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

AMIRUL HAMIZA BT. ABD.HAMID

MASTER OF SCIENCE (FINANCE)
UNIVERSITI UTARA MALAYSIA
AUGUST 2017

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

By

AMIRUL HAMIZA BINTI ABD.HAMID

Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business,
University Utara Malaysia,
in Partial Fulfillment of the Requirement for the Master of Science (Finance)

Pusat Pengajian Ekonomi, Kewangan dan Perbankan
SCHOOL OF ECONOMICS, FINANCE, AND BANKING
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PENYELIDIKAN
(Certification of Research Paper)

Saya, mengaku bertandatangan, memperakukan bahawa
(I, the undersigned, certified that)
AMIRUL HAMIZA BT ABD HAMID (810173)

Calon untuk Ijazah Sarjana
(Candidate for the degree of)
MASTER OF SCIENCE (FINANCE)

telah mengemukakan kertas penyelidikan yang bertajuk
(has presented his/her research paper of the following title)

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

Seperti yang tercatat di muka surat tajuk dan kulit kertas penyelidikan
(as it appears on the title page and front cover of the research paper)

Bahawa kertas penyelidikan tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that the research paper acceptable in the form and content and that a satisfactory knowledge of the field is covered by the dissertation).

Nama Penyelia (Name of Supervisor) : **DR. NORSHAFIZAH BT HANAFI**

Tandatangan (Signature) :

Tarikh (Date) : **23 AUGUST 2017**

PERMISSION TO USE

In presenting this dissertation/project paper in partial fulfillment of the requirements for a Postgraduate degree from Universiti Utara Malaysia (UUM), I agree that the university's library may take it freely available for inspection. I further agree that permission for copying of this dissertation/project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor or in other absence by the Dean of Othman Yeop Abdullah Graduate School of Business, where I did my dissertation/project paper. It is understood that any copying or publication or use of this dissertation/project paper or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due to recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my dissertation/project paper.

Request for permission to copy or to make other use of materials in this dissertation/project paper, in whole or in parts should be addressed to:

Dean of Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

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

ACKNOWLEDGEMENT

Alhamdulillah, thanks to Allah S.W.T for providing me the strength to proceed with this research until I am able to complete it.

I would like to take this opportunity to express my deepest gratitute and sincere appreciation to my supervisor Dr.Norshafizah bt. Hanafi who had provided support and guidance. Her encouragement has enabled for this dissertation to be completed.

Besides my supervisor, I would like to thank all my lecturers for their advice and suggestions.

My special respects and thanks also to my beloved late father, Abdul Hamid Bin Zamburi who strongly encouraged me to conduct a research in Islamic finance. May his soul rest in peace and blessed by Allah S.W.T.

I also would like to dedicate my special thanks and gratitude to my mother and my husband for their great support, endless encouragement and prayers throughout the duration of completing this research.

Last but not least, my deepest and sincere thanks to each and everyone who had contributed to the success of this dissertation.

Thank you.

TABLE OF CONTENTS

CHAPTER 2: LITERATURE REVIEW

CHAPTER 3: RESEARCH METHODOLOGY

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER 1

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.

The contents of the thesis is for internal user only

REFERENCES

AAOIFI. (2008). *Investment Islamic Bonds* (Shari'ah Standard No 18*)*. Accounting and Auditing Organization for Islamic Financial Institutions (AAIOFI). Retrieved from http://www.aaoifi.co /

AAOIFI. (2011). *Sukuk Definition.* Malaysia. Retrieved from http://www.nortonrose.com /knowledge/publications/16852/aaoifi-statement-on-sukuk-and-its-implications/

Alexander, G., Edwards, A., and Ferri, M.(2000). The Determinants of Trading Volume of High-Yield Corporate Bonds, *Journal of Financial Markets*, Vol 3, pp. 177-204.

Amihud, Y. and Mendelson, H. (1986). Asset pricing & the bid-ask spread. *Journal of Financial Economics,* Vol 17(2), 223-249. doi:org/10.1016/0304-405x(86)90065-6.

Amihud, Y. (2002). Illiquidity and stock returns: cross-section and time series effects. *Journal of Financial Markets*, Vol. 5, pp. 31-56.

Anderson, D.R., Sweeney, D.J. and Williams, T.A. (1981). Statistics for Business and Economics, 2nd ed., West Publishing Co,USA Minnesota, pp 474 – 475.

Ariff. M, Cheng, F. and Mohamad, S. (2013). *Handbook of ASIAN Sovereign Bond Markets: Yield and Risk.* (pp. 102 – 112). Malaysia: Universiti Putra Malaysia Press.

Bank Negara Malaysia. (1999). *The Central Bank and the Financial System in Malaysia – A Decade of Change*. Kuala Lumpur: Bank Negara Malaysia.

Babbel, D.F., Merrill, C.B., Myer, M.F., and Villiers, M.D. (2003). The Effect of Transaction Size on Off-the-Run Treasury Prices. *Wharton Financial Institutions Center*, Working paper No.01-03.

