UNIVERSITI PUTRA MALAYSIA

FINANCIAL STABILITY INDEX, CREDIT AND EXTERNAL SHOCKSIN MALAYSIA

KOONG SEOW SHIN

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FINANCIAL STABILITY INDEX, CREDIT AND EXTERNAL SHOCKSIN MALAYSIA

By

KOONG SEOW SHIN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

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To dad, mum and fusan

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

FINANCIAL STABILITY INDEX, CREDIT AND EXTERNAL SHOCKS IN MALAYSIA

By

KOONG SEOW SHIN

October 2014

Chair: Associate Professor Law Siong Hook, PhD
Faculty: Economics and Management

This study examines the role of credit, internal and external shocks on financial stability in Malaysia spanning from April 1997 to December 2011, where the sample period consists of two major financial crises that affected Malaysian economy, namely the 1997/98 Asian Financial Crisis and 2008/09 Global Financial Crisis. Specifically, this study examines three specific objectives: (1) to develop Malaysian financial stability index and relate its predictive power on Malaysian business cycle, (2) to determine the detrimental or beneficial effect of credit on the Malaysian financial stability and (3) to investigate the effects of credit shocks and monetary policy shocks on the Malaysian financial stability.

The first objective is motivated by the incapability of conventional macroeconomics indicators in predicting the likelihood of economic recession nowadays. More importantly, based on past studies, less attention is paid on the financial stability index in developing countries, except Osorio *et al.* (2011) and Tng *et al.* (2012). However, the financial stability index is developed to be a better measure with greater coverage of the Malaysian financial system compared to the existing financial conditions indexes. In addition, the forecasting tests used on the existing FCI developed by Osorio *et al.* (2011) are merely descriptive. Hence, its predictability of the FCI is unconvincing. In this part of study, a financial stability index is constructed using the dynamic factor model and a wide array of variables to measure the conditions of the Malaysian financial system. The empirical results demonstrate that the inclusion of the constructed financial stability index in the autoregressive model reduces the forecast errors. Further, the forecasted business cycle using the constructed index appears to be rational, properly scaled and provides incremental information in the short period of 3-month's time. The empirical findings reveal that the constructed financial stability index is able to predict the Malaysian business cycle.

The second objective is motivated by the increasing level of credit in Malaysia, especially the growth of household credit outpaces business credit. Further, a body of existing literatures found that rapid credit expansion is the main culprit of the

likelihood of financial crisis. As a result, credit expansion is detrimental to the stability of financial system. By employing a non-parametric, OLS and GMM methods, the degree of synchronization between credit and financial stability is investigated. The empirical results suggest that an increasing level of credit would tighten the conditions of the financial system and ultimately cause financial instability, especially business credits. However, there is insufficient evidences to prove that household credit is detrimental to Malaysian financial stability. In sum, the growth-enhancing effect of credit and financial stability do not complement each other in Malaysia, especially when business credit expands.

Lastly, the third objective is motivated by the openness of Malaysia, where Malaysia is a small open economy and the likelihood of the financial crisis could be transmitted from Malaysia's major trading partners due to its trade and financial linkages. Hence, using the structural VAR model, the effects of external shocks, such as a U.S. monetary policy shock, as well as internal shocks on Malaysian financial stability is examined. The impulse response results indicate that the Malaysian financial stability responds contemporaneously and significantly towards a U.S. monetary policy shock and domestic monetary policy shock; whereas it does not respond to either foreign credit or domestic credit shocks. However, the impact on the financial stability, after the shock, diminishes within a year. This study concludes that a U.S. monetary policy shock has indirect influenced on the macroeconomic fluctuations in Malaysia through affecting Malaysian financial stability.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

INDEKS KESTABILAN KEWANGAN, KREDIT DAN RENJATAN LUARAN DI MALAYSIA

Oleh

KOONG SEOW SHIN

Oktober 2014

Pengerusi: Profesor Madya Law Siong Hook, PhD
Fakulti: Ekonomidan Pengurusan

Kajian ini mengkaji tentang peranan kredit, renjatan dalaman dan renjatan luaran terhadap kestabilan kewangan di Malaysia merangkumi tempoh masa dari April 1997 ke Disember 2011, di mana tempoh ini termasuk dua krisis kewangan utama yang menjejaskan ekonomi Malaysia, iaitu krisis kewangan Asian 1997/98dan krisis kewangan global2008/09. Khususnya, kajian ini mengkaji tiga objektif khusus secara terperinci: (1) membina indeks kestabilan kewangan dan mengaitkan kuasa ramalannya dengan kitaran perniagaan di Malaysia, (2) menentukan sama ada kesan kredit yang memudaratkan atau memberi faedah kepada kestabilan kewangan di Malaysia dan (3) menyiasat kesan renjatan kredit dan polisi kewangan kepada kestabilan kewangan di Malaysia.

Objektif pertama didorong oleh ketidakupayaan petunjuk-petunjuk makroekonomi kovensional dalam meramali kemungkinan berlakunya kemelesetan ekonomi. Berdasarkan kepada kajian lepas, kurang perhatian diberikan kepada indeks kestabilan kewangan di negara-negara membangun, kecuali Osorio *et al.* (2011) dan Tng *et al.* (2012). Bagaimanapun, indeks kestabilan kewangan dibina untuk menjadi ukuran yang lebih baik dengan liputan luas dalam sistem kewangan di Malaysia berbanding dengan indeks-indeks kewangan yang sedia ada. Tambahan pula, ujian-ujian ramalan yang digunakan oleh Osorio *et al.* (2011) hanya deskriptif. Oleh itu, kupayaan meramal indeks kewangannya tidak boleh diyakinkan. Dalam kajian ini, satu indeks kestabilan kewangan telah dibina dengan menggunakan model dinamik faktor dan pelbagai pembolehubah-pembolehubah untuk mengukur keadaan sistem kewangan di Malaysia bagi tempoh dari April 1997 hingga Disember 2011. Hasil dapatan empirik menunjukkan bahawa ralat ramalan dapat dikurangkan apabila indeks kestabilan kewangan yang dibina telah dimasukkan dalam model autoregresif. Tambahan pula, indeks yang dibina dapat meramalkan kitaran perniagaan dengan rasional, diskalakan dengan betul dan mengandungi maklumat tambahan dalam tempoh yang pendek, iaitu dalam tempoh masa tiga bulan. Kajian ini menyimpulkan bahawa indeks kestabilan kewangan yang dibina dapat meramal kitara perniagaan di Malaysia.

Objektif yang kedua didorong oleh tahap kredit yang semakin meningkat di Malaysia, khususnya pertumbuhan kredit isirumah melebihi kredit perniagaan. Selain

itu, banyak kajian yang sedia ada menunjukkan bahawa pengembangan kredit yang laju merupakan penyumbang utama berlakunya krisis kewangan. Hasilnya, pengembangan kreditadalah memudaratkan kepada kestabilan sistem kewangan. Dalam kajian, darjah penyegerakan serentak antara kredit dan kestabilan kewangan disiasat dengan menggunakan kaedah-kaedah bukan parametrik, OLS dan GMM. Hasil dapatan empirik mencadangkan bahawa kenaikan tahap kredit akan mengetatkan keadaan sistem kewangan dan akhirnya menyebabkan ketidakstabilan kewangan, khususnya kredit kepada perniagaan. Bagaimanapun, tiada bukti yang cukup untuk membuktikan bahawa kredit isirumah adalah memudaratkan kestabilan kewangan di Malaysia. Kesimpulannya, kesan positif pengembangan kredit terhadap pertumbuhan ekonomi dan kestabilan kewangan tidak saling melengkapi di Malaysia, khususnya ketika kredit perniagaan mengembang.

