

**CREDIT RISK, MACROECONOMIC AND BANK SPECIFIC FACTORS
IN JORDANIAN BANKS**

MOHAMMED OQLAH MAHMOUD AL-SMADI

DOCTOR OF PHILOSOPHY

UNIVERSITI UTARA MALAYSIA

February 2010

**CREDIT RISK, MACROECONOMIC AND BANK SPECIFIC
FACTORS IN JORDANIAN BANKS**

BY

MOHAMMED OQLAH MAHMOUD AL-SMADI

**Thesis Submitted to the College of Business,
Universiti Utara Malaysia,
in Fulfillment of the Requirement for the Degree of Doctor of
Philosophy**

February 2010



Kolej Perniagaan
(College of Business)
Universiti Utara Malaysia

PERAKUAN KERJA TESIS / DISERTASI
(Certification of thesis / dissertation)

Kami, yang bertandatangan, memperakukan bahawa
(We, the undersigned, certify that)

MOHAMMED OQLAH AL-SMADI

calon untuk Ijazah

(candidate for the degree of)

DOKTOR FALSAFAH (Ph.D)

telah mengemukakan tesis / disertasi yang bertajuk:

(has presented his/her thesis / dissertation of the following title):

"CREDIT RISK, MACROECONOMIC AND BANK SPECIFIC FACTORS IN JORDANIAN BANKS"

seperti yang tercatat di muka surat tajuk dan kulit tesis / disertasi.
(as it appears on the title page and front cover of the thesis / dissertation).

Bahawa tesis/disertasi tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan, sebagaimana yang ditunjukkan oleh calon dalam ujian lisan yang diadakan pada : **25 Februari 2010**

That the said thesis/dissertation is acceptable in form and content and displays a satisfactory knowledge of the field of study as demonstrated by the candidate through an oral examination held on: 25 February 2010

Pengerusi Viva (Chairman for Viva)	:	Prof. Dr. Noor Azizi Ismail	Tandatangan (Signature)
Pemeriksa Luar (External Examiner)	:	Assoc. Prof. Dr. Mohd Rasid Hussin	Tandatangan (Signature)
Pemeriksa Dalam (Internal Examiner)	:	Prof. Dr. Mohd Zaini Karim	Tandatangan (Signature)

Tarikh: **25 February 2010**
(Date)

Pelajar : MOHAMMED OQLAH AL-SMADI

(Name of Student)

Tajuk Tesis : CREDIT RISK, MACROECONOMIC AND BANK SPECIFIC FACTORS IN

JORDANIAN BANKS

Program Pengajian : Doktor Falsafah (Ph.D)

(Programme of Study)

Nama Penyelia/Penyelia-penyaelia : Prof. Dr. Nor Hayati Ahmad

(Name of Supervisor/Supervisors)


Tandatangan
(Signature)

ABSTRACT

High volume of risks facing banks is one of the most important reasons behind their failure. The exposure of banks to risks measured by risk index could indicate the extent of the vulnerability of banks to adverse performance. This thesis applies risk index to measure risk exposure of 23 Jordanian banks during 1995 to 2008. Findings reveal that the average risk index of banks is 17.5 units in comparison to the mean industry index of 17.9 units. The lower value for risk index for the banks in the sample in comparison to the industry mean reflects the higher risk borne by some of the banks in the sample. Further investigation provides evidence that a bank with a higher risk index level has strong capital and profit relative to the volatility of their returns. Among the banks, Arab Jordan Investment Bank has the highest index of 33.3 units, while Jordan Investment and Finance Bank has the lowest index of 6.8 units. For industry risk index, the highest value for the risk index is 35 units (in 2006), while the lowest of 11 units in 1997. The low risk index showed high risks faced by the Jordanian banks in 1997. This is due to low economic performance where GDP decline from 6.2 percent in 1995 to 2.1 percent and 3.3 percent in 1996 and 1997 respectively. Most banks achieved low net income, which affect negatively their profitability. In addition to measure risk index, this thesis investigates the relationship between risk index and banks size. Results show that there exist significant differences between the mean of risk index between large, medium and small banks. Large banks have a significant mean difference among group of banks. Moreover, a positive and significant relationship was found between risk index and banks' size, which suggest that the