Bao, J., Pan, J. and Wang, J. (2008). Liquidity of Corporate Bonds. *Journal of Finance* 66,911–946. Retrieved from https://ssrn.com/abstract=1106852 or http://dx.doi.org/10.2139/ssrn.1106852/

Belsley, D. A., Kuh, E. & Welsch, R. H. (1980). Regression diagnostics: Identifying influential data and sources of collinearity. New York: John Wiley & Sons.

Bouchaddekh, T. and Bouri, A. (2013). Measures, Determinants and Commonality in Liquidity: Empirical Tests on Tunisian Stock Market. *International Journal of Science and Research.* 4(1), pp 347-355. Retrieved from http://www.ijsr.net.

Brandao-Marques, L., Gonzalez-Hermosillo, B., Bouveret, A., Han, F., Jones, D., Kiff, ...Yan, K. (2015). *International Monetary Fund.* Retrieved from http://www.imf.org/External/ Pubs/FT/GFSR/2015/02/pdf/cr_v2.pdf.

Calamia, A. (1999). Market Microstructure : Theory & Empirics. *LEM Working Paper Series.* Retrieved from http://www.lem.sssup.it/WPLem/files/199919pdf /

Chakravarty, S.,Sarkar,A.(1999). Liquidity in US fixed income markets: a comparison of the bid–ask spread in corporate, government and municipal bond markets. *Federal Reserve Bank of NewYork Staff Report* , No.73.

Chakravarty, S. and Sarkar, A. (2003). Trading costs in three US bond markets. *The Journal of Fixed Income*, June, pp 39-48.

Ching, P.W., Haniff, M.N., Sinnesamy, G., Ameer, R., & Abdul Hamid, S.F. (2009). *Financial Market*. Malaysia: McGraw Hill.

Chordia, T., Richard W., Roll,R. and Subrahmanyam, A. (2000). Commonality in liquidity, *Journal of Financial Economics* ,56, 3-28.

Chordia, T., Roll, R., Subrahmanyam, A.(2001). Market liquidity and trading activity. *Journal of Finance* , 56, pp 501–530.

Choudhry,M. (2009). The Value of Introducing Structural Reform to Improve Bond Market Liquidity: Experience from the U.K. Gilt Market. *European Journal of Finance and Banking Research*, Vol.2, No.2, pp 13-35. Retrieved from http://ssrn.com/abstract=1536087/.

CM2.(2006).Why Malaysia - Capital Markets Malaysia. Retrieved from http://www.capitalmarketmalaysia/why-malaysia/.

Cohen, J.W. (1988). Statistical power analysis for the behavioral sciences 2nd ed., *Hillsdale*, NJ:Lawrence Erlbaum Associates.

Colton, J.A. and Bower, K.M. (2002). Some Misconceptions about R^2. *International Society of Six Sigma Professionals*, EXTRAOrdinary Sense, Vol 3(2), pp 20-22. Retrieved from http://www.keithbower.com/Miscellaneous/ some%20 Misconceptions% 20about%20R-Sq.htm.

Datar, V.T., Naik, N., and Radcliffe, R.(1998). Liquidity and stock returns: An alternative test. *Journal of Financial Markets,* 1, 2, pp 203-219.

Demsetz, H. (1968). The Cost of Transacting. *Quarterly Journal of Finance*, 45, pp 33-53.

Dhesi, D. (2012). Liquidity hampers Sukuk. *The Star Online*. Retrieved from http://www.thestar.com.my/business/business-news/2012/01/27/liquidity-hampers-sukuk

Dick-Nielsen, J., Feldutter, P. ,Lando,D.,(2012). Corporate bond liquidity before and after the on set of the sub prime crisis. *Journal of Financial Economics* Vol.103,pp 471–492.

Duffie, D., Garleanu, N., and Pedersen, L.H. (2005). *Over the Counter Markets.* Econometrica, Vol 73 (6), pp 1815- 1847. Retrieved from doi: 10.1111/j.1468-0262.2005.00639.

Duffie, Darrell.(2012). Market Making under the Proposed Volcker Rule. *Working Paper 106*, Rock Center for Corporate Governance at Stanford University, Palo Alto, California.

Edwards, A., Harris, L., and Piwowar, M. (2004). Corporate bond market transparency and transaction costs. *SEC Working Paper.*

El Tiby, A.M. (2011). *Islamic Banking: How to manage risk and improve profitability.* John Wiley & Sons, USA, pp.71.

Fleming, M., and Remolona,E.(1999). Price Formation and Liquidity in the US Treasury Market: The Response to Public Information, *Journal of Finance*, 52, pp.1901-1915

Fridson, M.S. and Garman, M.C. (1998). Determinants of Spreads on New High-Yield Bonds, *Financial Analysts Journal,* March/April, pp 28-39.

Friewald, N.,Jankowitsch, R., and Subrahmanyam M.G. (2012). Illiquidity or credit deterioration: A study on liquidity in the US corporate bond market during financial crises. *Journal of Financial Economics.* 105, pp 18-36. Retrieved from https:www.elsevier.com/locate/jfec. Doi:10.1016/j.jfineco.2012.02.001.