Akhirnya, objektif yang ketiga didorong oleh keterbukaan di Malaysia, di mana Malaysia merupakan sebuah ekonomi terbuka dan krisis kewangan mungkin dijangkit dari rakan-rakan dagangan utama Malaysia menerusi hubungan perdagangan dan kewangan. Oleh itu, kesan-kesan renjatan luar dan dalaman kepada kestabilan kewangan di Malaysia telah dikaji dengan menggunakan model SVAR. Hasil dapatan analisis tindakbalas impuls menunjukkan bahawa kestabilan kewangan di Malaysia bertindakbalas terhadap renjatan dari polisi kewangan Amerika Syarikat dan polisi kewangan Malaysia dengan sezaman dan signifikan; manakala ia tidak bertindakbalas terhadap renjatan dari kredit asing dan kredit domestik. Bagaimanapun, kesan renjatan ini kepada kestabilan kewangan semakin berkurangan dan menyusut dalam tempoh masa setahun. Kajian ini menyimpulkan bahawa turun-naik makroekonomi di Malaysia tidak dipengaruhi oleh renjatan dari polisi kewangan Amerika Syarikat secara langsung, tetapi melalui saluran kestabilan kewangan di Malaysia.

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I certify that a Thesis Examination Committee has met on 14 October 2014 to conduct the final examination of Koong Seow Shin on her thesis entitled "Financial Stability Index, Credit and External Shocks in Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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Date:

Declaration by graduate student

I hereby confirm that:

- This thesis is my original work;
- Quotations, illustrations and citations have been duly referenced;
- This thesis has not been submitted previously or concurrently for any other degree at any other institutions;
- Intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as accoding to the Universiti Putra Malaysia (Research) Rules 2012;
- Written permission must be obtained from supervisor and the office of Deputy Vice-Chancellor (Research and Innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
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Signature:_____ Date:_____

Name and Matric No.: Koong Seow Shin GS26430

Declaration by Members of Supervisory Committee

This is to confirm that:

- The research conducted and the writing of this thesis was under our supervision;
- Supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

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LIST OF ABBREVIATIONS

AR	Autoregressive
BB	Bry and Boschan
CPI	Consumer Price Index
DFM	Dynamic Factor Model
FCI	Financial Conditions Index
FSI	Financial Stability Index
FSR	Financial Stability Report
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
IMF	International Monetary Fund
MCI	Monetary Conditions Index
MS	Markov Switching
NBER	National Bureau of Economic Research
OLS	Ordinary Least Square
PCA	Principal Component Analysis
RMSE	Root Mean Squared Error
SVAR	Structural Vector Autoregression
U.S.	United States
VAR	Vector Autoregression

CHAPTER ONE

INTRODUCTION

1.1 Research Background

Traditionally, financial institutions especially banks, play a major role as an intermediation function to channel excess funds from savers to finance promising investment projects as well as household consumption (for example, housing and vehicle loan). However, nowadays financial institutions tend to involve in business diversification for the purpose of profit seeking. This accompanied financial innovations have led the financial system to evolve into a more sophisticated system. In support with this, Minsky (1986, pp. 264) states that "a banker is always trying to find new ways to lend, new customers, and new ways of acquiring funds, that is to borrow: in other words, he is under pressure to innovate." The financial system, therefore, plays an important role in economic development through the channel of private saving, private investment or even the efficiency of financial system.

There is a body of empirical findings supporting the growth-enhancing effect of financial development[1]. Generally, a well-functioning financial system enhances economic growth by utilizing socially productive investment opportunities; whereas a malfunctioning financial system deters economic growth through misallocation of scarce resources. Recognizing the importance of financial markets, ample empirical literature emerges to focus on determinants of financial development. These determinants include trade and financial openness (Blackburn and Hung, 1998; Svaleryd and Vlachos, 2002; Rajan and Zingales, 2003; Lane and Milesi-Ferretti, 2003; Chinn and Ito, 2006; Ito, 2006), globalization (Mishkin, 2009) and institutional quality (Levine, 1998; La Porta *et al.*, 1997, 1998; Claessens *et al.*, 2002; Rajan and Zingales, 2004). In view of all this vast evidence, it implies the importance of financial development to an economy.

While a well-functioning financial system can play an essential role in economic stability, it can be fragile and accordingly brings potential risks, such as excessive credit expansion (credit risk) and financial globalization (external risk). According to Hume and Sentance (2009), the suspected main culprit behind the recent global financial crisis is the persistent rapid credit growth, particularly the housing mortgage loan.The credit expansion is facilitated by expansionary policy, especially in the United States as well as the perceptions of declining macroeconomic risk from year 2005 onwards (Ali & Daly, 2010). With overly-optimistic expectations, economic agents has took excessive risk leading to expansion in lending. The financial crisis take place when the banking sector engulfed with a large amount of subprime loan.The default risk of the subprime loan is relatively higher and balance sheets of banks are affected greatly when the financial sector collapsed, especially when the large financial institution – Lehman Brothers – went bankrupt and its adverse impact spreads to other financial institutions as well as other economies.

[1] See, for instance, King and Levine (1993), Gregorio and Guidotti (1995), Abu-Bader and Abu-Qarn (2007), Ang and McKibbin (2007), Ang (2008) and Hasan *et al.* (2008).

Failure of large financial institutions would bring systemic risk to the whole financial system. This is evidenced by the insolvency problem of Lehman Borthers. The failure of the large financial institution in the United States led to loss of confidence of market participants and exacerbated the subprime loan crisis in 2008 (Rotheli, 2010). Apart from the failure of large financial institutions, decisions made by an individual bank can put the whole financial system at risk too, especially when it comes to large banks which dominates the banking system in small economies.

The exposure of financial institutions to systemic risk is mostly due to the increasing degree of financial integration across the economies. In addition, contagious effect of a crisis to other regions is not only transmitted through the traditional trade channel, but also through financial linkages due to the rapid development of global financial integration in the past decade. In line with this, Zhang *et al.* (2010) confirms their finding that U.S. financial crisis affects the Asian economies through trade and financial channels. Furthermore, there is an association between severe financial downturns or recessions in advanced economies and financial crises or recessions in Asia (Hong *et al.*, 2009).

Prior to the occurrence of global financial crisis, the conventional macroeconomic indicators used to conduct macroeconomic policy (i.e. overall price level and aggregate output) suggest that there is no crisis ahead (Hume & Sentance, 2009), hence policy makers were caught off their guard when the financial crisis explodes.Does it prove that the current modern macroeconomic framework has led us to the wrong track? Unlike the previous financial crises, the recent 2007/08 global financial crisis is different, where the conduct of macroeconomic policy seems to be inappropriate to stabilize the economy. Due to this, modern macroeconomic analytical frameworks are found to be likely insufficient to prevent future crisis (White, 2009).

The adverse impact of financial crisis implies the importance of financial stability to a stable economy. Therefore, instead of focusing on economic stability (i.e. stable inflation and output growth), it is more important to concentrate on financial stability. The increasing growth-enhancing effect of financial market development as well as the increasing degree of global financial integration across the economies has led the study of financial stability to become a foundation of modern macroeconomic policy, especially in the context of credit and external risks. In line with this, Lange *et al.* (2007) also underlined that credit risk is more likely to cause failure in a financial institution than interest rate risk or exchange rate risk. Promoting financial stability is, therefore, one of the main objectives for policy makers since monetary system begins (Sanchis *et al.*, 2007).

