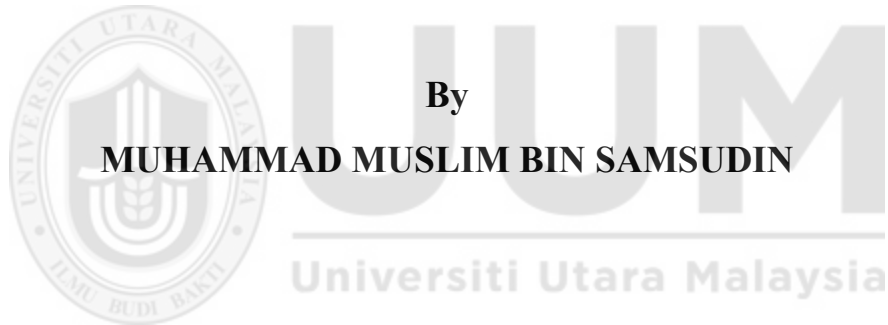


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**INFLUENCE OF INSTITUTIONAL OWNERSHIP AND LEVERAGE  
TOWARDS THE LIQUIDITY OF IPOs**

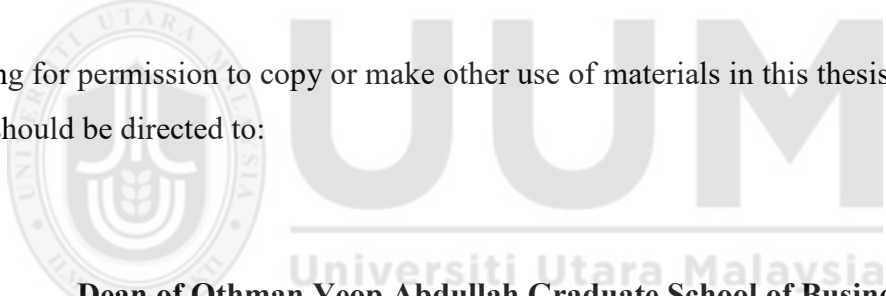


**Thesis submitted to the  
Othman Yeop Abdullah Graduate School of Business,  
Universiti Utara Malaysia,  
in Partial Fulfillment of the Requirement for the Master of Science (Finance)**

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## ABSTRACT

The aim of this study was to examine the influence of institutional ownership and leverage towards the aftermarket liquidity of 65 initial public offering (IPOs) that are listed on Bursa Malaysia, an emerging stock market in the South East Asia, from January 2011 to December 2015. This study begins from January 2011 to avoid the effects of the Global financial crisis in 2008. The data collected using the prospectus of the companies. The hypothesized effects are on liquidity based on the trading and signal and adverse selection theories. Trading and signal theory posits that institutional ownership contributes to higher level of aftermarket liquidity while adverse selection is vice versa. Trading volume is being used as a proxy of the liquidity of the stocks. Cross-section regression method is conducted to investigate the effects of institutional ownership and leverage on the liquidity of newly listed shares. The result indicates relationship between private institutional ownership and the liquidity of IPOs is insignificant. However after interacts the institutional ownership and leverage using multiplication of the both independent variables using centering mean the result shows impact of institutional ownership on liquidity of IPOs is significantly negative. The negative relationship show trading based on private information will deteriorate information asymmetry, thus will increase the adverse selection costs and eventually will decrease stock market liquidity. For leverage the result is negatively significant associate with liquidity as firms with high leverage signaling negative for investors since if firms need to finance a new project then new external financing will be needed accordingly the agency cost also increase. The significance of the study is to help the firm and investors to strategize their investment strategy as liquidity is important aspects in investment.

*Keywords: Initial Public Offerings, Institutional ownership, Leverage, Adverse selection theory, Trading and signal theory*

## ABSTRAK

Tujuan kajian ini adalah untuk mengkaji pengaruh pemilikan institusi dan leverage terhadap kecairan selepas pasaran 65 tawaran awam permulaan (IPO) yang disenaraikan di Bursa Malaysia, pasaran saham baru muncul di Asia Tenggara, dari Januari 2011 hingga Disember 2015. Kajian ini bermula dari Januari 2011 untuk mengelakkan kesan krisis kewangan global pada tahun 2008. Data yang dikumpul menggunakan prospektus syarikat-syarikat. Kajian ini menggunakan hipotesis berdasarkan kepada perdagangan dan isyarat dan teori pemilihan yang buruk. Perdagangan dan teori isyarat menegaskan bahawa pemilikan institusi menyumbang kepada tahap yang lebih tinggi kecairan selepas pasaran manakala pemilihan yang buruk adalah sebaliknya. Jumlah dagangan digunakan sebagai proksi kepada kecairan saham. Kaedah regresi keratan rentas dijalankan untuk menyiasat kesan pemilikan institusi dan memanfaatkan kecairan saham yang disenaraikan. Hasil kajian telah menunjukkan hubungan antara pemilikan institusi swasta dan kecairan IPO adalah tidak penting. Namun selepas berinteraksi institusi pemilikan dan leverage menggunakan pendaraban daripada kedua-dua pemboleh ubah bebas yang berpusat bermakna hasilnya menunjukkan kesan pemilikan institusi mengenai kecairan IPO adalah negatif yang ketara. Hubungan negatif menunjukkan hubungan berdasarkan maklumat peribadi akan merosot maklumat asimetri, dengan itu akan meningkatkan kos pemilihan yang buruk dan akhirnya akan mengurangkan kecairan pasaran saham. Untuk *leverage* hasilnya adalah negatif hububg kait signifikan dengan kecairan syarikat dengan *leverage* yang tinggi isyarat negatif kepada pelabur kerana jika firma perlu membiayai projek baru kemudian pembiayaan luar yang baru akan diperlukan sewajarnya kos agensi itu juga meningkat. Kepentingan kajian ini adalah untuk membantu firma dan pelabur untuk menyusun strategi strategi pelaburan mereka kecairan adalah aspek penting dalam pelaburan.

