IMPLICATIONS OF NON-INTEREST INCOME ON BANK RISK AND PERFORMANCE OF BANKS IN SELECTED DEVELOPING AND DEVELOPED ASIA PACIFIC COUNTRIES

KOH CHIN WEI

FEP 2019 18

IMPLICATIONS OF NON-INTEREST INCOME ON BANK RISK AND PERFORMANCE OF BANKS IN SELECTED DEVELOPING AND DEVELOPED ASIA PACIFIC COUNTRIES

By

KOH CHIN WEI

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

December 2018

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

IMPLICATIONS OF NON-INTEREST INCOME ON BANK RISK AND PERFORMANCE OF BANKS IN SELECTED DEVELOPING AND DEVELOPED ASIA PACIFIC COUNTRIES

By

KOH CHIN WEI

December 2018

Chairman : Nazrul Hisyam bin Abdul Razak, PhD
Faculty : Economics and Management

This study was conducted to serve three main purposes which are: 1) to investigate bank specific and economic factors on bank non-interest based activities, 2) to investigate implications of non-interest income on bank risk and 3) to investigate implications of non-interest income on bank performance of banks in selected developing and developed Asia Pacific Countries. For the study on bank specific and economic factors on bank non-interest based activities in selected developing and developed Asia Pacific Countries over the years 2000-2015, we employ pooled OLS and panel regression to assess the bank specific and economic factors effect on bank non-interest based activities throughout 61 representative banks across Australia, Hong Kong, Korea, Malaysia, Singapore and Thailand in Asia Pacific region. The empirical findings indicate that the bank specific and economic factors do have impact on banks' non-interest based activities in overall countries, developing and developed countries respectively. We also find that bank non-interest based activities also affected by subprime crisis for developed and developing countries. Furthermore, for the second objectives of the study, bank non-interest activities affect the bank risk in selected developing and developed Asia Pacific Countries. The empirical findings indicate that the bank non-interest based activities do have overall impact on Asia Pacific banks' risk. Once we further study by segregating into developed and developing countries segment, we only able to find that the impact do significant on developing countries only not on developed countries. We also find that the bank risk do not affected by subprime crisis for Asia Pacific countries by factor in bank non-interest activities which indicate that non-interest activities provide risk shelter for banks in mitigating certain risks. For the third objective of the study, the empirical findings indicate that the bank non-interest based activities do have overall impact on Asia Pacific banks' performance across overall, developing and developed countries but vary throughout bank performance proxies. This study suggested that with non-interest activities element, bank specific and economic factors have significant impacts on bank performance. We also find that the bank performance also affected by

subprime crisis only for overall Asia Pacific countries especially developing countries but not developed countries by factor in bank non-interest activities. This study manages to achieve its objectives by providing evidence of the implications of bank specific and macroeconomic factor on bank non-interest activities in selected Asia Pacific countries. The findings of this study are expected to contribute significantly to new chapter of bank non-interest based activities of the Asia Pacific banking sector for bank regulators and investors.

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

IMPLIKASI PENDAPATAN BUKAN FAEDAH TERHADAP RISIKO DAN PRESTASI BANK DI NEGARA-NEGARA ASIA PASIFIK YANG SEDANG MEMBANGUN DAN MEMBANGUN TERTENTU

Oleh

KOH CHIN WEI

Disember 2018

Pengerusi : Nazrul Hisyam bin Abdul Razak, PhD
Fakulti : Ekonomi dan Pengurursan

Kajian ini dijalankan untuk mengkaji tiga tujuan utama iaitu: 1) untuk menyelidik faktor-faktor bank tertentu dan ekonomi terhadap kegiatan bank aktiviti tanpa faedah, 2) untuk menyelidiki implikasi dari pendapatan bank tanpa faedah terhadap risikonya dan 3) untuk menyelidiki implikasi dari pendapatan tanpa faedah ke atas prestasi bank-bank di negara-negara maju dan membangun di Asia Pasifik. Untuk kajian mengenai faktor-faktor bank dan ekonomi terhadap aktiviti bank tanpa faedah, bank- bank terpilih di negara-negara membangun dan maju di Asia Pasifik antara tahun 2000-2015, kami menggunakan 'ordinary least square (OLS)' regresi dan panel regresi bagi menilaikan faktor-faktor bank dan ekonomi terhadap bank aktiviti tanpa faedah dari 61 bank merangkumi Australia, Hong Kong, Korea, Malaysia, Singapura dan Thailand di Asia Pasifik. Penemuan empirikal menunjukkan bahawa faktor-faktor bank dan ekonomi membawa kesan ke atas aktiviti tanpa faedah kepada bank di negara maju dan sedang membangun. Kami juga mendapati bahawa bank aktiviti tanpa faedah juga terjejas oleh krisis subprima bagi negara membangun dan maju. Seterusnya, bagi objektif kajian kedua pula iaitu bank aktiviti tanpa faedah mempengaruhi risiko bank di negara-negara Asia Pasifik yang membangun dan maju. Penemuan empirikal menunjukkan bahawa bank aktiviti tanpa faedah mepengaruhi ke atas risiko bank di Asia Pasifik. Kita mengkaji lebih mendalam dengan memisahkan segmen negara-negara membangun dan maju, kita mendapati bahawa impak yang signifikan di negara-negara membangun bukan di negara-negara maju. Kami juga mendapati bahawa risiko bank tidak terjejas oleh krisis subprime bagi negara-negara Asia Pasifik dengan menfaktorkan bank akitiviti tanpa faedah. Ini menunjukkan bahawa bank yang menunjukkan bank aktiviti tanpa faedah menyediakan perlindungan risiko bagi bank untuk mengurangkan risiko tertentu. Untuk tujuan kajian ketiga, penemuan empirikal menunjukkan bahawa bank aktiviti tanpa faedah membawa kesan keseluruhan terhadap prestasi bank-bank Asia Pasifik yang membangun dan maju tetapi keputusan berbeza melalui proksi prestasi bank yang digunakan. Kajian ini mencadangkan bahawa dengan elemen bank aktiviti tanpa faedah,