larger the banks, the safer they are. This thesis also measures market risk of banks during the test period using single index market model and Dimson's procedure with 2 lag and 1 lead to correct non-synchronous trading effect. The results show that the average market risk (beta) measure of Jordanian listed banks over 1995-2008 is 0.461, which indicates a very low market risk in terms of price volatility. Among the banks, Arab Bank has the highest average beta of 0.766, and Ahli Bank has the lowest market risk of 0.327. An investigation of the trend of average market risk during a study period reveal that the changes in market risk are mainly due to a fluctuation of financial market and movements of the prevailing interest rate. Finally, this thesis investigates the determining variables of credit risk among the sample banks. According to the Capital Assets Pricing theory, risks are attributable by external factors and internal factors. Hence, twelve variables comprising five macroeconomic variables (aggregate economic activity, inflation, money supply, interest rate and market risk), and seven bank specific variables (lag non performing loans, provision of loan losses, loan growth, equity capital ratio, loan concentration in risky sectors, net interest margin and size) are applied as independent variables. The dependent variable is credit risk, which is measured by non performing loans to total loans ratio. Four theories which are financial intermediation theory, agency theory, diversification theory and capital assets theory formed the theoretical framework in this study. OLS regression model was used to investigate the determinants of credit risk in the Jordanian banks. The results show that all the macroeconomic variables together explain 51.9 percent of the variation of credit risk. From the five macroeconomic variables, three were found statistically significant. They are GDP, inflation and market interest rate.

Our study shows that bank specific variables were found to affect credit risk more than the external variables. All bank specific variables explain 73 percent variation of credit risk. This indicates a strong association between bank specific variables and banks credit risk exposure. Five variables which are non performing loan, loan growth, loan concentration in risky sectors and banks size were found as significant determinants of credit risk at the Jordanian banks. On a pool basis, all macroeconomic variables and bank specific variables together explain 72 percent of the banks' credit risk. For the whole model, net interest margin was found significant and negatively related to credit risk. In conclusion, this thesis assesses the risk exposure and for the first time, empirically determines the variables affecting credit risk of the Jordanian banks. As credit risk is the main risk that could lead to bank failure, the results imply that the management of the Jordanian banks should pay great attention to the significant factors, in particular their non performing loans and loan growth. The positive and significant relationship between banks' risk index and their size supports the Basel Accord standards, where the greater the bank risks, the higher should be the size of their capital base in order to ensure that the risks adequately be covered.

ACKNOWLEDGEMENTS

First and former, thanks to God for giving me a good health, strength of mind and spirit in completing this thesis.

This thesis is the fulfillment of dreams, disciplines and hard work. It is a culmination of guidance, support and love involving many individuals who provided their time and care for me to successfully undertake this task.

I would like to express my greatest thanks to my supervisor Professor Nor Hayati Ahmad, who has helped me in every stage of this thesis. From my initial selection of a topic to my thesis defense. Special thanks for her motivation, her ideas and guidance to me to complete this thesis. It has been a great pleasure to work under her supervision. I am also very grateful for all the members of the College of Business at the Universiti Utara Malaysia for helping me through my 3 years study.

I could not have completed, or even started without prayer, love and support of my parents. They instilled in me the value of a good education, discipline and always giving me the best. To my father and mother, thanks for your encouragement and may God bless you. To my brother Tareq, I thank you for your strong support to realize my dream. Special thanks for my family in Jordan for their inspiration and their prayers.

I cannot imagine that I reach this goal without love, encouragement and support of my wife Israa, and my sons Bara'a and Obadah. Thank you for your loving, understanding, support and patience. Without all of you, this could not have become a reality. Finally, to all that I have not mentioned my deepest thanks to all of you.

TABLE OF CONTENTS

	Page
ABSTRACT	ii
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
 CHAPTER 1: BACKGROUND OF THE STUDY	
1.1 Introduction	1
1.2 Statement of the Problem	4
1.3 Research Questions	10
1.4 Research Objectives	
1.4.1 Main Objective	10
1.4.2 Specific Objectives	10
1.5 Significance of the Study	11
1.6 Scope and Limitation of the Study	13
1.7 Organization of the Study	14
 CHAPTER 2: OVERVIEW OF THE JORDANIAN ECONOMY AND FINANCIAL SYSTEM	
2.1 Introduction	15
2.2 The Jordanian Economy	
2.2.1 A Brief History of the Jordanian Economy	15
2.2.2 Jordan's Macroeconomic Performance	18
2.3 The Jordanian Financial System	
2.3.1 Financial Institutions	23
2.3.2 The Capital Market	25
2.3.3 The Banking Institutions	
2.3.3.1 Historical Developments	27
2.3.3.2 Regulating and Supervising Licensed Banks	29
2.3.3.3 The Performance of Licensed Banks	32
2.3.3.4 Market Capitalization of Licensed Banks	39