Ghemari, A.E. (2012). *Factors influence Sukuk and Conventional Bonds in Malaysia.* Malaysia: Universiti Utara Malaysia

Goyat, S. (2011). The basis of market segmentation: a critical review of literature. *European Journal of Business and Management.* Vol 3, No 9.

Hasbrouck, J., and Seppl.D. (2001).Common Factors in Prices, Order Flows, and Liquidity. *Journal of Financial Economics*, 59 (2001), pp 383-411.

Hong, G. and Warga, A., (2000). An empirical study of bond market transactions. *Financial Analysts Journal* , 56, 32–46.

Hotchkiss, E., A. Warga, and G. Jostova (2002). Determinants of Corporate Bond Trading: A Comprehensive Analysis. *Working Paper*, Boston College.

Howell, D.C. (1999). Fundamental statistics for the behavioral sciences, 4th ed., *Calirfornia:Brooks*, Cole Publishing Co.

IIFM. (2016). *Sukuk Report: A comprehensive Study of the Global Sukuk Market.* Retrieved from http://www.iifm.net

Investment & Finance.(2014). *Islamic Finance: Structures of Sukuk.* Retrieved from http://www.investment-and-finance.net

IOSCO. (2004). *Islamic Capital Market Fact Finding Report* : International Organization of Securities Commission.

IOSCO. (2007). Factors Influencing Liquidity in Emerging Markets, *Report of the IOSCO Emerging Market Committee*, (December 2007). Retrieved from https://www.iosco.org/library/pubdocs/pdf/IOSCOPD258.pdf/

Islamic & finance (2017). *Salam contract*. Retrieved from http://www.investment-and-finance.net/islamic-finance/s/sukuk-al-salam.html

Jack, D. (2016). *Why Liquidity Matters in the Corporate Bond Market.* Retrieved from https://www.investopedia.com/articles/investing/012216/why-liquidity-matters-in-the-corporate-bonds-market.asp

Jamal, A.Z. (2007). Overcoming barriers to liquidity: Commoditization, Sukuk, promoting issuance and a Secondary Market, *Islamic Finance and Investment World Europe 2007*. Retrieved from http://www.scribd.com/document/47943474/20070625.

Jankowitsch, R., Nashikkar, A., and Subrahmanyam, M. G. (2011). Price dispersion in OTC markets: A new measure of liquidity. *Journal of Banking & Finance* , Vol 35, pp343-357.

Jobst, A., Kunzel, P., Mills, P., & Sy, A. (2008). Islamic Bond Issuance - What Sovereign Debt Managers Need to Know. *International Monetary Fund Working Paper PDP/08/3*

Jovanovic, B. ,and Rousseau,P.L. (2001). Liquidity Effect in the Bond Market. *National Bureau of Economic Research Working Paper No. 8957*, (Nov), JEL No. E44, E5.

Kamara, A. (1994). Liquidity, Taxes, and Short-Term Treasury Yields. *Journal of Financial and Quantitative Analysis*, 29 (1994), 403-417.

Kendall, M. G. (1957). A course in multivariate analysis. London: Griffin.

Krejcie, R.V., & Morgan, D.W. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement, Vol 30,pp 607-610

Kyle, A. (1985). Continuous auctions and insider trading. *Econometrica*, Vol 53, pp 1315–1335.

Leung, M. (2014). Sukuk Liquidity Trends. *Sukuk 201 Global.* Retrieved from http://us.spindices.com/documents/education/practice-essentials-sukuk-liquidity-trends.pdf/

Lin, H., Wang,J. and Wu,C. (2011). Liquidity risk and expected corporate bond returns. *Journal of Financial Economics* , Vol 99, pp 628–650.

Madhavan, A. (2000). Market Microstructure: A Survey. *Journal of Financial Markets* , Vol 3, pp 205-258.

Mahanti, S., Nashikkar, A., Subrahmanyam, M., Chacko, G. and Mallik, G. (2008). Latent liquidity: A new measure of liquidity, with an Application to Corporate Bonds, *Journal of Financial Economics,* Vol 88, pp 272-298.

Mohammed, N. (2014). *The Main Benefits That Result From Sukuk.* Retrieved from http://www.sukuk.com/article/main-benefits-result-sukuk-3529/

Mohd Asri, Norain et al. (2004). The effect of Islamic private debt securities rating changes on firm's common stock returns. *The Journal of Muamalat and Islamic Finance Research*, 1 (1), 25-38.

Mokhtar, S., Rahman,S., Kamal,H. & Thomas,A. (2008). *Sukuk and the Capital Markets.* In A.Thomas (Eds), *Sukuk: Islamic Capital Market Series,* Thomson Reuters, SC: Malaysia , pp 18-39.

Nathif, J. A. and Thomas, A. (2009). Islamic Bonds: Your Guide to Issuing, Structuring and Investing in Sukuk *(London: Euromoney Books*, 2004), pp. 42.