It may be difficult to define financial stability and it has been used to describe a wide range of economic conditions. However, financial stability can refer to the absence of a financial crisis, or in other words, the "smooth functioning of the key elements that make up the financial system", for instance, interest rate (Wilkinson, Spong and Christensson, 2010). Alternatively, a financial system that is robust and resilient to various shocks or risks exposures is considered stable. A stable financial system can be defined as a system that"is able to sustain critical services to the wider economy – payments, credit provision and insurance against risk – even when it is hit by unanticipated events" as stated in *Financial Stability Report* 2009 from Bank of

England (BOE). Conversely, it would be less difficult to pinpoint the presence of financial instability as compared to financial stability. The occurrence of, for example, stock market crashes, banking crises, credit crunch are reflection of financial instabilities.

To measure financial instability, one is required to date back the crisis events and employ binary choice model. However, it would be more appropriate to construct a financial stability index to measure the current state of financial sector in a country in order to capture relevant factors that contribute to the healthiness of financial system as a whole, which does not include the financial factors only. Evidently, there is relatively more attention paid on building financial index in advanced countries, such as United States, United Kingdom and European economies (Illing and Liu 2006; Hatzius *et al.* 2010; Matheson 2012); whereas relatively less attention paid in emerging economies, such as Malaysia (Ghosh 2011; Osorio *et al.*, 2011). Yet again, the increasing emphasis of financial index construction across countries further implies the importance of financial stability to a stable economy.

1.2 The Structure of Financial System in Malaysia

The components of financial system in Malaysia consist of banking institutions and non-banking institutions. The Central Bank of Malaysia and the banking institutions which include commercial banks, Islamic banks and investment banks make up the banking system in the financial system. On the other hand, non-banking institutions complement banking system in mobilizing saving funds from the one with excess funds to the one who is lack of funds to finance their investment projects. Non-banking institutions include development financial institutions[2], insurance companies, employee provident funds (EPF), takaful operators, saving institutions and unit trust account. Both banking and non-banking institutions play an important intermediary role in the financial system. More than two-third of the credit is extended by the banking industry in the financial system with a large portion of the credit extended to household and business sectors. Similarly, development financial institutions (DFIs) also provide credit services to the household and business sector. Establishment of DFIs is to develop strategic sectors in the economy. This includes credit extends to agro-based industries (for example, palm oil-based products industry) and export sector, in order to foster socio-economic development in Malaysia. Furthermore, small and medium enterprises (SMEs) are the backbone of Malaysian economy[3]; therefore, DFIs are essential in promoting the development of SMEs by providing

[2] The development financial institutions (DFIs) consists of 1) Bank Pembangunan Malaysia, 2) Bank Kerjasama Rakyat Malaysia, 3) Bank Simpanan Nasional, 4) Export-Import Bank of Malaysia, 5) Bank Pertanian Malaysia, 6) Bank Perusahaan Kecil & Serdehana Malaysia, 7) Malaysian Industrial Development Finance, 8) Sabah Development Bank, 9) Borneo Development Corporation (Sabah), 10) Borneo Development Corporation (Sarawak), 11) Credit Guarantee Corporation Malaysia, 12) Sabah Credit Corporation and 13) Lembaga Tabung Haji, in which the first six DFIs are regulated by the Central Bank of Malaysia under Development Financial Institutions Act (DFIA) 2002.

[3] Based on SME Annual Report 2010/11, published by National SME Development Council, the total establishments is 552,849 which covering from micro to large enterprises and from agriculture to services sector. In the report, the total establishments for SMEs is 548,267, hence the share of SMEs is 99.2%.

credit services to help SMEs to finance their businesses, especially those entrepreneurs who have limited credit history and inadequate collateral.

Simiarly, financial markets in Malaysia also play a crucial role in channeling the funds from savers to investors. Financial markets include domestic financial market (i.e. money market, capital market, derivatives market) and foreign exchange market.

In the money market, the interbank deposits and a variety of money market instruments[4] play an important role as intermediation function. Active traders in the money market have contributed to an uptrend of total volume transactions in Malaysian money market since 1990s (Refer Figure 1.1). These active traders include commercial banks, investment banks, insurance companies, universal brokers and DFIs.

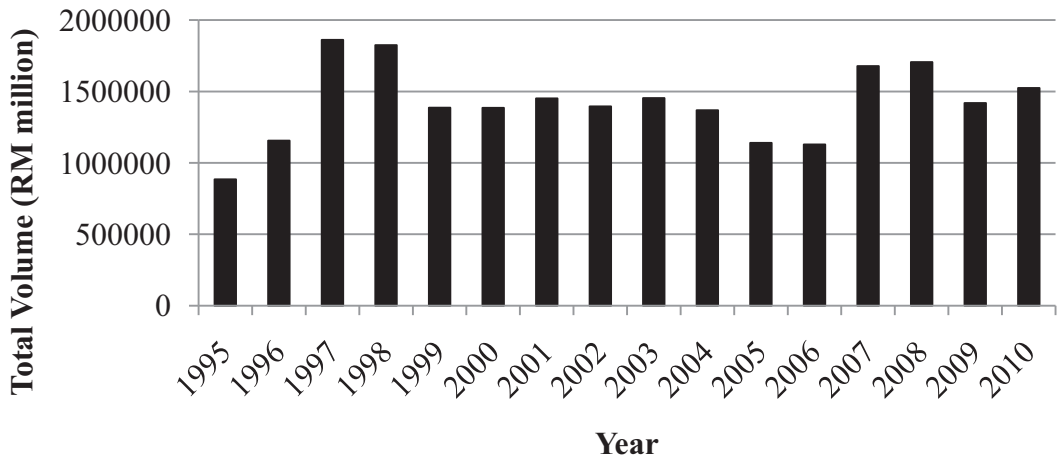

Figure 1.1: Total Volume of Transactions in Malaysian Money Market
(Source: Monthly Statistical Bulletin April 2011 Issue, Bank Negara Malaysia.)

Capital market comprises of equity and bond markets that extends an alternative and efficient way of funding to business sector for medium and long-term capital, especially large corporations. Furthermore, it has been assumed to be the main contributor in financing capital expenditures in both the public and private sectors. Evidently, large corporations from the business sector turn to capital market in meeting their needs of longer-term and larger amounts to finance their business plans. The following figure shows there is a growing trend of total fund raised in the capital market by public and private sector from 1970 until 2010.

[4] This includes repurchase agreements (Repos), Malaysian Treasury Bills, Malaysian Islamic Treasury Bills, Bank Negara Bills, Bank Negara Negotiable Notes, Bankers' Acceptance (BA), Islamic Accepted Bills, Negotiable Instruments of Deposits, Negotiable Islamic Debt Certificates, Malaysian Government Securities (MGS), Government Investment Issues, Khazanah Bonds, Cagamas Bonds, Cagamas Notes and Islamic Cagamas Bonds.