Kata kunci: *Tawaran Awam Permulaan, pemilikan Institusi, Leverage, teori pilihan buruk, Perdagangan dan isyarat teori*

## ACKNOWLEDGEMENT

*In the name of Allah, the most Gracious and the most Merciful*

It is with great appreciation that I wish to recognize the following individuals for their support throughout this study.

To Dr. Rasidah binti Mohd Rashid, I extend my gratitude for her guidance and continuous strong support. I appreciate her mentoring, advice, patience and she is always available when I needed help and provide countless feedbacks as well as valuable suggestions. Without her expertise this study would not have been possible and completed.

In addition, I would like to thank my friends and those who are involved either directly or indirectly and also help myself during this research progress until it is finished to the end. Thanks for the friendship, moments and keep supporting me.

Finally, I would also like to give my special thanks to my beloved Samsudin bin Bakar and Che Nin binti Man for their understanding, emotional, morale and financial supports as well as encouragement. Thank you for their unconditional loves and inspiration.

Thank you very much.

## TABLE OF CONTENT

PERMISSION TO USE	II
ABSTRACT	III
ABSTRAK	IV
ACKNOWLEDGEMENT	V
TABLE OF CONTENT	VI
LIST OF TABLES	X
LIST OF FIGURES	XI
LIST OF ABBREVIATIONS	XII
APPENDIX	XIII
<b>CHAPTER 1: INTRODUCTION</b>	
1.1 Background	1
1.2 Problem Statement	6
1.3 Research Question	10
1.4 Objectives of the research	10
1.5 Scope of the study	11
1.6 Significance of Study	12
1.7 Organization of Chapter	13
<b>CHAPTER 2: LITERATURE REVIEW</b>	
2.1 Introduction	14
2.2 Theories Related to Literature	14
2.2.1 Adverse Selection Hypothesis	14
2.2.2 Trading and Signaling Theory	16

2.3 Liquidity	17
2.4 Empirical research relationship between private institution ownership and liquidity of stocks	18
2.5 Empirical research relationship between leverage and liquidity of stocks	22
2.6 Interaction between private institution ownership and leverage towards liquidity of the stocks	24
2.7 Control variables	25
2.7.1 Price volatility	25
2.7.2 Offer Size	26
2.7.3 Shareholder Retention	26
2.7.4 Offer Price	27
2.7.5 Board Characteristic	27
<b>CHAPTER 3: DATA AND EMPIRICAL METHOD</b>	
3.1 Introduction	28
3.2 Data	28
3.3 Sample Description	29
3.4 Dependent Variable Measurement	30
3.5 Independent Variable Measurement	31
3.5.1 Institutional Ownership	31
3.5.2 Leverage	32
3.5.3 Interaction between private institution ownership and leverage	33
3.6 Control Variables Measurement	33
3.6.1 Volatility	33
3.6.2 Offer size	34
3.6.3 Shareholder retention	34



3.6.4 Offer price	35
3.6.5 Board Characteristics	35
3.7 Hypothesis Development	36
3.7.1 Institutional Ownership	36
3.7.2 Leverage	37
3.7.3 Interaction between private institution ownership and leverage	38
3.8 Research Framework	39
3.9 Model Specification of Research	39
3.10 Techniques of Data Analysis	40
3.10.1 Normality Test	41
3.10.2 Correlation Coefficient Analysis	41
3.10.3 Multicollinearity Test	42
3.10.4 Autocorrelation Issue	42
3.10.5 Heteroskedasticity Issue	43
3.11 Summary of Chapter	43

## **CHAPTER 4: DATA ANALYSIS AND EMPIRICAL FINDINGS**

4.1 Introduction	44
4.2 Descriptive Statistics	45
4.3 Correlation Analysis	48
4.4 Results of Diagnostic Testing	50
4.4.1 Normality of Distributions	50
4.4.2 Multicollinearity	51
4.4.3 Autocorrelation	52
4.4.4 Heteroskedasticity Test	52

