The copyright © of this thesis belongs to its rightful author and/or other copyright owner. Copies can be accessed and downloaded for non-commercial or learning purposes without any charge and permission. The thesis cannot be reproduced or quoted as a whole without the permission from its rightful owner. No alteration or changes in format is allowed without permission from its rightful owner.

BANK LENDING AND MACROECONOMIC VARIABLES: EMPIRICAL EVIDENCE FROM PANEL DATA

NUR AZIANI BINTI AZIZI

Universiti Utara Malaysia

MASTER OF SCIENCE (BANKING)
UNIVERSITI UTARA MALAYSIA
DECEMBER 2016

BANK LENDING AND MACROECONOMIC VARIABLES:

EMPIRICAL EVIDENCE FROM PANEL DATA

BY

NUR AZIANI BINTI AZIZI

Universiti Utara Malaysia

Thesis Submitted to

School of Economics, Finance and Banking (SEFB)

Universiti Utara Malaysia

in Partial Fulfillment of the Requirement for the Master of Science (Banking)

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)
NUR AZIANI BINTI AZIZI (820217)

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

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

BANK LENDING AND MACROECONOMIC VARIABLES: EMPIRICAL EVIDENCE FROM PANEL DATA

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. Sabri Nayan**

Tandatangan (Signature) : Sabri Nayan

Tarikh (Date) : **20 December 2016**

Dr. Sabri Nayan
Senior Lecturer
School of Economics,Finance and Banking (SEFB)
038 Economic Building College of Business
Universiti Utara Malaysia
06010 Sintok, Kedah Darul Aman
MALAYSIA

PERMISSION TO USE

In presenting this research paper in partial fulfilment of the requirements for a Post Graduate degree from the University Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this research paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or in their absence, by the Dean of School of Economics, Finance & Banking (SEFB) where I did my research paper. It is understood that any copying or publication or use of this research paper parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the UUM in any scholarly use which may be made of any material in my research paper.
Request for permission to copy or to make other use of materials in this research paper in whole or in part should be addressed to:

Dean of School of Economics, Finance and Banking (SEFB)

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman

Universiti Utara Malaysia

ABSTRAK

Tujuan kertas penyelidikan ini adalah untuk menentukan kesan pembolehubah makroekonomi terhadap pinjaman bank di negara-negara G7 sepanjang tempoh 2005 hingga 2015. Kajian ini menguji hubungan di antara kadar faedah, pekerjaan, inflasi dan pinjaman bank. Dalam kajian ini digunakan *panel ordinary least square* (POLS) untuk memeriksa kesan pembolehubah makroekonomi terhadap pinjaman bank. Hasil kajian menunjukkan bahawa kadar faedah, pekerjaan dan inflasi mempunyai hubungan yang signifikan terhadap pinjaman bank.

Kata kunci: pinjaman bank, pembolehubah makroekonomi, kadar faedah, pekerjaan, inflasi

Universiti Utara Malaysia

ABSTRACT

The aim of this research paper is to determine the impact of macroeconomic variables towards bank lending in the G7 countries over the period 2005 to 2015. This study tests the relationship between interest rate, employment, inflation and bank lending. In this study applied the panel ordinary least square (POLS) to examine the impact macroeconomic variables on bank lending. The findings show that interest rate, employment and inflation have significant impact towards bank lending.

Keywords: Bank lending, macroeconomic variables, interest rate, employment, inflation

Universiti Utara Malaysia

ACKNOWLEDGEMENT

This research paper has been successfully completed with the assistance of many authorities. I would like to take this opportunity to express my appreciation to those who assisting me to complete this research paper with advices, guidance and support. Without them, this research paper would not be able to complete.

Special thanks to my supervisor Dr. Sabri Nayan, who has patiently, guided me from not knowing anything regarding research paper yet being able to complete this research paper. He also shared his knowledge and expertise, gave me support and believed in me. This research paper would not be completed without his time, effort and support.

I would like to express a big thanks to my beloved family especially to my father Azizi bin Md Wali and to my mother Parwani binti Mohd Mukhtar who always been by my side and continuously giving support and encouragement throughout this research paper process.