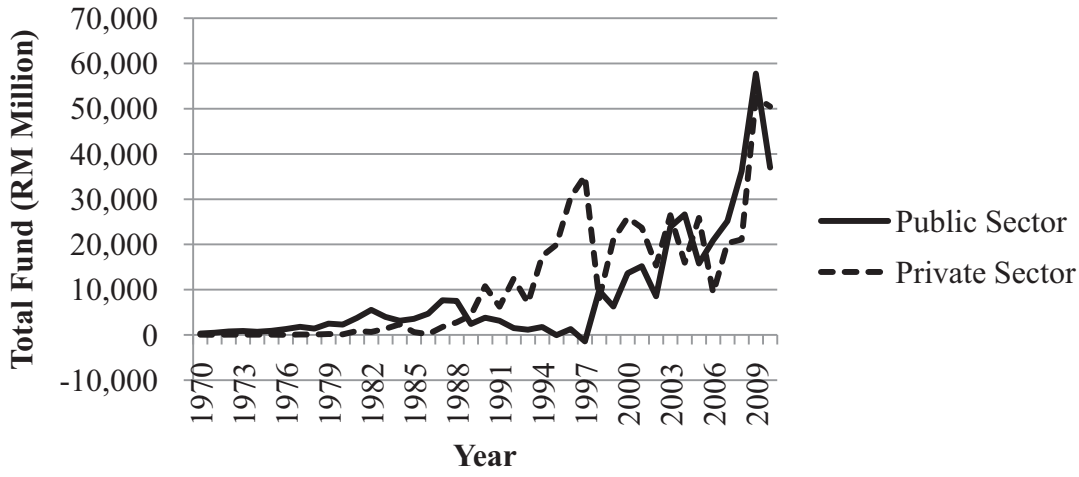

Figure 1.2: Net Fund Raised in Malaysian Capital Market
(Source: Monthly Statistical Bulletin April 2011 Issue, Bank Negara Malaysia.)

For risk management and investment purposes, derivatives market plays an essential role in offering extra financial products that meet the purpose as well as complementing the financial market as a whole. There are types of derivatives, namely over-the-counter derivatives and exchange-traded derivatives, where these financial products show a growing trend.

Other than domestic financial markets, Malaysian foreign exchange market also plays a crucial role in fostering the development of financial system and economic growth through intermediation process; however, the volume of interbank transactions is traded in terms of foreign exchange currency instead of local currency as shown in Figure 1.3, where there is an increasing trend in the total volume of spot and swap transaction in Kuala Lumpur (KL) foreign exchange market from 1993 till 2010.

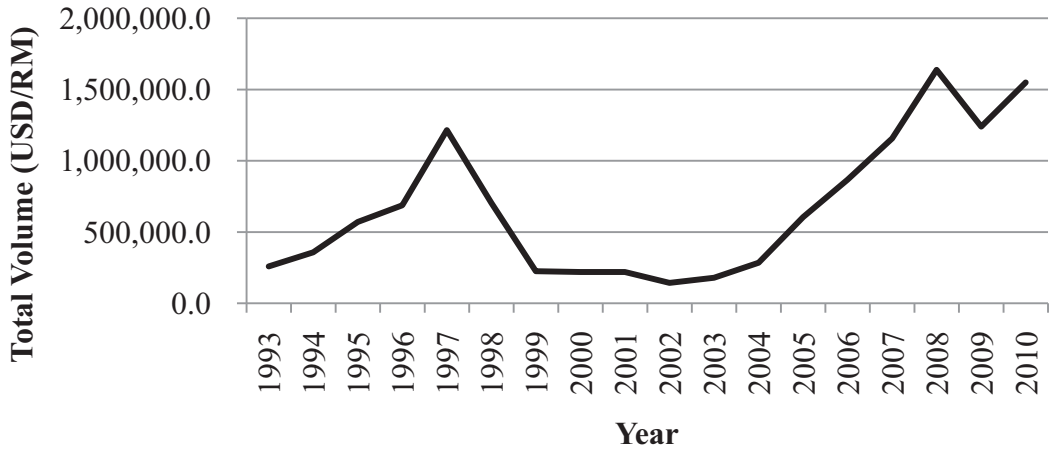

Figure 1.3: Total Volume of Spot and Swap Transactions in KL Foreign Exchange Market
(Source: Monthly Statistical Bulletin April 2011 Issue, Bank Negara Malaysia.)

1.3 Trend of Credit Growth in Malaysia

Prior to the 1997/98 Asian Financial Crisis, the share of business credit in total outstanding of bank loans was relatively larger than the credit extended to the household. However, since 2000 onwards, the household credit has been increasing substantially compared to business credit, where the average annual growth rate for the period of 2001 – 2007 was 14.8% (Endut and Toh, 2009). There are several reasons to explain the event of household credit expansion. Firstly, in pursuing the objective of maximum profits, household credit has became a diversification strategy for the banks when the businesses turn to capital markets in order to access to the credit in longer-term and larger amounts to finance their projects. Secondly, macroeconomic stability that induces overly optimistic expectationshas lead to household confidence and excessive risk taking behavior among the households. Thirdly, the progressive financial liberalization that opens up the competition in the financial sector has lead to a downward pressure on the interest rates (due to more credit suppliers in the banking system), wider loan coverage and larger loan amounts. Meanwhile, the risk management on the household credit has been strengthened and enabled the financial intermediaries to increase their availability of credit to the households. Lastly, government policies that promote home ownership, especially low-income households.Under this scenario, financial institutions are encouraged to offer housing loans based on the capacity and business strategy of the banks. For instance, the newly launched home ownership policy in March 2011 – a family with total household income less than RM3000 will be eligible for 100% house loan application. These are the reasons behind the increasing level of household credits. The following figure 1.4 shows the trend of credit approved by the banking system in Malaysia. The figure indicates the share of household credit exceeds the share of business credit, out of the total credit approved in the banking system from January 2000 to February 2011.

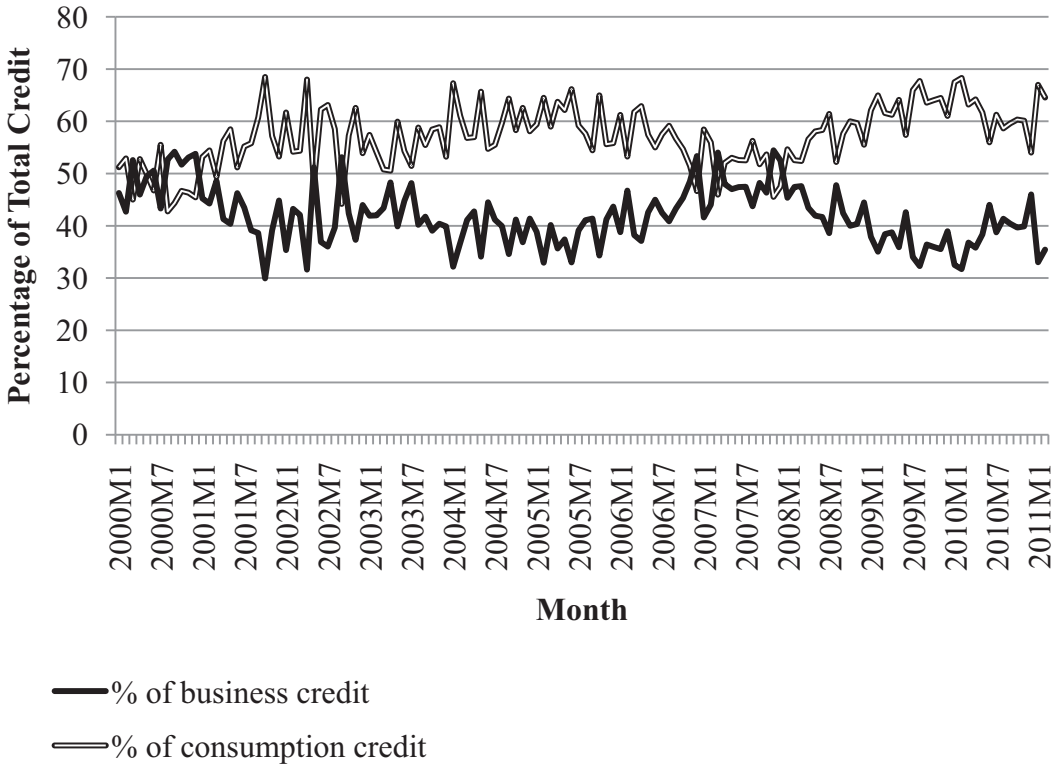

Figure 1.4: Trend of Credit Approved by Banking System in Malaysia.
(Source: Various issues of Monthly Statistical Bulletin, Central Bank of Malaysia.)

