

Apparently, sukuk market has shown a different trend from the conventional bond market. According to Leung; the Associate Director of Fixed Income Indices that liquidity of sukuk market dictates a slight increase in 2013 (Leung, 2014). It is interesting to know whether market liquidity of sukuk specifically in Malaysian market will have similar trend as in the global market. Concern for liquidity is rising due to liquidity effects asset return of the bond market and sukuk market. These markets do normally involve with large projects that require huge capital outlay of fund-raising. To investors, the faster the investment returns can be received, the better it will be. So when the market is liquid, it helps to absorb on the price movement by a sudden change in investors' risk appetite. This will control the potential of negative effects of the financial system and indirectly to the economy.

This study examines the pattern of liquidity in the Malaysian sukuk market for several reasons. First, Malaysia is an emerging country that is small but has a diversified market. It receives strong support from government that enables the development of sukuk market with better facilities. The capitalization of ringgit Malaysia in bond market is more favorable compares to other emerging bond markets. Second, there are two type of bond markets in Malaysia that is Islamic bond market (sukuk) and conventional bond market. This market differences may have impact on liquidity. The potential increase of investor due to the rise of demand for Islamic products and thereby boost trading activity for sukuk market. Third, the microstructure of Malaysian bond market that has changes over the past decade. For instance, Bank Negara Malaysia (BNM) has introduced post-trade disclosure in 1987, the Central Bank of Malaysia Act 2009 and liberalization of short-selling and reverse repo

operations in 2015. Such changes would therefore have influences on market liquidity.

Sukuk as an innovative of Islamic capital market's product is becoming increasingly popular and important. The unique feature of sukuk is designed to comply with Shariah principles. The most common structure is that investors receive dividends instead of interest from the sale and buyback transaction. In essence of having more market players to participate in the market, Duffe et al.(2005) dictate that a higher turnover agent will enhance liquidity due the transaction cost involves is lower. Thus, it is interesting to know whether market liquidity against sukuk determinants will have similar result as the bonds or not. This is because sukuk is not based on debt capital but it is free from the forbidden interest or the *riba*. There is a variety of liquidity measurements proposed by numerous literatures but for this research, only two liquidity measures are being focused which are the bid-ask spreads and the amihud (2002) measure.

The intention of this paper is to distinguish any relationship exists between market liquidity and the determinants of sukuk in Malaysia. It should be noted that investigations of the previous literatures on this relationships are very limited. There are numerous studies on market liquidity which mainly focus on bond market, however only few studies in sukuk market, despite of sukuk's characteristic that is free from speculation. Hence, this paper will explore the determinants of sukuk and the market liquidity of sukuk market using empirical analysis on secondary data collected from the Bond Pricing Agency Malaysia (BPAM) database and Bond Info

Hub of Bank Negara Malaysia to analyze various characteristics of sukuk, such as its maturity, age, coupon rate and credit rating on whether the determinants led to higher or lower liquidity.

1.2 Introduction to Malaysian Capital Market

The capital market in Malaysia is expanding in terms of its market size and range of products. Malaysia is among the top five markets in Asia and ranked as the top market in ASEAN for fundraising in the secondary market. The capital market in Malaysia has played an important role in raising long-term funds for government, banks and corporations and at the same time to provide a platform for trading of securities. This capital market is crucial in boosting the economic growth by attracting and channeling the funds into investments. It manages on the allocation of financial resources from the surplus areas to the deficit and productive areas in order to improve the productivity and promotes economic growth in the country. In such a way, balanced economic growth is achieved when the resources are properly allocated.

The diversity of Malaysian economy from commodities to services has assisted in the finance and economy stability. The country practices for an open market where global investors are freely buying, selling and hedging the ringgit and ringgit-denominated securities. On top of that, Malaysia has a responsive regulatory framework where it provides sufficient protection for all participants without neglecting the aspect of assuring the continuation of policies, rules and regulations.

Currently, the Securities Commission Malaysia (SC) is the main statutory body that functions in regulating and developing the capital markets in Malaysia. Securities Commission is given the responsibility to supervise and monitor activities of market institutions under the governance of an act known as the Capital Markets and Services Act 2007. The Malaysian capital market has two different capital markets which are the equity market and the bond market. The equity market deals with stocks and shares, but not for the bond market because it involves with public and private debt securities, basically having maturities more than one year (BNM, 1999).

Capital market comprises primary market and secondary market in which both markets are important. In primary markets, new issues of bonds or securities are sold to investors. It directly effects on the supply of funds for investments. For example, when a government needs funds, they will issue securities to the public via a mechanism known as underwriting. Meanwhile, under secondary markets, the existing securities are being traded through buy and sell transactions among investors and traders. El Tiby (2011) explains that securities under secondary market on traded based on an exchange, over-the-counter, or elsewhere. In matters relating to secondary markets, Syed Ali (2005) concludes that the secondary markets are platforms for early exit opportunity, assets pricing and provides liquidity the associated risks on continuous basis according to the relevant of new information received (Syed Ali, 2005). Therefore, liquidity in secondary markets is crucial for the success of public offerings as well as it reduces the cost and risk for underwriters and market makers because it involves with existing securities. Market participants in

secondary market are normally comprise of institutional investors, governments, traders and individual investors where the market is dominated by banks and financial institutions (Jamal, 2007).

Malaysia was known as the largest sukuk issuer in the world. Total sukuk issuance by Malaysia in 2014 was US$77.9 billion or 66% of the total global sukuk where 58% of the total global outstanding sukuk was from Malaysia, with a value of US$172.8 billion. As a thriving capital market, the overall of Malaysia's capital market size has increased by 2.1% from RM2.76 trillion in 2014 to RM2.82 trillion or USD705 billion in 2015 (Refer to figure 1.1). The equity market has shown an increase by 2.6% from RM1.65 trillion in 2014 to RM1.7 trillion in 2015. Overall, both sukuk and bond markets have increased by 1.4% to RM1.12 trillion in 2015 (CM2, 2016).

Figure 1.1
Malaysian Capital Market in RM trillion
Source: Securities Commission Annual Report 2015

The volatility of global environment seems not giving much impact to Malaysian capital market. As illustrated by figure 1.2, the overall funds raised in 2015 has increased but at a slower pace of 9.5 percent to RM109.6 billion from RM100.1 billion in 2014. Out of RM109.6 billion amount of funds raised in Malaysian capital market, 57 percent is from the private sector, whereas 43 percent from public sector (Figure 1.2). Thus, it is a blend of both sectors in the market. Private sector contributes a higher proportion as compared to the public sector of the total in 2015 with an increase of 25.1 percent amounting RM62.8 billion.

This explains that investors or the bondholders are able to choose whether to invest in government bonds or private debt securities depending on the bondholder's risk appetite, objective and risk-return. The greater proportion from the private sector was to fund the development projects such as development of roads, highway, constructions and many more.

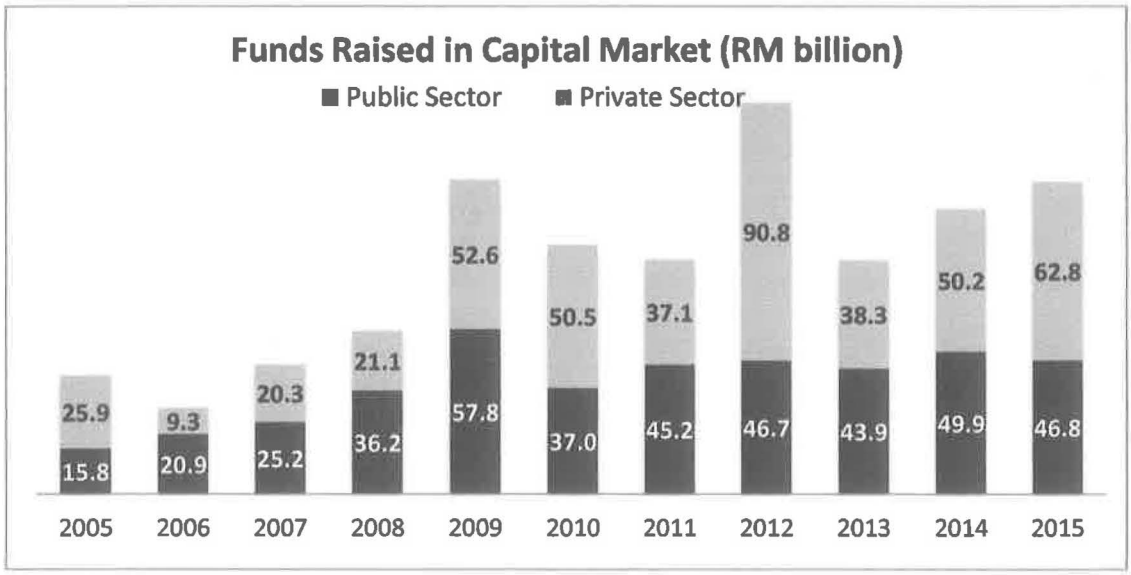

Figure 1.2
Total Funds Raised in Capital Market of Malaysia
Source: Bank Negara Malaysia

During the earlier of development of sukuk in Malaysia, the bond market was made up mainly of the Malaysian Government Securities (MGS). They were issued to finance on government investments. Most public organizations such as the provident funds, financial institutions and insurance firms invested in MGS due to the low cost and hold the securities till its maturity. During the earlier period, there was no trading in the secondary market that signified a low market growth (Ariff et al., 2013). Later, regulators began to realize the importance of having active and effective secondary bond markets which led to the introduction of few regulatory and operational reforms in 1984.

Not long after that, a "Principal Dealer System" or PDS was introduced on January 1, 1986, while the market makers or the principal dealers were appointed for certain classes of debt securities. Apparently, the growth rate of new issuance MGS was quite slow in 1990s due to the budget surplus. When budget surplus incurred, the tendency of firms to seek financing will reduce accordingly. Later, from 1996 to the post-financial crisis period, the trading system of the bond market was modernized and improved. Two computerized systems were introduced namely the Fully Automated System for Tendering or "FAST" and the Bond Information and Dissemination System or "BIDS" which have improved on the liquidity.

Malaysian capital market includes the equity market and the bond market, as been mentioned earlier. As a developing country, Malaysia has developed the bond market

significantly. It has been recognized as one of the fastest growing bond markets in Asia. Such an achievement is due to the tremendous support by the Malaysian government (Securities Commission, 2009). The bond market comprises of two different bonds which are the conventional bonds and the Islamic bonds. As for the conventional bond, it bears floating coupon rate which is determined according to the current market rate, length of the term and creditworthiness of the issuer. The rate changes overtime which caused a change in the bond's market price after it was first issued (Wilson, 2004).

Conventional bonds are certificates of debt which owe by the issuer. In other words, bonds are loan and they represent debt capital. Thus, loans are associated with pre-determined returns. When firms need more funds or seek for diversified lenders, they tap into the market and issue bonds to investors. Investors (bondholders) are lenders to the issuer and they lend the funds for specific purposes to issuer. Hence, regardless the issuing firm (issuer) is generating profit or not, bondholders will still get the contractual interest (Mokhtar et al., 2008). Bear in mind that this payment of fixed return on a loan is prohibited by Shariah principles because it constitutes interest or *riba* that is forbidden income to the bondholder.

Unlike conventional bonds, sukuk are based on an exchange of approved assets that makes investors to receive profits from the transactions in accordance to the Shariah principles (Ching et al., 2009). Islamic bonds are instruments that represent proportionate and undivided ownership right over the asset. They are based on the real

underlying asset. In most circumstances, Islamic bonds are frequently referred to as "Sukuk". But what is important, both the conventional bonds and sukuk are capital market instruments which act as key players to raise funds.

Figure 1.3 illustrates the new issues of corporate bonds and Sukuk distributed in seven sectors in Malaysia from 2000 to 2015. The bonds and Sukuk are being traded in almost all sectors in Malaysia except for "agro" which is associated to agriculture, forestry and fishing. Finance institutions are the most active private sector of new bonds and Sukuk issuers throughout the period followed by utilities sector and construction firms. Why? The reason behind it is because finance sector comprises finance firms, real estate, business services institutions and insurance companies which are the key players in the bond market. For the purpose of analysis, miscellaneous sector was named to associate with three different sectors which were Transportation, Storage and Communications, Mining and Quarrying and Wholesale, Retailing, Hotel and Restaurants.

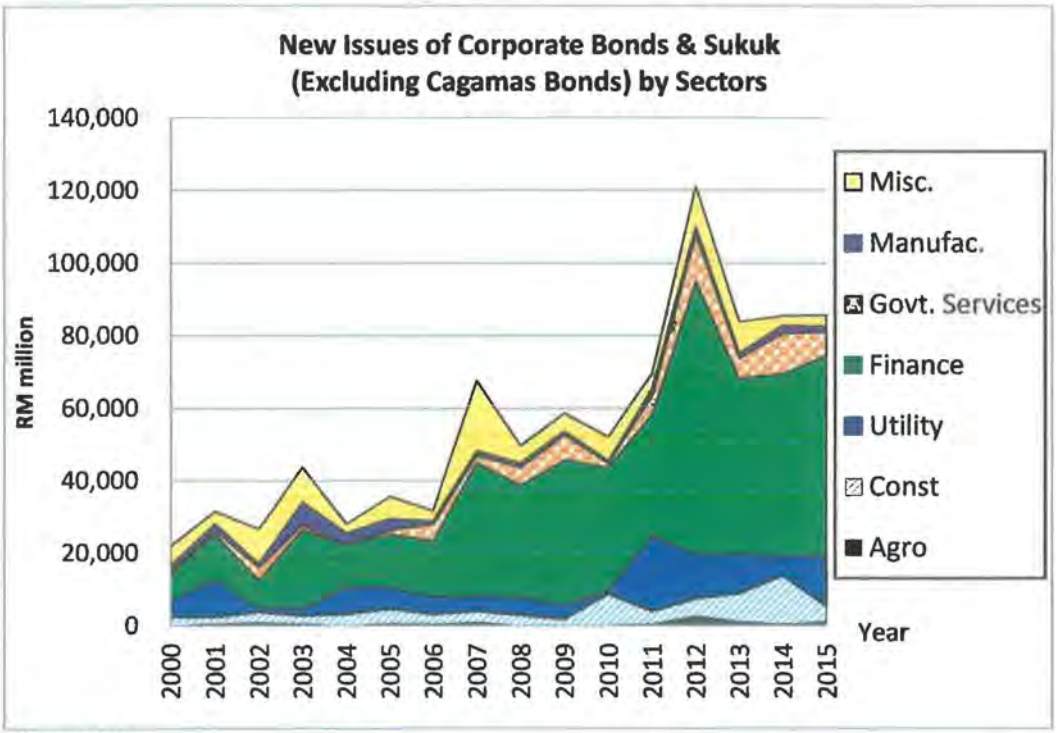

Figure 1.3
New Issues of Corporate bonds and Sukuk by Sectors exluding the Cagamas bonds
Source : Bank Negara Malaysia

Figure 1.4 illustrates the new issues of corporate bonds and sukuk in terms of percentage. As at end-2015, the new issuance of corporate bonds and sukuk dominated by the finance institutions accounted for almost 65 percent. Then, it was followed by Utility sector that constituted 45 percent from the total capital market in Malaysia. This is not surprising as utility sector seeks the new issuance of corporate bonds and Sukuk to finance the new plant or development projects.

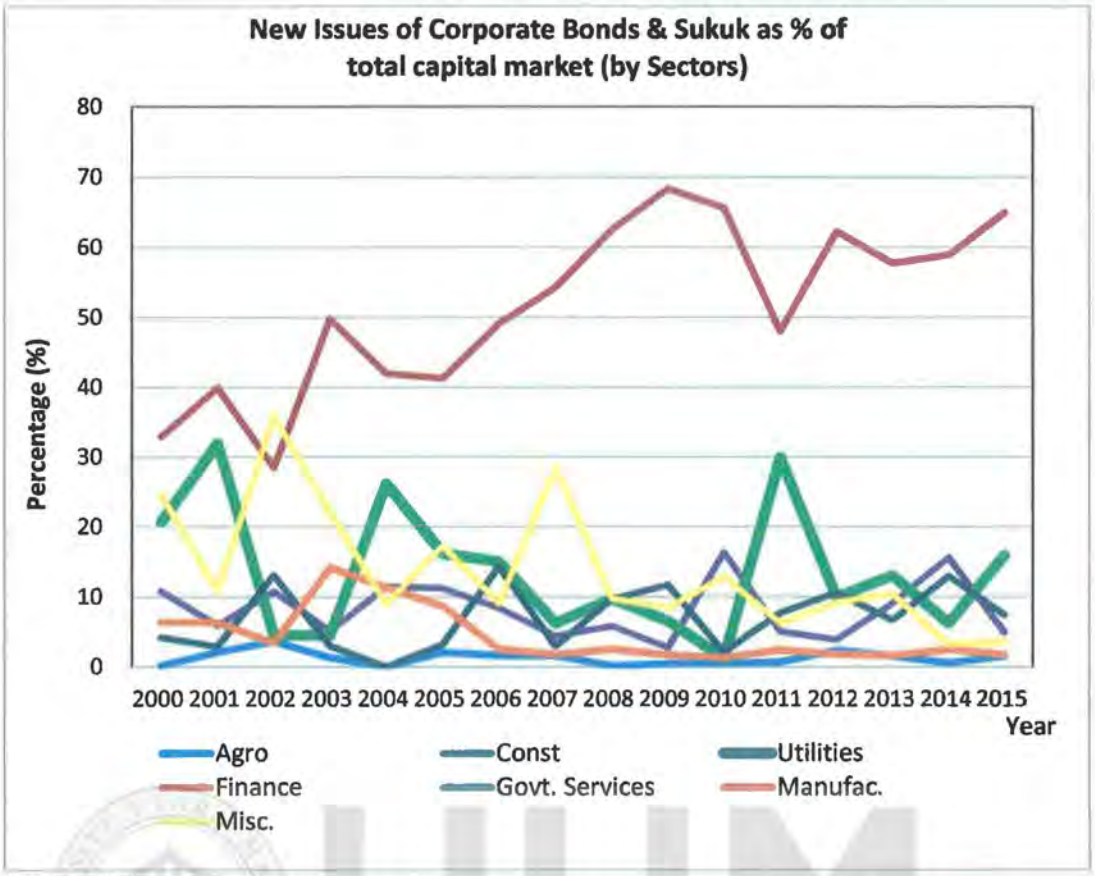

Figure 1.4
New Issues of Corporate Bonds & Sukuk as % of Total Capital Market (By Sectors)
Source : Bank Negara Malaysia

Bonds and sukuk in Malaysia that are Ringgit denominated currency are classified by type of issuer. As per the Bond Pricing Agency of Malaysia (BPAM), the issuance, redeemed, suspended and pending of bonds and sukuk are categorized under six sectors namely the government, quasi-government, financial institutions, corporates, Bank Negara Malaysia and Asset Backed Securities (ABS) (BPAM, 2017).

1.3 The introduction of Malaysian Islamic capital market

The Malaysian Islamic capital market is unique because its capacity to compete with conventional capital market concurrently. Islamic capital market can be referred to the market in which transactions or activities are carried out in accordance to the Shariah principles. These activities are free from the non-Islamic elements which are prohibited by the Shariah Law such *riba* (usury), *maisir* (gambling) and *gharar* (ambiguity) (Security Commission, 2009). Briefly, Islamic capital market of Malaysia was came into existence from the liquidity problem faced by Islamic finance industry due to the surplus of funds and also due to the Asian Financial Crisis 1997(IOSCO, 2004). Now, Investors have an alternative of investment philosophy provided by Islamic capital market that has been accepted globally.

The Islamic capital market of Malaysia has developed rapidly and constituted more than half of the total size of the Malaysian capital market. As at end of 2014, the total size of Islamic capital market in Malaysia reached at RM1.5 trillion or 57 percent of the country's total market capitalization. Figure 1.5 below provides an overview of the growth in Malaysian capital market. From the period of 2005 to 2015, the size was more than tripled with a compounded annual growth rate of 11.7 percent. By the year-end 2015, the market reached RM1.69 trillion or about 60 percent from the overall Malaysia capital market (Figure 1.5).