CHAPTER 3: LITERATURE REVIEW

3.1	Introduction	40
3.2	Definitions of risks	40
3.3	Underpinning Theories	
3.3.1	The Theory of Financial Intermediation	42
3.3.2	The Agency Theory	44
3.3.3	The Theory of Diversification	46
3.3.4	The Theory of Capital Asset Pricing	47
3.4	Determinants of Banks' Credit Risk	
3.4.1	Macroeconomic Variables	50
3.4.2	Bank Specific Variables	55
3.5	Empirical Determinants of Banks' Credit Risk	
3.5.1	Macroeconomic Variables	62
3.5.2	Bank Specific Variables	67
3.6	Risk Index and Its Applications	78
3.7	Gap in the Literature	80

CHAPTER 4: RESEARCH METHODOLOGY

4.1	Introduction	82
4.2	Conceptual Framework	82
4.3	Hypotheses Development	84
4.4	Measurement of Variables	
4.4.1	The Dependent Variable	90
4.4.2	The Independent Variables	
4.4.2.1	Macroeconomic Variables	91
4.4.2.2	Bank Specific Variables	92
4.5	Data Collection	
4.5.1	Sampling	95
4.5.2	Data Collection Procedures	96
4.6	Data Analysis	
4.6.1	Statistical Techniques	97
4.6.2	Test Models	98

CHAPTER 5 : RESULTS AND DISCUSSION

5.1	Introduction	100
5.2	Risk Index Analysis	100
5.3	Market Risk Analysis	107

5.4	Regression Assumptions	
5.4.1	Normality	113
5.4.2	Linearity	114
5.4.3	Multicollinearity	115
5.4.4	Stationarity	116
5.4.5	Homoscedasticity	118
5.5	Credit Risk Analysis	
5.5.1	Level of Banks' credit Risk Exposure	120
5.5.2	Macroeconomic Determinants of Credit Risk	
5.5.2.1	Descriptive Statistics	122
5.5.2.2	Regression Results	125
5.5.3	Bank Specific Determinants of Credit Risk	
5.5.3.1	Descriptive Statistics	129
5.5.3.2	Regression Results	131
5.5.4	Macroeconomic and Bank Specific Determinants of Credit Risk (whole model)	136

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1	Introduction	139
6.2	Summary of Findings	
6.2.1	Risk Index of Banks	140
6.2.2	Market Risk of the Banks	141
6.2.3	Macroeconomic Determinants of Credit Risk	142
6.2.4	Bank Specific Determinants of Credit Risk	144
6.3	Implications of the Study	
6.3.1	Implication for Theory	147
6.3.2	Implication for Practitioners	149
6.4	Recommendations for Future Research	152

LIST OF REFERENCES

APPENDICES

Appendix 1: Risk Index Measures of the Jordanian banks, 1995-2008	164
Appendix 2: Industry Risk Index Measures, 1995-2008	165
Appendix 3: Corrected Beta Value of the Jordanian banks, 1995- 2008	166
Appendix 4: Graphical Test of Normality	167
Appendix 5: Linearity Test	170
Appendix 6: Descriptive Statistics	173
Appendix 7: Model Summary	174

LIST OF TABLES

	Page
CHAPTER ONE	
Table 1.1: Selected Indicators of Jordanian Banking System	3
CHAPTER TWO	
Table 2.1: Selected Key Economic Indicators, 1995-2008	23
Table 2.2: Selected Key Statistics of Capital Market, 2004-2008	26
Table 2.3: The Banking Sector in Jordan	28
Table 2.4: Classifications of Credit Facilities	31
Table 2.5: Licensed Banks' Consolidated Balance Sheet, 1995-2008	33
Table 2.6: Ranking of Banks and their Market Capitalization	39
CHAPTER FOUR	
Table 4.1: Measurement of Variables	94
Table 4.2: Sample of the Study	95
CHAPTER FIVE	
Table 5.1: Ranking of Banks Based on Their Risk Index	101
Table 5.2: ANOVA Statistics	104
Table 5.3: Multiple Comparison of Risk Index Mean Differences	105
Table 5.4: Correlation Statistics	106
Table 5.5: Corrected Beta Value of the Jordanian banks	108
Table 5.6: Univariate Statistical Test of Normality	114
Table 5.7: Multicollinearity Statistics	116
Table 5.8: Results of Augmented Dickey–Fuller (ADF) Unit Root Test	117
Table 5.9: Results of Corrected Standard Errors Procedure	119
Table 5.10: Mean and Standard Deviation of Macroeconomic Variables	123
Table 5.11: Regression Results of Macroeconomic Determinants	125
Table 5.12: Mean and Standard Deviation of Bank Specific Variables	130
Table 5.13: Regression Results of Bank Specific Determinants	132
Table 5.14: Regression Results of Macroeconomic and Bank Specific Determinants	137