4.5 Results from Regression Analysis	52
4.5.1 Effect of Independent Variables on Liquidity of Newly Listed Shares	54
4.5.2 Effect of Control Variables on Offer Price	58
4.6 Summary of the Chapter	60
 <b>CHAPTER 5: CONCLUSION AND RECOMMENDATION</b>	
5.1 Introduction	62
5.2 Summary of the study	62
5.3 Limitation of the study	65
5.4 Recommendations of the Future Research	65
<b>REFERENCES</b>	67



## LIST OF TABLES

Table 2.1	Summary of Literature	21
Table 3.1	The Number of IPOs List	30
Table 3.2	The Distribution of IPOs Sample	31
Table 4.1	Results of Descriptive Statistics	45
Table 4.2	Correlation Analysis	48
Table 4.3	Results of Cross-Sectional Regression	53



## LIST OF FIGURES

Figure 1.1	Statistics of the total number of companies	2
Figure 4.1	Results of Normality Test	51



## LIST OF ABBREVIATIONS

BRICS	Brazil, Russia, Indian, China and South Africa
ETF	Exchange Trade Fund
IPO	Initial Public Placement
LEV	Leverage
NASDAQ	National Association of Securities Dealers
NYSE	New York Stocks Exchange
OFFPR	Offer price
OFFSZ	Offer size
PRIV	Institutional ownership
PRIV*LEV	Interaction between Institutional Ownership and leverage
$\bar{r}$	Mean return
$r_i$	return at period $i$
REITS	Real Estate Investment Trust
SBF	French stock market index
SEO	Subsequent seasoned equity offerings
SPAC	Special Purpose Acquisition Companies
TURNOVER	Volume turnover
USA	United State of America
VOL	Trading volume

## APPENDICES

APPENDIX A	Descriptive statistics indicators for the variables of the research	74
APPENDIX B	Relationship between institutional ownership, leverage and interaction of institutional ownership and leverage with liquidity of IPOs	75
APPENDIX C	Relationship between institutional ownership and leverage with liquidity of IPOs	76
APPENDIX D	Multicollinearity Test	77
APPENDIX E	Heteroskedasticity Test	78



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of Study

According to Jung et al. (1996) and Brealey et al. (2008) sale of company securities to the public for the first time via primary market can be called as an initial public offering (IPO). An IPO normally being executed during the phase when company's equity demands cannot be fulfilled by a single investor or a group of propriety investors and the result is it eventually will change the ownership structure from concentrated in few investor's hands into bigger numbers of investors argue by Miloud (2014). As a result, the trading activity of that particular company shares become more liquid. Besides liquidity purposes for going IPO, another reason is to improve the ability of the original owners to raise a larger pool amount of funds for investment, repaying debt and growth (Mikkelson, Partch and Shah 1997). IPOs also gives opportunities for investors to obtain more profit when the shares are issued and traded publicly, in which able to enhance liquidity in order to allow firm for raising capital on the favorable term (Ritter, 1998). However not necessarily when one going for IPO it always profitable and outperform the market performances especially for investors. Aggarwal and Rivoli (1990) make a study by comparing performances of IPOs and market using return of aftermarket on IPOs and returns on market the result is market performance better than IPO in the long-run. In addition researched made by Ritter (1991) find average three-year performance of IPOs is bad than market performance and that of the matching firms. Ritter said that negative long-run performance of IPOs is due to the fads in IPO market. This shows going for IPO has its own advantages and loopholes.

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## REFERENCES

- Abdul-Rahim, R. and Yong, O. (2008), "Initial returns of Shariah-compliant IPOs in Malaysia", *Capital Market Review*, Vol. 16 No. 2, pp. 270-279.
- Acharya, V. V., & Pedersen, L. H. (2005). Asset pricing with liquidity risk. *Journal of Financial Economics*, 77, 375-410
- Aggarwal, R., & Rivoli, P. (1990). Fads in the initial public offering market? *Financial Management*, 19, 45-57.
- Ajina, A., Lakhal, F., & Sougné, D. (2015). Institutional investors, information asymmetry and stock market liquidity in France. *International Journal of Managerial Finance*, 11(1), 44-59.
- Ajinkya, B., Bhojraj, S., & Sengupta, P. (2005). The association between outside directors, institutional investors and the properties of management earnings forecasts. *Journal of accounting research*, 43(3), 343-376.
- Amihud, Y., & Mendelson, H. (1986), "Liquidity and stock returns", *Financial Analysts Journal*, Vol. 42 No. 3, pp. 43-48.
- Anders, C., Cumming, D., Karabiber, T. and Schweizer, D. (2014), "Do markets anticipate leverage decisions – Feedback effects in equity liquidity", *Journal of Corporate Finance*, Vol. 27 No. C, pp. 133-156.
- Aslan, H., D. Easley, S. Hvidkjaer, and M. O'Hara, (2007), Firm characteristics and informed trading: Implications for asset pricing, Working paper
- Attig, N., Fong, W. M., Gadhoun, Y., & Lang, L. H. (2006). Effects of large shareholding on information asymmetry and stock liquidity. *Journal of Banking & Finance*, 30(10), 2875-2892.
- Bae, K., Kang, K. and Kim, J. (2002), "Tunneling or value added? Evidence from mergers by Korean business groups", *The Journal of Finance*, Vol. 57 No. 6, pp. 2695-2740.
- Bathala, C., Moon, K. and Rao, R. (1994), "Managerial ownership, debt policy, and the impact of institutional holdings: an agency perspective", *Financial Management*, Vol. 23, pp. 38-50.
- Bharat, Sreedhar T., Paolo Pasquariello and Guojun Wu, (2008), "Does Asymmetric Information Drive Capital Structure Decisions?" *Review of Financial Studies*, forthcoming.