I also would like to extend my thankfulness and appreciation to all my friends and everyone for the biggest supports they give to me throughout this research paper.

Universiti Utara Malaysia

TABLE OF CONTENTS

Abstrak i
Abstract ii
Acknowledgement iii
Table of Contents iv
List of Tables vi
List of Figures vi

Chapter 1 Introduction

1.1 Introduction to the Study 1
1.1.0 Background of the Study 1
1.1.1 Overview Bank Lending in the G7 1
1.1.2 Bank Lending and Financial Intermediation 2
1.2 Problem Statement 4
1.3 Research Questions 5
1.4 Objectives of the Study 6
1.5 Scope of the Study 6
1.6 Contribution of the Study 7
1.7 Organization of the Study 7
1.8 Concluding Remarks 8

Chapter 2 Literature Review

2.1 Introduction of the Chapter 9
2.2 Literature Reviews 9
2.2.1 Macroeconomic Variables and Bank Lending 9
2.2.2 Interest Rate and Bank Lending 9
2.2.3 Employment and Bank Lending 11
2.2.4 Inflation and Bank Lending 11
2.3 Concluding Remarks 12

Chapter 3 Methodology

3.1 Introduction of the Chapter 13
3.2 Data Collection and Sample Selection 13
3.2.1 Panel Data 15
3.3 Measurement of Variables 15
3.3.1 Dependent Variable 15

Universiti Utara Malaysia

3.3.2 Independent Variable 15
3.4 Theoretical Framework 18
3.5 Hypothesis Development 19
3.6 Econometric Model 19
3.7 Empirical Method 20
3.7.1 Descriptive Statistic 20
3.7.2 Correlation 20
3.7.3 Diagnostic Test 20
3.7.4 Ordinary Least Square (OLS) 21
3.8 Concluding Remarks 21

Chapter 4 Empirical Finding and Discussion

4.1 Introduction of the Chapter 22
4.2 Descriptive Analysis 22
4.3 Correlation 23
4.4 Diagnostic Test 24
4.4.1 Multicollinearity Test 24
4.5 Regression Analysis 25
4.6 Discussion Finding 26
4.6.1 Interest Rate and Bank Lending 26
4.6.2 Employment and Bank Lending 26
4.6.3 Inflation and Bank Lending 27
4.7 Concluding Remarks 28

Chapter 5 Conclusion and Recommendation

5.1 Introduction of the Chapter 29
5.2 Summary of Findings 29
5.3 Implication of the Study 30
5.4 Limitations 31
5.5 Recommendation and Future Research 32
5.6 Concluding Remarks 32

References 33
Appendix 41

Universiti Utara Malaysia

LIST OF TABLES

Table 3.1 Data Description 14
Table 3.2 Sampling of the Study 14
Table 3.3 Summary of Variables and Measurements 17
Table 4.1 Summary of Descriptive Analysis 22
Table 4.2 Correlation 23
Table 4.3 Multicollinearity Test 24
Table 4.4 Regression Analysis (common effect) 25
Table 4.5 Summary of Hypothesis Testing 27

LIST OF FIGURES

Figure 1.1 Total Bank Lending in The G7 2
Figure 1.2 Process of Intermediation 3
Figure 3.1 Theoretical Frameworks 18

Universiti Utara Malaysia

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter provides a brief discussion on the bank lending and macroeconomic variables. The chapter begins with the discussion about the background of the study and followed by the problem statement in section 1.2. Then, explanation about the research questions in section 1.3 and in section 1.4 explains the discuss objectives of the study. While, section 1.5 discusses scope of the study and section 1.6 explains the contribution of the study. The organization of the study is discussed in section 1.7. Lastly, the conclusion of this chapter is explained in section 1.8.