O'Brien, R.M. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. Quality & Quantity. *Springer*, Vol. 41, pp 673-690. Retrieved from https://www.researchgate.net/publication/226005307. Doi 10.1007/s11135-006-90186

O'Hara, M. (1995). Market Microstructure Theory. *The Review of Financial Studies.* Vol 8, No.4, pp 1235-1238. Retrieved from https://www.jstor.org/stable/2962305

Pallant, J. (2016). SPSS Survival Manual : A Step By Step Guide to Data Analysis Using IBM SPSS, *McGraw Hill*, 6th edition, London.

PwC, (2015). Global financial market liquidity study. *Report of the Pricewaterhouse Coopers LLP*. (August). Retrieved from http://www.pwc.se/sv/pdf-reports/global-financial-markets-liquidity-study.pdf/.

Ross, S.A., Westerfield, R.W., and Jaffe, J. (2010). *Corporate Finance.* (9th ed.). New York: McGraw Hill.

Rusmawati, S., Wan Nurhanan, W,S., and Asmaddy, H. (2013). Determinants of Islamic Bond (Sukuk): Evidence in Malaysia. *SSRN.* Retrieved from SSRN: https//ssrn.com/abstract= 2311835 .doi.org/10.2139/ssrn.2311835

Sarr, A. and Lybek, T. (2002). Measuring Liquidity in Financial Markets. IMF Working Paper. Retrieved from https://www.imf.org/external/pubs/ft/wp/2002/wp02232.pdf.

Sarig, O., and A. Warga, (1989). Bond price data and bond market liquidity, *Journal of Financial and Quantitative Analysis*, Vol. 24, pp 367-378.

Schultz, P. (2001). Corporate bond trading costs: a peek behind the curtain. *Journal of Finance,* Vol. 56, pp 677 - 698.

Securities Commission. (2009). *Islamic Capital Market*. Retrieved from http://www.sc.com.my

Securities Commission. (2015). Annual Report 2015. Retrieved from https://www.sc.com.my/en/post_archive/2015-annual-report/.

Sekaran, U. and Bougie, R. (2013). Research Methods for Business: A Skill-Building Approach, 6th Edition, *John Wiley & Sons*, pp 266 – 269.

Shahida, S. and Saharah, S., (2013). Why Do Firms Issue Sukuk Over Bonds? Malaysian Evidence. *Prosiding PERKEM VIII*, Vol.2, pp 551-573. Malaysia: The National University of Malaysia.

Shamser, M.R., Taufiq, H., and Adesina-Uthman, G.A.(2010). *Exigency for Sukuk Bonds Financing : Issues and Discussions.* Retrieved from https://ssrn.com/abstract=1666103.

Singh A. (2011). Impact of demographical factors on the purchasing behaviour of the customers' with special reference to FMCG: An empirical study. *International Journal of Research in Commerce & Management*, Vol. 2, No: 3.

Smith, W. (1956). Product differentiation and market segmentation as alternative marketing strategies. *Journal of Marketing*. Vol 21,pp 3–8.

Syed Ali, S.(2005). *Islamic Capital Market Products: Developments and Challenges.* (1st ed.). Occasional Paper No.9. Jeddah: IRTI, Islamic Development Bank.

Vayanos, Dimitri, and Jiang Wang. (2012). Market Liquidity: Theory and Evidence. *NBER Working Paper 1825*, National Bureau of Economic Research, Cambridge, Massachusetts

Vishwanath, R. and Krishnamurti, C. (2009). *Investment Management : A Modern Guide to Security Analysis and Stock Selection.* Verlag, BH:Springer. Retrieved from https:// www.springer.com/978-3-540-88801-7. doi:10.1007/978-3-540-88802-4-2.

Wilson, R. (2004). *Overview of the Sukuk Market.* In: Islamic Bonds: Your Guide to Issuing Structuring and Investing in Sukuk, Euromoney Books.

Yuan, K. (2002). The Liquidity Service of Sovereign Bonds. *Working Paper,* University of Michigan. Retrieved from https://papers.ssrn.com/sol3/papers.cfm/abstract_id=276190