1.4 Problem Statement

Macroeconomic stability has always been the objective for central bankers and policy makers. Though financial stability is an essential part to a stable economy, but there was relatively limited interest paid to financial stability for several decades until the early 1970s (Goodhart, 2005). The issue of financial stability has raised a huge interest in international circles due to market globalization and financial market integration, which triggers the contagious effect of risks among the global markets. Evidently, the occurrence of the 1997/98 Asian financial crisis in Asia regions and the 2007/08 global financial crisis in the United States has further indicate the importance of financial stability. Hence, these scenarios have shifted the focus towards the study of financial stability. In the event of recent 2007/08 global financial crisis, the policy makers are shocked by the severity of the crisis due to the conventional macroeconomic indicators used to conduct macroeconomic policy does not reflect the signal of crisis. This has caused them to take dramatic steps to stabilize the broad economy at the expense of financial market stability.

Due to the rapid global financial market development, policy makers and economic agents concern the stability of the financial market, many advanced economies, such as United Kingdom, Sweden, Spain and the Netherlands, have published *Financial Stability Reports* by their respective central bank with the purpose of assessing their financial system's risk exposures and raising awareness of risks among the banking institutions and economic agents, so that they could make appropriate expectations

and responses to their current economic scenario. There is no exception for Malaysia, in which the Central Bank of Malaysia publishes *Financial Stability and Payment Systems Report* annually since 2006, in order to closely monitor the risks development as well as to assess the conditions of the Malaysian financial system.

Inpredicting financial instability, one can adopt binary choice model, where researchers are required to date back the crisis event, and assign a value of one to represent the presence of a financial crisis and a value of zero to represent the absence of financial crisis. However, the financial sector is not an independent sector in an economy. In view of this, it would be insufficient to employ only binary choice model to assess financial stability of a country. Therefore, financial index computation to assess the conditions of financial sector in a country is relatively more appropriate to capture relevant factors that contributes to the conditions of the financial system as a whole. Relevant financial indicators include indicators frombanking sector, money market, capital market, stock market, bond market, foreign exchange market and credit market.More importantly, the concern is that there is relatively less attention paid on constructing financial index in emerging economies, such as Malaysia, except the FCI of Malaysian developed by Osorio *et al.* (2011). In the research, the FCI is developed by using generalized DFM as well as addressing the problem of endogeneity in the index, but the forecasting tests used to test the predictability of the index are merely descriptive. Hence, its reliability and validity is questionable.

Rapid credit expansion has been identified as a culprit behind the occurrence of the 2007/08 global financial crisis. Literally, there is a great number of literatures that show the linkages between the credit and the financial stability (Goldstein, 2001; Borio and Lowe, 2002; Kraft and Jankov, 2005; Beck *et al.*, 2006; Bussiere and Fratzscher, 2006; Crowley, 2008; Buyukkarabacak and Valev, 2010; Bernoth and Pick, 2011). These literatures found that there is a significant relationship between the credit and the financial stability. However, this increasing level of credit or also called credit expansion is claimed to cause financial instability. This is the case especially when there is a high probability of credit risks. Additionally, in recent years, lending to households (e.g. housing loan) has increased substantially (Buyukkarabacak & Valev, 2010), as compared to business credit. Evidently, the increasing growth of household credit is happening in Malaysia since 2000 (Refer Figure 1.4). More importantly, household credit is more likely to cause banking crises (Buyukkarabacak & Valev, 2010) compared to business credit. Thus, these literatures focus on aggregate level of credit and could not answer a question, such as which category of credit is more likely to cause financial instability and which are not, are the policy-makers likely to face policy dilemma between credit expansion and financial stability.

As mentioned earlier, credit expansion is one of the culprits of financial instability. Not to mention a credit shock occurs would cause financial instability as the shock may be contagious among a group of financially liberalized countries. Malaysian economy is at least as fragile as advanced countries, such as Japan and United States. In most of the time, Malaysia is exposed to external risks; either adversely affected (e.g. 1997/98 Asian Financial Crisis) or slightly affected (e.g. 2007/08 Global Financial Crisis). This is due to Malaysia is a highly open economy, where the contagious effect of the crises is easily transmitted to the Malaysian economy

through financial linkage. Theory supports financial liberalization leads to a fast-growing economy. Since 1970s, Malaysia adopts a gradual and progressive liberalization steps, which were undertaken at a "stop-go-stop" pace that are consistent with the conditions and needs of Malaysian economy (Goh *et al.*, 2006). The financial liberalization process covers interest rate liberalization, capital controls and exchange rate controls.Due to rapid global financial integration across economies, external financial shocks, such as credit shock and monetary policy shock, play a crucial role in influencing financial stability. Therefore, the exposure of Malaysian financial system to the external financial risks is a main concern and crucial to be addressed.

1.5 Objectives of the Study

1.5.1 General Objectives

The main objective of the study is to examine the roles of credit, internal and external shocks on financial instability in Malaysia.

1.5.2 Specific Objectives

The specific objectives of the study are:

i. To develop Malaysian financial stability index and relate its predictive power on Malaysian business cycle.

ii. To determine the detrimental or beneficial effect of credit on the Malaysian financial stability.

iii. To investigate the effects ofcredit shocks and monetary policy shocks on the Malaysian financial stability.

1.6 Significance of the Study

There is relatively limited research that focuses on identifying the sources of financial stability, as compared to economic growth and macroeconomic stability. Hence, this study intends to fill the gap of the literature in the areas of credit, monetary policy and financial stability in three-folds. (1)the need of constructing a financial stability index is of particular important to predict the future state of an economy for monitoring purposes. Considering monetary transmission mechanism, monetary policy that is used to influence the economy through alteration of financial conditions (for example, bank lending channel, balance sheet channel and Tobin's *q* theory), whereby financial conditions influence economic behavior and ultimately the future state of the economy. Since a policy is transmitted soley through the channel of financial condition, therefore with the help of a financial stability index,

one can predict the future state of the economy or the macroeconomic fluctuations. Specifically, the construction of financial stability index can be used to explain and predict Malaysian business cycle, where it can be used as a leading indicator to signal the conditions of Malaysian financial system, (2) the constructed financial stability index can serve as a signal and helps to buffer financial system for a soft landing with timely policy actions. Furthermore, the conduct of conventional policies would not face dilemmas when there is a tight link between the constructed financial stability index and the Malaysian business cycle, and (3) the constructed financial stability index covers wider areas (including banking sector, money market, stock market, yield curve, foreign exchange market, credit market, capital market, oil market) to truly replicate the conditions of the Malaysian financial system from all aspects, as compared to the Malaysian financial conditions index developed by Osorio *et al.* (2011) and the Malaysian financial stress index developed by Tng *et al.* (2012)[5].

Secondly, the examination on the degree of synchronization between various types of credits and financial instability enables one to answer the questions, such as which type of credit is likely to cause financial instability or not and whether the policy-makers are likely to face policy dilemma. Policy dilemma indicates that growth-enhancing effect of credit and financial instability occurs at the same time. As a result, the empirical results which measure at the disaggregated level of data could serve as a reference to the policy-makers or central bankers, so that they can weigh their policy actions with cautious in order to avoid policy dilemma. This is especially important when it involves expansionary monetary policy or policy actions for the purpose of financial development.