1.1.0 Background of The Study

1.1.1 Overview Bank Lending In The G7

On July 2001, the list countries in G7 are Canada, France, Germany, Italy, Japan, United Kingdom and United States (Robert, 2014). As we know, the G7 countries are developed countries and have a sustainable growth. However, as the world economy recovers from the global financial crisis on 2007-2009, the revival of growth in the US, UK, Canada, Italy, German, France, Japan and other industrialized countries has been slow and not acted (Jorgenson, 2013). The aimed for G7 is their bank can raise capital from public and gain confident and permission from them to continue leading on household and businesses (Brown, 2014). The figure 1.1 below shows that the total of bank lending in G7 countries:

Universiti Utara Malaysia

The contents of the thesis is for internal user only

REFERENCES

Alejendro, R. & Nestor, G. (2016). The impact of bank credit on employment formality: Evidence from Uruguay. *Journal Emerging Markets Finance and Trade*, 52, 1661-1678.

Allen, F., & Gale, D. (2004a). Financial intermediaries and markets. *Econometric*, 72, 1023-1061.

Allen, F., & Gale, D. (2004b). Competition and financial stability. *Journal Money Credit, Banking*, 36, 453–480.

Alkilani, Q. A., & Kaddumi, T.A. (2015). Cyclicality of lending behavior by banking sector for the period (2000…2013): Evidence from Jordan. *International Journal of Economics and Finance*, 7, 57-65.

Andres, J. I., Hernando., & Lopez-Salido, J.D. (1999). The role of the financial system in the growth-inflation link: The OECD experience, *Banco de Espana*, 9920.

Angeloni, I., & Faina, E. (2013). Capital regulation and monetary policy with fragile banks. *Journal of Monetary Economics*, 60, 311–324.

Baboucek, I., & Jancar, M. (2005), Vector autoregression analysis of the effects of macroeconomic shocks to the quality of the aggregate loan portfolio of the Czech banking sector *Czech National Bank Working*, 1.

Baltensperger, E. (1980). Alternative approaches to the theory of the banking firm. *Journal of Monetary Economics*, 6, 1–37.

Universiti Utara Malaysia

Bencivenga, V. R., & Smith, B. (1991). Financial intermediation and endogenous growth. *Review of Economic Studies,* 58, 195–209.

Bettencourt, M. (2010). Inflation and financial development: Evidence from Brazil. *Economic Modelling*, 28, 91-99.

Boot. A.W., & Thakor, A.V. (2000). Can relationship banking survive competition. *The Journal of Finance,* 55.

Boyd, J.M., Levine, R., & Smith, B.D. (2001). The impact of inflation on financial sector performance. Journal of Monetary Economics, 47, 221-248.

Brown, G. (2014). Inside the Banking Crisis: The Untold Story. United Kingdom, UK: A&C Black.

Bunda, I., & Desquilbet, J. (2008). The bank liquidity smile across exchange rate regimes. *International Economic Journal*, 22, 361-386.

Chodechai, S. (2004). Determinants of bank lending: An empirical examination for the year (1992…1996).

Cooper, M., Jackson W., & Patterson. (2003). Evidence of predictability in the cross-section of bank stock returns. *Journal of Banking and Finance*, 27, 817-850.

Diamond, D., & Rajan, R (1998). Liquidity risk, liquidity creation and financial fragility: A theory of banking. *University of Chicago, working paper.*

Dinh, T.H. (2012). Macroeconomic factors influencing UK household loan losses. *Journal of Financial Regulation and Compliance*, 20, 385–401.

Universiti Utara Malaysia

Djogap, F., & Ngomsi, A. (2012). Determinants of bank long term lending behaviour in the central African economic and monetary community (CEMAC). *Review of Economic and Finance,* 107-114.

Ewert, R., Szczesmy A., & Schenk, G. (2000). Determinants of bank lending performance in Germany. *Business Review,* 52, 344–36.

Gambera, M. (2000). Simple forecasts of bank loan quality in the business cycle. Emerging Issues Series, Federal Reserve Bank of Chicago, Chicago, IL.

Goh, K. L., & Yong, S. L. (2007). Bank lending and monetary policy: The effects of structural shift in interest rates.

Granger, C. W. J. (1969). Investigating causal relations by econometric models and cross spectral methods. *Econometrica*, 37, 424-438.