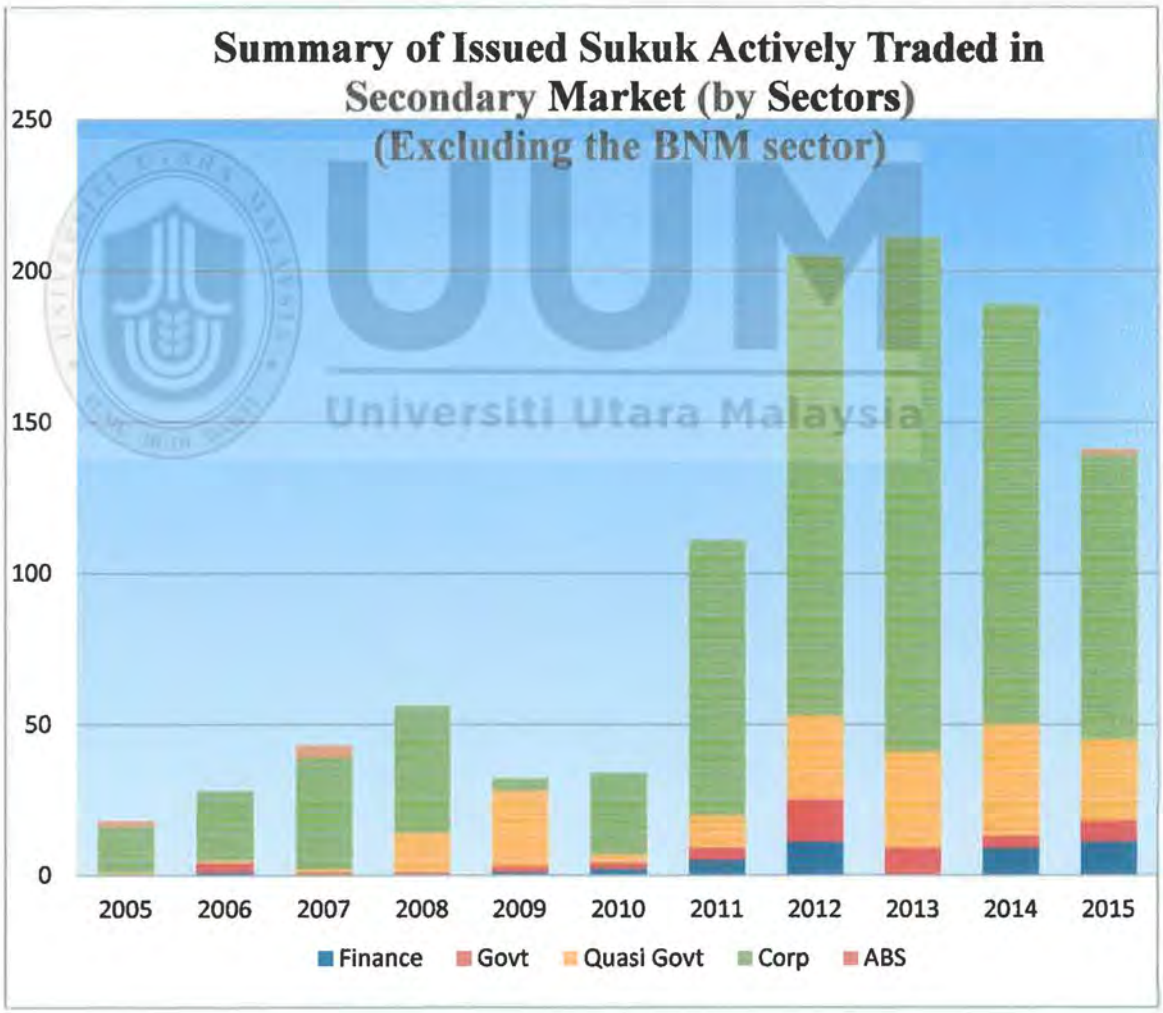
Zaidi, J.A. (2007). Overcoming barriers to liquidity: Commoditization, Sukuk, promoting issuance and a secondary market. *Islamic Finance and Investment World Europe*. Retrieved from https://www.scribd.com/document/47943474/20070625-overcoming-barriers-to-liquidity

Zawya. (2011). *The Concept Of Sukuk.* United Arab Emirates. Retrieved from http://www.kantakji.com/fiqh/files/Markets/587.pdf