LIST OF FIGURES

	Page
CHAPTER 2	
Figure 2.1: Percentage Growth of GDP, 1995-2008	18
Figure 2.2: Inflation Rate, 1995-2008	20
Figure 2.3: Distribution of Loans By Borrowing Type, 1995-2008	35
Figure 2.4: Distribution of Loans By Economic Sectors	36
Figure 2.5: Total Deposits with Licensed Banks, 1995-2008	36
Figure 2.6: Distribution of Loans By Maturity Period	38
CHAPTER THREE	
Figure 3.1: Theoretical Framework of the Study	49
CHAPTER FOUR	
Figure 4.1: Conceptual Framework of the Study	83
CHAPTER FIVE	
Figure 5.1: Industry Risk Index, 1995-2008	103
Figure 5.2: Average Market Risk of Jordanian Bank, 1995-2008	109
Figure 5.3: Domestic and Foreign Assets of the Jordanian banks,1995-2008	112
Figure 5.4: Average Banks' NPL to Total Loans, 1995-2008	120
Figure 5.5: Banks' NPL to Total Loans, Cross Countries Comparison, 2002-2007	122
Figure 5.6: Gross Domestic Product and Total Loans, 1995-2008	123
Figure 5.7: Credit Risk and Market Interest Rate, 1995-2008	129

CHAPTER ONE

BACKGROUND OF THE STUDY

1.1 Introduction

Financial intermediaries play a positive role in the development of the economy as a whole. For all countries especially developing countries, banking system is the main component of the financial system. Banks in developing countries are the main source of credit within the domestic markets because a capital market is weak and limited, and it does not have the ability to provide adequate sources of financing for investors (Saci, Giorgioni, and Holden, 2009; and Tang, 2006). The importance of banking system appears through intermediary role between the two sides of the supply and demand of funds. In addition, banking system provides a mechanical system to group public savings and convert them into investments. Financial system also attracts foreign investment, in which foreign investors look for a banking system that is able to meet their needs either by giving loans or providing a foreign relations and good investments climate (Anyiwe, 2003; and Beck and Levine, 2004) .

Since the eighties, a change in the structure of the global economy started as a result of the globalization of the economy and financial liberalization. These conditions impact heavily on banking systems in all countries of the world, causing them to make fundamental changes covering various aspects in order to face the new challenges. Banks are exposed to the challenges of competition from

The contents of
the thesis is for
internal user
only

REFRENCES

Ahmad, N. H. (2002). FINANCIAL CRISIS AND NON-PERFORMING LOANS: The Malaysian Banks Experience. *International Journal of Finance*, 14(2), 2257-2278.

Ahmad, N. H. (2003). *FORMATION CREDIT RISK, REGULATORY PRICE EFFECTT AND THE PATH LINKING CREDIT TO TOTAL RISK*. Unpublished Doctor of Philosophy Thesis, University Utara Malaysia.

Ahmad, N. H., and Ariff, M. (2007). Multi-country study of bank credit risk determinants. *The international journal of Banking and Finance*, 5(1), 135-152.

Al-Abadi, M. I., & Al-Sabbagh, O. W. (2006). Interest Rate Sensitivity, Market Risk, Inflation and Bank Stock Returns. *Journal of Accounting-Business & Management*, 13, 25-38.

Al-Abbad, M. I. (2002). *Distressed Credit in Commercial Banks Listed in Amman Stock Exchange: A Field study*. Unpublished Master Thesis, University of Jordan, Amman.

Al-qudah, W. A. (2005). *Evaluating Credit Risk at Financial Institutions and Banking Sector*. Unpublished Master Thesis, Yarmouk University, Irbid.