Thirdly, due to the increasing global financial integration across economies and the vulnerability of financial system to potential financial risks, the contagioneffects of monetary policy shocks and credit shocks play a significant role in influencing financial instability. A stable financial system is reflected through the resiliency of financial system towards shocks, regardless internal or external shocks. In short, if the Malaysian financial stability is irresponsive towards the financial shocks, it implies the resiliency of the financial system. Hence, the major contribution of this part of study is to provide an empirical analysis to investigate the responsiveness of the constructed financial stability index towards external shocks as well as internal shocks in term of monetary policy and credit. This is essential for the purpose of appropriate and timely policy responses, especially for the central bankers and policy-makers.

1.7 Oraganization of the study

This study is concerned in the area of credit, monetary policy and financial stability issues in Malaysia. It revolves around three main empirical analyses found in Chapter 3, 4 and 5. Before proceeding to the empirical analyses, this study also describes some of the relevant recent literature and this is carried out in Chapter 2.

[5] The index developed by Osorio *et al.* (2011) covers stock market, yield curve, credit market and foreign exchange market; whereas the index developed by Tng *et al.* (2012) covers banking sector, equity market, foreign exchange market and domestic bond market.

This chapter of literature review contains a brief introduction, revises the historically role of financial sector in macroeconomic outcomes, reviews the past literatures that relate to the construction of a financial stability index and its predictability on future economic activity, the importance of credit on financial instability and the impacts of credit shock and monetary policy shock on macroeconomic variables. The organization of the remainder of this study is as follows:

Chapter 3 measures the first objective of this study – to develop a Malaysian financial stability index and relate its predictive power on the Malaysian business cycle. This chapter begins with a brief introduction that consists of a background of this issue, the motivation and significance of this part of study. It discusses the various approaches for constructing an index, describes the dynamic factor model that is adopted to construct a financial stability index in this study, explains both descriptive and empirical forecasting methods used (i.e. pseudo out-of-sample forecasting and test of forecast rationality respectively) and presents the description of the data. This chapter continues with the section of empirical results, where three indexes are shown in the form of line graph and its predictive power on the Malaysian business cycle is reported. Lastly, this chapter summarizes the results of the three constructed indexes and concludes.

Chapter 4 measures the second objective of this study – to determine the detrimental or beneficial effect of credit on the Malaysian financial stability. This chapter starts with a brief introduction about the background of this issue, the motivation and significance of this part of study. This chapter discusses a brief concept of dating cycles that involves classical cycle and growth cycle. The methodology part in this study explains how a classical cycle is determined, describes the construction of the concordance index and the synchronization between two cycles and presents the data description for each variable employed in this study. This chapter continues with the empirical results of the concordance index, the degree of synchronization between two cycles using OLS and GMM estimation. Finally, this chapter summarizes the results and concludes.

Chapter 5 measures the third objective of this study to investigate the responsiveness of the Malaysian financial stability towards credit shocks and monetary policy shocks. Similarly, this chapter begins with a brief introduction of the background of this issue, the motivation and significance of this part of study. The methodology part in this study describes the structural VAR model, discusses the identification restrictions in the baseline model, explains the identification restrictions in the alternative models for the purpose of robustness checking and presents the data description for each variables used in this study. This chapter continues with the empirical results of the baseline model as well as the alternative models. The results are further discussed with the analysis of impulse response function. Lastly, this chapter summarizes the results and concludes.

Chapter 6 is the final chapter in this study. It summarizes the overall results of the three main empirical analyses, discusses the major findings of the three analyses, and provides policy implications for each analysis and recommendations for future research.

REFERENCES

Aarle, B. v., Garretsen, H., & Gobbin, N. (2003). Monetary and fiscal policy transmission in the Euro-area: evidence from a structural VAR analysis. *Journal of Economics and Business 55*, 609-638.

Ali, A., & Daly, K. (2010). Macroeconomic determinants of credit risk: recent evidence from a cross country study. *International Review of Financial Analysis19(3)*, 165-171.

Abu-Bader, S., & Abu-Qarn, A. S. (2007). Financial development and economic growth: the Egyptian experience. *Journal of Policy Modeling30(5),* 887-898.

Akerlof, G. (1970). The market for lemons: quality uncertainty and the market mechanism. *Quarterly Journal of Economics 84*, 488-500.

Amisano, G., & Giannini, C. (1997). *Topics in Structural VAR Econometrics (2nd ed.).* Berlin: Springer-Verlag.

Ang, J. B. (2008). What are the mechanisms linking financial development and economic growth in Malaysia? *Economic Modelling 25*, 38-53.

Ang, J. B., & McKibbin, W. J. (2007). Financial liberalization, financial sector development and growth: evidence from Malaysia. *Journal of Development Economics 84*, 215-233.

Augustine, C. (2008). The synchronization of business cycles in CARICOM: Is there a case for a Caribbean Monetary Union? *International Journal of Development Issues 7(1)*, 29-40.

Babihuga, R. (2007). Macroeconomic and financial soundness indicators: an empirical investigation. *IMF Working Paper WP/07/115*.

Batini, N., & Turnbull, K. (2002). A dynamic monetary conditions index for the UK. *Journal of Policy Modeling 24*, 257-281.

Beck, T., Demirguc-Kunt, A., & Levine, R. (2006). Bank concentration, competition and crises: first results. *Journal of Banking and Finance 30(5)*, 1581-1603.

Benk, S., Gillman, M., & Kejak, M. (2005). Credit shocks in the financial deregulatory era: not the usual suspects. *Review of Economic Dynamics 8*, 668-687.

Bernanke, B. S. (1990). On the predictive power of interest rates and interest rate spreads. *NBER Working Paper No. 3486*.

Bernanke, B. S., & Gertler, M. (1999). Monetary policy and asset price volatility. *Federal Reserve Bank of Kansas City Economic Review 84*, 17-51.

Bernanke, B., Gertler, M., & Gilchrist, S. (1998). The financial accelerator in a quantitative business cycle framework. *NBER Working Paper No. 6455* .

Bernoth, K., & Pick, A. (2011). Forecasting the fragility of the banking and insurance sectors. *Journal of Banking and Finance 35*, 807-818.

Bjornland, H. C. (2008). Monetary policy and exchange rate interactions in a small open economy. *Scandinavian Journal of Economics 110(1)*, 197-221.

Bjornland, H. C. (2009). Monetary policy and exchange rate overshooting: Dornbusch was right after all. *Journal of International Economics 79(1)*, 64-77.

Bjornland, H. C., & Leitemo, K. (2009). Identifying the interdependence between US monetary policy and the stock market. *Journal of Monetary Economics 56(2)*, 275-282.

Blackburn, K., & Hung, V. T. Y. (1998). A theory of growth, financial development and trade. *Economica 65*, 107-124.

Bonfim, D. (2009). Credit risk drivers: evaluating the contribution of firm level information and of macroeconomic dynamics. *Journal of Banking and Finance 33(2)*, 281-299.

Bordo, M. D., Dueker, M. J., & Wheelock, D. C. (2003). Aggregate price shocks and financial stability: the United Kingdom 1796-1999. *Explorations in Economic History 40*, 143-169.

Borio, C., & Lowe, P. (2002). Asset prices, financial and monetary stability: exploring the nexus. *BIS Working Paper No. 114* .

Borio, C., & Lowe, P. (2004). Securing sustainable price stability: should credit come back from the wilderness? *BIS Working Paper No.157.*

Boshoff, W. (2005). The properties of cycles in South African financial variables and their relation to the business cycle. *South African Journal of Economics 73(4)*, 694-709.