APPENDIX A

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

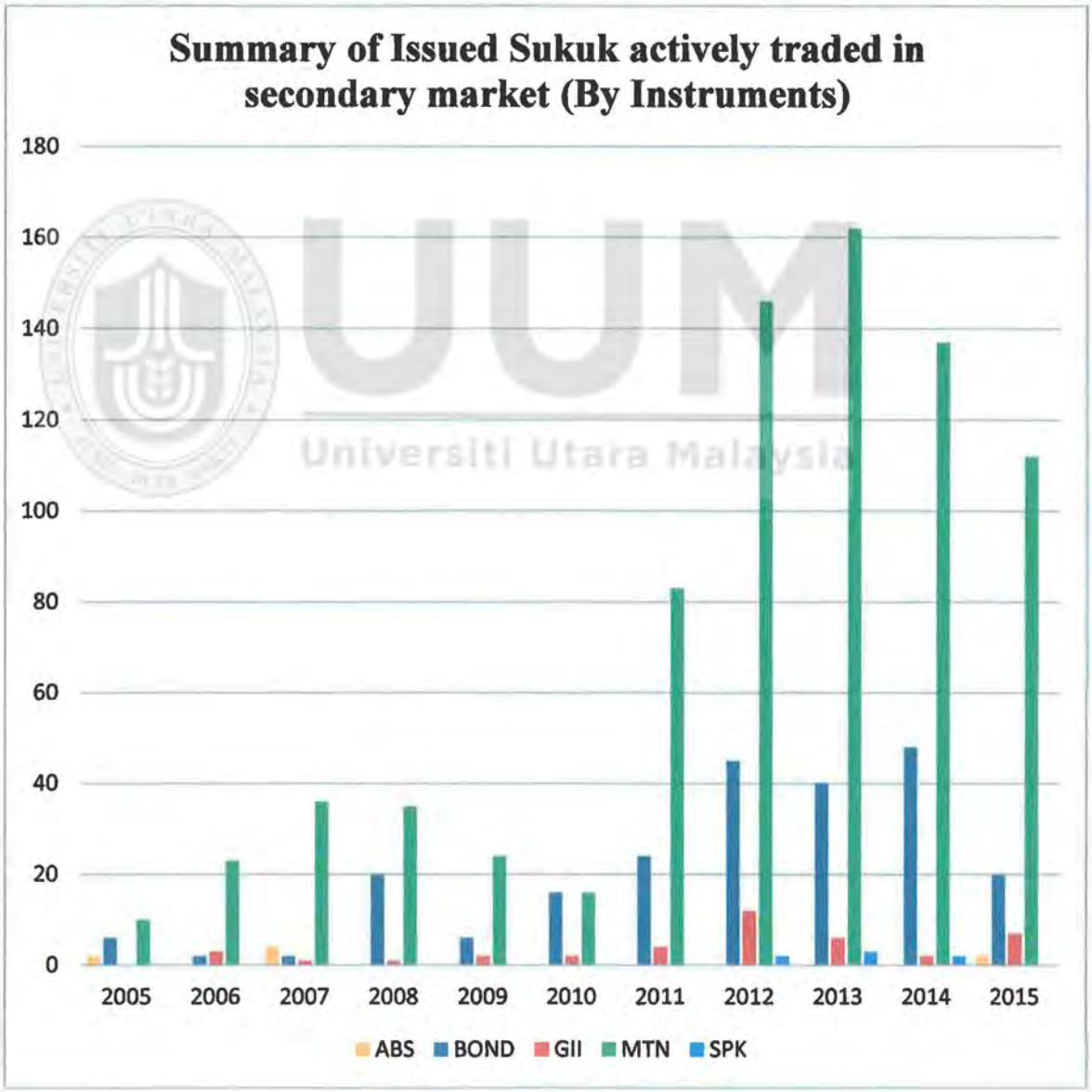
	Year										
Sector	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Finance	0	1	0	0	1	2	5	11	0	9	11
Govt	0	3	1	1	2	2	4	14	9	4	7
Quasi Govt	1	1	1	13	25	3	11	28	32	37	27
Corp	15	23	37	42	4	27	91	152	170	139	94
ABS	2	0	4	0	0	0	0	0	0	0	2
Total	18	28	43	56	32	34	111	205	211	189	141



APPENDIX B

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

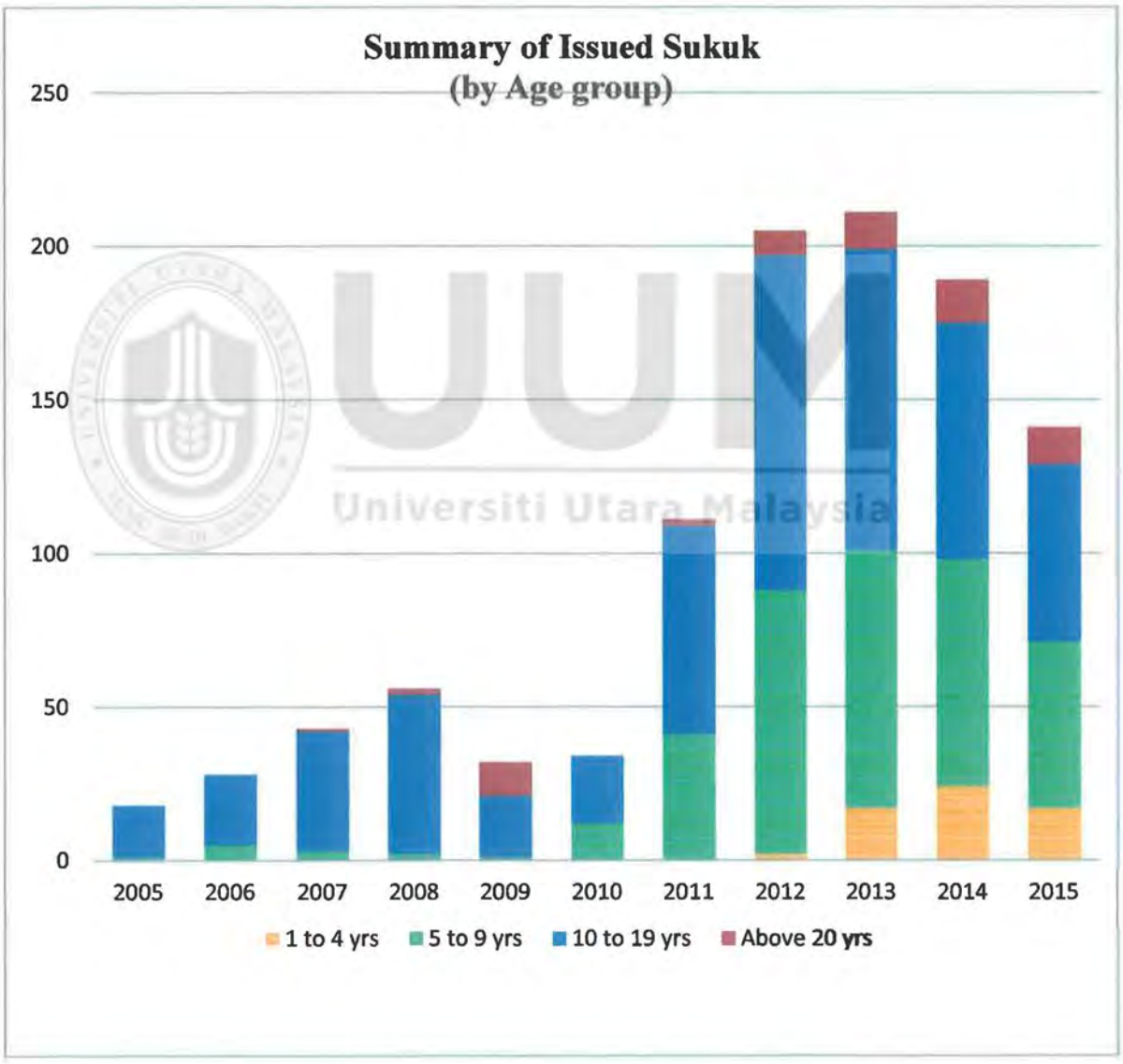
Instrument	Year										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ABS	2	0	4	0	0	0	0	0	0	0	2
BOND	6	2	2	20	6	16	24	45	40	48	20
GII	0	3	1	1	2	2	4	12	6	2	7
MTN	10	23	36	35	24	16	83	146	162	137	112
SPK	0	0	0	0	0	0	0	2	3	2	0
Total	18	28	43	56	32	34	111	205	211	189	141