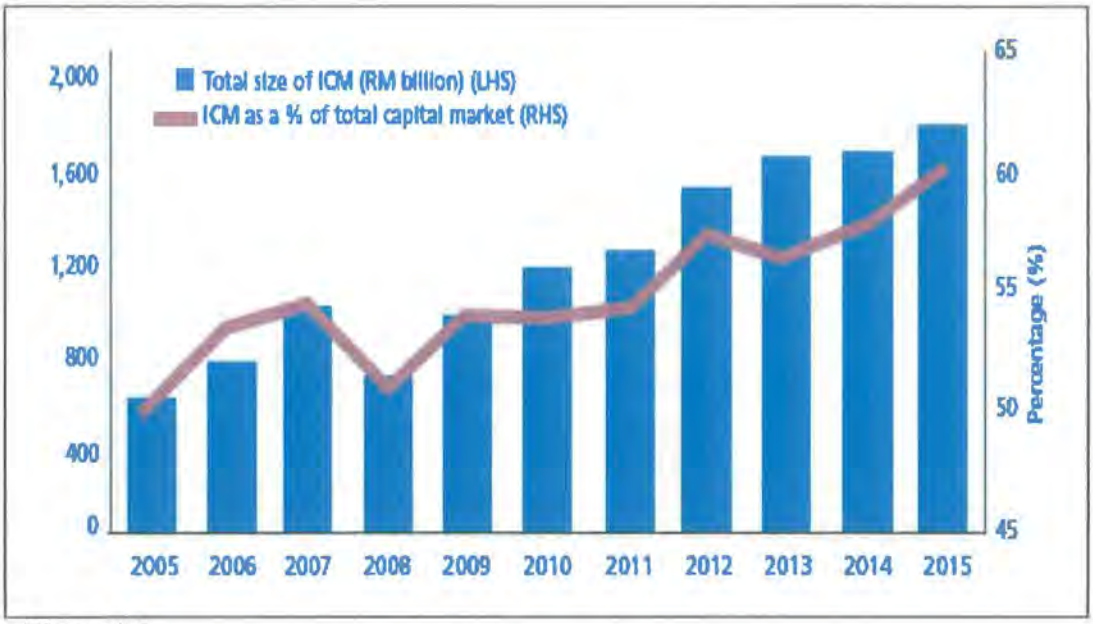

Figure 1.5
The Growth of Malaysian Islamic Capital Market
Source: Securities Commission Bulletin Jan-June 2016

The emergence of Islamic capital market has played a very important role in mobilizing funds and directing the assets into productive economic activities, thus accelerates the economic growth of the country. It ensures the financial stability from proper allocation of both financial and economic resources via the Islamic Financial System for a better of risk diversification.

Ching *et al* (2009) in their study, suggest that Islamic capital market consists of three main elements namely the Shari'ah-compliant securities, Islamic investment certificates (known as sukuk) and Islamic funds. However, Securities Commission (2009) dictated that the Islamic capital market's products can be classified under are five categories which are the Shariah-compliant securities, Shariah-based Unit Trust Funds, Islamic Exchanged Traded Funds (ETF), Islamic Real Estate Investment

Trusts (REITs) and Sukuk. Figure 1.6 below summarizes the Islamic products as offered by Malaysian Islamic capital market.

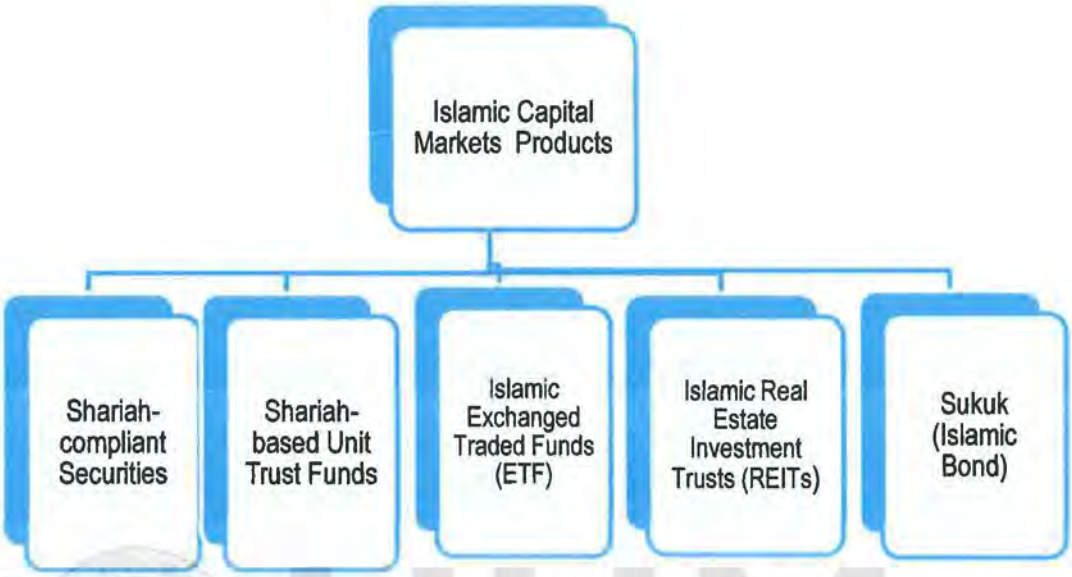

Figure 1.6
Malaysian Islamic Capital Market Products
Source: Securities Commission website 2010

1.3.1 Shariah Compliant Securities

The Shariah compliant securities include those ordinary shares, warrants and transferable subscription rights issued by companies which comply with Islamic criteria promulgated by the Securities Commission. This security is the most popular product which being issued by the listed Shariah approved companies of Bursa Malaysia.

1.3.2 Shariah Based Unit Trust Fund

The Shariah based unit trust fund is a type of collective investment funds which being offered to investors. The funds are managed by professional managers based on Shariah principles. Hence, investors of this unit trust can invest their funds into a diversified portfolio of Shariah compliant securities. There are three main categories namely; Balance fund, Sukuk fund and Equity fund. The most popular product of the Shariah based unit trust fund is the Equity fund.

1.3.3 Islamic Exchanged Traded Funds (ETF)

Under this category, it tracks indices of Shariah compliant listed equities. This Exchanged Traded Funds allows funds to be diversified and liquidated with low minimum investment.

1.3.4 Islamic Real Estate Investment Trusts (REITs)

This type of investment is a collective of investment funds that pool money from investors to be utilized for buying, managing and selling the real estate.

1.3.5 Sukuk (Islamic Bond)

Sukuk is a financial certificate that represents value of an asset. The Malaysian Sukuk is issued either in Malaysian Ringgit or other foreign currencies which such variety enables investors to choose the best investments opportunities. Sukuk is the most

preferable products of the Islamic capital market products. Each sukuk-holder holds an undivided beneficial ownership in the sukuk assets. As a result, proceeds from the realization of sukuk assets and revenues can be shared by sukuk-holders.

1.4 An overview of Sukuk

Sukuk have become important Islamic financial instruments which have been used by both the government and corporate sector for alternative financing in the long-term project financing. The growth of sukuk is so impressive. Its attractiveness has made investors from all around the world to invest via buying the sukuk. Sukuk grant investor with asset's ownership, along with the commensurate cash flows and risk. As reported by IIFM in the Sukuk Report (2016), the global outstanding volume of sukuk as at end of October 2015 rose to more than USD280 billion compared to USD20 billion ten years ago. Even though sukuk is an innovative product of Islamic capital market, it adheres to the Shari'ah Law that prohibits the involvement of any unlawful income or *riba*. Not only Muslims are entitled to buy and issue sukuk, but the non-Muslims are applicable to do so. Sukuk as a certificate of investment provides investors with ownership claims. Thus, sukuk holders are entitled for a stream of incomes until it reached its maturity.

Malaysia continues to be a leader in sukuk market and credits should be given to the government of Malaysia and its regulators on the efforts and incentives which have made the county turn into an Islamic financial center. Figure 1.7 shows Malaysia as the world largest of sukuk issuer which represents 67.35% from the total of global

sukuk issuances with the value of USD767.1 billion by end of 2015 (IIFM, 2006). Then, second top runner-up was the United Arab Emirates (UAE) with 8.09%. Followed by the Saudi Arabia represents 7.75% from the total global issued, Indonesia with 3.7%, Qatar with 3.04%, Bahrain with 2.66%, Turkey with 1.46% and Pakistan with 1.25% respectively.

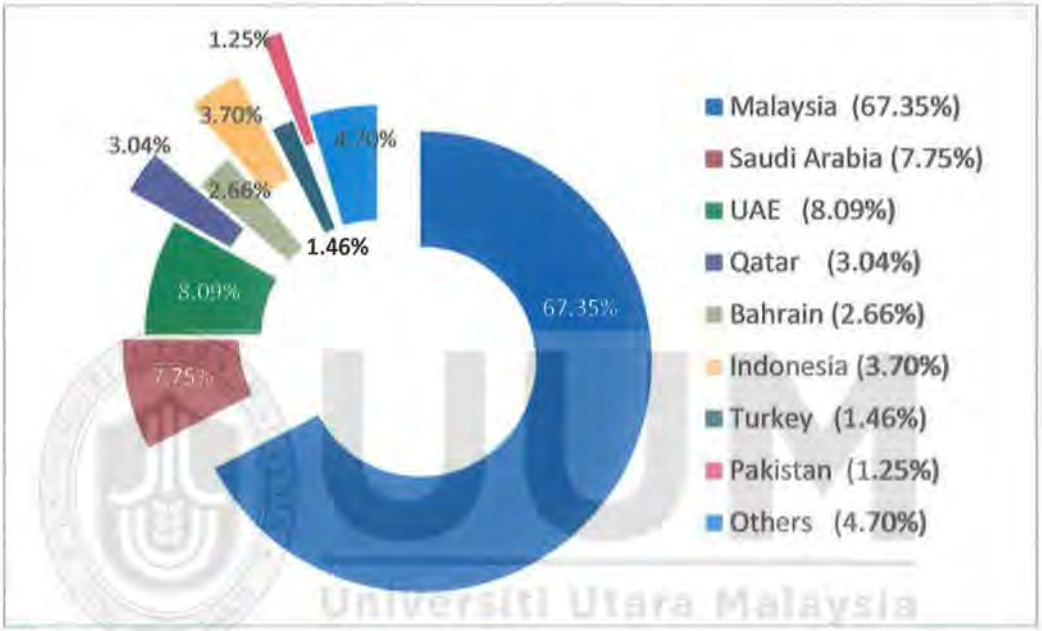

Figure 1.7
Global Sukuk Issuances Country Wise Breakdown (Jan 2001 – Dec 2015, USD millions)
Source: IIFM Sukuk database

"Sukuk" is a plural form of Arabic word; *sakk* which means "certificates". It can be defined as the "certificates of equal values that represent undivided shares in ownership of tangible assets, usufruct and services or in the assets ownership for particular projects or a special investment activity" (AAOIFI Standard 17, 2008). These certificates represent obligations of the issuer and ownership stakes in an asset

or project. Sukuk are issued to finance on the trade or the production of tangible assets which can only be issued for specific Shari'ah compliant purpose. (El Tiby, 2011). Sukuk and conventional bond are similar because both do have coupon rates with fixed date of maturity and they are traded on the yield-price relationship. Despite these similar features, there are several differences between bonds and sukuk which will be explained further.

Sukuk represents a proportionate and undivided ownership of the asset in which the funds being invested, whereas bonds represent debt obligations of the issuer. In other words, each of the sukuk-holders of the underlying assets held an undivided ownership. Therefore, revenues and the proceeds from the realization of the sukuk assets can be shared accordingly by sukuk-holders.

Sukuk can be either debt obligations or equity characteristics which depend on the underlying of the Islamic contract. It is not a loan due to the prohibition of *riba* on the contractual payment over the loan principle. Consequently, sukuk have to utilize the non-loan business forms. Unlike bonds where its underlying relationship between the issuer and bondholders is based on a loan, but as for sukuk, the issuer-sukuk holder relationship can occur in few scenarios such as a sale transaction, namely the *murabahah, salam*, or *istisna';* a lease transaction known as *ijarah*, and the equity and agency relationships such as *musharakah, mudharabah* and *wakalah* (Mokhtar *et al.*, 2008).

Notwithstanding that sukuk can only be issued for specific Shariah-compliant purposes where the underlying assets should be complied with Shariah principles. Since sukuk are based on the real underlying assets, the value of sukuk may increase as well as the value of the assets. For such reason, income of the real underlying assets should be related to the purpose of the raised funding. These positive features of sukuk have led for a greater global acceptance.

Figure 1.8 below shows a comparison between global sukuk issuance and Malaysian sukuk issuance from 2005 to end-October 2015. It is appeared that Malaysia has sustained its dominance over global sukuk issuance by representing 51% of global issuance or valued at USD29.4 billion as at end October, 2015 (IIFM, 2016). The graph illustrates that from year 2012 to 2015, the issuance of sukuk falls drastically in 2015. This downward trend was due to the global economic slowdown as the major hit problem on tumbling oil prices and this had made an impact on the currencies.

Figure 1.8
Sukuk Issuances from 2005 to end Oct 2015 (Malaysia versus Global)
Source: IIFM

There are many achievements made by the Malaysia Islamic capital market and the key milestone was initially taken place when the Securities Commission imposed a regulatory intervention. Securities Commission (SC) as a statutory body is responsible to regulate and develop capital market of Malaysia systematically. Moreover, there are numerous functions played by Securities Commission such as responsible in regulating matters related to securities and future contracts, approving authority for corporates bond issues and encouraging and promoting securities and future market development in Malaysia. As a result, sukuk have been introduced which assimilates the concept of debentures. Table 1.1 below explains briefly on major issuances of sukuk in Malaysia from year 1990 to 2007.

Table 1.1

Summarize of the Sukuk issuances in Malaysia

Issuer	Sum raised	Year	Transaction highlights	Tenure (years)
Shell MDS	RM125m (US$33m)	1990	World's first ringgit sukuk issue by foreign owned, non-Islamic company	-
Kumpulan Guthrie Bhd	US$150m	2001	World's first global corporate sukuk	8
Government of Malaysia	US$600m	2002	World's first global sovereign sukuk	5
International Finance Corporation (The World Bank)	RM500m (US$132m)	2004	First ringgit sukuk issue by a supranational agency	3
Cagamas MBS Bhd	RM2.05b (US$540m)	2005	World's first Islamic residential mortgage-backed security	13
Khazanah Nasional (Rafflesia Capital Ltd)	US$750m	2006	World's first exchangeable sukuk	5
Nucleus Avenue (Malakoff Corporation)	RM8b (US$2.5b)	2007	World's first hybrid sukuk	50
Maybank Berhad	US$300m	2007	World's first international subordinated sukuk	10
Binariang GSM	RM15.35b (US$4.8b)	2007	The world largest sukuk issue	20

Source : International Islamic Financial Market (IIFM) Sukuk Report 2010

From the year 1990, a foreign owned and non-Islamic company known as Shell MDS has issued the first sukuk in the world. Later, in the year 2001, Kumpulan Guthrie Berhad has become the world's first global of corporate sukuk issuer with eight years tenure. In the year 2002, the first global sovereign sukuk worth of US$600 million has been issued by the Malaysian Government. Further in 2007, there are a number of significance events such as the issuance of the largest exchangeable sukuk in the world and the largest of Malaysia's equity-linked by Khazanah, the world's first hybrid sukuk by Malakoff Corporation Bhd, the world's first Islamic US dollar-denominated subordinated sukuk by Malayan Banking Berhad and the world largest sukuk issued by Binariang GSM (as reported to be one of Asia ex-Japan's largest corporate bond issues).

The primary condition for the issuance of sukuk occurs when the government or corporate body or financial institution or any entity requires mobilization of financial resources. According to Nathif and Thomas (2009), sukuk has four characteristics namely; it has undivided ownership of the underlying assets or particular project with the purpose of establishing or financing a business, it does not consist of any guarantee of sukuk capital, it does not compromise with any guarantee of fixed profit or profit based on a percentage of the capital and it does not include any promise of buying back sukuk at nominal price. In the aspect of promise, sukuk may involve a promise to buy back at a market price, or a mutually agreed price at maturity. Thus, from the above discussions it can be noted that sukuk benefits to the economy of a country, firms as well as to investors.

Mohammed (2014) in his study has emphasized that sukuk works in accordance to Shari'ah principles which is free from the unlawful income or *riba.* By avoiding riba, investors are helping the economies to develop by creating and producing rather than by consuming or manipulating others. At the same time, sukuk improves the living standard in Islamic society and the economic development in general. Apparently, sukuk is the best way of raising fund for large projects because sukuk is not an interest-based debt that brings fairness and justice in the redistribution of wealth.

Sukuk are attractive and innovative product of Islamic capital market because the instruments can be negotiated and traded actively in the secondary market. Moreover, sukuk are the ideal investments that can be liquidated easily and this has attracted investors to participate in the secondary market. High liquidity means investors may obtain their return on investments more quickly. This can make us understand the reason of why more investors having interest in sukuk instrument.

1.5 Problem Statement

Sukuk are the important source of financing for companies and public sector. Through sukuk issuance, it enables large projects to be financed without having relies on bank loans. Malaysian sukuk market has become the world largest of sukuk issuances, despites of being the late bloomer when comparing with the domestic banking and equity market. Sukuk market received a wide range of participations from international investors in terms of funds raise and investment via issuance of sukuk

made outside of Malaysia. Despite the volatility of global liquidity caused by the increase in US Fed interest rate and the weak commodity prices in China, the capital market of Malaysia remains resilient (Securities Commission Malaysia, 2015).

The development of the sukuk market has transformed the economic to be more diversified where the market players are either the government sector or the private sector. As a key player in the sukuk market, there are many factors contributing to the rise in Malaysian sukuk issuances including of having strong support and incentives by the government of Malaysia, the variety of sukuk structures and schemes, and the increase awareness on sukuk facilities by the firm decision makers (Shahida and Saharah, 2013).

The Malaysian sukuk market started to develop in 1990 with issuance size of RM125 million by Shell MDS Sdn.Bhd. Currently, the market is rapidly growing and getting more sophisticated. The market not only a leader in global sukuk market but is also active in the introduction of innovative sukuk structures. As the dominant player in the sukuk market, there are many market participants that make the sukuk market active. Sarr and Lybek (2002) dictate that financial asset is considered as liquid in situation where investors are able to sell large amounts of asset without being affected from the price knock-on. In addition, financial assets are viewed as liquid when the transaction costs are lower, easy trading, settlement is on timely manner and the market prices are not significantly affected by the large trades. In the bond market, lower transaction costs are associated with higher liquid markets. Then, it may attract more traders and the market become more decentralized and diversified that led for

greater transactions. This enables more information from market participants to be spread widely via the price mechanism. Thus, this will smooth the price effect and improve on the resource allocation.

Lately, the concern on market liquidity has increased due to the decrease in liquidity from various markets. For instance, the case of Treasury bond flash rally in United States on October 2014 had alarmed us that market liquidity was fragile. Dislocations of market may take place although these market dislocations derived from the most liquid assets (Brandao-Marques et al., 2015). This is because transformations in financial market may trigger the market liquidity. The same goes for the increasing usage of automated calculations for computerized trades and electronic trading that has made market liquidity to become unpredictable.

As of today, there is very limited study on sukuk's market liquidity, even though the sukuk market is getting more popular. The concern on market liquidity has increased after the global financial crisis. People are getting worry if a reduction in liquidity could impede the economic growth and recovery. Due to the increased concern in liquidity, now there are numerous studies related to market liquidity especially in the bond market. A study by Jankowitsch et al. (2011) on liquidity of bond market finds that the determinant drivers of market's liquidity are the issuance amount, maturity, age of the asset, credit ratings, bid-ask spread and trading volume. Whereas, Rusmawati, Wan Nurhanan and Asmaddy (2013) that investigate the determinants in sukuk market discover only four variables that agree with Jankowitsch et al. (2011). Those sukuk drivers are the amount of issued, maturity, coupon rate and age.

Rusmawati et al. (2013) also discover that credit rating is not significantly related with sukuk's liquidity level.

Another literature by Chordia, Roll and Subrahmanyam (2001) investigates on the relationship between liquidity and trading activity. The measures used for trading activity are volume and number of daily transactions. They discover that trading activity is associated with the liquidity level. In other words, when the market is becoming more active, the number of trading activities will also increase and makes the market to be more liquid.

By utilizing the previous literatures relating to market liquidity, it is the aim for this paper to investigate the relationship between market liquidity and determinants of sukuk in the perspective of Malaysia. Basically, since sukuk is not a loan that based on debt capital as the conventional bond, it is interesting to know on how is the relationship between market liquidity and sukuk determinants. It is hoped this study may benefit the investors during the decision making whether to invest in sukuk market or conventional market and also the policy makers for the improvement in the sukuk market. There are six variables of sukuk proxies for this study which are the maturity, coupon rate, age, credit rating, number of trading and amount of trading.

It is unclear how market liquidity interacts with sukuk determinants since many of the studies only focus on bond market rather than sukuk market. Thus, we have found that at the lacking of empirical investigations on the relationship between market liquidity

and sukuk determinants, it has captured the researchers' interest to fill the gap in the perspective of Malaysia.

1.6 Research Questions

It is the aim of this study to meet the research objective by determining the relationship between market liquidity and determinants of sukuk in the perspective of Malaysia through the following research questions.

i. Is there any relationship between maturity of Sukuk and market liquidity?

ii. Is there any relationship between coupon rate of Sukuk and market liquidity?

iii. Is there any relationship between age of Sukuk and market liquidity?

iv. Is there any relationship between credit rating of Sukuk and market liquidity?

v. Is there any relationship between number of trades in Sukuk market and market liquidity?

vi. Is there any relationship between amount of trading in Sukuk market and market liquidity?