- Blume, M. and Keim, D. (2012), "Institutional investors and stock market liquidity: trends and relationships", working papers, the Wharton School, University of Pennsylvania
- Boehmer, E., & Kelley, E. K. (2009). Institutional investors and the informational efficiency of prices. *Review of Financial Studies*, 22(9), 3563-3594.
- Booth, J. R., & Chua, L. (1996). Ownership dispersion, costly information, and IPO underpricing. *Journal of Financial Economics*, 41(2), 291-310.
- Brealey, R.A., Myers, S.C. & Allen, F. (2008). *Principles of Corporate Finance*. New York: McGraw-Hill.
- Brennan, M. J., and A. Subrahmanyam, 1996, "Market Microstructure and Asset Pricing: On the Compensation for Illiquidity in Stock Returns," *Journal of Financial Economics*, 41(3), 441-464.
- Bushee, B. J., & Goodman, T. H. (2007). Which institutional investors trade based on private information about earnings and returns?. *Journal of Accounting Research*, 45(2), 289-321.
- Butler, A. W., Grullon, G., Weston, J. P. (2005), 'Stock Market Liquidity and the Cost of Issuing Equity', *The Journal of Financial and Quantitative Analysis*, 40, 331-348.
- Carole, C. and James, R. (2006), "Director holdings, shareholder concentration and illiquidity", Finance Discipline, School of Business University of Sydney NSW.
- Chae, J. (2005), "Timing information, information asymmetry, and trading volume", *The Journal of Finance*, Vol. 60 No. 1, pp. 413-442.
- Chaganti, R. and Damanpour, F. (1991), "Institutional ownership, capital structure and firm performance", *Strategic Management Journal*, Vol. 12, pp. 479-93.
- Chordia, T., Subrahmanyam, A., & Anshuman, R. (2001b). Trading activity and expected stock returns. *Journal of Financial Economics*, 59, 3-32
- Chordia, T., Roll, R., & Subrahmanyam, A. (2001a). Market liquidity and trading activity. *The Journal of Finance*, 56(2), 501-530.
- Crutchley, C.E. and Jensen, M.R.H. (1996), "Changes in corporate debt policy: information asymmetry and agency factors", *Managerial Finance*, Vol. 22, pp. 1-16.
- Datar, V., Naik, N., & Radcliffe, R. (1998). Liquidity and stock returns: An alternative test. *Journal of Financial Markets*, 1, 203-219.

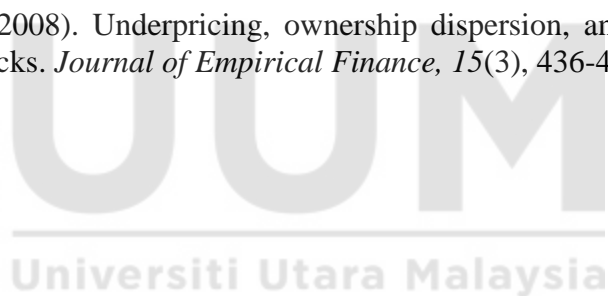
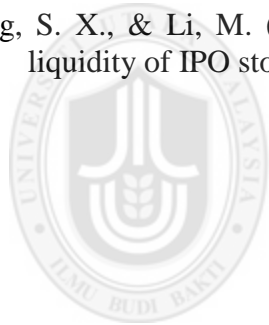
- Demir, I., Muthuswamy, J., & Walter, T. (2004). Momentum returns in Australia equities: The influences of saiz, risk, liquidity and return computation. *Pacific-Basin Finance Journal*, 12, 143-158
- Demsetz, H. (1968), “The cost of transacting”, *Quarterly Journal of Economics*, Vol. 82 No. 1, pp. 35-53.
- Dennis, P. and Weston, J. (2001), “Who’s informed? An analysis of stock ownership and informed trading”, AFA 2002 Atlanta Meetings.
- Downes, D. and Heinkel, R. (1982), “Signaling and the valuation of unseasoned new issues”, *Journal of Finance*, Vol. 37 No. 1, pp. 1-10.
- Easley, D., and M. O’Hara, (1987), Price, trade size and information in securities markets, *Journal of Financial Economics*, 19:69–90.
- Easley, D., Hvidkjaer, S., & O’Hara, M. (2002). Is information risk a determinant of asset returns? *The Journal of Finance*, 57, 2185-2221.
- Easley, D., Kiefer, N., O’Hara, M., Paperman, J., (1996). Liquidity, information, and infrequently traded stocks. *Journal of Finance* 51, 1405–1436.
- Ellul, A., & Pagano, M. (2006). IPO underpricing and after-market liquidity. *Review of Financial Studies*, 19(2), 381-421.
- Espinosa, M., Tapia, M. and Trombetta, M. (2008), “Disclosure and liquidity in a driven by orders market: empirical evidence from panel data”, *Investigaciones Económicas*, Vol. 32 No. 3, pp. 339-370.
- Foucault, T. (1999). Order flow composition and trading costs in a dynamic limit order market. *Journal of Financial markets*, 2(2), 99-134.
- Frieder, L. and Martell, R. (2006), “On capital structure and the liquidity of a firm’s stock”, Working Paper, available at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id\\_880421](http://papers.ssrn.com/sol3/papers.cfm?abstract_id_880421).
- Glosten, L. R., and P. R. Milgrom, (1985), Bid, ask and transaction prices in a specialist market with heterogeneously informed traders, *Journal of Financial Economics*, 14:71–100, October.
- Grier, P. and Zychowicz, E. (1994), “Institutional investors, corporate discipline and the role of debt”, *Journal of Economics and Business*, Vol. 46, pp. 1-11.
- Hahn, T., & Ligon, J. (2006). *Liquidity and initial public offering underpricing*. Retrieved October 1, 2016, from <http://ssrn.com/abstract=929141>.
- Hameed, A., Kang, W., & Viswanathan, S. (2010). Stock market declines and liquidity. *The Journal of Finance*, 65(1), 257-293.