APPENDIX C

Summary of Issued Sukuk (by age group)

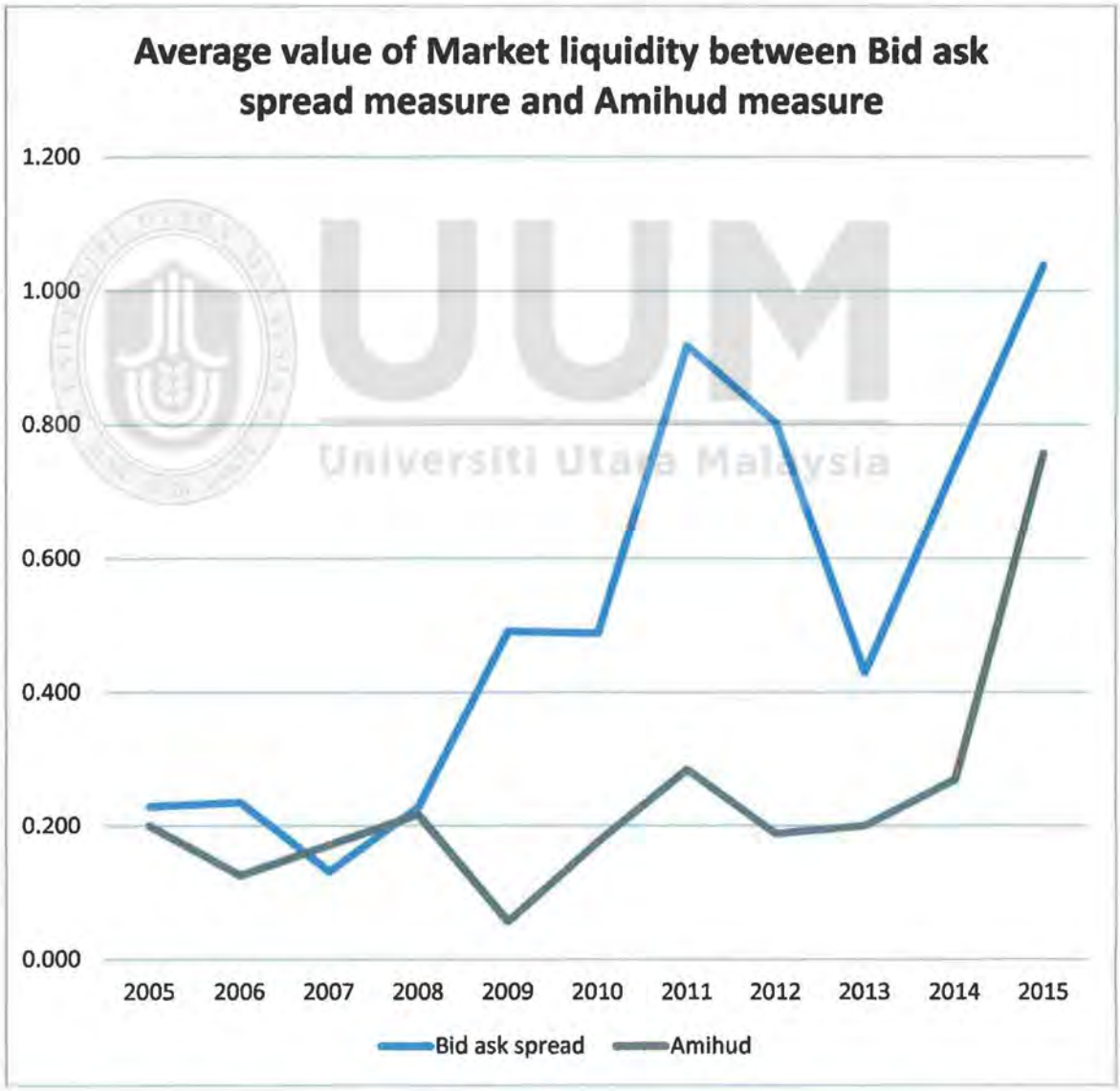
Age (yr)	Year										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1 to 4 yrs	0	0	0	0	0	0	0	2	17	24	17
5 to 9 yrs	1	5	3	2	1	12	41	86	84	74	54
10 to 19 yrs	17	23	39	52	20	22	68	109	98	77	58
Above 20 yrs	0	0	1	2	11	0	2	8	12	14	12
Total	18	28	43	56	32	34	111	205	211	189	141