Allen, F., and Santomero, A. M. (1998). The theory of financial intermediation. *Journal of Banking and Finance*, 21(11), 1461-1485.

Allen, F., and Santomero, A. M. (2005). What do financial intermediaries do? *Journal of Banking and Finance*, 25(2), 271-294.

Altunbas, Y., Capro, S., Gardener, E., and Molyneux, P. (2007). Examining the Relationships between Capital, Risk and Efficiency in European Banking. *European Financial Management*, 13(1), 49-70.

Angbazo, L. (1997). Commercial bank net interest margins, default risk, interest-rate risk, and off-balance sheet banking. *Journal of Banking and Finance*, 21(1), 55-87.

Anyiwe, M. A. (2003). Commercial Bank Credit and Economic Growth in Nigeria: 1970-1996. *Finance India*, 17(3), 953-964.

Ariff, M., Mohamad, S., and Nassir, A. M. (1998). *Stock Pricing in Malaysia Corporate Financial and Investment Management*. Selangor: Universiti Putra Malaysia Press.

Arpa, M., Giulini, I., Ittner, A., and Pauer, F. (2001). The influence of macroeconomic developments on Austrian banks: implications for banking supervision. *BIS Papers*, 1, 91-116.

Athanasoglou, P. P., Brissimis, S. N., and Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), 121-136.

Baum, C. F., Caglayan, M., and Ozkan, N. (2009). The second moments matter: The impact of macroeconomic uncertainty on the allocation of loanable funds. *Economics Letters*, 102(2), 87-89.

Beck, T., and Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking and Finance*, 28(3), 423.

Bennaceur, S., and Ghazouani, S. (2005). Does Inflation Impact on Financial Sector Performance in the MENA Region? *Review of Middle East Economics and Finance*, 3(3), 219-229.

Bessis, J. (2002). *Risk management in banking* (2nd ed.). Chichester: John Wiley and Sons Ltd.

Berger, A. N., and Bonaccorsi di Patti, E. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking and Finance*, 30(4), 1065-1102.

Bhattacharya, B., and Sinha Roy, T. N. (2008). Macroeconomic Determinants of Asset Quality of Indian Public Sector Banks: A Recursive VAR Approach. *ICFAI Journal of Bank Management*, 7(1), 20-40.

Bichsel, R., and Blum, J. r. (2004). The relationship between risk and capital in Swiss commercial banks: a panel study. *Applied Financial Economics*, 14(8), 591-597.

Blasko, M., and Sinkey, J., Joseph F. (2006). Bank asset structure, real-estate lending, and risk-taking. *The Quarterly Review of Economics and Finance*, 46(1), 53-81.

Block, S. B., and Hirt, G. A. (2005). *Foundation of Financial Management* (11th ed.). Boston: McGraw-Hill/Irwin.

Boyd, J. H., Levine, R., and Smith, B. D. (2001). The impact of inflation on financial sector performance. *Journal of Monetary Economics*, 47(2), 221-248.

Campbell, A. (2007). Bank insolvency and the problem of non-performing loans. *Journal of Banking Regulation*, 9(1), 25-45.

Cannata, F., and Quagliariello, M. (2006). Capital and risk in Italian banks: A simultaneous equation approach. *Journal of Banking Regulation*, 7(3/4), 283-297.

Cebula, R. J. (2001). New evidence on determinants of bank failures in the US. *Applied Economics Letters*, 6(1), 45-47.

Central Bank of Jordan Annual Report, Amman, Various Issues.

Central Bank of Jordan, The financial and banking system in Jordan (1964-2004), *CBJ* Amman, Jordan: Various Pages.

Central Bank of Jordan, Financial Stability in Jordan, *CBJ* Amman, Jordan: Various Pages.

Chandra, P. (2005). *Investment analysis and Portfolio Management* (2nd ed.). New Delhi: Tata McGraw-Hill.

Cihk, M., and Schaeck, K. (2007). How Well Do Aggregate Bank Ratios Identify Banking Problems? *IMF Working Papers*, 7275(200), 1-40.

Cooper, D. R., and Schindler, P. S. (2001). *Business research methods* (7th ed.). Boston: McGraw-Hill.

Coyle, B. (2000). *Framework for Credit Risk Management*. New York: AMACOM.

Daradkah, D. A. (2005). *The effect of macroeconomic factors on banks' performance: A case study of Jordanian commercial banks*. Unpublished Master Thesis, Yarmouk University, Irbid.