- Handa, P., & Schwartz, R. A. (1996). How best to supply liquidity to a securities market. *The Journal of Portfolio Management*, 22(2), 44-51.
- Healy, P., & Palepu, K. (2001). Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature. *Journal of Accounting and Economics*, (31), 405-440.
- Heflin, F., Shaw, K. W., & Wild, J. J. (2000). Disclosure quality and market liquidity. Available at SSRN 251849.
- Heflin, F., Shaw, W. and Wild, J. (2005), "Disclosure policy and market liquidity: impact of depth quotes and order sizes", *Contemporary Accounting Research*, Vol. 22 No. 4, pp. 829-866.
- Holmström, B., & Tirole, J. (1993). Market liquidity and performance monitoring. *Journal of Political Economy*, 101, 678-709.
- Jain, B. and Kini, O. (1994), "The post-issue operating performance of IPO firms", *Journal of Finance*, Vol. 49 No. 5, pp. 1699-726.
- Jensen, M. (1986), "Agency cost free cash flow, corporate finance, and takeovers", *American Economic Review*, Vol. 76, pp. 323-9.
- Jensen, M. C, and W. H. Meckling, (1976), "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure," *Journal of Financial Economics*, 3(4), 305-350.
- Jung, K., Kim, Y. C., & Stulz, R. (1996). Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics*, 42(2), 159-186.
- Kini, O., & Mian, S. (1995). Bid-ask spread and ownership structure. *Journal of Financial Research*, 18, 401-414.
- Kiyamaz, H. (2000). The initial and aftermarket performance of IPOs in an emerging market: evidence from Istanbul stock exchange. *Journal of Multinational Financial Management*, 10(2), 213-227.
- Kothare, M. and Laux, A. (1995), "Trading costs and the trading systems for NASDAQ stocks", *Financial Analysts Journal*, Vol. 51 No. 2, pp. 42-53.
- Krigman, L., Shaw, W. H., & Womack, K. L. (1999). The persistence of IPO mispricing and the predictive power of flipping. *The Journal of Finance*, 55(3), 1015-1044.
- Kyle, A. S., (1985), Continuous auctions and insider trading, *Econometrica*, 53(6):1315–1335, November.

- LaFond, R., & Watts, R. L. (2008). The information role of conservatism. *The Accounting Review*, 83(2), 447-478.
- Lesmond, D. A., O'Connor, P. F., & Senbet, L. W. (2008). Capital structure and equity liquidity. *Robert H. Smith School Research Paper No. RHS*, 06-067.
- Li, M., Zheng, S. X., & Melancon, M. V. (2005). Underpricing, share retention, and the IPO aftermarket liquidity. *International Journal of Managerial Finance*, 1(2), 76-94.
- Lipson, M.L. and Mortal, S. (2009), "Liquidity and capital structure", *Journal of Financial Markets*, Vol. 12 No. 2, pp. 611-644.
- Liu, W. (2006). A liquidity-augmented capital asset pricing model. *Journal of financial Economics*, 82(3), 631-671.
- Markowitz, H. M. (1992). *Foundations of portfolio theory* (p. 279). Singapore, World Scientific Publishing Co.
- Merton, R., 1987, A simple model of capital market equilibrium with incomplete information, *Journal of Finance* 42, 483-51.
- Mikkelson, W. H., Partch, M. M., & Shah, K. (1997). Ownership and operating performance of companies that go public. *Journal of Financial Economics*, 44, 281-307.
- Miloud, T. (2014). Earnings Management And Initial Public Offerings: An Empirical Analysis. *Journal of Applied Business Research*, 30(1), 117.
- Morales-Camargo, E. (2006). Underpricing and aftermarket liquidity: An empirical exploration of Hong Kong IPOs. *University of Arizona Working Paper*.
- Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of financial Economics*, 5(2), 147-175.
- Pagano, M. (1989). Trading volume and asset liquidity. *The Quarterly Journal of Economics*, 104(2), 255 – 274.
- Pham, P. K., Kalev, P. S., & Steen, A. B. (2003). Underpricing, stock allocation, ownership structure and post-listing liquidity of newly listed firms. *Journal of Banking and Finance*, 27, 919-947.
- Pritsker, M. (2006). *A fully-rational liquidity-based theory of IPO underpricing and underperformance. Finance and Economics Discussion Series*. Washington, D.C: Federal Reserve Board
- Ramalingegowda, S, & Yu, Y. (2012). Institutional ownership and conservatism. *Journal of Accounting and Economics*, 53(1), 98-114.