Gujarati, D. N., & Porter, D.C. (2009). Basic Econometric, 5th Ed. Mc Graw Hill, Singapore, 653, 755-756, 75.

Gujarati, D. N. (2003). Basic Econometrics. 4th Ed. Mcgraw-Hill. Singapore.

Gurley, J. G., & Shaw, E. S. (1955). Financial aspects of economic development. *American Economic Review*, 45, 515–528.

Guru, B., Staunton, J., & Balashanmugam, B. (2002). Determinant of commercial bank profitability in Malaysia. Paper presented at the 12th annual Australian finance and banking conference Sydney, Australia, 16 – 17 December.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L., (2006). *Multivariate Data Analysis.* 6th Ed. Prentice Hall, USA.

Universiti Utara Malaysia

Hanh. P.T.H. (2014). Determinants of bank lending LEMNA, *Institute of Economics and Management University of Nante.*

Haron, S., & Ahmad, N. (2006). The effects of conventional interest rates and rate of profit on funds deposited with Islamic banking system in Malaysia. *International Journal of Islamic Financial Services*. 1, 7.

Haron, S., & Wan Azmi, W. N. (2006). Deposit Determinants of commercial banks in Malaysia. *International Journal of Islamic Financial Services*. 1, 15.

Huybens, E., & Smith, B. (1999). Inflation, financial markets, and long-run real activity. *Journal of Monetary Economics*, 43, 283-315.

Ibrahim, M. H. (2006). Stock prices and bank loan dynamics in a developing country: The case of Malaysia. *Journal of Applied Economics.* 10, 81.

Imran, K., & Nishat, M. (2012). *Determinants of bank credit in Paksitan: A supply side approach.* Proceedings of 2nd ed International Conference on business management, 2-32.

Irina, B. (2003). *Bank liquidity and exchange rate regimes: New European Perspectives.* 3rd international Scientific Conference, Bulgaria.

Karim, A. Z., Sani, A. W., & Karim, A. B. (2012). Bank lending channel of monetary policy: Dynamic panel data study of Malaysia.

Kashyap, A., Rajan, R., & Stein, J. (2002). Banks as liquidity providers: An explanation for the coexistence of lending and deposit-taking. *Journal of Finance,* 57, 33–73.

Keeton, R.W. (1999). Does faster loan growth lead to higher loan losses. 57-75.

Keho, Y. (2009). Inflation and financial development: Cointegration and causality analysis for the UEMOA countries. *International Research Journal of Finance and Economics*, 27, 117-123.

Kelly, R., McQuinn, K., & Stuart, R. (2013). *Exploring the steady-state relationship between credit and Gdp for a small open economy the case of Ireland.* Research Working Paper. January.

Keynes, J. M. (1936). *The General Theory of Employment. Interest and Money*. London: Macmillan.

Ladime, J., Kumankana, E. S., & Osei, K. A. (2013). Determinants of bank lending behaviour in Ghana. *Journal of Economics and Sustainable Development*, 4, 42-47.

Lee, C., & Wong, S. Y. (2005). Inflationary thresholds effects in the relationship between financial development and economic growth: Evidence from Taiwan and Japan. *Journal of Economic Development*, 30, 49-68.

Li, M. (2006). *Inflation and economic growth: Threshold effects and transmission mechanism.* Malaysian Financial System- Bank Negara Malaysia 'Overview of Malaysian Financial System'. Retrieved 1st October 2016 from: http://www.bnm.gov.my.

Lin, S., & Ye, H. (2009). Does inflation targeting make a difference in developing countries?. *Journal of Development Economics*, 89, 118 –123.

Lynch, D. (1996). Measuring financial sector development: A Study of selected Asia Pasific countries. *Developing Economies*, 3, 3–33.

Universiti Utara Malaysia

Malede, M. (2014). Determinants of commercial bank lending: Evidence from Ethipoan commercial banks. *European Journal of Business and Management*, 6, 109-118.

Mathai, K. (2002). Stabilizing prices and output.

Matthews, K., & Thompson, J. (2005). *The Economics of Banking*. Chichester: John Wiley and Sons.