1.7 Research Objective

This study is undertaken to provide for a better understanding in the sukuk determinants in the aspect of following:-

a. To investigate the relationship between market liquidity and the determinants of sukuk which are the maturity, coupon rate, age, credit rating, number of trades and amount of trading sukuk.

1.8 Significance of Study

Investors and policy makers would derived better understanding from the findings in this study for their investment decision making. The findings of this study could assist investors in the making decision by choosing the right type of sukuk structure and by utilizing the suitable sukuk determinants at the right time. For example, investors who agree to enter a contract under sukuk al-Mudarabah should know that the annual returns from this type are based on the agreed profit and loss sharing ratio. Hence, few considerations on either to have sukuk with higher coupon rate or better credit ratings or longer age need to be well weighted for a worth rewarding investment. This is because the longer the age of the contract means the longer it will reach its maturity where investors can receive their capital back.

This study will also allow the policy makers to revise on existing policies of the secondary market in Malaysian sukuk market. Consequently, it will make the way in improving the Malaysian sukuk market specifically in the secondary market. Furthermore, it enriches the literature on Islamic capital market relating to market liquidity in Malaysia. These all depend on the suitability and intensity of the investors' interest.

1.9 Scope and Limitations of the Study

This paper covers investigation only for sukuk that are denominated in Malaysian Ringgit. Perhaps, by doing this it, will avoid any biases that may arise from analyzing many currencies. All types of sukuk shall be included in the study because the investigation on sukuk is in general that ignores the differences in the type of sukuk structures.

The scope of this research is limited to empirical research using secondary data from the Bond Pricing Agency Malaysia (BPAM) and Bond Info Hub of Bank Negara Malaysia. The research data covers such as coupon rate, maturity, age, credit ratings, amount of sukuk outstanding, number of sukuk trades and trading amount in Malaysian sukuk market from 2005 to 2015.

However, this study has some limitations in this study. The limitations are as follows:

i. The availability of data from Bond Pricing Agency Malaysia is limited up to five sectors inclusive Government, Quasi-government, Finance, Asset Backed Securities (ABS) and Corporates. The Bank Negara Malaysia (BNM) sector is omitted due to the absence of ample data.

ii. This study is only based on sukuk that are still remained in active. In other words, sukuk that have been redeemed suspended and still on pending shall be excluded from this study.

iii. This study is limited due to the absence of sufficient data to be carried for this study as there are only 933 records of sukuk data which represents 10.78% from the total of 8,656 records in the sukuk market in Malaysia. These 933 records represent 87.36% from the total of 1,068 active sukuk in the database of Bond Pricing Agency Malaysia (BPAM).

iv. Based on the secondary data from Bond Pricing Agency Malaysia database, the amount issuance is not captured neither in primary market nor secondary market. Due to the absence of data on amount of issuance, hence investigation that involves amount of issuance could not be taken and will be ignored.

1.10 Organization of the Study

This paper is organized into five chapters. Chapter 1 is the introduction of the background study and the brief explanation on market liquidity and sukuk in Malaysia. This chapter also briefly explains the development of Islamic capital in Malaysia, the sukuk structures, problem statements, research questions and research objective, significance of the study, and scope and limitations of the study.

Chapter 2 discusses previous literature on liquidity measurements and clarifies the dependent and independent values. It also provides theoretical underpinning to the study related to bonds as well as sukuk. Chapter 3 presents the theoretical framework and the development of hypothesis methodology used in meeting the research objectives. Then follow by the research design and descriptive analysis.

Chapter 4 provides an analysis of data transaction to illustrate the trading frequency of sukuk in Malaysia. In this chapter, statistics on the sukuk market composition will be further analyzed in relation to the different sukuk determinants, namely the maturity, coupon rate, age and credit ratings. Finally, chapter 5 presents the reports the summary of results and concludes with short discussion of the overall findings. It also provides recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

2. 1 Introduction

This chapter discusses some literature review including on independent variables of sukuk determinants, which are the sukuk maturity, age, coupon rate, credit ratings, number of trades and volume trading. It will also discuss the dependent variable which is the market liquidity of sukuk market and the underlying theories.

2.2 Types and Structure of Sukuk

Sukuk are structured in several different techniques that distinguish them from conventional bonds (Zawya, 2011). Sukuk is permitted under Shariah law when it was backed by a real asset such as a piece of land, a building or an item of equipment. When sukuk are bought and sold, actually investors and issuers are dealing indirectly with the real asset. Islam allows the underlying assets being used in contracts with assumption that contracts have certain degree of risk before a legitimate profit can be earned. In other words, exchanging money for commodity is permitted whereas exchanging money for money is prohibited.

The Islamic-based structures of sukuk are varies depending on the underlying contracts. The issuer's preference type of contract depends on several factors such as the financial objectives, the debt amount owed by the issuer, the assets' availability and issuer's credit

rating, the legal framework, the issuer's type (i.e. corporate, sovereign) and also on the tax implication involved (Islamic & Finance, 2014).

Consequently, the underlying relationship between the issuer and sukuk-holders can be classified according to the underlying principles which are the sale-based sukuk, lease-based sukuk, equity-based sukuk and agency-based sukuk (Securities Commision, 2009). The classification of sukuk structures are as follow:-

(i) Sale-based sukuk is where the underlying relationship between the issuers and sukuk-holders as similar to a relationship between sellers and purchasers. Sukuk stuctures under this category are *Al-Bai' Bithaman Ajl (BBA)*, *Murabaha, Salam and Istisna*'

(ii) Lease-based sukuk is a class of sukuk structures that are based on the contract Ijarah (Lease) and Intifa' (Sub-lease). The Ijarah concept acknowledges issuers and sukuk-holders as lessee and lessors respectively. This means that the holders of Ijarah sukuk are the beneficial owner of the leased asset and the lease charges. The holders will receive the agreed fixed rental payments during the lease period and their principal at the end of the lease contract after the asset is sold at the original price.

(iii) Equity-based sukuk is represents equity relationship which similar to a share features, not a debt obligation. Therefore, the sukuk-holders' profit is depending on the performance of the underlying assets. This equity-based sukuk includes such as *Musyarakah* or the Profit and loss sharing and *Mudarabah* or the Profit sharing.

(iv) Agency-based sukuk is a combination of the previously stated contracts. This is also not represents a debt obligation but similar to shares in which it associates to equity relationship. Example of agency-based sukuk is *Wakalah*.

According to Mokhtar (2008), the sale and lease structures are certain, whereas the equity and agency structures are naturally uncertain. Such uncertainty relates to the amount of principal which is not guaranteed. Since the structures of sukuk are commonly based on its underlying Shari'ah contracts, it is important for the issuer to analyze the potential demand of these sukuk structures. According to the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI, 2011), that there are 14 different structures of sukuk, inclusive those noted above.

Figure 2.1 illustrates the percentage of sukuk approved in 2015, which sukuk *Murabahah* is the most popular structure from the total size of sukuk approved valued at RM48.33 billion in 2015. Sukuk *Murabahah* has dominated the approval sukuk in 2015 by representing 66% of the total sukuk size, followed by *Musharakah* (12%), *Wakalah* (10%), *Ijarah* (7%) and combination structures (5%). This *Murabahah* sukuk is so popular in Malaysian market because of its feature having more liberal interpretation of fiqh with the permission sale of debt (*Bai-al-dayn*) at a negotiable price.

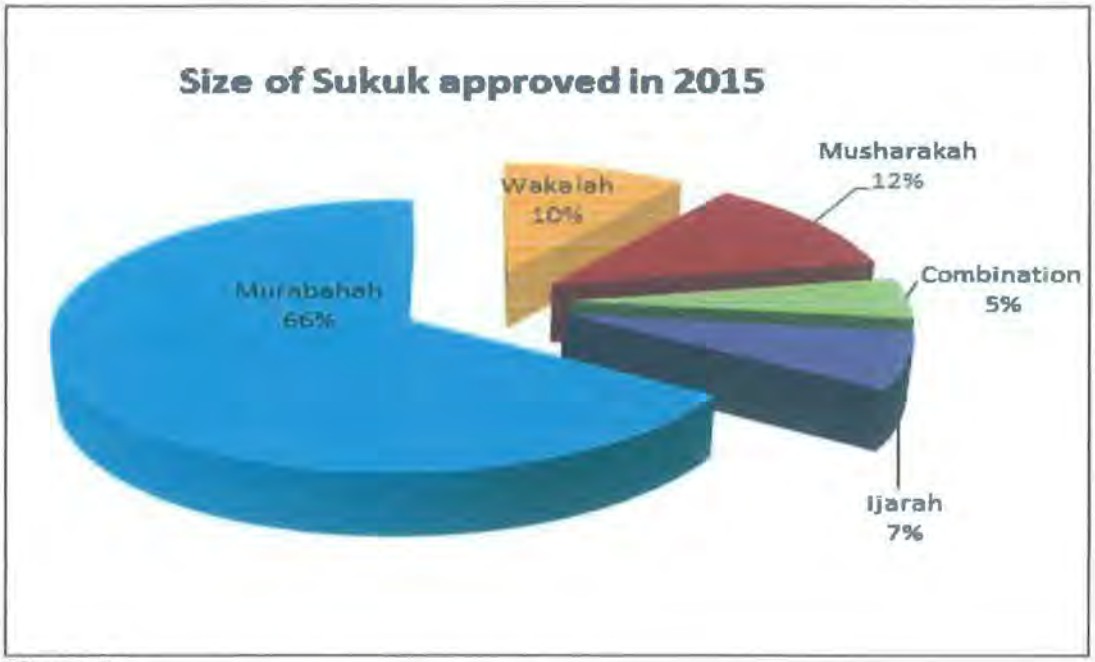

Figure 2.1
Size of Sukuk approved in 2015 by Shari'ah Principle
Source: Securities Commisssion Annual Report 2015

This paper shall briefly explain some of the sukuk types and the process involved accordingly. The relationship between the originator (issuer) and investor (sukuk holder) involved a special entity which is created as a trustee on behalf of the sukuk holder. This special purpose vehicle (SPV) or Trustee is an independent entity which normally is a subsidiary company with the objective is to protect the underlying assets used in sukuk from creditors in the case if the originator goes bankrupt. Thus, SPV is responsible in the arrangement to lease the assets back to the originator who is required to pay lease income to sukuk holders. The followings are the types of common sukuk structures.

2.2.1 Sukuk Al-Bai Bithaman Ajil (BBA)

Under the structure of Bai Bithaman Ajil, the sale is made with deferred payment. The contract of sales and purchase is based on a long term basis where payment is deferred. They involve are several processes. At initial stage, issuer or originator will identify the desired asset to be acquired. Upon identification the asset, issuer will notify the Special Purpose Vehicle or known as SPV by issuing sukuk. This special vehicle purpose serves as an intermediary between the issuer and the investors. Later, SPV will sell the issued sukuk to investors. The proceeds from the selling are used to purchase the identified asset. Afterwards, the investors will sell the asset to issuer at selling price plus the profit margin. The payment to investors will be made in monthly installments by the issuer. The below illustration explains on the process of Al-Bai Bithaman Ajil (BBA).

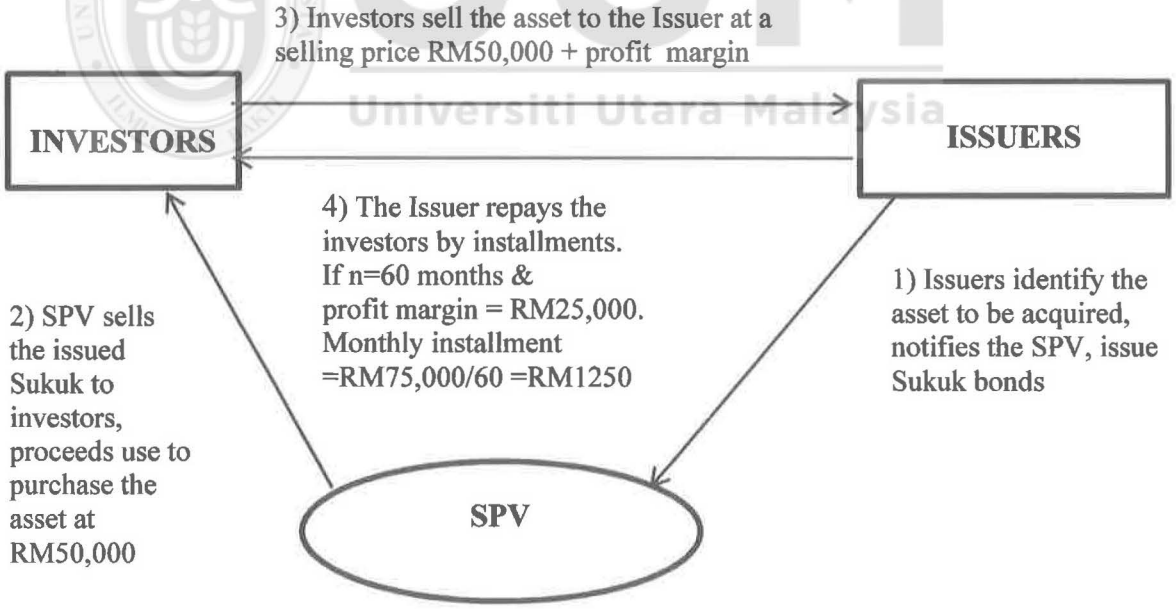

Figure 2.2
Structure of Al-Bai Bithaman Ajil (BBA)
Source : Shamser et al. (2010)

2.2.2 **Sukuk Murabahah**

Murabahah is a concept of having fund via purchase and re-sell transaction. It involves with the sale and buy back. A company that intends to issue sukuk Murabahah will sell the asset to the special purpose vehicle (SPV) or Trustee. Later, the SPV will buy the asset by issuing sukuk to investor. Once the asset is purchased by SPV, SPV then will resell the asset back to the company at the agreed amount where it involved with an initial price plus the profit margin. The payment by the company to investor will be through the installment plan and at maturing, the investor will obtain the sukuk in full payment amount together with their principle. The further explanation on the Murabahah mechanism can be viewed as illustrated in figure 2.3.

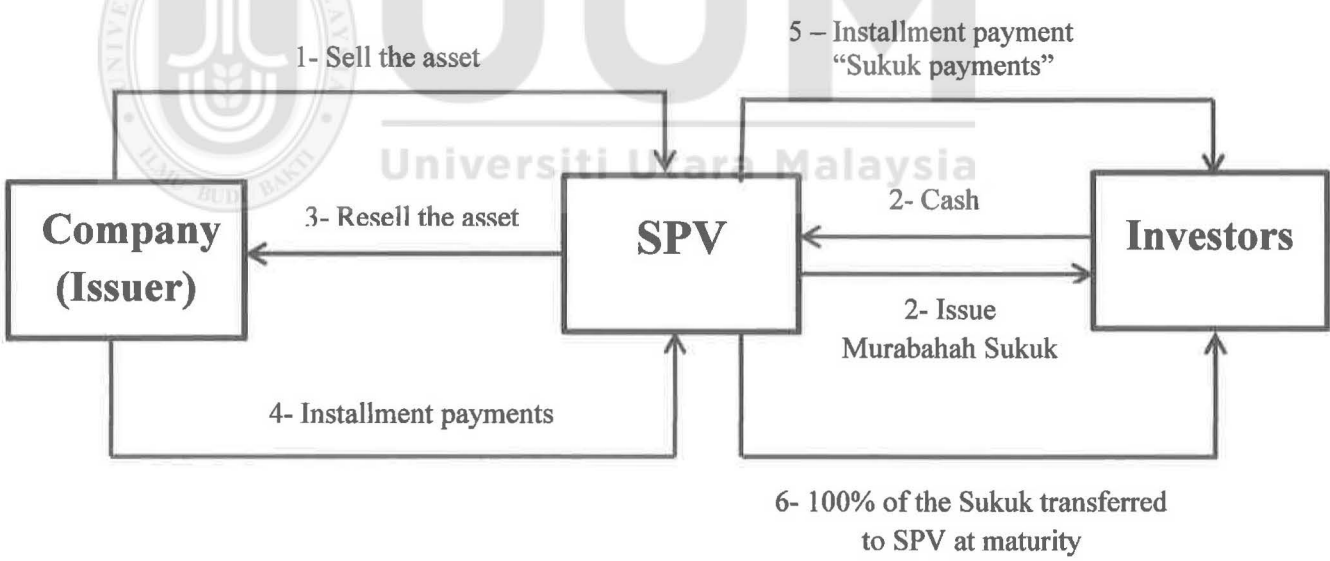

Figure 2.3
Structure of Sukuk Murabahah
Source: Ghemari, (2012)

2.2.3 **Sukuk Al-Salam**

This type of sukuk relates with the sale of commodity. Under this contract, certificates are issued with equal value in order to generate capital prior the delivery of goods. The issuer or obligator of the certificates is the seller of the commodities, while the subscribers or investors are the buyers of the goods. The holders of Salam certificates are the owners of the Salam commodities. These holders are entitled to the sale price of the certificates or the sale price of the Salam commodities. Upon the creation of Salam contract, SPV or the trustee signs an agreement with issuer (obligator) to source for commodities and the buyers. Under this contract, issuer is selling the commodities based on forward basis. Initially, issuer will buy commodities on behalf of sukuk holders with the intention to sell it to sukuk holders to gain profit.

The contract certificates are issued to investors for raising funds. Buyers (investors) are then made immediate payment to trustee to raise the Salam capital where the delivery of the commodities is on a determined of future date. In other words, the delivery of the underlying assets is made on deferred term. Even though Salam contract involves with pre-determined date, the delivery date, quantity and quality of the commodities should be clearly stated in the agreement between the issuer and the trustee to avoid any disputes.

Trustee then passes the payment from buyers to issuer or obligator. In return, trustee receives the commodities from issuer in which the commodities are to be sold on behalf of sukuk holders. Later, these commodities shall be passed by trustee to investors. The

profits earned from the sale of commodities shall be distributed to sukuk holders. Such profits are generated from the price difference between the sale price and the price of purchase and are distributed to sukuk holders through the special purpose vehicle or a trustee company. Thus, Salam certificate will attract buyers or investors when the underlying commodities' selling prices are expected to become more expensive at maturity date.

The commodities being purchased are not allowed to be re-sold before the maturity date. The reason is due to the disposal of the underlying commodities by re-selling it before taking possession is not allowed by Shari'ah. However, the delivery of the Salam underlying goods prior to the agreed delivery date is permissible (Islamic & finance, 2014).

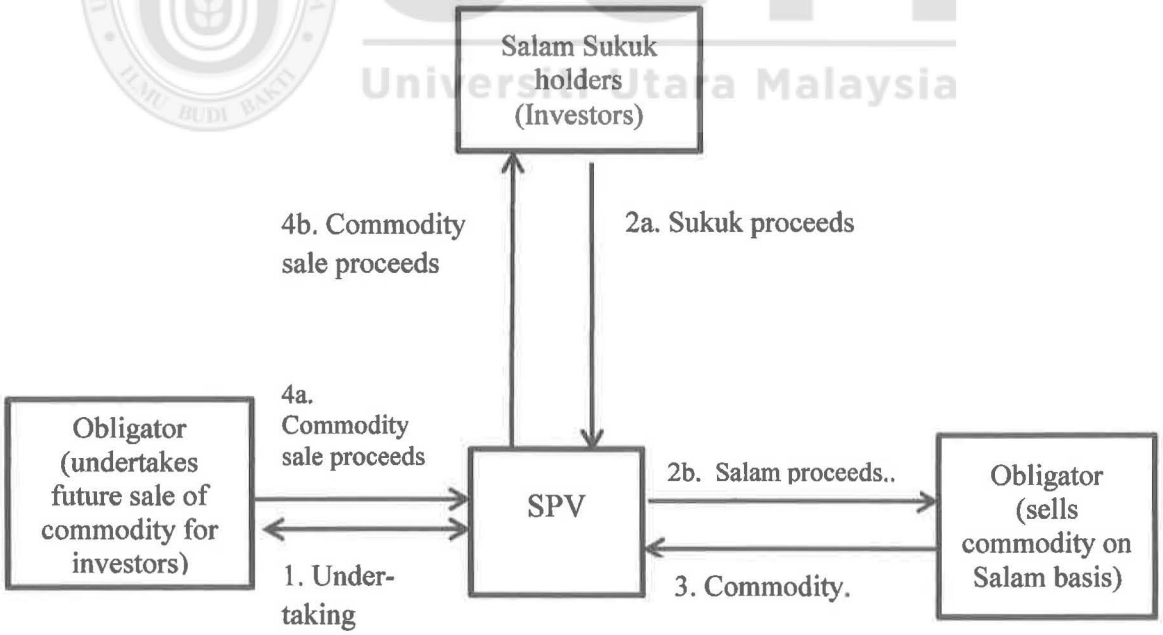

Figure 2.4
Structure of Sukuk al-Salam
Source : www.sukuk.com

2.2.4 Sukuk Istisna'

Istisna' is a type of contract under sukuk which such agreement applicable in manufacturing of goods and commodities. This involves with cash payment in advance and future delivery or a payment on determined of future date and deferred delivery. Under this type of sukuk, it enables the use of financing facility on manufacture or housing construction, plants, projects, and building of bridges and highways. Briefly, sukuk Istisna' allows on the concept to finance a project which is going to be completed in the future. For instance when a manufacturer or a builder decides to produce goods or build a building but having financial constraints, the funding can be generated by applying sukuk Istisna'.