- Rashid, R. M., Abdul-Rahim, R., & Yong, O. (2014). The influence of lock-up provisions on IPO initial returns: Evidence from an emerging market. *Economic Systems*, 38(4), 487-501.
- Rhee, S. and Wang, J. (2009), "Foreign institutional ownership and stock market liquidity: evidence from Indonesia", *Journal of Banking & Finance*, Vol. 33 No. 7, pp. 1312-1324.
- Ringim, K.J., Razalli, M.R., & Hasnan, N. (2012). A Framework of Business Process Re-engineering Factors and Organizational Performance of Nigerian Banks. *Asian Social Science*, 8(4), 203-216.
- Ritter, J. R. (1991). The long-run performance of initial public offerings. *The journal of finance*, 46(1), 3-27.
- Rubin, A. (2007), "Ownership level, ownership concentration and liquidity", *Journal of Financial Markets*, Vol. 10 No. 3, pp. 219-248
- Sapian, R. Z. Z., Rahim, R. A., & Yong, O. (2013). IPO underpricing and aftermarket liquidity: Evidence from Malaysia. *International Journal of Business and Society*, 14(2), 299.
- Schwartz, R., Shapiro, J., 1992, The challenge of institutionalization of the equity market, in *Recent Developments in Finance*, Anthony Saunders, ed. (New York Salomon Center, New York, 1992).
- Sharma, L. (2005), "Ownership structure and stock liquidity, evidence from Indian market", working paper, T.A. Pai Management Institute, Manipal, Karnataka
- Shleifer, A. and Vishny, R. (1988), "Value maximisation and the acquisition process", *Journal of Economic Perspectives*, Vol.2 No. 1, pp. 7-20.
- Subrahmanyam, A., & Titman, S. (1999). The going-public decision and the development of financial markets. *The Journal of Finance*, 54(3), 1045-1082.
- Taylor, J.J. (2013). Confusing Stats Terms Explained: Heteroscedasticity. Retrieved on 31 March 2016 from <http://www.statsmakemecry.com/smmctheblog/confusing-stats-terms-explained-heteroscedasticity-heteroske.html>
- Tong, S. and Ning, Y. (2004), "Does capital structure affect institutional investor choices?", *The Journal of Investing*, Vol. 28, pp. 53-66.
- Udomsirikul, P., Jumreornvong, S. and Jiraporn, P. (2011), "Liquidity and capital structure: the case of Thailand", *Journal of Multinational Financial Management*, Vol. 21 No. 1, pp. 106-117.

- Umar, M., Umar, M., Sun, G., & Sun, G. (2016). Bank leverage and stock liquidity: evidence from BRICS countries. *Journal of Financial Economic Policy*, 8(3), 298-315.
- Wang, G.C.S. & Akabay, C.K. (1995). Autocorrelation: Problems and Solutions in Regression Modeli. *Journal of Business Forecasting Methods & Systems*, 13(4).
- Whited, T. M. (1992). Debt, liquidity constraints, and corporate investment: Evidence from panel data. *The Journal of Finance*, 47(4), 1425-1460.
- Yong, O. (2011a). Investor Demand, Size Effect and the Immediate Post-Listing Behavior of Malaysian IPOs. *Universiti Tun Abdul Razak Ejournal*, 7(2), 23- 32.
- Yong, O. (2015). What is the “True” value of an initial public offering? *Journal of Scientific Research and Development*, 2(10), 78-85.
- Zheng, S., Ogden, J. and Jen, F. (2003), “Pursuing value through liquidity: share retention, lockup, and underpricing in IPOs”, working paper, University of Manitoba, Winnipeg.
- Zheng, S. X., & Li, M. (2008). Underpricing, ownership dispersion, and aftermarket liquidity of IPO stocks. *Journal of Empirical Finance*, 15(3), 436-454.