Das, A., and Ghosh, S. (2007). Determinants of Credit Risk in Indian State-owned Banks: An Empirical Investigation. *ECONOMIC ISSUES-STOKE ON TRENT-*, 12(2), 27.

Dell'Ariccia, G., Detragiache, E., and Rajan, R. (2008). The real effect of banking crises. *Journal of Financial Intermediation*, 17(1), 89-112.

Demirguc-Kunt, A., and Detragiache, E. (2005). Cross-country empirical studies of systemic bank distress: a survey. *National Institute Economic Review*, 192(1), 68.

Diamond, D. W. (1984). Financial Intermediation and Delegated Monitoring. *Review of Economic Studies*, 51(166), 393.

Dickerson, B., Campsey, B., and Brigham, E. (1991). *Introduction to financial management* (3rd ed.). Fort Worth: Dryden Press.

Ding, L., Thangavelu, S., and Qing, H. (2005). Biased Lending and Non-performing Loans in China's Banking Sector. *Journal of Development Studies*, 41(6), 1071-1091.

Eickmeier, S., Hofmann, B., and Worms, A. (2009). Macroeconomic Fluctuations and Bank Lending: Evidence for Germany and the Euro Area. *German Economic Review*, 10(2), 193-223.

Eisenbeis, R. A., and Kwast, M. L. (1991). Are Real Estate Specializing Depositories Viable? Evidence from Commercial Banks. *Journal of Financial Services Research*, 5(1), 5-24.

Elsas, R. (2005). Empirical determinants of relationship lending. *Journal of Financial Intermediation*, 14, 32-57.

Enders, W. (2004). *Applied Econometrics Time Series*. Canada: John Wiley and Sons, Inc.

Eng, L. L., and Nabar, S. (2007). Loan Loss Provisions by Banks in Hong Kong, Malaysia and Singapore. *Journal of International Financial Management and Accounting*, 18(1), 18-38.

Fraser, D. R., Gup, B. E., and Kolari, J. W. (2001). *Commercial Banking: The Management of Risk* (Second ed.). Sydney: South Western Collage.

Gallati, R. (2003). *Risk Management and Capital Adequacy*. New York: McGraw-Hill.

Garcia-Marco, T., and Robles-Fernandez, M. D. (2008). Risk-taking behavior and ownership in the banking industry: The Spanish evidence. *Journal of Economics and Business*, 60(4), 332-354.

Godlewski, C. J. (2005). Bank capital and credit risk taking in emerging market economies. *Journal of Banking Regulation*, 6(2), 128-145.

Gup, B. E., Avram, K., Beal, D., Lambert, R., and Kolari, J. W. (2007). *Commercial Banking: The Management of Risk* (3rd ed.). Australia: John Wiley and Sons Ltd.

Hadad, W. (2005). *Bad Debt in Jordanian Commercial Banks*. Unpublished Master Thesis, Yarmouk University, Irbid.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tathan, R. L. (2006). *Multivariate Data Analysis* (6th ed.). New Jersey: Pearson Prentice Hall.

Hair, J. F., Money, A., and Samouel, P. (2007). *Research Method for Business*. London: John Wiley and Sons Ltd.

Halkos, G. E., and Salamouris, D. S. (2004). Efficiency measurement of the Greek commercial banks with the use of financial ratios: a data envelopment analysis approach. *Management Accounting Research*, 15(2), 201-224.

Handrof, W. C., and Zhu, L. (2006). US Bank Loan-Loss Provisions, Economic Conditions, and Regulatory Guidance. *Journal of Applied Finance*, 16(1), 97-114.

Hannan, T. H., and Hanweck, G. A. (1988). Bank Insolvency Risk and the Market for Large Certificates of Deposit. *Journal of Money, Credit and Banking*, 20(2), 203-211.

Hawasheen, H. A. (2004). *Loan Management and Risk Indicators in the Jordanian banking Sector*. Unpublished Master Thesis, Yarmouk university, Irbid.

Heffernan, S. (2005). *Modern Banking in Theory and Practice*. Chichester: John Wiley.

Herman, M. L., Head, G. L., Jackson, P. M., and Fogarty, T. E. (2004). *Managing Risk in Nonprofit Organization* (1st ed.). New Jersey: John Wiley and Sons, Inc.