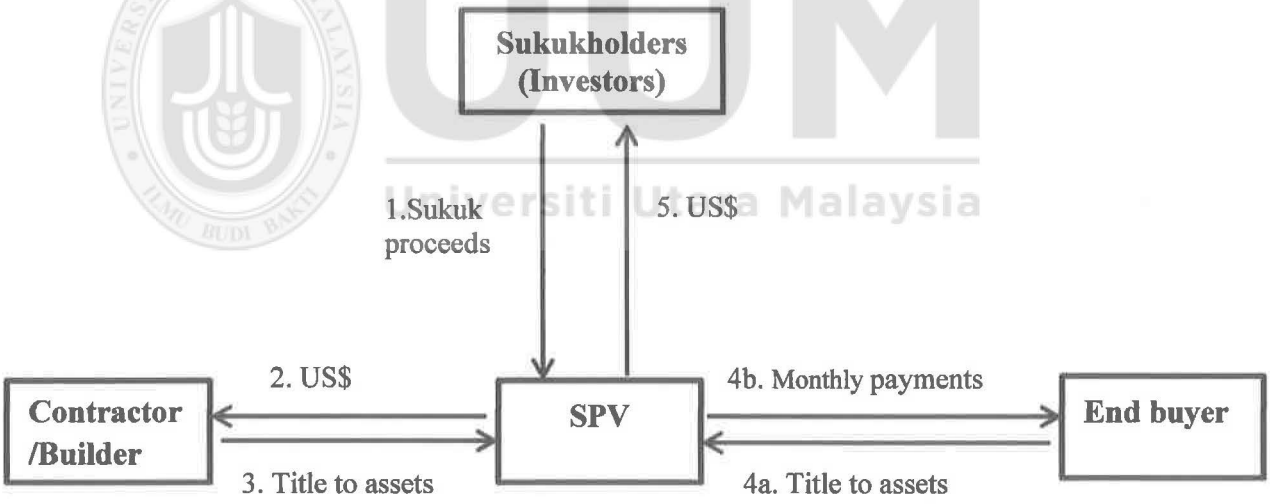

Figure 2.5
Structure of Sukuk Istisna'
Source : www.sukuk.com

For this type of sukuk, the issuer is the manufacturer or contractor (supplier or seller) and the subscribers are the buyers of the intended product. The issuer or originator, who seek

for asset financing upon construct or manufacture an asset or goods, will enter an agreement with a special purpose vehicle (SPV) or a trustee company in order to deliver the assets or goods at future date.

In return, the trustee should pay the originator the manufacturing cost or the construction cost of the asset on installments basis. Meanwhile, the purchase of these assets or goods is financed by the trustee from the proceeds of the sukuk issuance. As the assets shall be hold by the trustee on behalf of the sukuk holders.

When the manufacture or construction is completed, the trustee will sign an undertaking with originator to lease the asset to originator. Therefore, trustee will use the proceeds of rental payments received from the originator to pay the sukuk holders. Here, the financial institution can undertake the manufacturing or construction on deferred payments, while sub-contract the actual construction to a specialized firm. In terms of suitability of sukuk istisna, it is all depending on the ability of a contractor to deal with sub-contractor prior entering the contract.

2.2.5 **Sukuk Al-Ijarah**

Sukuk al-Ijarah is a new financial product but is acceptable as it is Shari'ah compliant. Ijarah is a leasing contract between the issuer and the investor with the involvement of special purpose vehicle (SPV) or Trustee. Under this structure, issuer will take underlying asset from investors as a lease (ijarah). Normally this asset is from issuer and sold to investors before being leased back to the issuer as a rental. Sukuk holder will receive rental payment during the lease period and principle at the end of lease contract.

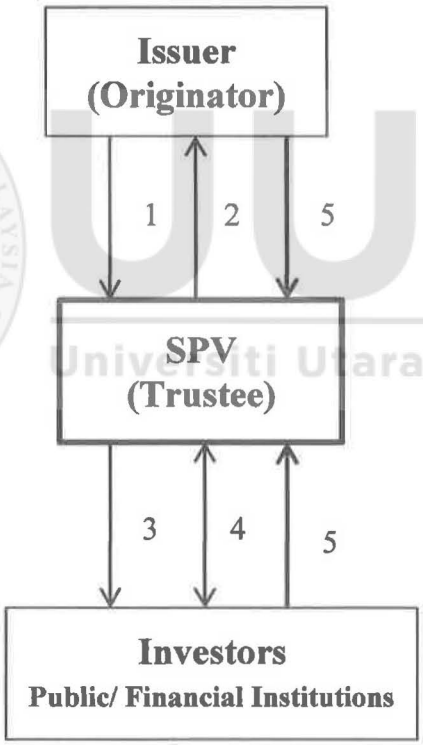

Figure 2.6
Structure of Sukuk Al-Ijarah
Source : www.sukuk.com

As illustrated in Figure 2.6, suppose an issuer or originator requires RM10 million to expand its business. Firstly, the issuer later sells its property to Trustee that worth of RM10 million. Furthermore, the issuer company promises to buy back the asset at RM10 million upon reached its maturity date, we assume at year-10.

Secondly, trustee will lease out the property to issuer for a period of 10 years. Thus, the issuer will pay rent based on the agreed installments to trustee for a 10 years period.

Thirdly, a trustee will issue a 10 years sukuk to investors. Fourthly, the trustee will lease out the property to issuer and proceeds from the rental payments will be distributed to investors.

Finally, upon reaches its maturity, issuer will buy back the property, at the same time trustee will also buy back sukuk al-Ijarah at its original face value.

This type of sukuk can be negotiated and is tradable in the secondary markets. Sukuk al-ijarah offers such a flexible in terms of issuance, management and marketability. Additionally, sukuk al-Ijarah can be issued by financial instituitions or directly by users of the leased assets. The holders of sukuk al-Ijarah are the property's owners, therefore are fully responsible on the property.

2.2.6 **Sukuk Al-Musyarakah**

Musyarakah is a type of contract where both issuer and investors (represented by SPV) are the capital provider for the project being managed by issuer. Profit will be shared as at an agreed sharing ratio by both issuer and investors. Consequently, any losses incurred will be borne by both parties based on the proportionate to their investment.

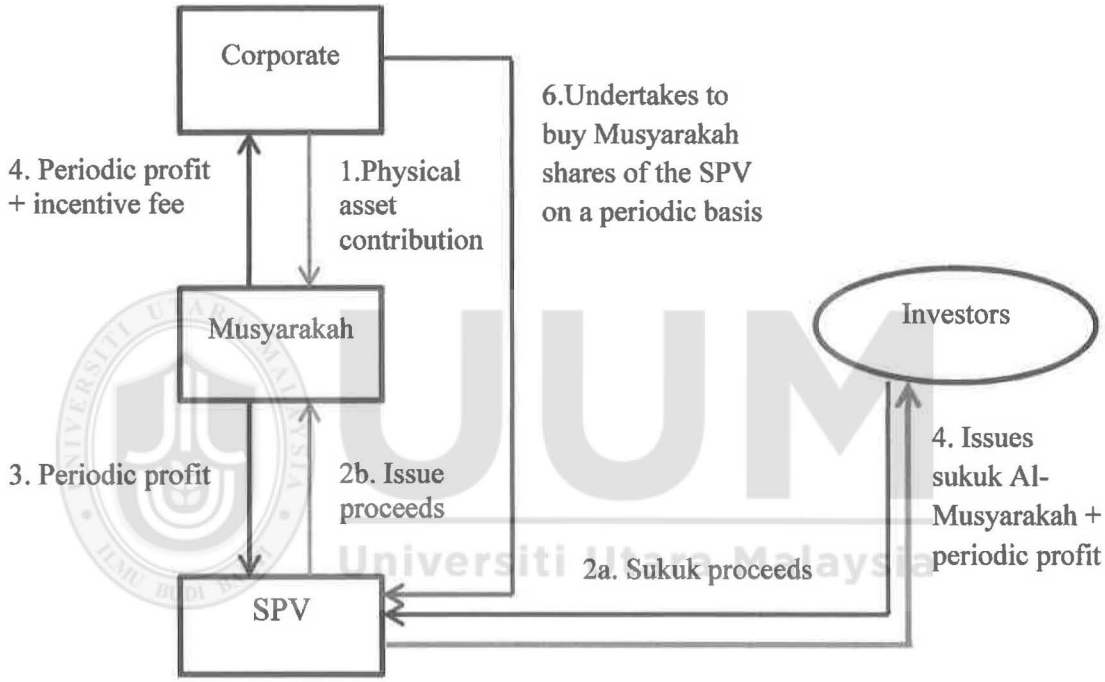

Figure 2.7
Structure of Sukuk Musyarakah
Source : www.sukuk.com

2.2.7 **Sukuk Al- Mudarabah**

Mudarabah is an agreement between two entities in which one party will provide capital or the capital provider for the other party (known as Mudarib) in terms of management and in return shall be given rewards based on the agreed profit and loss sharing ratio. The

owner of mudarabah will then receive capital at the time of the sukuk being surrendered which is based on agreed proportion of the realised profits.

Mudarabah sukuk are similar to shares that have variety of returns and where profits are accrued according to the project base. Upon reaching its maturity date, sukuk holders can have the right to transfer ownership either through selling or trading securities in the market.

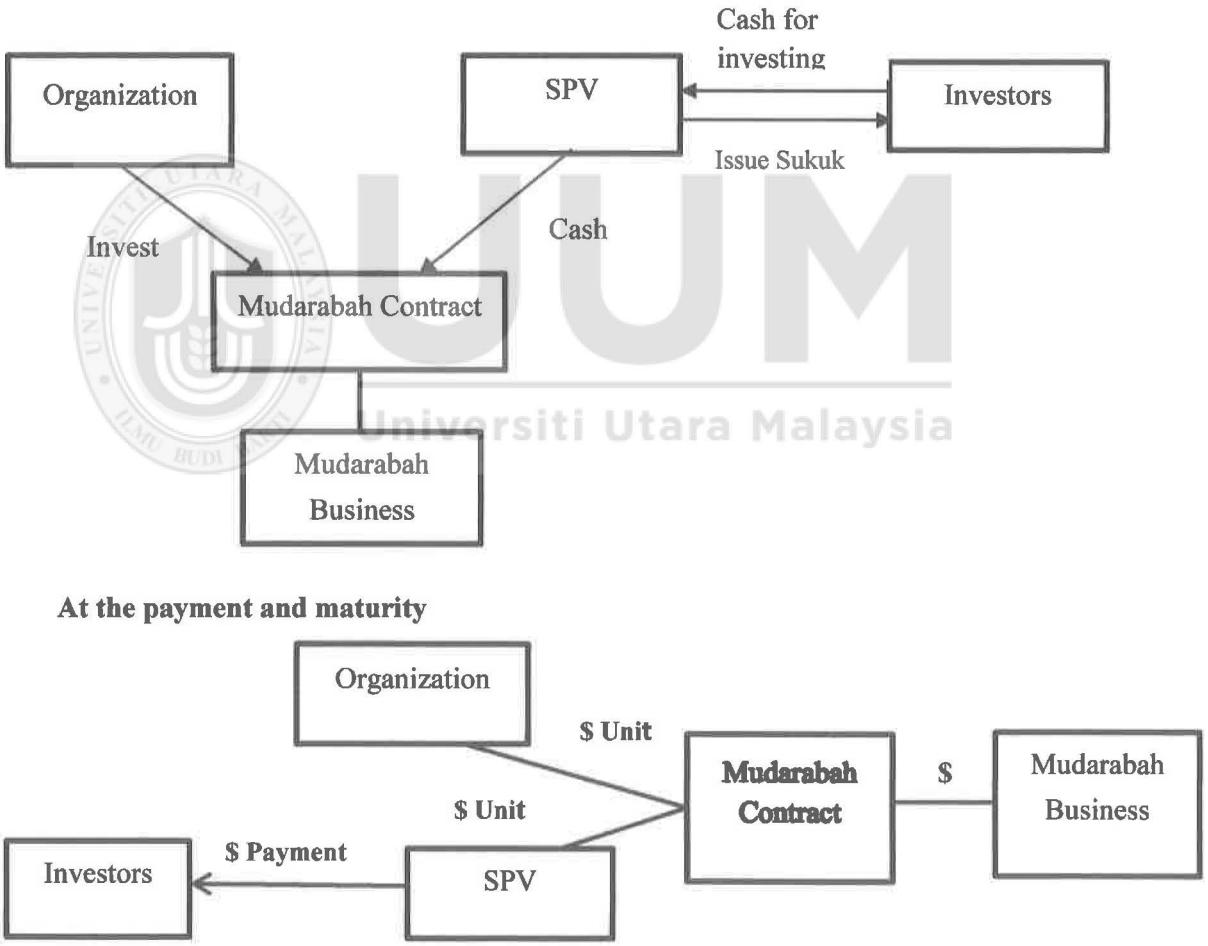

Figure 2.8
Structure of Sukuk Al-Mudarabah
Source : Ghemari, (2012)

2.2.8 **Sukuk Al-Wakalah**

Sukuk Al-Wakalah are certificates representing business activities managed by an investment agency. The agency (wakeel) is appointed by the principle to manage those investments on behalf of sukuk holders. In sukuk Al- Wakalah, sukuk holders will provide capital for the investment activities through the investment agent (wakeel). The special purpose vehicle (SPV) will act in representing the sukuk holders. SPV and the agent enter into Wakalah agreement in which the agreement describe on the scope of services and fee payable to the wakeel.

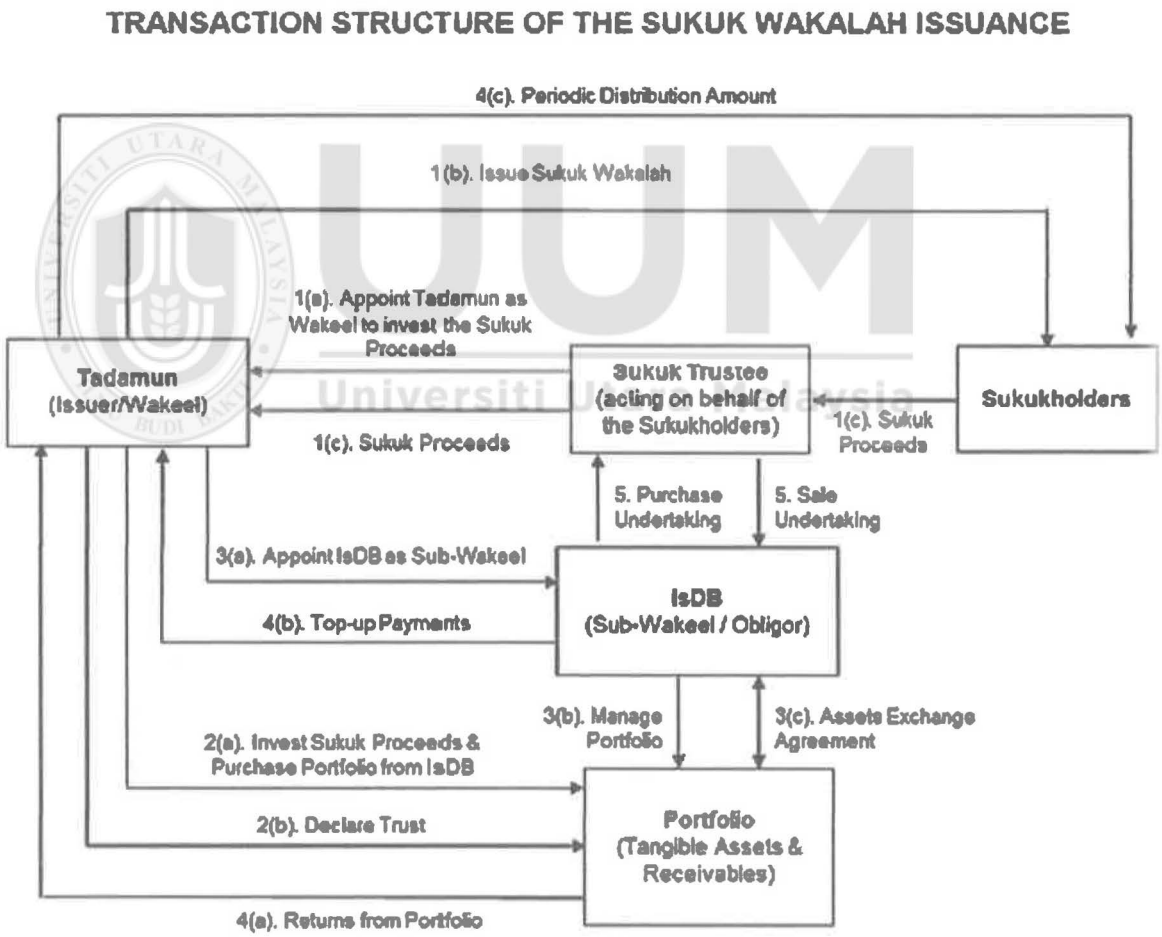

Figure 2.9
Transaction Structure of the Sukuk Wakalah Issuance
Source: https://issuance.sc.com.my

2.3 Variables

This study involves with variables inclusive the market liquidity, maturity, age, coupon rate, credit ratings, number of trades and amount of trading sukuk in the secondary market where they can be categorized into independent variables and dependent variable. The below explanation shall further clarify on these variables.

2.3.1 Dependent Value

Market liquidity is a major concern for investors, practitioners and policy makers especially during financial crisis. Therefore, it is important to maintain adequate levels of liquidity because liquidity smoothen the functioning of financial markets (Datar, Naik and Radcliffe, 1998). The higher ability to convert the investment asset into cash would give a better preferential to attract more investors. The dependent variable is what is being measured in an experiment that is changed by the effect of independent variables.

There are few definitions related to liquidity. Liquidity can be defined as the ability an asset of investment to be converted into cash within reasonable of time period at a reasonable price. In other words, it is the ability of the market to execute large amount of trades without causing excessive price movements (IOSCO, 2007). Liquidity is a multi-dimensional concept that refers to the ability to perform large transactions without much price affect in which it can be associated with low transaction costs and immediacy in execution. Alternatively, market liquidity is the ability to carry out large securities

transactions at a low cost without much price impact (Brandao-Marques et al., 2015). Meanwhile, liquidity in the corporate bond market can be defined as the bond's ability to be traded in large trades at low-cost asset without significant impact on its price (Jack, 2016). The larger the size of issuance amount, the higher will be the liquidity. This means that transactions should be carried out in a cost effective manner. According to Jankowitsch et al. (2011), proxies of liquidity are the issuance amount, age, maturity, rating, bid-ask spread and trading volume. Meanwhile, Mahanti et al. (2008) that use new measure of liquidity known as "latent liquidity" , claim that the determinants of liquidity are age of a bond, the issue size of a bond, credit quality and industry sector.

In contrast, the measure of bid-ask spread is considered as illiquidity measure. Edwards, Harris and Piwowar (2004) emphasized that the bid-ask spread does not fully consider on other elements of liquidity such as market resilience and market depth. They confirm that transaction costs are negatively correlated with the new issues, large volume of trades, trades number, highly rated bonds, floating rate structures, complex securities and firms with listed equity. Thus, by reducing the transaction costs can attract more participants in the market, leading to higher market liquidity.

A study by Chakravarty and Sarkar (2003) on bid-ask spreads, maturity, credit risk and trading volume based on a large sample of corporate bonds in US confirm that there is a significant positive relationship between bid-ask spreads with maturity and credit risk, but has shown a negative correlation between bid-ask spreads and volume of trading.

Studies on the influence of liquidity in the corporate bond market by Chordia et al. (2000), Bao et al. (2011), Lin et al. (2011), Hasbrouck & Seppi (2001), and Dick-Nielsen et al. (2012) concluded that market-driven liquidity and the corporate bond's individual liquidity have a significant impact on the bond yield spreads and actual returns.

Meanwhile, Sarr and Lybek (2002) verify that for a market to be distinguished as liquid, it need to have five attributes which are; i) tightness; ii) immediacy ; iii) depth, iv) breadth and v) resiliency. Tightness represents for a lower transactions cost where it is the different between buy and sell prices or the bid-ask spread. As for immediacy, it refers to the speed of orders to be carried out and settled. While, depth represents for the abundant orders in existence. Another characteristics is breadth where it indicates that orders are in wide range and large in volume with minimum price impact. As for the resiliency, it refers to the speed in which the bid and the ask schedules flow back to their initial positions after an order has been carried out.