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]

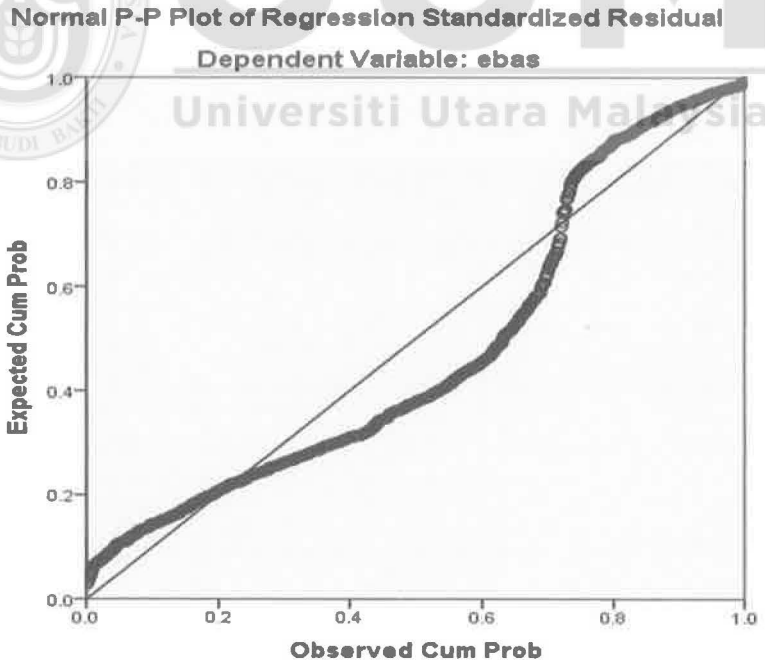
Model		Collinearity Statistics VIF
1	(Constant)	
	mat	10.944
	age	10.815
	coupon	1.114
	Cr Rating	1.553
	ln_Voltrg	11.431
	ln_notrdg	7.849

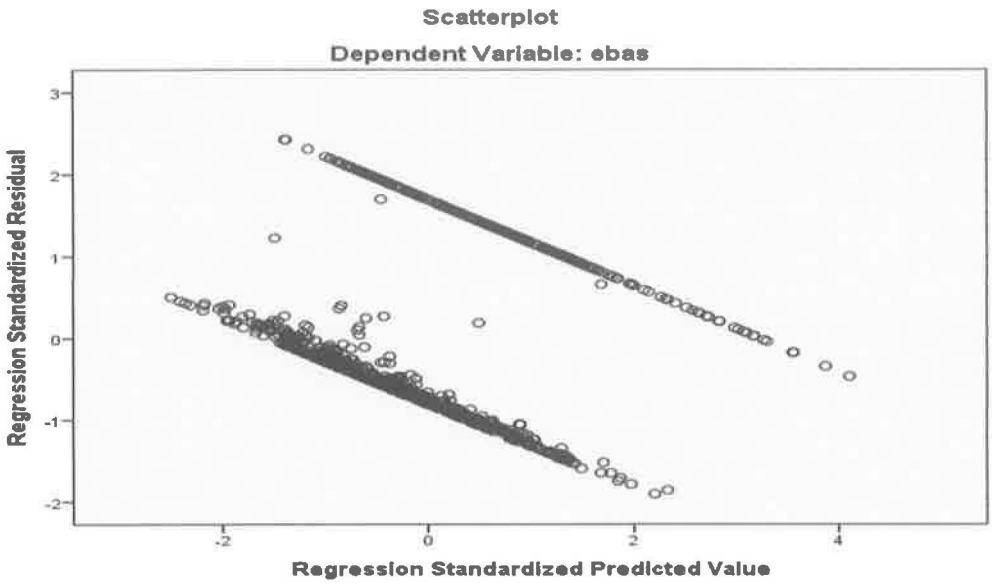
a. Dependent Variable: bid ask spread (ebas)

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