Brave, S., & Butters, R. A. (2011). Monitoring financial stability: a financial conditions index approach. In *Economic Perspective*, Federal Reserve Bank of Chicago, 22-43.

Breitung, J., Brüggemann, R.,& Lütkepohl, H. (2004).Structural Vector Autoregressive Modeling and Impulse Responses**.**In H. Lütkepohl, M. Krätzig (eds.). *Applied Time Series Econometrics* (pp. 159-196).Cambridge University Press.

Brue, S. L. (2000). *The evolution of economic thought (6th ed.)*. USA: The Dryden Press.

Brue, S. L., & Grant, R. R. (2007). *The History of Economic Thought (7th ed.)*. USA: Thomson South-Western.

Brunner, K., & Meltzer, A. H.(1990). Money supply. In B. M. Friedman, F. H. Hahn (eds.).*Handbook in Monetary Economics* (Chapter 9). Elsevier Science Publishers.

Bry, G., & Boschan, C. (1971). *Cyclical analysis of time series: Selected procedures and computer programs.* New York: NBER.

Burns, A. F., & Mitchell, W. C. (1946). *Measuring business cycles.* New York: NBER.

Bussiere, M., & Fratzscher, M. (2006). Towards a new early warning system of financial crises. *Journal of International Money and Finance 25*, 953-973.

Buyukkarabacak, B., & Valev, N. T. (2010). The role of household and business credit in banking crises. *Journal of Banking and Finance 34(6)*, 1247-1256.

Castelnuovo, E. (2013). Monetary policy shocks and financial conditions: A Monte Carlo experiment. *Journal of International Money and Finance 32*, 282-303.

Chaiechi, T. (2012). Financial development shocks and contemporaneous feedback effect on key macroeconomic indicators: A post Keynesian time series analysis. *Economic Modelling 29*, 487-501.

Chinn, M. D., & Ito, H. (2006). What matters for financial development? Capital controls, institutions and interactions. *Journal of Development Economics 81*, 163-192.

Claessens, S., Djankov, S., Fan, J. P. H., & Lang, L. H. P. (2002). Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance 57(6),* 2741-2771.

Cottarelli, C., Dell'Ariccia, G., & Vladkova-Hollar, I. (2005). Early birds, late risers, and sleeping beauties: Bank credit growth to the private sector in Central and Eastern Europe and in the Balkans. *Journal of Banking and Finance 29*, 83-104.

Crowley, J. (2008). Credit growth in the Middle East, North Africa and Central Asia Region. *IMF Working Paper No. WP/08/184* .

Demirguc-Kunt, A., & Detragiache, E. (1997). The determinants of banking crises in developing and developed countries. *IMF Staff Papers 45*, 81-109.

Driffill, J., Rotondi, Z., Savona, P., & Zazzara, C. (2006). Monetary policy and financial stability: what role for the futures market? *Journal of Financial Stability 2(1)*, 95-112.

Edwards, S., Biscarri, J. G., & de Gracia, F. P. (2003). Stock market cycles, financial liberalization and volatility. *Journal of International Money and Finance 22*, 925-955.

Endut, N., & Toh, G. H. (2009). Household debt in Malaysia. *BIS Papers No. 46*, 107-116.

Gebka, B., & Serwa, D. (2006). Are financial spillovers stable across regimes? Evidence from the 1997 Asian crisis. *Journal of International Financial Markets, Institutions and Money 16*, 301-317.

Ghosh, S. (2011). A simple index of banking fragility: application to Indian data. *The Journal of Risk Finance 12(2)*, 112-120.

Gjerde, O., & Sættem, F. (1999). Causal relations among stock returns and macroeconomic variables in a small, open economy. *Journal of International Financial Markets, Institutions and Money 9*, 61-74.

Goh, S. K., Lim, G. C., & Olekalns, N. (2006). Deviations from uncovered interest parity in Malaysia. *Applied Financial Economics 16*, 745-759.

Goldstein, M. (2001). Global financial stability: recent achievements and ongoing challenges. *Global Public Policies and Programs: Implications for Financing and Evaluation* (pp. 157-61). Washington: World Bank.

Goodhart, C. (2005). What can academics contribute to the study of financial stability? *Economic and Social Review 36(3)*, 189-203.

Gregorio, J. D., & Guidotti, P. E. (1995). Financial development and economic growth. *World Development, 23*(3), 433-448.

Gurley, J. G., & Shaw, E. S. (1955). Financial aspects of economic development. *American Economic Review 45(4)*, 515-538.

Hall, V., & McDermott, C. J. (2004). Regional business cycles in New Zealand: do they exist? What might drive them? *Motu Working Paper 04-10, Motu Economic and Public Policy Research* .

Halvorsen, J. I., & Jacobsen, D. H. (2009). Are bank lending shocks important for economic fluctuations? *Norges Bank Working Paper 2009/27*.

Hamilton, J. D. (1989). A new approach to the economic analysis of non-stationary time series and the business cycle. *Econometrica 57*, 357-384.

Harding, D., & Pagan, A. (2001). Extracting, using and analysing cyclical information. *MPRA Paper No. 15*, 1-34.

Harding, D., & Pagan, A. (2002). A comparison of two business cycle dating methods. *Journal of Economic Dynamics & Control 27*, 1681-1690.

Harding, D., & Pagan, A. (2002a). Dissecting the cycle: a methodological investigation. *Journal of Monetary Economics 49*, 365-381.

Harding, D., & Pagan, A. (2006). Synchronization of cycles. *Journal of Econometrics 132*, 59-79.

Hasan, I., Wachtel, P., & Zhou, M. (2008). Institutional development, financial deepening and economic growth: evidence from China. *Journal of Banking and Finance 33(1),* 157-170.

Hatzius, J., Hooper, P., Mishkin, F. S., Schoenholtz, K. L., & Watson, M. W. (2010). Financial conditions indexes: a fresh look after the crisis. *NBER Working Paper No. 16150*.

Hayek, F. (1929). *Monetary Theory and the Trade Cycle*. London: Jonathan Cape.

Helbling, T., Huidrom, R., Kose, M. A., & Otrok, C. (2010). Do credit shocks matter? A global perspective. *IMF Working Paper No. WP/10/261*.

Hilbers, P., Otker-Robe, I., Pazarbasioglu, C., & Johnsen, G. (2005). Assessing and managing rapid credit growth and the role of supervisory and prudential policies. *IMF Working Paper No. WP/05/151*.

Hong, K., Lee, J., & Tang, H. (2009). Crises in Asia: historical perspectives and implications. *Asian Development Bank Economics Working Paper No.152*.

Hume, M., & Sentance, A. (2009). The global credit boom: challenges for macroeconomics and policy. *Journal of International Money and Finance 28(8)*, 1426-1461.

Illing, M., & Liu, Y. (2006). Measuring financial stress in a developed country: an application to Canada. *Journal of Financial Stability 2*, 243-265.

International Monetary Fund. (2004, April). Are credit booms in emerging markets a concern? *World Economic Outlook* .

Ito, H. (2006). Financial development and financial liberalization in Asia: thresholds, institutions and the sequence of liberalization. *The North American Journal of Economics and Finance 17*, 303-327.

Iyoboyi, M. (2013). Bank and non-bank financial deepening and economic growth: The Nigerian experience (1981 – 2010). *Economic Notes 42*, 247-272.

Kaminsky, G., & Reinhart, C. (1999). The twin crises: the causes of banking and balance of payments problems. *American Economic Review 89(3)*, 473-500.

Kaminsky, G., Lizondo, S., & Reinhart, C. (1998). Leading indicators of currency crisis. *IMF Staff Papers 45*.