Based on the drivers of market liquidity levels and resilience, it can be classified into three categories including; (1) the risk appetite, constraints in funding and market risks faced by financial intermediaries; (2) the search costs that influence the speed of matching the buyers and sellers; and (3) investor's characteristics and behavior that reflect different mandates, constraints, and access to information (Vayanos and Wang 2012; Duffie 2012). For example, investors who are risk-seekers, tend to invest in

securities with higher risk with the perception to receive for better returns. Thus, this led the market to become more liquid and better resiliency.

2.3.2 **Independent values**

The independent values are variables that influence dependent variable in either positive or negative relationship. Independent variables are related with each other in the presence of dependent variable and independent variable. In this study, the determinants of sukuk are the independent values include the maturity of the sukuk, age, coupon rate, credit ratings, number of trades and volume of trading. The issuer will determine the size of the issuance, age of sukuk, coupon rate and maturity of sukuk but not the market.

2.3.2.1 **Maturity**

According to a study by Mahanti, Nashikkar, Subrahmanyam, Chacko and Mallik (2008) relating to bond maturity, it appears that bonds with lower original maturity that is five and seven years, have greater liquidity than bonds with higher maturity of ten years or 30 years. Hence, for long-term buy-and-hold investors such as insurance companies, they have long-dated liabilities. In other words, for investors who hold bonds with longer maturity, they tend to hold them in which makes the bond market to be less liquidity.

In a study by Choudhry (2009), he observes that there was a decline in the theoretical price error (OPE); a proxy measure of liquidity. This theoretical price error (OPE) is depends on the time to maturity. The longer is the maturity, the higher will be the OPE.

2.3.2.2 **Age**

The age factor is also one of the liquidity determinants. Studies by Sariq and Warga (1989); and Alexander, Edwards and Ferri (2000) conclude that there is a relationship between age of bond and liquidity. In their studies, it has shown that corporate bonds which newly issued were more actively traded rather than the older bonds.

A study by Leung (2014) finds that the new sukuk issuances are more liquid than the older ones. Moreover, as the size of sukuk issuance is increased, the more liquidity the sukuk would be. Meanwhile, bond with current age is found to have adversely strong relationship with liquidity (Mahanti et al., 2008). That is, as the age of the bonds increase, market liquidity would then be reduced. Similar result derived from the studies of Chakravarty and Sarkar (1999), Hong and Warga (2000), Schultz (2001), Hotchkiss, Warga and Jostava (2002) find that bonds with larger number of age or have been in outstanding for a longer period of time, is found to be less liquidity.

2.3.2.3 **Coupon rate**

Based on a study by Jovanovic and Rousseau (2001) relating to impact of liquidity in the bond market discover that liquidity has a significant influence on the interest rates caused by the supply of bonds but not on the supply of money. In contrast, Mahanti et al. (2008), Friewald et al. (2012) and Rusmawati et al. (2013) verify that coupon rate was found to have a negative relationship with liquidity. The higher the rate, the lesser the market liquidity would be.

2.3.2.4 **Credit ratings**

The commencement of Islamic bond rating in the early 1994 has embarked another milestone in the Islamic bond market. The purpose of bond ratings is to judge the credit risk and undertake ratings of corporate debt issues (Mohd Asri et al, 2004). As of today, Malaysia has two rating agencies namely the Rating Agency Malaysia Berhad (RAM) and Malaysia Rating Corporation Berhad (MARC). Both of these rating agencies play an important role in the development of Malaysian market for conventional and Islamic Private Debt Securities (IPDS). Rating Agency Malaysia (RAM) has come out with rating definition based on debt-based sukuk. As drawn in Table 2.1 in the appendix.

A study by Fridson and Garman (1998) examine the bond market credit ratings on bond liquidity. They discover that credit ratings with lower quality bonds tend to have great impact on the bid-offer spread at the time of issue. This bid-ask spread is a proxy for liquidity. Hence, bonds with lower rating tend to be more liquid.

2.3.2.5 **Number of Trades**

According to Chordia, Roll and Subrahmanyam (2001) that when the market volatility is increased, the spread is concurrently will be reduced. Furthermore, Alexander, Edwards and Ferri (2000) agree with the original finding of Demsetz (1968) that the more active markets, the more liquid it will be. When the stocks being traded frequently, it reduces the bid-ask spreads or lower transaction costs. As the transaction costs are lower, the cheaper provision of liquidity services which lead to higher profits for dealers.

2.3.2.6 **Amount of Trading**

There are few studies regarding the relationship between trading volume and liquidity which using the yield spreads as proxies for liquidity as investigations by Kamara (1994) and Alexander et al. (2000). A study by Chordia et al. (2000) finds that there is positive relationship between liquidity and trading volume, whereas a negative relation between quoted spread and liquidity. The larger the trading volume, the more liquid the market would be but the greater the differences in quoted spread, the lower will the liquidity. Schultz (2001) finds that bid-ask spreads or transaction costs decline with trading size and a customer's trading activity. Here, Schultz used a large sample of corporate bond transactions of US insurance companies to derive such conclusion.

2.4 Theory Underpinning

In this paper, we focus on two (2) theories that are Market Microstructure Theory and Market Segmentation Theory to explain on the market liquidity.

2.4.1 Market Microstructure Theory

Market microstructure is the study on the impact of numerous market frictions in the market structure and individual behavior during the price determination process. Among the market frictions are transaction costs and disagreement between dealers (Vishwanath and Krishnamurti, 2009). Market microstructure can be defined as *"the study of the process and outcomes of exchanging assets under explicit trading rules"* (O'Hara, 1995). Market microstructure relates to the market participants' behavior either the participants are investors, dealers or admin to authority, in the sense that market microstructure as an important factor in making the investment decision and also in investment exit. This microstructure involves with the structure and design of the market; issues of price setting and price discovery; transaction and timing cost; information and disclosure; and market maker and investor behavior.

The factor of market structure and design is mainly concentrates on the relationship between price determination and trading rules. For instance, some assets are traded through dealers in a particular market but in other markets, assets are traded through brokers who act as intermediaries (for example in housing). Another factor of market

microstructure is the transaction cost and timing cost which focuses on the impact of transaction cost against the returns and procedure of execution. These transaction costs comprise of order processing costs, adverse selection costs, inventory holding costs, and monopoly power.

For price formation and discovery factor, the market microstructure focuses on the process in determining the price of an asset. For example, price for an asset in some markets can be determined through an auction process, while in other markets prices are negotiated ; such as dealing for new cars or the prices are simply posted (for example in local supermarket) in which buyers can choose either to buy or not. Meanwhile, the factor of information and disclosure focuses on the market information, transparency and the impact of the information on the behavior of the market participants.

Most importantly, in market microstructure theory, the asset prices cannot be reflected all available information because of the various market frictions. Such market frictions faced by dealers pertaining the asymmetric information, as the bid/ask price that being displayed are not taking into consideration whether their audience are insiders or outsiders, has driven for the implementation of bid-ask spread prices based on Demsetz (1968).

Amihud and Mendelson (1986) in their study on bid–ask spread against the stock returns find that in order to assess the stock value based on their returns net of trading costs, the investor should demand a higher rate of return for high spread stocks to compensate them with higher trading costs. Thus, in the process of decision making for the best investment, investors should take into consideration the liquidity and risk. It is understandable that an investor can reduce the risk by holding a diversified portfolio, but the cost of illiquidity cannot be diversified away. The longer the holding period of an investor, the lower the extra return is required to repay for the bid–ask spread. Hence, securities with high bid–ask spread will be held by investors with longer holding periods.

Meanwhile, if investors decide to hold for a shorter holding periods, they should hold lower-spread securities. This supports a study by Calamia (1999) emphasizes that market liquidity and transaction costs are among the main issues in microstructure literature which are measured by the size of bid-ask spread, and their influence on transaction prices and returns. Other issues are related to the trade volume, price movement or volatility and the dispersion of beliefs.

2.4.2 **Market Segmentation Theory**

Market segmentation theory indicates that the division of a market into groups of customers who share certain characteristics or features toward a product or service (Goyat, 2011). According to Babbel et al. (2003) that Treasury bond markets are segmented based on liquidity. Meanwhile, Yuan (2002) concludes that liquidity can be

stimulated by government through the issuance of sovereign securities to absorb the cost of acquiring systematic information. By doing this, all externalities of information canbe internalized accordingly. As a result, the corporate bond markets either primary or secondary market tends to be more liquid and information-efficient.

Under market segmentation theory, assumption is made that bonds with different maturities are not substitutes. In other words, the market is separated and segmented for each of the bonds maturities. Therefore, investors can have preferences for bonds of one maturity over another. Basically, the supply and demand for bonds will determine the interest rate and maturity of a bond. Due to market segmentation, there will be no impact from returns on bonds in other segments, that is return in government bond market will not effect on the corporate bond market.

There are few factors determine the demand for short term bonds and long term bonds such as interest rate on the bonds, government policy, wealth, liquidity and risk. Whereas, the supply factor for short-term or long-term bonds are determined by the price or interest rate and general economic situations. Hence for Treasury bonds, the supply depends on government monetary and fiscal policy (Goyat, 2011). Market segmentation is a condition where the markets and market participants are not homogeneous. Thus, by segmenting the market can assist the organization in managing diversification within a market effectively (Smith, 1956).

Singh (2011) finds that demographic factors were considered as the best basis of segmentation in the earlier days but they are no longer effective in today life. The basis of market segmentation as suggested below:-

i. The selection of market segmentation is based on the industry and the product type.

ii. Segmentation can base on the psyche factor of the consumers such as the attitudes, values, opinions, activities and interests.

2.5 Chapter Summary

In brief, this chapter discusses the previous literatures regarding type of sukuk structures and liquidity. It also describes the dependent and independent variables that exist in the relationship between market liquidity and sukuk determinants. It also explains the theories that relate to the study of market liquidity.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology used in this study which includes theoretical framework, the development of hypotheses and a discussion on the research design with an explanation on the data collection and sample. It is also describes briefly on the measurements and instrument used in this study.

3.2 Theoretical Framework

This paper aims to investigate on the relationship between market liquidity and sukuk's determinants. This theoretical framework provides a background of researcher's investigation which comprises the dependent variable and independent variables. The relationship between the dependent variable and independent variables are depicted in the theoretical framework as illustrated in figure 3.1 below.

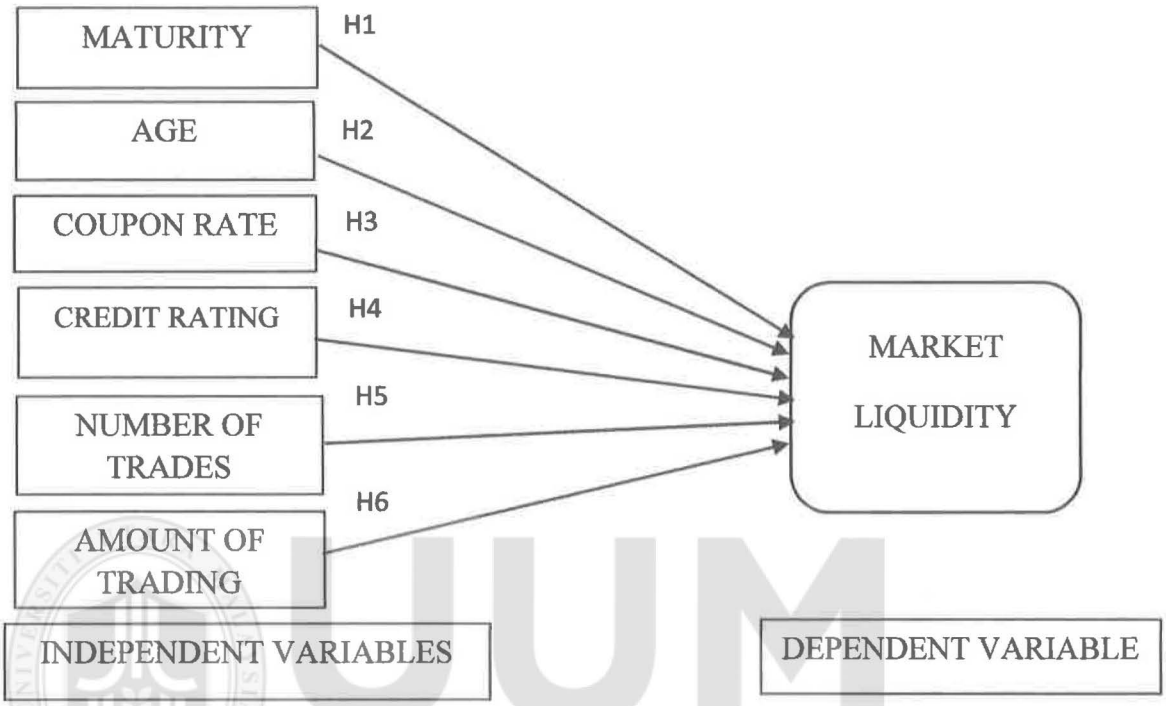

Figure 3.1: Theoretical Framework

Based on theoretical framework above [Figure 3.1], it explains the relationship between independent variables and dependent variable. In this study the independent variables are maturity, age, coupon rate, credit ratings, number of trades and amount of trading. Meanwhile, for the dependent variable is represented by market liquidity.

3.2.1 **Hypotheses Development**

The study focuses on the determination of the relationship between market liquidity and determinants of sukuk. The hypotheses are as follow:-

H_1 : There is a significant relationship between maturity of sukuk and market liquidity.

Bao et al. (2008) in their study to investigate the relationship between liquidity of corporate bonds with the impact of asset-pricing have found that bonds with higher maturity are more liquid.

H_2 : There is a significant relationship between age of sukuk and market liquidity.

Alexander et al. (2000) and Leung (2014) reveal that the relationship between age of corporate bonds and liquidity is related significantly.

H_3 : There is a significant relationship between coupon rate of sukuk and market liquidity.

Studies undertaken by Mahanti *et al* (2008), Friewald *et al* (2012) and Rusmawati *et al* (2013) reveal that coupon rate has a significant negative relationship with liquidity. They have proved that coupon rate was the significant determinant for liquidity.

H_4 : There is a significant relationship between credit rating and market liquidity.

According to Fridson and Garman (1998) that the credit rating of bonds are found significantly correlated with bond liquidity.

H_5 : There is a significant relationship between number of trades and market liquidity.

There are few studies undertaken by Chordia et al (2001) and Demsetz (1968) that discover the significant relationship between number of trades and market liquidity. Number of trades is influenced by transaction costs. When transaction costs in the dealer market are reduced, more market participants would enter into the market. As a result, the market becomes more active and more volatility due to the increased transactions. However, when the transactions costs are high, it would reduce the number of market participants. Consequently, the market liquidity would also decrease.

H_6 : There is a significant relationship between amount of trading and market liquidity.

Kamara(1994), Alexander et al (2000) and Chordia et al. (2000) have discovered that the greater the amount of trading being traded in the market, the higher would be the liquidity. Hence, the relationship between amount of trading and market liquidity is significantly related.

3.3 Research Design

In this section, we provide a description of the data, measurement and instrument used in the study, followed by a brief explanation on descriptive statistics, correlation and regression.

3.3.1 Data collection and Sample selection

The data are collected from the Bond Pricing Agency Malaysia (BPAM) data base and Bond Info Hub of Bank Negara Malaysia (www.bondinfo.bnm.gov.my). The sample size in this study consists of 933 of Sukuk issued in Malaysia which represents a full sample for eleven consecutive years' period from 2005 to 2015. This sample size is determined by the availability of data in which only issued sukuk under active status and sufficient data are being studied. In other words, sukuk that have been redeemed, suspended, still on pending and data in available shall be excluded from this study.

The data of issued sukuk from the data base of Bond Pricing Agency Malaysia is classified under five (5) sectors which are the Government, Quasi-government, Finance, Asset Backed Securities (ABS) and Corporates. However, Bank Negara Malaysia (BNM) sector is being excluded from this study because the absence of its data in the secondary market. The initial total of active issued sukuk in primary market is 8,656 records. Each record represents for the sukuk issued in Malaysia denominated in Malaysian Ringgit (MYR). The details of the distribution of issued sukuk are illustrated in Figure 3.2 below.

Status sukuk / Sector	Issued Sukuk traded in secondary market				Total issued at primary market
	Active		Redeemed	Suspended /Pending	
	Complete	Insufficient data			
Finance	37	3	18	0	64
Government	47	0	232	0	277
Quasi-Government	145	34	168	0	388
Corporate	698	96	5,516	60	6762
Asset Backed Securities (ABS)	6	2	51	0	70
BNM	Not available	-	1,095	-	1095
Sub-total	933	135	7,080	60	8,656

Figure 3.2
The distribution of issued Sukuk according to Sector (from 2005 – 2015)
Source: Bond Pricing Agency Malaysia data base

Those records of 8,656 derived from primary market are then matched with available records in the secondary market according to the stock code. Finally, after matching and sorting, only 933 records remain which represents 10.78% from total records issued during the study period. All of these 933 records are long-term type of sukuk. Hence, there is no short term sukuk that being investigated.

According to Sekaran and Bougie (2013), a large and adequate sample size could remove bias and meet the criteria required by the analytical methods used within the research. Additionally, Krejcie and Morgan (1970) have made contribution in the sample size

determination. They suggest a generalized scientific guideline for sample size decisions which have been tabulated as below.

Table 3.1
Krejcie and Morgan's sample size determination table

Population	Sample	Population	Sample	Population	Sample
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	175	2000	322
55	48	320	181	2200	327
60	52	340	191	2400	331
65	56	360	196	2600	335
70	59	380	205	2800	338
75	63	400	210	3000	341
80	66	420	217	3500	346
85	70	440	226	4000	351
90	73	460	242	4500	354
95	76	480	248	5000	357
100	80	500	260	6000	361
110	86	550	265	7000	364
120	92	600	274	8000	367
130	97	650	278	9000	368
140	103	700	169	10 000	370
150	108	750	186	15 000	375
160	113	800	201	20 000	377
170	118	850	214	30 000	379
180	123	900	234	40 000	380
190	127	950	254	50 000	381
200	132	1000	269	75 000	382
210	136	1100	285	1 000 000	384

Source: Adapted from (Krejcie and Morgan, 1970)

Table 3.1 is a derivative from the sample size calculation which is expressed in below equation proposed by Krejcie and Morgan (1970). The calculation was based on p = 0.05 where the probability of committing type I error is less than 5 % or p <0.05.

$$s = X^2 NP (1 - P) / [d2 (N—1) + X^2 P (1—P)] \quad \text{(equation 3.1)}$$

where;

s = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (0.05 = 3.841).

N = the population size.

P = the population proportion (assumed to be 0.50 since this would provide the maximum sample size.

d = the degree of accuracy expressed as proportion (0.05).

The sample size determination as proposed by Krejcie and Morgan (1970) for population of 9,000 is 368 representing 4.09%. As per our study, the sample size is 933 or 10.78% out of the total population. Therefore, the sample size that represents 10.78% from the population of sukuk from year 2005 to 2015 is acceptable because it is still within the tolerable range.

3.3.2 Measurement of Variables and Instrument

We are using IBM Statistical Package of Social Science (SPSS) version 24.0 as instrument to perform for the data analysis. There are several statistical techniques being used in this study in generating statistical report which are the descriptive statistics, correlations analysis and regressions analysis.

This section also highlights on the measurement of dependent variable and independent variables as being studied.

3.3.2.1 Market Liquidity

Our dependent variable in this study is market liquidity. Market is said to be liquid when agents can buy or sell without having much impact on the price. There are three (3) features of market liquidity based on Kyle (1985) which are tightness, depth, and resilience. Tightness is measured as the bid-ask spread that result from the difference between actual price and trade price. The depth shows the volume of the security to be traded at the current market price. Meanwhile, resilience is associated with the convergence speed from the price level caused by the price changes at random.

There are two (2) measurements being used as proxies to liquidity in this study. The measurements are: i) bid-ask spreads and ii) amihud (2002) measure.

i) Bid-ask spreads

Generally, the bid-ask spread is known as the best measure of liquidity (Bouchaddekh and Bouri, 2013). The bid ask-spread is used to determine liquidity of an investment. According to Sarr and Lybek (2002), the bid-ask spread is associated to almost of transaction costs (i.e. order processing costs, taxes, execution costs), in which is referred as transaction costs measure. The higher of transaction costs, the higher would be the bid-ask spreads, which led to a reduction in volume of trading as caused by a reduction in potential active market participants. As a result, lower its liquidity.