## APPENDIX A

### DESCRIPTIVE STATISTICS INDICATORS FOR THE VARIABLES OF THE RESEARCH

	<b>Volume</b>	<b>Shareholder retention</b>	<b>Risk</b>	<b>Priv</b>	<b>Offer price</b>	<b>Offer size</b>	<b>Leverage</b>	<b>Board</b>
<b>Mean</b>	5633.647	69.77287	0.051210	54.22912	1.029231	7.929874	0.468308	0.753846
<b>Median</b>	2817.847	70.86774	0.038495	68.09211	0.750000	7.695830	0.470000	1.000000
<b>Maximum</b>	36256.21	94.78369	0.159891	93.33000	3.380000	9.804055	1.240000	1.000000
<b>Minimum</b>	26.88000	8.937290	0.002991	0.000000	0.120000	6.864587	0.020000	0.000000
<b>Std. Dev.</b>	7391.115	11.76471	0.037973	31.36148	0.803886	0.767930	0.263756	0.434122
<b>Skewness</b>	2.330762	-2.135072	0.998134	-0.70819	1.313927	0.884025	0.676216	-1.17857
<b>Kurtosis</b>	8.551984	12.48144	3.274395	2.016568	3.997739	2.684280	3.697567	2.389031
<b>Jarque-Bera</b>	142.3346	292.8570	10.99686	8.052552	21.39882	8.736221	6.271606	16.05881
<b>Probability</b>	0.000000	0.000000	0.004093	0.017841	0.000023	0.012675	0.043465	0.000326
<b>Sum</b>	366187.1	4535.237	3.328669	3524.893	66.90000	515.4418	30.44000	49.00000
<b>Sum Sq. Dev.</b>	3.50E+09	8858.144	0.092287	62946.71	41.35886	37.74188	4.452314	12.06154
<b>Observations</b>	65	65	65	65	65	65	65	65



## APPENDIX B

### RELATIONSHIP BETWEEN INSTITUTIONAL OWNERSHIP, LEVERAGE AND INTERACTION OF INSTITUTIONAL OWNERSHIP AND LEVERAGE WITH LIQUIDITY OF IPOs.

Dependent Variable: VOLUME\_30\_DAYS

Method: Least Squares

Date: 11/20/16 Time: 15:16

Sample: 1 65

Included observations: 65

White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PRIV	30.59699	22.06148	1.386897	0.1710
LEV	-5920.550	3493.650	-1.694660	0.0957
LOG_OFFER_SIZE	8791.917	2407.642	3.651670	0.0006
OFFERPRICE_RM_	-5687.545	1848.502	-3.076839	0.0032
RISK_30	36025.58	18418.82	1.955912	0.0555
SHARE_RETENTION	148.2939	97.36919	1.523006	0.1334
BOARD	-4711.669	2700.942	-1.744454	0.0866
CENTLEV*CENTPRIV	-171.4925	75.33176	-2.276496	0.0267
C	-65887.57	21235.28	-3.102741	0.0030

R-squared	0.320374	Mean dependent var	5633.647
Adjusted R-squared	0.223284	S.D. dependent var	7391.115
S.E. of regression	6513.899	Akaike info criterion	20.52915
Sum squared resid	2.38E+09	Schwarz criterion	20.83022
Log likelihood	-658.1974	Hannan-Quinn criter.	20.64794
F-statistic	3.299777	Durbin-Watson stat	1.911062
Prob(F-statistic)	0.003725	Wald F-statistic	3.477849
Prob(Wald F-statistic)	0.002533		

## APPENDIX C

### RELATIONSHIP BETWEEN INSTITUTIONAL OWNERSHIP AND LEVERAGE WITH LIQUIDITY OF IPOs

Dependent Variable: VOLUME\_30\_DAYS

Method: Least Squares

Date: 11/15/16 Time: 21:53

Sample: 1 65

Included observations: 65

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PRIV	24.42355	29.24711	0.835076	0.4072
LEV	-6022.237	3364.538	-1.789915	0.0788
LOG_OFFER_SIZE	9051.941	2409.023	3.757516	0.0004
OFFERPRICE_RM_	-5443.342	2245.645	-2.423954	0.0185
RISK_30	30501.25	24534.12	1.243218	0.2189
BOARD	-5816.486	2274.392	-2.557380	0.0132
SHARE_RETENTION	149.5291	80.81285	1.850314	0.0695
C	-66659.18	19488.29	-3.420473	0.0012
R-squared	0.278440	Mean dependent var		5633.647
Adjusted R-squared	0.189828	S.D. dependent var		7391.115
S.E. of regression	6652.710	Akaike info criterion		20.55825
Sum squared resid	2.52E+09	Schwarz criterion		20.82587
Log likelihood	-660.1433	Hannan-Quinn criter.		20.66385
F-statistic	3.142223	Durbin-Watson stat		1.822745
Prob(F-statistic)	0.007064			

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## APPENDIX D

### MULTICOLLINEARITY TEST

Variance Inflation Factors  
Date: 10/05/16 Time: 15:50  
Sample: 1 65  
Included observations: 65

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
SHARE_RETENTION	6530.717	47.99993	1.307093
RISK_30	6.02E+08	3.573428	1.255118
PRIV	855.3936	4.911012	1.216583
OFFERPRICE_RM_	5042923.	12.55809	4.712526
LOG_OFFER_SIZE	5803390.	540.9066	4.948893
LEV	11320117	4.784888	1.138779
BOARD	5172859.	5.727032	1.409731
C	3.80E+08	557.7809	NA