McConell, C. R., Brue, S. L., & Flynn, S. M. (2012). *Macroeconomics*. 19th ed. London" McGraw –Hill Higher Education.

Moussa, M. A. (2016). Determinant of bank lending: Case Tunisia. *International Journal of Finance and Accounting*, 5, 27-36.

Naceur, S. B., & Ghazouani, S. (2005). Does inflation impact on financial performance in the MENA region?. *Journal of Middle East Economics and Finance*, 3, 219-229.

Namazi, M., & Salehi, M. (2010). The role of inflation in financial depression: Evidence from Iran. *World Applied Science Journal*, 11, 653 – 661.

Olokoyo, F. (2011). Determinants of commercial bank's lending behavior in Nigeria. *International Journal of Financial Research*, 2, 61-72.

Olusanya, S., Oyebo, A., & Ohadebure, E. (2012). Determinants of lending behavior of commercial banks: Evidence from Nigeria a co-integration analysis (1975…2010). *Journal of Humanities and Social Sciences*, 5, 71-80.

Peek, J., & Rosengren, E. (1995). The capital crunch: Neither a borrower nor a lender be. *Journal of Money, Credit and Banking*, 27, 625-638.

Universiti Utara Malaysia

Pesola, J. (2005). *Banking fragility and distress: an econometric study of Macroeconomic determinants*. Bank of Finland Discussion Paper No. 13.

Rababah, M. (2015). Factors affecting the bank credit: an empirical study on the Jordanian commercial banks. *International Journal of Economic and Finance*, 7, 166-178.

Robert, M. (2014). *The Origins of the Modern World: A Global and Ecological Narrative from the Fifteenth to the Twenty-first Century*. New York, NY: Rowman & Littlefield Publishers.

Rose, P. (2013). *Bank management and financial services (9th ed.).* New York, NY: McGraw Hill Componies, Inc.

Rousseau, Peter, L,. & Wachtel, P. (2002). Inflation thresholds and the finance growth Nexus. *Journal of International Money and Finance*, 21, 777-793.

Salina., & Majid. (2009). the role of bank loans and deposits in the monetary transmission mechanism in Malaysia. *International Journal of Banking and Finance*, 6.

Sekaran, U. (2003). *Research methods for business a skill-building Approach*. New York: John Wiley & Sons Inc. South- Western College Publishing.

Stein, J. C. (2014). Banks as patient debt investors. Philadelphia, Pennsylvania. American Economic Association/American Finance Association Joint Luncheon speech delivered on 3 January 2014.

Stiglitz, J., & Weiss, A. (1981). Credit rationing in markets with information. *American Economic Review*, 71, 393-410.

Universiti Utara Malaysia

Tan, Y., & Floros, C. (2012). Bank profitability and inflation: The case of China. *Journal of Economics Studies*, 39, 675 – 696.

Tang, T. C. (2001). Bank lending and inflation in Malaysia: Assessment from unrestricted error-correction models. *Asian Economic Journal*. 15, 275-289.

Thaker, T., Ee, T. S., Sin, C. F., & Man, W. H. (2014). The macroeconomic determinants of bank credit in Malaysia: An analysis via the error correction model (ECM). *Skyline Business Journal*, IX.

Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, 1, 15–29.

Tobin, J. (1963). *Commercial banks as creators of, money*. Cowles Foundation Paper 205 reprinted. In D. Carson (Ed.), Banking and Monetary Studies Irwin: Homewood.

Tomak, S. (2013). Determinants of commercial bank lending behavior: Evidence from Turkey. *Asian journal of Empirical research*.

Usman, S. (1999). Bank Regulation and Supervision in Nigeria. The Nigerian Bank.

Vodova, P. (2011). Liquidity of Czech commercial banks and its determinants. *International Journal of Mathematical Models and Methods in Applied Sciences*, 6, 1060-1067.

Whitley, J., Windram, R., & Cox, P. (2004). An empirical model of household arrears. Bank of England, Working Paper No. 214.

Wooldridge, J. M. (2006). Introductory Econometrics. A Modern Approach, 2nd edition.