In other words, when the transaction cost is lower, it will lead for more decentralization, diversification and greater transactions. The higher the transactions mean the better will be the dissemination of information through price mechanism that led to better efficiency in resource allocation and thus increase the liquidity. Chakravarty and Sarkar (2003) reveal that bid-ask spreads are increased with maturity and credit risk but negatively correlated with trading volume.

The bid-ask spread is measured by deducting the lowest ask price that a seller is willing to sell from the highest bid price that a buyer is willing to buy. In short, it is the absolute value from the difference between the highest bid prices and the lowest ask prices in the

market. The bid-ask spread can be measured either as the difference between bid and ask prices (equations 1a) or as percentage spread shown in equation 1b as illustrated below:-

Spread $= (P_a - P_b)$; where P_a is the ask price and P_b is the bid price (equation 3.2a)

Spread $= (P_a - P_b)/((P_a + P_b)/2)$ (equation 3.2b)

ii) Amihud (2002) measure

Another proxy of liquidity that is used in this paper is known as Amihud (2002) measure. It is a well-known measure that was originally proposed by Yakov Amihud who is a Finance Professor from New York University. His works mainly focus on liquidity of stocks and bonds and also the methods and systems of trading market securities. The amihud (2002) measure was initially proposed by Kyle (1985). This measurement calculates the price impact (i.e. price change) measured in returns, over the trade volume measured in US dollar (Friewald et al., 2012).

The calculation for this measure as per the equation illustrated below:-

$$\text{Amihud}_t = \frac{1}{N_t} \sum_{j=1}^{N_t} \frac{|r_j|}{v_j} \qquad \text{(equation 3.3)}$$

This Amihud (2002) measures at day t for a certain bond over a particular period of time that involved with a number of observed returns depicted as N_t. It is calculated based on the average ratio between the absolute value of the returns referred as r_j and its trading volume; referred as v_j.

3.3.2.2 **Independent variables**

In this study, the measurement for independent variables are quite straight forward because all the variables are directly taken from the data base provided by Bond Pricing Agency Malaysia (BPAM) except for maturity. For variables coupon rate, age and credit rating are obtained from the primary market in the data set of BPAM. As for the other two variables (i.e. number of trades and amount of trading), they are retrieved directly from the secondary market of the BPAM data base. Regarding the credit rating, the classification of each group is in accordance to Rating Agency Malaysia (RAM). For example , '1" is assigned to group AAA rating; "2" is assigned to group AA1 to AA3; "3" is assigned to group rating of A1 to A3; "4" is assigned to group BBB1 to BBB3 and so forth. The definition of each credit rating can be found in Appendix E .

The variable of maturity as defined by Ross et al. (2010) as the remaining number of years until the bond's face value is paid. Once a bond is issued, the number of years to maturity drops as time goes by. Therefore, the maturity in this study is calculated using the below equation:

$$Maturity = \frac{(Maturity\ date - Current\ date}{365\ days}; \qquad \text{(equation 3.4)}$$

where the current date in this study is taken as at 01/01/2016

3.3.3 **Data Analysis**

The focus in this study is to investigate the relationship between dependent and independent variables by adapting few measurements as explained below:-

3.3.3.1 **Descriptive Statistics**

Descriptive statistics are a brief descriptive on coefficients that summarize a given data set. It is also used to interpret the basic measures such as the minimum, maximum, mean and standard deviation. Moreover, descriptive statistics technique can also be used to measure the spread of the observed data from the value range.

3.3.3.2 **Correlation**

Correlation describes the relationship between two or more variables either positive or negative. The closer the correlation coefficient is to 1.0, the stronger the relationship will be. In contrast, when the correlation is 0, it denotes the absence of a relationship.

Correlation with positive sign indicates that the variables are moving in the same direction and vice versa. Meanwhile, the Sig.2 tailed indicates the level of confidence of the relationship. In SPSS version 24, there are two (2) types correlation that are Pearson Product Moment Correlation Coefficient (r) and Spearman Rank Order Correlation (rho). However, Spearman correlation is best used for the non-parametric statistics (Pallant,

2016). In this study, it also calculates the coefficient of determination by square the r value. This value shows the variance between the two (2) variables.

3.3.3.3 **Multiple Regression Analysis**

Multi regression analysis is a type of statistical analysis which is used to identify the strength of the relationship between one continuous dependent variable and either one or more of independent variables. It is based on the correlation in which regression provides an understanding on how well the value of dependent variable changes when one of the independent variables is changed, while remains the other independent variables. The relationship is expressed in a mathematical equation and it provides results of dependent variable that based on the values of independent variables.

The regression model that includes all the variables can be seen as below.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + X_{it} \qquad \text{(equation 3.5)}$$

Where :

α = Constant

Y = Dependent variable which represents market liquidity

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ = Coefficient to be estimated based on the slopes of the relationship

X_1 = Independent variable which represents maturity

X_2 = Independent variable which represents age

X_3 = Independent variable which represents coupon rate

X_4 = Independent variable which represents credit ratings

X_5 = Independent variable which represents number of trades

X_6 = Independent variable which represents amount of trading

X_{it} = Term of random error which is part of dependent variable

3.3.3.4 **Analysis of Variance (ANOVA)**

Briefly, the analysis of variance or known as ANOVA is the most frequent analysis used in the study of behavioral sciences (Howell, 1999). It allows the mean scores of more than two groups to be compared concurrently. In other words, ANOVA compares the variance between the independent variables that if the result shows p value less than or equal to 0.05 (shows as **Sig.**) then the statistical is significant.

3.4 Chapter Summary

This chapter elaborates the research design and research method used to determine the relationship between the determinants of sukuk (maturity, age, coupon rate, credit ratings, number of trades and amount of trading) and market liquidity using two (2) liquidity measures as proxy to liquidity.

CHAPTER 4

ANALYSIS OF FINDINGS

4.1 Introduction

This chapter provides investigation and findings of the study. This study involves a sample of 933 of issued sukuk which were issued from period of 1st January of 2005 until 31st December of 2015. The data of sukuk are mainly retrieved from the database of Bond Pricing Agency Malaysia (BPAM) and the website of bondinfo.com.my.

There are four (4) statistical techniques that being used to analyze the dataset which are the descriptive statistics, the Spearman Rank Order Correlation, multiple regression analysis and analysis of variance (ANOVA). Further discussions on the results shall be explained below.

4.2 Results of the Study

Results of this study that focus to determine the relationship between market liquidity and the determinants of sukuk shall be explained below based on the data analysis reports generated by the SPSS.

4.2.1 Descriptive Statistics

Table 4.1
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Y_1 : BAS	933	0.000	2.0002	0.65	0.8973
Y_2 : AMHD	933	0.0001	6.5687	0.26	0.6693
X_1: MAT	933	0.874	99.055	7.49	7.1305
X_2: AGE	933	2.000	100.000	11.05	6.9593
X_3: COPN	933	2.500	100.100	5.32	3.7008
X_4: CRAT	933	1	9	2.99	2.8030
X_5: LN-NOTR	933	0.69	8.71	3.162	1.3725
X_6: LN_VOL	933	0.0	11.41	5.1	1.6523

The above sample consists of 933 sukuk records as listed in the dataset of Bond Pricing Agency Malaysia (BPAM) from 2005 to 2015. The descriptive statistics as drawn in Table 4.1 shows two dependent variables used as the proxies for market liquidity; Y_1 – Bid ask Spread (basis points) and Y_2 - Amihud (2002) measure together with independent variables namely X_1. Maturity of sukuk (in years), X_2 - Age or tenor of the issued sukuk (in years), X_3 – Coupon rate of sukuk (in percentage), X_4 - Credit rating (associates with class number from 1 to 9), X_5 – Number of trades for each issued sukuk being traded in the secondary market (in units). and X_6 – Amount of trading is the size of the issued sukuk (in millions). Because the value of traded volume and number of trades involve large values, normal log is taken for a more meaningful value.

The summarized results as depicted in Table 4.1 shows that mean for liquidity measures bid-ask spread is 0.65 with standard deviation of 0.897. Meanwhile, as for the Amihud(2002) measure shows that the mean is 0.26 where on average is about 0.669 each sukuk deviates from the mean. Subsequently, the mean for coupon (COPN), credit rating (CRAT), age (AGE), maturity (MAT), natural log of number of trades (LN-NOTR) and natural log of trade volume (LN_VOL) are 5.32, 2.99, 11.05, 7.49, 86.39 and 1162.28 respectively. The mean for CRAT is 2.99 indicates that on average Credit Rating is within group rating of AA1 to AA3.

Standard deviation shows the spread of observed data. The higher the standard deviation indicates that the observed data are spread out over a larger range of values. Based on the results, maturity (MAT) shows the highest standard deviation with 7.130 indicates that it has the highest deviation from its average of 7.49 years. Meanwhile, the number of trades (LN_NOTR) has the lowest standard deviation with 1.372.

4.2.2 Collinearity Diagnostics

The collinearity diagnostics is used to measure the correlation among independent variables or predictor variables in a regression. Multicollinearity refers to the correlation among independent variables. When independent variables are highly correlated with each other, it makes the task of interpreting the results of coefficient estimates becomes

more diffilcult. The higher the degree of multicollinearity, the larger the deviation will be. This may lead to lack of statistical significance (Anderson et al., 1981).

In a study by Pallant (2016) suggests that multicollinearity exists when the Tolerance is less than 0.10 and the variance influence factor (VIF) is greater than 10. Table 4.2 below presents the results of the collinearity test for the six independent variables which are maturity, age, coupon rate, credit ratings, number of trades and amount of trading.

Table 4.2
Collinearity test

	Tolerance	VIF
X1: MAT	0.091	10.944
X2: AGE	0.092	10.815
X3: COPN	0.897	1.114
X4: CRAT	0.644	1.553
X5: LN-NOTR	0.127	7.849
X6: LN_VOL	0.087	11.431

a. Dependent variable – bid ask spread and amihud(2002) measure

According to the above results, there is no collinearity for independent variables coupon rate (COPN), credit rating (CRAT) and Number of Trading (LN_NOTR). The reason is due to the tolerance value is greater than 0.1 value and the variance influence factor (VIF)

is lower than 10. However, collinearity exists for independent variables like maturity (MAT), age (AGE) and volume trade (LN_VOL). The LN_VOL has the highest value for variance influence factor (VIF) of 11.431, while coupon rate (COPN) has the lowest VIF value of 1.114.

Despite the above diagnostics using Tolerance and VIF, there are other tests that can be assessed, for example the inspection of the "eigenvalues" and "eigensystem" analysis. These methods are conserved as the best practices that allow the assessment of linear dependencies in model data which was first proposed by Kendall (1957) but was further studied by Belsley, Kuh & Welsch (1980) and Belsley (1991). There are guidelines to interpret the 'eigenvalues' and also the condition indexed as illustrated in Table 4.3 and Table 4.4.

Table 4.3
Guidelines for interpreting Collinearity based on Eigenvalues

Degree of Collinearity	Form of Matrix	Magnitude of Eigenvalue
No collinearity	Non singular	Not equal to zero
Near perfect collinearity	Near singular	Close to zero
Perfect collinearity	Singular (Not positive definite)	Equal to zero (Estimation terminal)

For eigenvalue, any values that close to zero should be tested using Condition Index which is calculated in the following equation:

$$CI_i = \left[\frac{\lambda_{max}}{\lambda_i}\right]^{1/2} \quad \text{for } i = 1,2 \qquad \text{(equation 4.1)}$$

Table 4.4

Guidelines for interpreting Collinearity based on Condition Indexes

Condition Index, CI	Degree of Collinearity
If CI < 10	Weak
If 10 < CI <30	Moderate to strong
If CI > 30	Severe

Table 4.5

Results from the Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index
1 Bid ask spread	1 Constant	7.463	1.000
	2 Maturity	.650	3.388
	3 Age	.459	4.034
	4 Coupon rate	.259	5.370
	5 Cr rating	.110	8.248
	6 ln_Voltrg	.016	21.849
	7 ln_notrdg	.009	28.567

Model	Dimension	Eigenvalue	Condition Index
1 Amihud	1 Constant	7.463	1.000
	2 Maturity	.650	3.388
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	4 Coupon rate	.259	5.370
	5 Cr rating	.110	8.248
	6 ln_Voltrg	.016	21.849
	7 ln_notrdg	.009	28.567

From the above results [bid ask spread and amihud (2002) measure], it is found that all the tested independent variables (maturity, age, coupon rate and credit rating) excluding amount of trading and number of trades are having Eigenvalues not equal to zero. Furthermore, the condition index (CI) of number of trades and amount trading are less than 30, indicating the multicollinearity are not severe. Thus, based on the guidelines in Table 4.3 and Table 4.4, we can conclude that the degree of multicollinearity is not severe that can provide an impact on the overall regression model (O'Brien, 2007).

4.2.3 Correlation Matrices

There two (2) proxies of liquidity are utilized for this study. The proxies are the bid-ask spread and amihud (2002) measure. Therefore, two different correlations are analyzed accordingly.

a) Correlation using the Bid-ask spread measure

Table 4.6
Spearman's Correlations between Bid Ask Spread measure and determinants of Sukuk

	BA Spread	AGE	MAT	COPN	CRAT	LN_VOL	LN_NOTR
BA Spread	1						
AGE	0.243**	1					
MAT	0.138**	0.791**	1				
COPN	0.005	0.493**	0.245**	1			
CRAT	0.103**	-0.024	-0.048	-0.003	1		
LN_VOL	0.468**	0.014	-0.048	-0.240**	0.243**	1	
LN_NOTR	0.502**	0.027	-0.066*	-0.164**	0.218**	0.916**	1
LN_AMOS (Dummy)	0.355**	-0.003	.105**	-0.358**	0.290**	0.733**	-0.218**
YIELD *(Dummy)*	-0.007	0.516**	0.522**	0.622**	0.037	-0.255**	-0.174**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.6 presents the Spearman Rank Order Correlation (rho) among the variables based on the Bid-ask spread measure. There are positive correlations between liquidity (bid-ask spread) and variables of age (AGE), maturity (MAT), coupon (COPN), credit rating

(CRAT), volume trade (LN_VOL) and number of trading (LN_NOTR). The value of Spearman's coefficient (rho) for LN-NOTR is positively correlated with liquidity by having a moderate strength relationship as its correlation coefficients (rho) is 0.502. Meanwhile, the rho value for coupon rate is 0.005 which is considered to have a very weak relationship and is not significant at $p<0.01$.

For the variables AGE, MAT, CRAT and LN_VOL, because their values of rho are 0.243, 0.138, 0.103 and 0.468 respectively, they are considered to have a weak relationship with market liquidity. For this study, in order to determine the strength of a relationship, we based guidelines by Cohen (1988) that suggests the correlation values; rho as the following:-

Weak relationship	rho = 0.10 to 0.29
Moderate	rho = 0.30 to 0.49
Strong	rho = 0.50 to 1.00

b) Correlation using Amihud(2002) measure

Table 4.7
Spearman's Correlations between Amihud (2002) measure and determinants of Sukuk

	Amihud	AGE	MAT	COPN	CRAT	LN_NOTR	LN_VOL
Amihud	1						
AGE	0.260**	1					
MAT	0.182**	0.791**	1				
COPN	0.225**	0.493**	0.245**	1			
CRAT	-0.102**	-0.024	-0.048	-0.003	1		
LN_VOL	-0.175**	0.014	-0.048	-0.240**	0.243**	1	
LN_NOTR	-0.081*	0.027	-0.066*	-0.164**	0.218**	0.916**	1
LN_AMOS (Dummy)	-0.161**	-0.003	.105**	-0.358**	0.290**	0.733**	-0.218**
YIELD *(Dummy)*	0.220**	0.516**	0.522**	0.622**	0.037	-0.255**	-0.174**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.7 shows the Spearman Rank Order correlation by using the amihud (2002) measure as proxy of liquidity. The results of rho values are AGE, MAT and COPN are having positive weak relationship as their values are less than 0.3. In addition, CRAT, LN-VOL and LN-NOTR are negatively correlated with market liquidity with values of rho are -0.102, -0.175 and -0.081 respectively, thus are considered of having a weak relationship with liquidity.

According to the results from the bid-ask spread and amihud measure, we can conclude that age and maturity are positively significantly correlated with market liquidity but the

relationship's strength is weak. Therefore, the results support hypothesis H_1 and H_2 that maturity and age have significant relationship with market liquidity. Meanwhile, due to inconsistency results on the relationship between number of trades (LN-NOTR) where under bid ask spread measure it has reasonably strong positive relationship with market liquidity (rho = 0.502) but under amihud (2002) measure, it is adversely correlated with market liquidity (rho= -0.081), we conclude that number of trading has an unclear relationship with market liquidity.

4.2.4 Multiple Regression Analysis

a) Bid ask spread as the proxy for liquidity

Table 4.8
Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.467[a]	0.219	0.212	0.7966438

a. Predictors: (Constant), X_1: Maturity, X_2: Age, X_3: Coupon rate, X_4: Credit rating, X_5:Ln_NOTR and X_6: Ln_VOL
b. Dependent Variable: bid ask spread

b) Amihud (2002) measure

Table 4.9

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.270[a]	0.073	0.065	0.6472498

b. Predictors: (Constant), X_1: Maturity, X_2:Age, X_3: Coupon rate, X_4: Credit rating, X_5:Ln_NOTR and X_6: Ln_VOL

b. Dependent Variable: Amihud (2002) measure

According to Table 4.8 and Table 4.9 above, R square explains the value of variance in the dependent variable as the values are 21.9 percent and 7.3 percent in respect to liquidity using the bid ask spread and amihud(2002) measure respectively.

As for Table 4.8 , the adjusted R square is 0.212 or 21.2%, while 78.8% is explainable by other variables while adjusted R square for Table 4.9 is 7.3% and this can be associated with a very low explanatory power. However, according to Colton and Bower (2002), small R square is not deemed to be associated of having any relationship between the variables. Similarly, large value of R square is also not associated to have a significant effect arose from the relationship.

Based on the results of coefficients, the multiple linear regression model is shown as the following equations:

1) Bid-ask spread

$$Ys = -0.23 + 0.072X_1 - 0.067X_3 + 0.004X_2 + 0.012X_4 + 0.192X_5 + 0.007X_6 + Xit$$
$$(-1.01)\quad (5.92)\quad (-5.42)\quad (0.57)\quad (1.01)\quad (3.61)\quad (0.14)$$

(equation 4.2)

2) Amihud (2002) measure

$$Ya = 0.818 + 0.017X_1 - 0.017X_3 + 0.002X_2 - 0.003X_4 + 0.070X_5 - 0.20X_6 + Xit$$
$$(4.40)\quad (1.73)\quad (-1.72)\quad (0.38)\quad (-0.33)\quad (1.63)\quad (-4.62)$$

(equation 4.3)

Where;

Ys : Dependent variable represents market liquidity using bid-ask spread measure

Ya : Dependent variable represents market liquidity using amihud (2002) measure

4.2.5 **Analysis of variance (ANOVA)**

The significance of a relationship between dependent variable and the independent variables can be assessed by a test known as Anaylsis of variance or ANOVA. According to Pallant (2016), when the value of Sig. is zero, it means the model has reached its statistical significance which is the value is greater than 0.0005; ($p < 0.0005$). The results of ANOVA for dependent variable of bid ask spread and amihud (2002) measure are shown as Table 4.10 and Table 4.11 below.

Table 4.10

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	163.955	6	20.494	32.293	.000b
	Residual	586.409	926	0.635		
	Total	750.364	932			

a. Dependent Variable: BA spread

b. Predictors: (Constant), Age, Coupon, Credit Rating , Maturity, Trade Volume and Number of Trades

Table 4.11

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.393	6	3.799	9.069	.000b
	Residual	387.094	926	0.419		
	Total	417.487	932			

a. Dependent Variable: Amihud (2002) measure

b. Predictors: (Constant), Age, Coupon, Credit Rating , Maturity, Trade Volume and Number of Trades

By referring to Table 4.10 and Table 4.11 above, the statistical significance (Sig.) in the sample using bid ask spread and amihud (2002) measure are zeros for both measures. Therefore, it indicates that the model of relationship between market liquidity and the determinants of sukuk has achieved its statistical significance at $p<0.0005$.

4.3 Chapter Summary

In this chapter, the findings on the relationship between dependent variable (market liquidity) and its determinants (independent variables) are analyzed and discussed. According to the Deputy Chief Executive of Securities Commission (SC) in Malaysia that liquidity in the secondary market of sukuk market is remains a major concern as the sukuk market is still illiquid (Dhesi, 2012). Thus, active involvement from market participants such as fund managers should be increased for a more robust of secondary market for sukuk.

This study reveals that age and maturity are positively correlated with market liquidity but the relationship's strength is weak. Meanwhile, number of trading is found to have a moderate positive relationship with market liquidity using bid ask spread measure. Coupon rate has positive relation with market liquidity but the strength of relationship in very weak. Consequently, the results shows that credit rating and amount of trading are found to have unclear relationship with sukuk market liquidity due to they are positively correlated under bid ask spread measure but negatively correlated under amihud (2002) measure.