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## APPENDIX E

### HETEROSKEDASTICITY TEST

Heteroskedasticity Test: White

F-statistic	2.281819	Prob. F(41,23)	0.0188
Obs*R-squared	52.17339	Prob. Chi-Square(41)	0.1133
Scaled explained SS	100.4760	Prob. Chi-Square(41)	0.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 11/24/16 Time: 03:35

Sample: 1 65

Included observations: 65

White heteroskedasticity-consistent standard errors & covariance

Collinear test regressors dropped from specification

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.24E+10	9.31E+09	1.326110	0.1978
PRIV^2	45714.96	22837.79	2.001724	0.0572
PRIV*LEV	29752133	51463111	0.578125	0.5688
PRIV*LOG_OFFER_SIZE	1728023.	1287425.	1.342232	0.1926
PRIV*OFFERPRICE_RM_	-3738248.	2079974.	-1.797257	0.0854
PRIV*RISK_30	11642275	16511861	0.705086	0.4878
PRIV*SHARE_RETENTION	64295.62	58433.27	1.100326	0.2826
PRIV*BOARD	1227063.	1380365.	0.888941	0.3832
PRIV*CENTLEV*CENTPRIV	-121564.9	101512.3	-1.197539	0.2433
PRIV	-32932156	31877244	-1.033093	0.3123
LEV^2	2.44E+08	1.75E+08	1.396998	0.1757
LEV*LOG_OFFER_SIZE	-4.12E+08	3.06E+08	-1.346823	0.1912
LEV*OFFERPRICE_RM_	3.86E+08	3.53E+08	1.093711	0.2854
LEV*RISK_30	8.92E+09	4.93E+09	1.810007	0.0834
LEV*SHARE_RETENTION	-6657008.	5983529.	-1.112555	0.2774
LEV*BOARD	-1.88E+08	2.36E+08	-0.796072	0.4341
LEV*CENTLEV*CENTPRIV	-14370606	9951877.	-1.444010	0.1622
LEV	1.35E+09	2.24E+09	0.603419	0.5521
LOG_OFFER_SIZE^2	2.54E+08	1.51E+08	1.677207	0.1070
LOG_OFFER_SIZE*OFFERPRICE_RM_	-4.16E+08	2.65E+08	-1.567413	0.1307
LOG_OFFER_SIZE*RISK_30	-3.19E+09	1.54E+09	-2.074586	0.0494
LOG_OFFER_SIZE*SHARE_RETENTION	7495098.	4784800.	1.566439	0.1309
LOG_OFFER_SIZE*BOARD	-4.31E+08	2.31E+08	-1.868042	0.0745
LOG_OFFER_SIZE*CENTLEV*CENTPRIV	-2659748.	5564086.	-0.478021	0.6371
LOG_OFFER_SIZE	-3.51E+09	2.26E+09	-1.551758	0.1344
OFFERPRICE_RM_^2	1.36E+08	1.09E+08	1.244200	0.2260
OFFERPRICE_RM_*RISK_30	1.33E+09	7.50E+08	1.770615	0.0899
OFFERPRICE_RM_*SHARE_RETENTION	-11391685	6210398.	-1.834292	0.0796
OFFERPRICE_RM_*BOARD	7.88E+08	2.22E+08	3.549159	0.0017
OFFERPRICE_RM_*CENTLEV*CENTPRIV	8582856.	6737942.	1.273810	0.2155

OFFERPRICE_RM_	3.01E+09	2.15E+09	1.399582	0.1750
RISK_30^2	-1.68E+10	1.15E+10	-1.457534	0.1585
RISK_30*SHARE_RETENTION	-51849881	62810214	-0.825501	0.4176
RISK_30*BOARD	9.52E+08	2.05E+09	0.465441	0.6460
RISK_30*CENTLEV*CENTPRIV	52518934	80078153	0.655846	0.5184
RISK_30	2.34E+10	1.29E+10	1.817129	0.0823
SHARE_RETENTION^2	-25789.75	71593.63	-0.360224	0.7220
SHARE_RETENTION*BOARD	-2276469.	5260183.	-0.432774	0.6692
SHARE_RETENTION*CENTLEV*CENTPRIV	-17946.50	230502.9	-0.077858	0.9386
SHARE_RETENTION	-40062598	38161207	-1.049825	0.3047
BOARD^2	3.03E+09	1.78E+09	1.708616	0.1010
BOARD*CENTLEV*CENTPRIV	-7492290.	7898689.	-0.948549	0.3527
<hr/>				
R-squared	0.802668	Mean dependent var	36555836	
Adjusted R-squared	0.450901	S.D. dependent var	83920959	
S.E. of regression	62186454	Akaike info criterion	38.98259	
Sum squared resid	8.89E+16	Schwarz criterion	40.38758	
Log likelihood	-1224.934	Hannan-Quinn criter.	39.53695	
F-statistic	2.281819	Durbin-Watson stat	2.421447	
Prob(F-statistic)	0.018766			



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