Honohan, P., and Klingebiel, D. (2000). Controlling fiscal cost of bank crises. *World bank, Working paper No.2441*.

Horne, V., and C., J. (2002). *Financial Management and Policy* (12th ed.). New Jersey: Pearson Prentice Hall.

Hubbard, R. G. (2002). *Money, the Financial System and the Economy* (4th ed.). Boston: Addison Wesley.

James R. Barth, Gerand Caprio, J., and Nolle, D. E. (2004). Comparative International Characteristics of Banking. *World bank, Economic and policy Analysis Working paper NO.2004-1*.

Jimenez, G., and Saurina, J. (2006). credit cycle, credit risk and prudential regulations. *International Journal of Central Banking*, 2, 65-98.

Kahsali, A. S. (2005). *Bank Stumbling in Jordan: A comparative Analytical Study For the Period (1980-1997)*. Unpublished Master Thesis, Al al-Bayt university, Mafraq.

Kearns, A. (2004). Loan Losses and the Macroeconomy: A Framework for Stress Testing Credit Institutions' Financial Well-Being. *Journal of Financial Intermediation*, 12(3), 111-121.

Keeton, W. R. (2003). Does Faster Loan Growth Lead to Higher Loan Losses? *Economic Review*, 84(2), 57.

Koch, T. W., and McDonald. (2003). *Bank Management* (5th ed.). Sydney: Thomson.

Konishi, M., and Yasuda, Y. (2004). Factors affecting bank risk taking: Evidence from Japan. *Journal of Banking and Finance*, 28(1), 215-232.

Kwack, S. Y. (2000). An empirical analysis of the factors determining the financial crisis in Asia. *Journal of Asian Economics*, 11(2), 195.

Laeven, L., and Valencia, F. V. (2008). Systemic banking crises: a new database. *IMF, Working paper No 8/224*.

Li, Y. (2003). The Asian Financial Crises and Non-performing Loans: Evidence from Commercial Banks in Taiwan. *International Journal of Management*, 20(1), 69-73.

Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*, 7(1), 77-91.

Maudos, J. n., and de Guevara, J. F. n. (2004). Factors explaining the interest margin in the banking sectors of the European Union. *Journal of Banking and Finance*, 28(9), 2259-2281.

Saif, I. (2004). *The Jordanian economy in a changing environment*. Amman: Center for Strategic Studies, University of Jordan.

Salas, V., and Saurina, J. (2002). Credit Risk in Two Institutional Regimes: Spanish Commercial and Savings Banks. *Journal of Financial Services Research*, 22(3), 203-224.

Sanjeev, G. M. (2007). Bankers' Perceptions on Causes of Bad Loans in Banks. *Journal of Management Research*, 7(1), 40-46.

Saunders, A., and Cornet, M. M. (2008). *Financial institutions Management. A Risk Management Approach* (6th ed.). Boston: McGraw-Hill Irwin.

Sengonul, A., and Thorbecke, W. (2005). The effect of monetary policy on bank lending in Turkey. *Applied Financial Economics*, 15(13), 931-934.

Sharpe, W. (1964). Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. *The Journal of Finance*, 19(3), 425-442.

Sinkey, J. F. (1998). *Commercial bank financial management in the financial-services industry* (5th ed.). Upper Saddle River: Prentice Hall.

Sinkey Jr., J. F., and Nash, R. C. (1993). Assessing the Riskiness and Profitability of Credit-Card Banks. *Journal of Financial Services Research*, 7(2), 127-150.

Stiroh, K. J. (2004). Do Community Banks Benefit from Diversification? *Journal of Financial Services Research*, 25(2/3), 135-160.

Tabachnick, B. G., and Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn and Bacon.

Tang, D. (2006). The effect of financial development on economic growth: evidence from the APEC countries, 1981-2000. *Applied Economics*, 38(16), 1889-1904.

Thygerson, K. J. (1995). *Management of Financial Institutions* (1st ed.). New York: HarperCollins Collage.

Urich, T., and Wachtel, P. (2000). The Effects of Inflation and Money Supply Announcements on Interest Rates. *Journal of Finance*, 39(4), 1177-1188.

Weston, J. F., and Brigham, E. F. (1993). *Essentials of Managerial Finance* (10th ed.). Fort Worth: Dryden Press.

Williams, B. (2007). Factors Determining Net Interest Margins in Australia: Domestic and Foreign Banks. *Financial Markets, Institutions and Instruments*, 16(3), 145-165.