CHAPTER 5

CONCLUSION

5.1 Introduction

This chapter presents the summary of this study. It also highlights on some implications of the study and limitations. Finally, this chapter makes some recommendations for future research.

5.2 Summary of the Study

This study focuses in examining the relationship between market liquidity and the determinants of sukuk in the context of Malaysia. Sukuk are an innovative product of Islamic capital market that represent undivided ownership in the underlying assets and not based on debt capital as the conventional bonds. The objectives of our study are to investigate the relationship between market liquidity and sukuk determinants represented by maturity, coupon, age, credit rating, number of trades and amount of trading. Hence, it is interesting to know whether sukuk market is acting as similar to the bond market in terms of liquidity.

Our study is based on a sample size of 933 sukuk records that cover a period of investigation from 1st January, 2005 to 31st December 2015, according to the issued date of sukuk. These secondary data are collected from the Bond Pricing Agency Malaysia (BPAM) data base and also from the Bond info hub of Bank Negara Malaysia (BNM).

This sample of 933 records is collected from five (5) sectors comprise of i) government; ii) quasi-government; iii) finance; iv) Asset Backed Securities (ABS) and v) corporates. Corporates sukuk is the major issuer which comprises 698 records out of the total 933 records in which represents 74.8% .

There are four (4) methods of analysis used in this research namely; the descriptive analysis, Spearman Rank Order Correlation, multiples regression analysis and analysis of variance (ANOVA). From the analysis, natural log of number of trading has the lowest standard deviation among the other independent variables examined with a value of 1.37 basis points. This indicates that natural log of number of trading deviates by 1.44 from its mean.

Age has a positive relationship with liquidity either using bid-ask spread or amihud (2002) measure even though the relationships are quite weak. This reveals that the longer the sukuk are held till maturity, the more active it being traded in the secondary market. Thus, the more liquidity it would be. In other words, for newly issued sukuk, the tendency the sukuk being traded in the secondary market are lower as compared to the older sukuk with longer tenure. This result is not consistent with the bond's negative characteristics towards liquidity as per the previous bond's researchers such as Warga and Jostava (2002) and Mahanti et al. (2008) that discover bonds with lesser number of age or shorter period of time, are more liquid than bonds with greater age.

Based on the results of maturity variable from both measures, it has shown that maturity is positively correlated with market liquidity which is significantly correlated but the relationship's strength is considered as weak. It means, for Malaysian investors, they tend to hold sukuk with shorter maturity. The shorter maturity the investors hold, the lesser would be the market liquidity (Mahanti et al., 2008).

As for the coupon rate, the relationship exists between coupon rate and market liquidity is positive but it is not significant. In view of descriptive statistics, coupon rate has an average of 5.32 percent, whereby the minimum rate is at 2.5 percent and the maximum is at 100.1 percent. Thus, it appears that there is a tendency for investors to buy sukuk with lower coupon rate since the lower interest rate is associated for a lower risk.

In terms of credit ratings, there two different results derive from different measures. Firstly, when the bid-ask spread measure is used, credit rating variable is found to have positive relationship with liquidity except it does not significantly correlated to sukuk's liquidity. Secondly, when amihud (2002) measure is used, credit rating is negatively correlated with liquidity. This is consistent with Rusmawati et al. (2013) that conclude sukuk's credit rating is negatively related to market liquidity. The mean of credit ratings falls under group rated AA1 to AA3. This rated group AA1 to AA3 is seemed to have more demand as compared to other group ratings.

Meanwhile as for volume of trading, the results for both measures seems not giving the same consensus as it is positively correlated with liquidity under bid ask spread but negatively correlated with liquidity under amihud measure. Therefore, the relationship between volume of trading and market liquidity is unclear.

As a conclusion, despite the positive relationship between age and market liquidity as well as positive relationship between maturity and sukuk's liquidity, it does not significantly proved that sukuk market in Malaysia is liquid. It is the culture for investors to hold the securities until maturity rather than traded it in the secondary market. As remarked by Zaidi (2007) as the CEO of Islamic International Rating Agency of Bahrain that investors with buy and hold culture rather than trading the securities in secondary market has led to inefficiency in the market (Zaidi, 2007). Therefore, from the above findings, it can be concluded that Sukuk market in Malaysia is very illiquid market. This proves that sukuk market in Malaysia is not significantly liquid. Even though Malaysian sukuk are the world largest issuance, it does not mean that the securities are also actively traded in the secondary market of Malaysia. There are many factors that interferes the smooth operation of sukuk market in Malaysia such as the global economic crisis, behavioral of market participants and resiliency of financial institutions.

5.3 Implications of the Study

The findings of this study are useful to investors and policy makers as the consequence of revealing the truth could help in rectifying the system. Policy makers especially Bank Negara Malaysia and Securities Commission need to work together in finding ways to improve the sukuk market such as creating more new instruments that give better benefits as well more choices to investors. Incentives or rewards are given to the capable portfolio manager to encourage them to attract more investors to trade in secondary market in order to make the market more liquid.

Investors should be prudent prior making the investments in sukuk market. They need to know the maturity and the tenure or age of the sukuk since the age and maturity are the determinants factors that relate to market liquidity.

5.4 Limitations

The study in sukuk market liquidity has not been done in previous literature through my observations that used liquidity measurements such as bid-ask spread and amihud(2002). Previous researcher studied on sukuk's market liquidity based on latent liquidity measurement due to the absence of sufficient transaction data in the secondary market. Hence, in this study, the major problem is to obtain reliable and sufficient data such as the amount of issuance to allow us proceed with the investigation.

Moreover, the choice of Islamic instruments in Sukuk market is still limited. As of today, there are few types of sukuk such as Sukuk Al-Murabahah, Sukuk Al-Istisna' and Sukuk Al-Salam. Due to the limitation of choice, reflects to the investors' preference for Shari'ah products will be influenced. Thus, this study is unable to segment the sample according to the sukuk structures, instead the study have to consider all types of sukuk as the investigation is in general.

5.5 Recommendations for future research

Due to the global increasing demand for Islamic capital market products such as sukuk, the study on products that are Shari'ah compliant is necessity to overcome any hiccups in the management of Islamic capital market for a smooth and resilience financial system. This study is hoped to be the pioneer in the investigations in sukuk's market liquidity.

Additionally, further research should be done by incorporating other liquidity factors such as the liquidity risk, yield spread and price in order to have more input to the study on liquidity since the sukuk market is increasing in demand and becomes more sophisticated as the financial market is moving towards digitalization and electronification.

5.6 Conclusion

Market liquidity is a main concern for the investors, practioners and regulators. When the market is liquid, it makes the market looks more resilient and attractive. However, the study in sukuk's market liquidity is very limited as compares to the study of market liquidity in bond market. Thus, this study aims to investigate the relationship between market liquidity and the independent variables of maturity, age, coupon rate, credit ratings, number of trades and amount of trading.

From the study, it is found that age of the sukuk and sukuk's maturity are positively significant correlated with market liquidity. Meanwhile, the other variables such as credit ratings, number of trades and amount of trading are said to have unclear relationship with market liquidity. Furthermore, based on the findings, coupon rate could not be accepted to be the determinant for market liquidity due to the relationship between market liquidity and coupon rate is insignificant.

The results make us to understand that the secondary market of sukuk's market in Malaysia is still illiquid as per the remarked by the Deputy Chief Executive of Securities Commission (SC) in Malaysia (Dhesi, 2012). Investors tend to hold their securities until reached its maturity rather than to trade them in the secondary market.

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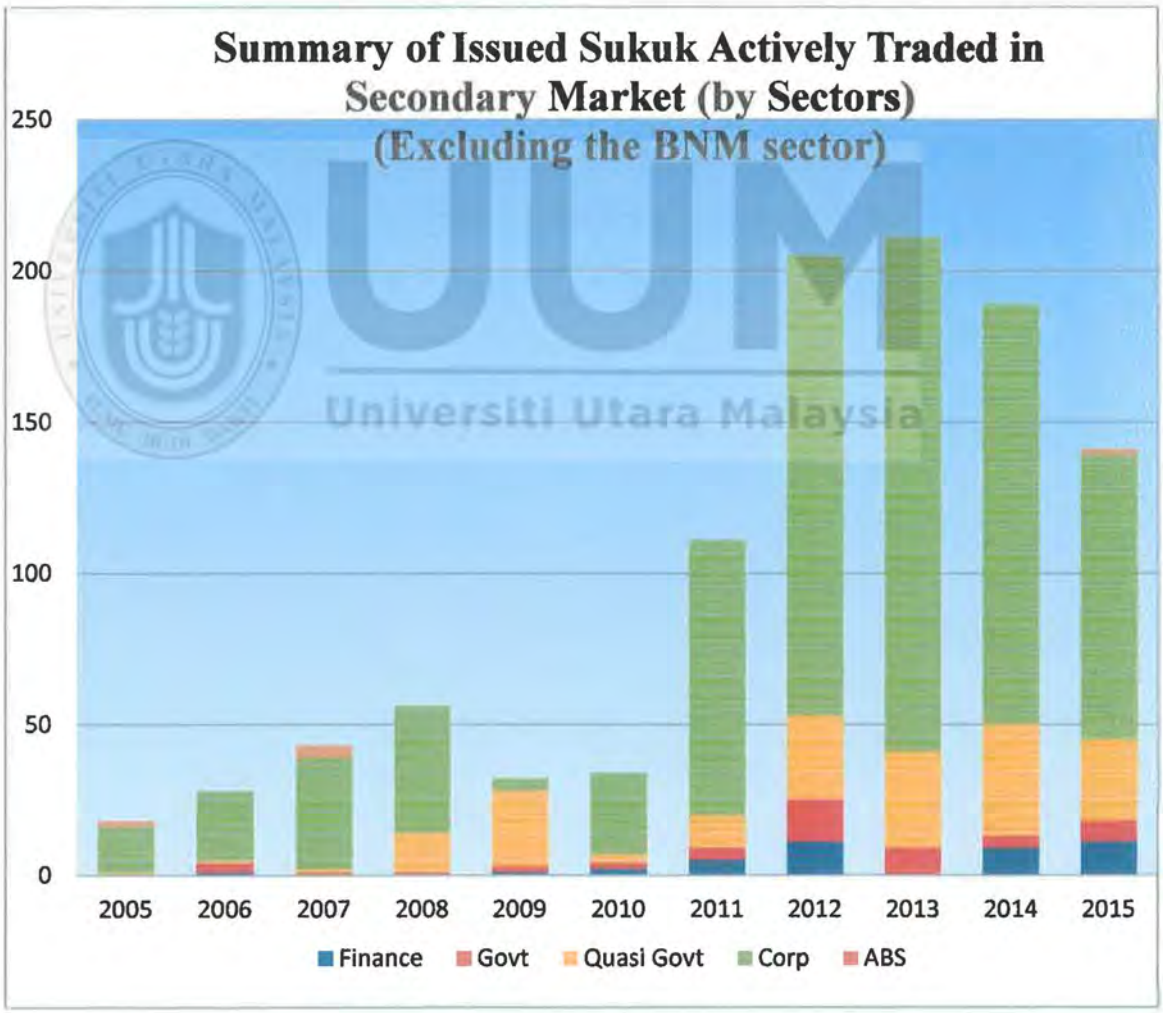
APPENDIX A

Summary of Issued Sukuk actively traded in Secondary Market (by sectors) (Excluding the BNM sector)

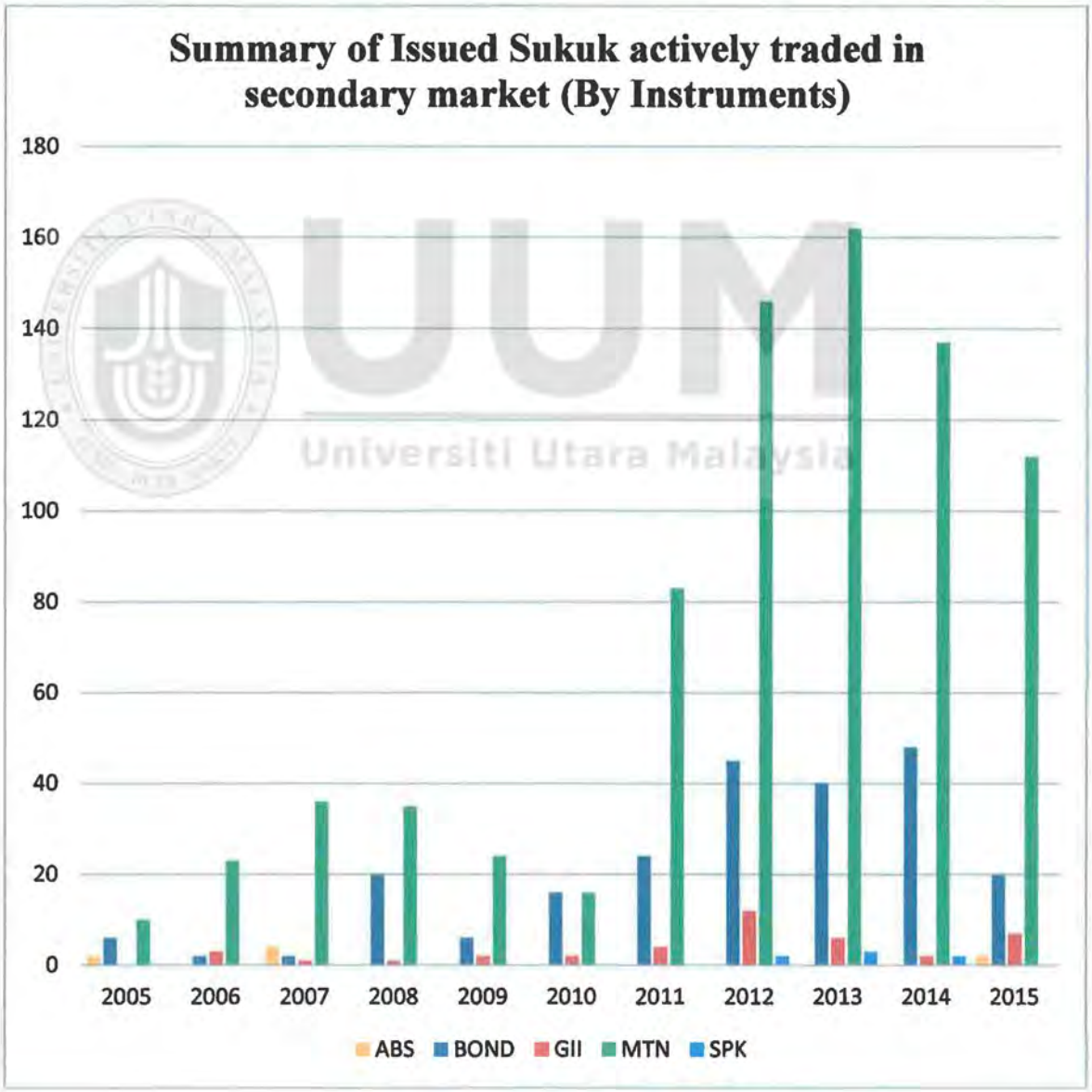
	Year										
Sector	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Finance	0	1	0	0	1	2	5	11	0	9	11
Govt	0	3	1	1	2	2	4	14	9	4	7
Quasi Govt	1	1	1	13	25	3	11	28	32	37	27
Corp	15	23	37	42	4	27	91	152	170	139	94
ABS	2	0	4	0	0	0	0	0	0	0	2
Total	18	28	43	56	32	34	111	205	211	189	141



APPENDIX B

Summary of Issued Sukuk actively traded in secondary market (by Instruments)

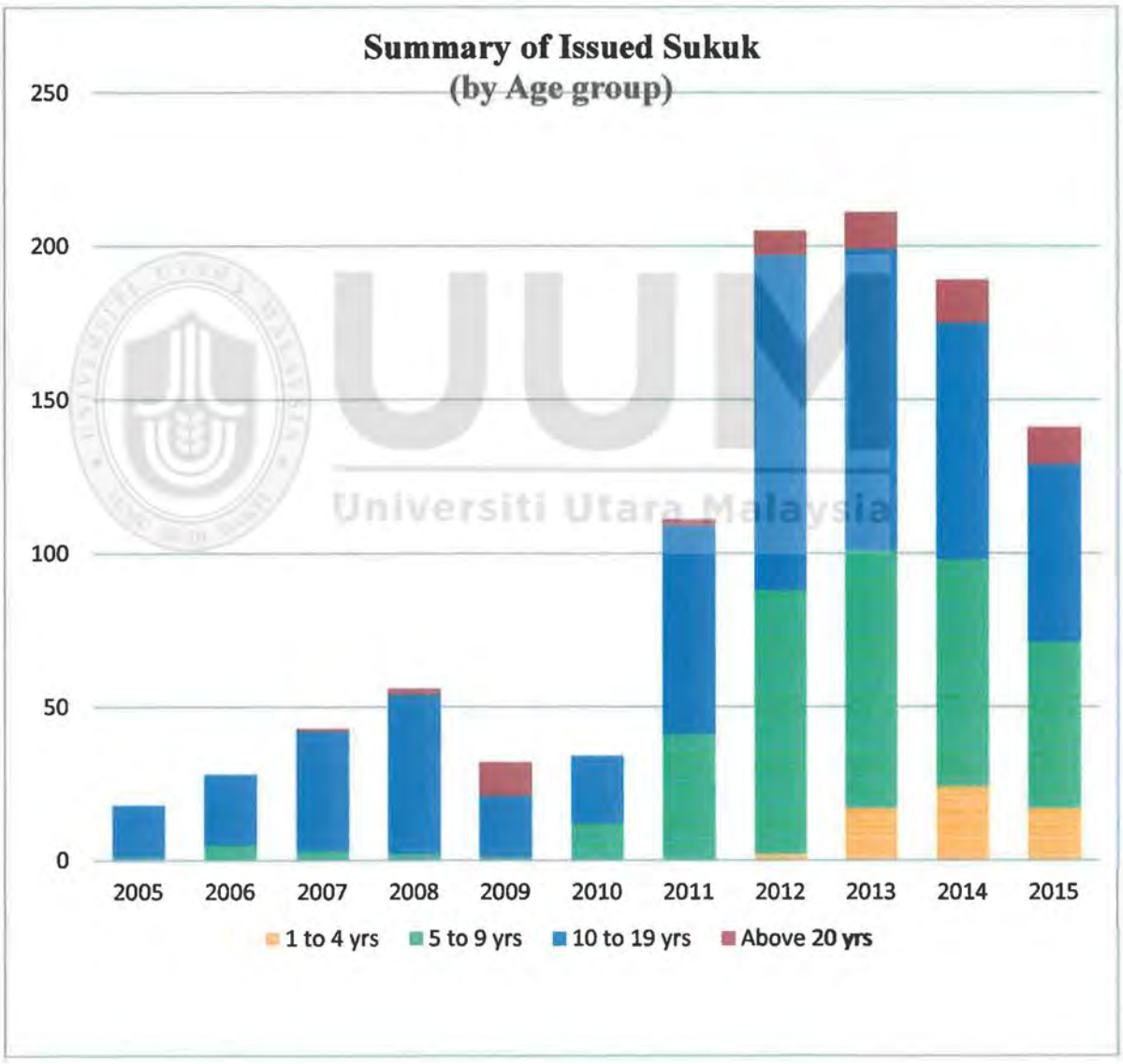
Instrument	Year										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ABS	2	0	4	0	0	0	0	0	0	0	2
BOND	6	2	2	20	6	16	24	45	40	48	20
GII	0	3	1	1	2	2	4	12	6	2	7
MTN	10	23	36	35	24	16	83	146	162	137	112
SPK	0	0	0	0	0	0	0	2	3	2	0
Total	18	28	43	56	32	34	111	205	211	189	141



APPENDIX C

Summary of Issued Sukuk (by age group)