APPENDIX

APPENDIX A

RELATIONSHIP BETWEEN INTEREST RATE, TOTAL EMPLOYMENT, INFLATION AND BANK LENDING

Covariance Analysis: Ordinary

Date: 10/20/16 Time: 21:49

Sample: 2005 2015

Included observations: 77

Correlation Probability	LNTL	LNINT	LNEMP	LNINF
LNTL	1			

LNINT	-0.4630	1		
	0.0000	-----		
LNEMP	0.2506	-0.0181	1	
	0.0279	0.8759	-----	
LNINF	-0.3698	0.1892	-0.0919	1
	0.0009	0.0994	0.4267	-----

Universiti Utara Malaysia

APPENDIX B

MULTICOLLINEARITY TEST

Variance Inflation Factors

Date: 10/20/16 Time: 21:55

Sample: 1 77

Included observations: 77

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LNINT	0.077552	3.322896	1.037113
LNINF	0.037626	1.075729	1.045601
LNEMP	0.083915	687.8816	1.008515
C	25.71102	690.9671	NA

Universiti Utara Malaysia

APPENDIX C

COMMON EFFECT MODEL

Dependent Variable: LNTL
Method: Panel Least Squares
Date: 10/20/16 Time: 21:52
Sample: 2005 2015
Periods included: 11
Cross-sections included: 7

Total panel (balanced) observations: 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINT	-1.1757	0.2785	-4.2217	0.0001
LNEMP	0.6639	0.2897	2.2920	0.0248
LNINF	-0.5458	0.1940	-2.8138	0.0063
C	12.3513	5.0706	2.4359	0.0173
R-squared	0.3442	Mean dependent var		22.6131
Adjusted R-squared	0.3173	S.D. dependent var		2.0486
S.E. of regression	1.6927	Akaike info criterion		3.9411
Sum squared resid	209.1585	Schwarz criterion		4.0628
Log likelihood	-147.7308	Hannan-Quinn criter.		3.9898
F-statistic	12.7719	Durbin-Watson stat		0.4117
Prob(F-statistic)	0.0000			

Universiti Utara Malaysia

APPENDIX D

RELATIONSHIP BETWEEN INTEREST RATE, TOTAL EMPLOYMENT, INFLATION, INDUSTRIAL PRODUCTION INDEX AND BANK LENDING.

Covariance Analysis: Ordinary
Date: 10/24/16 Time: 05:15
Sample: 2005 2015
Included observations: 77

Correlation Probability	LNTL	LNINT	LNEMP	LNINF	LNIPI
LNTL	1				

LNINT	-0.4630	1			
	0.0000	-----			
LNEMP	0.2506	-0.0181	1		
	0.0279	0.8759	-----		
LNINF	-0.3698	0.1892	-0.0919	1	
	0.0009	0.0994	0.4267	-----	
LNIPI	-0.1641	0.3603	0.0356	0.2564	1
	0.1538	0.0013	0.7583	0.0244	-----

Universiti Utara Malaysia

APPENDIX E

COMMON EFFECT MODEL

Dependent Variable: LNTL
Method: Panel Least Squares
Date: 10/24/16 Time: 05:16
Sample: 2005 2015
Periods included: 11
Cross-sections included: 7
Total panel (balanced) observations: 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINT	-1.2261	0.2964	-4.1364	0.0001
LNEMP	0.6541	0.2918	2.2418	0.0281
LNINF	-0.5675	0.1994	-2.8457	0.0058
LNIPI	1.6080	3.1122	0.5167	0.6070
C	5.1212	14.8926	0.3439	0.7319
R-squared	0.3466	Mean dependent var		22.6131
Adjusted R-squared	0.3103	S.D. dependent var		2.0486
S.E. of regression	1.7012	Akaike info criterion		3.9633
Sum squared resid	208.3858	Schwarz criterion		4.1155
Log likelihood	-147.5883	Hannan-Quinn criter.		4.0242
F-statistic	9.5495	Durbin-Watson stat		0.4159
Prob(F-statistic)	0.0000			

Universiti Utara Malaysia