Karfakis, C. (2013). Credit and business cycle in Greece: Is there any relationship? *Economic Modelling 32*, 23-29.

Kim, J-H, & Rousseau, P. L. (2012). Credit buildups and the stock market in four East Asian economies. *Journal of Macroeconomics 34*, 489-503.

King, R. G.,& Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics 108(3),* 717-737.

Kiyotaki, N. (1998). Credit and business cycles. *The Japanese Economic Review 49*, 18–35.

Klomp, J., & de-Haan, J. (2009). Central bank independence and financial instability. *Journal of Financial Stability 5*, 321-338.

Kocherlakota, N.R. (2000). Creating business cycles through credit constraints. *Federal Reserve Bank of Minneapolis Quarterly Review 24*, 2–10.

Kontonikas, A., MacDonald, R., & Saggu, A. (2013). Stock market reaction to fed funds rate surprises: state dependence and the financial crisis. *Journal of Banking and Finance 37*, 4025-4037.

Kozluk, T., & Mehrotra, A. (2009). The impact of Chinese monetary policy shocks on East and South-East Asia. *Economics of Transition 17(1)*, 121-145.

Kraft, E., & Jankov, L. (2005). Does speed kill? Lending booms and their consequences in Croatia. *Journal of Banking and Finance 29(1)*, 105-121.

Lane, P. R., & Milesi-Ferretti, G. M. (2003). International financial integration. *IMF Working Paper No. WP/03/86.*

Lange, H., Saundres, A., Anderson, J., Thomson, D., & Cornett, M. (2007). *Financial institutions management (2nd ed.).* McGraw Hill.

LaPorta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *Journal of Finance 52*, 1131-1150.

LaPorta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy 106*, 1133-1155.

Lee, B. (2003). Asset returns and inflation in response to supply, monetary and fiscal disturbances. *Review of Quantitative Finance and Accounting 21(3)*, 207-231.

Levine, R. (1998). Stock markets, banks and economic growth. *American Economic Review 88*, 537-558.

Lown, C., & Morgan, D.P. (2004). The credit cycle and the business cycle: new findings using the loan officer opinion survey. *Journal of Money, Credit, and Banking 38*, 1575–1597.

Lucas, R. (1977). Understanding business cycles. In K. Brunner, & A. Metzler, *Stabilization of the domestic and international economy.* North-Holland, Amsterdam.

Mackowiak, B. (2007). External shocks, US monetary policy and macroeconomic fluctuations in emerging markets. *Journal of Monetary Economics 54*, 2512-2520.

Matheson, T. D. (2012). Financial conditions indexes for the United States and euro area. *Economics Letters 115*, 441-446.

Mincer, J., & Zarnowitz, V.(1969) The evaluation of economic forecasts. In: J. Mincer, ed. Economic forecasts and expectations. New York: National Bureau of Economic Research, 1-46.

Minsky, H.P. (1982). The financial-instability hypothesis: capitalist processes and the Behavior of the economy. In C. P. Kindleberger, J. Laffargue(eds.).*Financial Crises* (Chapter 2). Cambridge University Press.

Minsky, H. P. (1986). *Stabilizing an unstable economy.* USA: McGraw Hill.

Mishkin, F. S. (2009). Globalization and financial development. *Journal of Development Economics 89(2)*, 164-169.

Murasawa, Y. (1972). Measuring the natural rates, gaps and deviation cycles. *Retrospect and Prospect NBER*, 39-88.

Neri, S. (2004). Monetary policy and stock prices: theory and evidence. *Bank of Italy Working Paper No. 513*.

Osorio, C., Pongsaparn, R., & Unsal, D. F. (2011). A quantitative assessment of financial conditions in Asia. *IMF Working Paper No. WP/11/170*.

Patelis, A. D. (1997). Stock return predictability and the role of monetary policy. *Journal of Finance 52*, 1951-1972.

Rajan, R., & Zingales, L. (2003). The great reversals: the politics of financial development in the 20th century. *Journal of Financial Economics 69(1),* 5-50.

Rajan, R., & Zingales, L. (2004). *Saving capitalism from the capitalists: unleashing the power of financial markets to create wealth and spread opportunity*. Princeton: Princeton University Press.

Rotheli, T. F. (2010). Causes of the financial crisis: risk perception, policy mistakes and banks' bounded rationality. *Journal of Socio-Economics 39(2)*, 119-126.

Rousseau, P. L., & Wachtel, P. (2011). What is happening to the impact of financial deepening on economic growth? *Economic Inquiry 49*, 276-288.

Sanchis, A., Segovia, M. J., Gil, J. A., Heras, A., & Vilar, J. L. (2007). Rough sets and the role of monetary policy in financial stability (macroeconomic problem) and the prediction of insolvency in insurance sector (microeconomic problem). *European Journal of Operational Research 181(3)*, 1554-1573.

Sanders, D. R., Manfredo, M. R., & Boris, K.(2009). Evaluating information in multiple horizon forecasts: The DOE's energy price forecasts. *Energy Economics31*, 189-196.

Silipo, D. B. (2010). It happened again: a Minskian analysis of the subprime loan crisis. *Journal of Economics and Business 63(5)*, 441-455.

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

Stiglitz, J., & Weiss, A. (1984). Incentive effects for terminations: applications to credit and labor markets. *American Economic Review 73*, 912-927.

Stock, J. H., & Watson, M. W. (2002). Macroeconomic forecasting using diffusion indexes. *Journal of Business and Economic Statistics 20(2)*, 147-162.

Stock, J. H., & Watson, M. W. (2008). Forecasting in dynamic factor models subject to structural instability. *National Bureau of Economic Research Paper*, 1-36.

Svaleryd, H., & Vlachos, J. (2002). Market for risk and openness to trade: how are they related? *Journal of International Economics 57(2)*, 369-395.

Terrones, M. (2004). Are credit booms in emerging markets a concern? *World Economic Outlook*, 147-166.

Thorbecke, W. (1997). On stock market returns and monetary policy. *Journal of Finance 52*, 635-654.

Tng, B. H., Kwek, K. T., & Sheng, A. (2012). Financial stress in ASEAN-5 economies from the Asian crisis to the global crisis. *The Singaporean Economic Review 57*, 1-24.

Voss, G. M., & Willard, L. B. (2009). Monetary policy and the exchange rate: evidence from a two-country model. *Journal of Macroeconomics 31(4)*, 708-720.

Vuchelen, J., & Gutierrez, M.-I.(2005). A direct test of the information content of the OECD growth forecasts. *International Journal of Forecasting21*, 103-117.

Werner, R. (2011). Economics as if banks mattered: a contribution based on the inductive methodology. *The Manchester School Supplement*, 25–35.

White, W. (2009). *Modern macroeconomics is on the wrong track.* Retrieved February 2010, from World Bank: www.worldbank.org.

Wilkinson, J., Spong, K., & Christensson, J. (2010). Financial stability report: how useful during a financial crisis? *Economic Review Federal Reserve Bank of Kansas City*, 41-70.

Wong, J., Wong, T. C., & Leung, P. (2010). Predicting banking distress in the EMEAP economies.*Journal of Financial Stability 6*, 169-179.

Xu, T. T. (2010). The role of credit in international business cycles. *Job Market Paper*.

Zhang, W., Zhang, Z., & Han, G. (2010). How does the U.S. credit crisis affect the Asia-Pacific economies? - analysis based on a general equilibrium model. *Journal of Asian Economics 21(3)*, 280-292.

Zhu, F. (2011). Credit and business cycles: some stylized facts. *BIS draft*, 1–30.