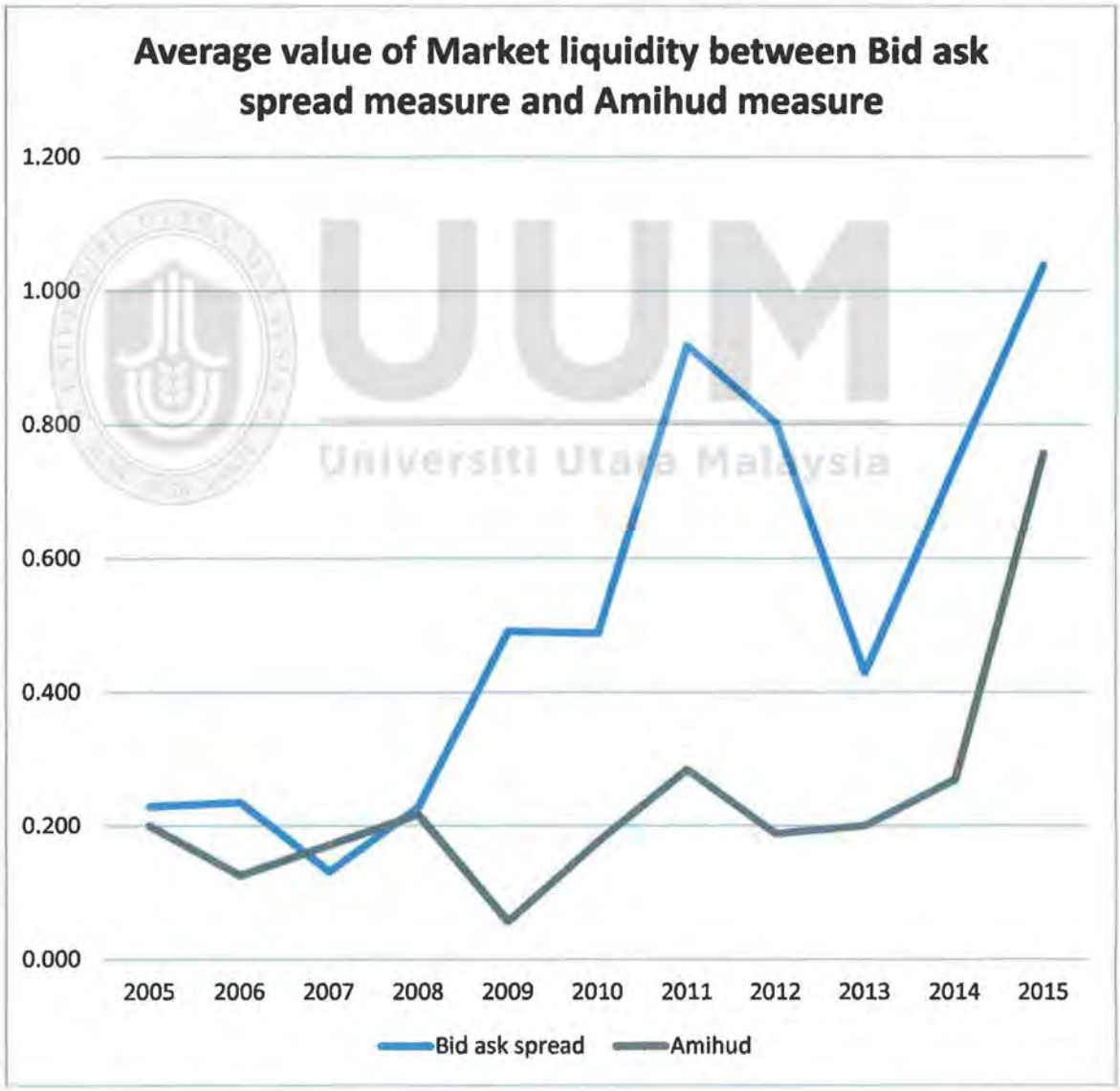
Age (yr)	Year										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1 to 4 yrs	0	0	0	0	0	0	0	2	17	24	17
5 to 9 yrs	1	5	3	2	1	12	41	86	84	74	54
10 to 19 yrs	17	23	39	52	20	22	68	109	98	77	58
Above 20 yrs	0	0	1	2	11	0	2	8	12	14	12
Total	18	28	43	56	32	34	111	205	211	189	141



APPENDIX D

Average value of market liquidity between bid ask spread measure and amihud measure

Liquidity Measure (bp)	Year										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bid ask spread	0.229	0.235	0.132	0.228	0.491	0.488	0.918	0.803	0.429	0.739	1.038
Amihud	0.200	0.126	0.171	0.217	0.057	0.176	0.284	0.188	0.200	0.270	0.757



APPENDIX E

Rating Definition by Rating Agency Malaysia (RAM) on Debt-Based Sukuk

Type	Rating	Definition
Long Term	AAA	A sukuk rated AAA has superior safety for payment of financial obligations. This is the highest long-term Issue Rating assigned by RAM Ratings to a debt-based sukuk.
Long Term	AA	A sukuk rated AA has high safety for payment of financial obligations. The issuer is resilient against adverse changes in circumstances, economic conditions and/or operating environments.
Long Term	A	A sukuk rated A has adequate safety for payment of financial obligations. The issuer is more susceptible to adverse changes in circumstances, economic conditions and/or operating environments than those in higher-rated categories.
Long Term	BBB	A sukuk rated BBB has moderate safety for payment of financial obligations. The issuer is more likely to be weakened by adverse changes in circumstances, economic conditions and/or operating environments than those in higher-rated categories. This is the lowest investment-grade category.
Long Term	BB	A sukuk rated BB has low safety for payment of financial obligations. The issuer is highly vulnerable to adverse changes in circumstances, economic conditions and/or operating environments.
Long Term	B	A sukuk rated B has very low safety for payment of financial obligations. The issuer has a limited ability to withstand adverse changes in circumstances, economic conditions and/or operating environments.
Long Term	C	A sukuk rated C has a high likelihood of default. The issuer is highly dependent on favourable changes in circumstances, economic conditions and/or operating environments, the lack of which would likely result in it defaulting on a particular sukuk.

Type	Rating	Definition
Long Term	D	A sukuk rated D is either currently in default or faces imminent default on its financial obligations, whether or not formally declared. The D rating may also reflect a distressed exchange, the filing of bankruptcy and/or other actions pertaining to the issuer that could jeopardise the payment of a particular sukuk.
Short Term	P1	A sukuk rated P1 has high safety for payment of financial obligations in the short term. This is the highest short-term Issue Rating assigned by RAM Ratings to a debt-based sukuk.
Short Term	P2	A sukuk rated P2 has adequate safety for payment of financial obligations in the short term. The issuer is more susceptible to the effects of deteriorating circumstances than those in the highest-rated category.
Short Term	P3	A sukuk rated P3 has moderate safety for payment of financial obligations in the short term. The issuer is more likely to be weakened by the effects of deteriorating circumstances than those in higher-rated categories. This is the lowest investment-grade category.
Short Term	NP	A sukuk rated NP has doubtful safety for payment of financial obligations in the short term. The issuer faces major uncertainties that could compromise its capacity for payment of a particular sukuk.
Short Term	D	A sukuk rated D is either currently in default or faces imminent default on its financial obligations, whether or not formally declared. The D rating may also reflect a distressed exchange, the filing of bankruptcy and/or other actions pertaining to the issuer that could jeopardise the payment of a particular sukuk.

Source : Bondinfo.bnm.gov.my

APPENDIX F

SPSS OUTPUT

Frequency Table

Sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Finance	37	4.0	4.0	4.0
	Government	47	5.0	5.0	9.0
	Quasi Govt	145	15.5	15.5	24.5
	Corporate	698	74.8	74.8	99.4
	ABS	6	.6	.6	100.0
	Total	933	100.0	100.0	

Instrument

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ABS	6	.6	.6	.6
	BONDS	196	21.0	21.0	21.7
	GII	40	4.3	4.3	25.9
	MTN	684	73.3	73.3	99.2
	SPK	7	.8	.8	100.0
	Total	933	100.0	100.0	

Cr Rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AAA	283	30.3	30.3	30.3
	AA1- AA3	435	46.6	46.6	77.0
	A1 - A3	30	3.2	3.2	80.2
	BBB1 - BBB3	15	1.6	1.6	81.8
	BB1 - BB3	11	1.2	1.2	83.0
	B1 - B3	1	.1	.1	83.1
	NR(LT)	158	16.9	16.9	100.0
	Total	933	100.0	100.0	

Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic
Maturity	933	.8740	99.0548	7.492566	7.1304567	7.176
Age	933	2.0	100.0	11.047	6.9593	7.006
Coupon	933	2.500	100.100	5.31870	3.700769	18.912
Bid ask spread	933	.0000	2.0002	.648021	.8972800	.833
Amihud	933	.0001	6.5687	.263998	.6692886	5.055
Cr Rating	933	1	9	2.99	2.803	1.556
ln_Voltrg	933	.00	11.41	5.0991	1.65228	.622
ln_notrdg	933	.69	8.71	3.1620	1.37251	.552
Valid N (listwise)	933					

Correlations

			Sector	Instrument	year	maturity	age	coupon	Cr Rating
Spearman's rho	year	Correlation Coefficient	-.105**	.014	1.000	.290**	-.248**	-.254**	.041
		Sig. (2-tailed)	.001	.665	.	.000	.000	.000	.212
		N	933	933	933	933	933	933	933
	maturity	Correlation Coefficient	-.032	-.085**	.290**	1.000	.791**	.245**	-.048
		Sig. (2-tailed)	.324	.009	.000	.	.000	.000	.140
		N	933	933	933	933	933	933	933
	age	Correlation Coefficient	.045	-.103**	-.248**	.791**	1.000	.493**	-.024
		Sig. (2-tailed)	.165	.002	.000	.000	.	.000	.456
		N	933	933	933	933	933	933	933
	coupon	Correlation Coefficient	.322**	.046	-.254**	.245**	.493**	1.000	-.003
		Sig. (2-tailed)	.000	.159	.000	.000	.000	.	.938
		N	933	933	933	933	933	933	933
	Cr Rating	Correlation Coefficient	-.477**	.125**	.041	-.048	-.024	-.003	1.000
		Sig. (2-tailed)	.000	.000	.212	.140	.456	.938	.
		N	933	933	933	933	933	933	933
	yield	Correlation Coefficient	.333**	.009	.104**	.522**	.516**	.622**	.037
		Sig. (2-tailed)	.000	.789	.002	.000	.000	.000	.260
		N	933	933	933	933	933	933	933
	Bid ask spread	Correlation Coefficient	-.132**	.097**	-.160**	.138**	.243**	.005	.103**
		Sig. (2-tailed)	.000	.003	.000	.000	.000	.876	.002
		N	933	933	933	933	933	933	933
	amihud	Correlation Coefficient	.186**	.045	-.077*	.182**	.260**	.225**	-.102**
		Sig. (2-tailed)	.000	.173	.018	.000	.000	.000	.002
		N	933	933	933	933	933	933	933
	ln_Voltrg	Correlation Coefficient	-.366**	.209**	-.168**	-.048	.014	-.240**	.243**
		Sig. (2-tailed)	.000	.000	.000	.139	.661	.000	.000
		N	933	933	933	933	933	933	933
	ln_notrdg	Correlation Coefficient	-.244**	.187**	-.211**	-.066*	.027	-.164**	.218**
		Sig. (2-tailed)	.000	.000	.000	.044	.408	.000	.000
		N	933	933	933	933	933	933	933
	lnamt_os	Correlation Coefficient	-.512**	.216**	.139**	.105**	-.003	-.358**	.290**
		Sig. (2-tailed)	.000	.000	.000	.001	.926	.000	.000
		N	933	933	933	933	933	933	933

Correlations

			yield	Bid ask	amihud	ln_Voltrg	ln_notrdg	lnamt_os
Spearman's rho	maturity	Correlation Coefficient	.522**	.138**	.182**	-.048	-.066*	.105**
		Sig. (2-tailed)	.000	.000	.000	.139	.044	.001
		N	933	933	933	933	933	933
	age	Correlation Coefficient	.516**	.243**	.260**	.014	.027	-.003
		Sig. (2-tailed)	.000	.000	.000	.661	.408	.926
		N	933	933	933	933	933	933
	coupon	Correlation Coefficient	.622**	.005	.225**	-.240**	-.164**	-.358**
		Sig. (2-tailed)	.000	.876	.000	.000	.000	.000
		N	933	933	933	933	933	933
	Cr Rating	Correlation Coefficient	.037	.103**	-.102**	.243**	.218**	.290**
		Sig. (2-tailed)	.260	.002	.002	.000	.000	.000
		N	933	933	933	933	933	933
	yield	Correlation Coefficient	1.000	-.007	.220**	-.255**	-.174**	-.218**
		Sig. (2-tailed)	.	.829	.000	.000	.000	.000
		N	933	933	933	933	933	933
	Bid ask	Correlation Coefficient	-.007	1.000	.717**	.468**	.502**	.355**
		Sig. (2-tailed)	.829	.	.000	.000	.000	.000
		N	933	933	933	933	933	933
	amihud	Correlation Coefficient	.220**	.717**	1.000	-.175**	-.081*	-.161**
		Sig. (2-tailed)	.000	.000	.	.000	.014	.000
		N	933	933	933	933	933	933
	ln_Voltrg	Correlation Coefficient	-.255**	.468**	-.175**	1.000	.916**	.733**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000
		N	933	933	933	933	933	933
	ln_notrdg	Correlation Coefficient	-.174**	.502**	-.081*	.916**	1.000	.618**
		Sig. (2-tailed)	.000	.000	.014	.000	.	.000
		N	933	933	933	933	933	933
	lnamt_os	Correlation Coefficient	-.218**	.355**	-.161**	.733**	.618**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.
		N	933	933	933	933	933	933

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.467[a]	.219	.212	.7966438

a. Predictors: (Constant), mat, age, coupon, Cr Rating, ln_notrdg, ln_Voltrg

b. Dependent Variable: bid ask spread

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	163.955	6	20.494	32.293	.000[b]
	Residual	586.409	926	.635		
	Total	750.364	932			

a. Dependent Variable: bid ask spread

b. Predictors: (Constant), mat, age, coupon, Cr Rating, ln_notrdg, ln_Voltrg

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-.231	.229		-1.009	.313
	mat	.072	.012	.570	5.922	.000
	age	-.067	.012	-.519	-5.422	.000
	coupon	.004	.007	.018	.573	.567
	Cr Rating	.012	.012	.037	1.007	.314
	ln_Voltrg	.007	.053	.013	.136	.892
	ln_notrdg	.192	.053	.294	3.612	.000

Coefficients[a]

Model		95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Correlations Zero-order	Correlations Partial	Part	Collinearity Statistics Tolerance
1	(Constant)	-.681	.219				
	mat	.048	.095	.085	.191	.172	.091
	age	-.091	-.043	.029	-.176	-.158	.092
	coupon	-.010	.019	-.084	.019	.017	.897
	Cr Rating	-.011	.034	.236	.033	.029	.644
	ln_Voltrg	-.098	.112	.393	.004	.004	.087
	ln_notrdg	.088	.297	.387	.118	.105	.127

Coefficients[a]

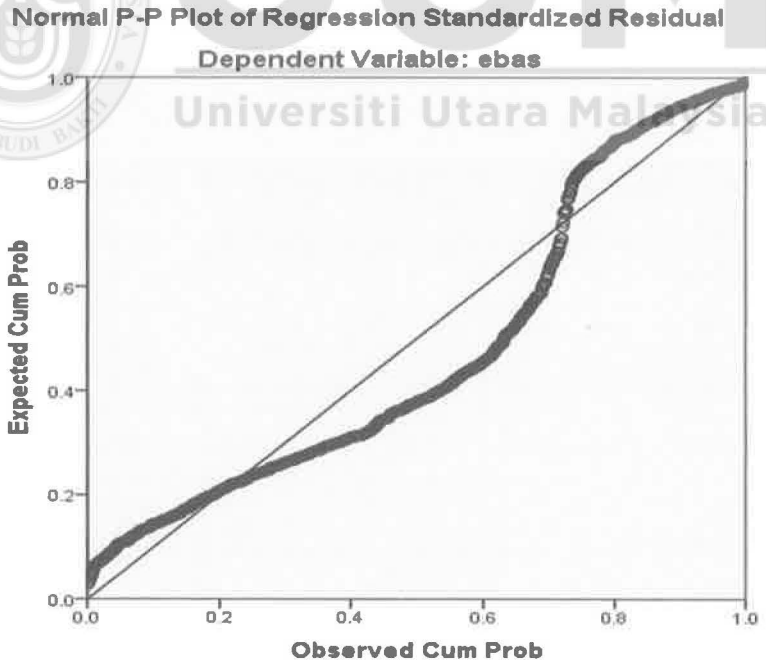
Model		Collinearity Statistics VIF
1	(Constant)	
	mat	10.944
	age	10.815
	coupon	1.114
	Cr Rating	1.553
	ln_Voltrg	11.431
	ln_notrdg	7.849

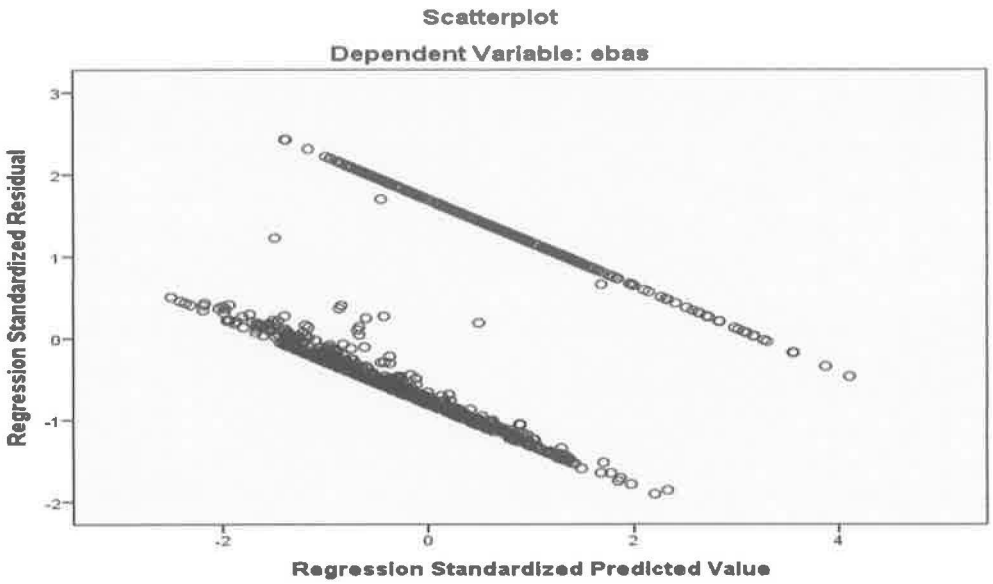
a. Dependent Variable: bid ask spread (ebas)

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	mat	age	coupon	Cr Rating	ln_Voltrg	ln_notrdg
1	1	7.463	1.000	.00	.00	.00	.00	.00	.00	.00
	2	.650	3.388	.00	.03	.01	.00	.05	.00	.00
	3	.459	4.034	.00	.01	.00	.28	.27	.00	.00
	4	.259	5.370	.00	.00	.00	.44	.41	.00	.01
	5	.110	8.248	.02	.00	.00	.16	.04	.01	.05
	6	.016	21.849	.03	.55	.62	.03	.04	.02	.16
	7	.009	28.567	.62	.23	.18	.00	.03	.07	.01

Charts





Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.270[a]	.073	.065	.6472498

a. Predictors: (Constant), mat, age, coupon, Cr Rating, ln_notrdg, ln_Voltrg
b. Dependent Variable: amihud

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.393	6	3.799	9.069	.000[b]
	Residual	387.094	926	.419		
	Total	417.487	932			

a. Dependent Variable: amihud
b. Predictors: (Constant), mat, age, coupon, Cr Rating, ln_notrdg, ln_Voltrg

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.818	.186		4.395	.000
	mat	.017	.010	.181	1.726	.085
	age	-.017	.010	-.179	-1.715	.087
	coupon	.002	.006	.013	.377	.706
	Cr Rating	-.003	.009	-.013	-.327	.744
	ln_Voltrg	-.200	.043	-.495	-4.618	.000
	ln_notrdg	.070	.043	.144	1.626	.104

Coefficients[a]

Model		95.0% Confidence Interval for B		Correlations			Collinearity Statistics
		Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance
1	(Constant)	.453	1.184				
	mat	-.002	.036	.029	.057	.055	.091
	age	-.037	.002	-.014	-.056	-.054	.092
	coupon	-.010	.014	-.008	.012	.012	.897
	Cr Rating	-.022	.015	-.083	-.011	-.010	.644
	ln_Voltrg	-.286	-.115	-.229	-.150	-.146	.087
	ln_notrdg	-.015	.155	-.203	.053	.051	.127

Coefficients[a]

Model		Collinearity Statistics
		VIF
1	(Constant)	
	mat	10.944
	age	10.815
	coupon	1.114
	Cr Rating	1.553
	ln_Voltrg	11.431
	ln_notrdg	7.849

a. Dependent Variable: amihud

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions						
				(Constant)	mat	age	coupon	Cr Rating	ln_Voltrg	ln_notrdg
1	1	7.463	1.000	.00	.00	.00	.00	.00	.00	.00
	2	.650	3.388	.00	.03	.01	.00	.05	.00	.00
	3	.459	4.034	.00	.01	.00	.28	.27	.00	.00
	4	.259	5.370	.00	.00	.00	.44	.41	.00	.01
	5	.110	8.248	.02	.00	.00	.16	.04	.01	.05
	6	.016	21.849	.03	.55	.62	.03	.04	.02	.16
	7	.009	28.567	.62	.23	.18	.00	.03	.07	.01

a. Dependent Variable: amihud

Charts