faktor bank dan ekonomi bank mempunyai kesan yang signifikan terhadap prestasi bank. Kami juga mendapati bahawa prestasi bank juga terjejas oleh krisis subprima hanya di seluruh Asia Pasifik terutamanya negara-negara membangun tetapi bukan negara-negara maju dengan memfaktorkan bank aktiviti tanpa faedah. Kajian ini berjaya mencapai matlamatnya dengan menyediakan keterangan tentang implikasi faktor bank dan ekonomi terhadap bank aktiviti tanpa faedah di negara-negara terpilih di Asia Pasifik. Penemuan kajian ini menyumbang secara signifikan terhadap bab baru bank aktiviti tanapa faedah di sektor perbankan Asia Pasifik.

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my research team members (Dr. Nazrul Hisyam Ab Razak as chairman, Dr. Fakarudin Kamarudin as member, Assoc. Prof. Dr. Cheng Fan Fah as member) as well as my institution for sponsoring me conference fees and gave me the golden opportunity to further my study on this topic (Implications of Non-Interest Income on Bank Risk and Performance of banks in selected Developing and Developed Asia Pacific Countries.), which also helped me in doing a lot of research and i came to know about so many new things I am really thankful to them. Secondly i would also like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.

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:

Nazrul Hisyam bin Abdul Razak, PhD
Senior Lecturer
Faculty of Economics and Management
Universiti Putra Malaysia
(Chairman)

Cheng Fan Fah, PhD
Associate Professor
Faculty of Economics and Management
Universiti Putra Malaysia
(Member)

Fakarudin Kamarudin, PhD
Senior Lecturer
Faculty of Economics and Management
Universiti Putra Malaysia
(Member)

ROBIAH BINTI YUNUS, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

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 institutions;
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according 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;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software

Signature: ________________________ Date: __________________

Name and Matric No: Koh Chin Wei, GS46254

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) were adhered to.

Signature: ______________________

Name of Chairman of Supervisory Committee: Dr. Nazrul Hisyam bin Abdul Razak

Signature: ______________________

Name of Member of Supervisory Committee: Associate Professor Dr. Cheng Fan Fah

Signature: ______________________

Name of Member of Supervisory Committee: Dr. Fakarudin Kamarudin

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

This chapter describes the study background. It explores the statement of problem, research objectives and questions, as well as the significance and scope of study. A description of the conceptual framework also used in this study is also provided. The end of chapter provides the outline of this study.

1.1 Background of the Study

This section provides an overview of the banking activities in Asia Pacific countries. This is followed by an introduction on non-interest based activities in Asia Pacific countries and the impacts of bank specific and economic factors on bank activities in the Asia Pacific region.

Most banks have gradually diverted from traditional activities to non-interest activities since a few decades ago and non-interest activities have long been a feature of banking, although it is not a primary topic in research area. Non-interest based activities refer to activities that are conducted primarily from fee-based activities and not charging interest on banks' products and services. Gradually, these activities contribute a bigger portion to banks' overall income recently. Even though many non-interest based banking services are provided for free or at a very low cost, banks still emphasise on non-interest based activities as they are cross-subsidised by the wider interest margins earned from their banking intermediations; thereafter, banks' interest rates are heavily regulated. Such regulation ruled out competition via interest rates. The main avenue of competition left for banks is to provide non-interest based activities and other services at a low, or no charge, to customers in order to attract deposits.

Historically, banks are considered as financial intermediaries receiving deposits from surplus parties and providing funds to deficit parties, thereby making profits. However, economic restructuring, financial sector reforms, deregulation, emergence of advanced technologies and consolidation restriction lead banks all over the world to transcend their normal business operations and diversify their activities, thus enabling traditional banks to offer more fee-earning activities. However, this also leads commercial banks to suffer a sharp decline in interest margins and profitability on traditional intermediation activities. Thus, there is a need for banks to diversify into new activities and reduce their traditional lines. The majority of banks offer insurance services, funds management, advisory services, financial market products, a wide range of transaction services and in-house trading activities. These components have attracted a good pact of public interest recently.

The world banking industry, especially in developed country, has been steadily shifting away from traditional sources of revenue like loan-making towards non-traditional activities. The topics on Asian regional banks' non-interest based income activities have not much induced in academic discussion whereas most existing literature based on U.S and European banking (Hsieh et al., 2013; Yang, 2013). Emerging economies in Asian countries getting gradually growing and indispensable in the global financial markets, banking activities development in the Asian Pacific area should be mandatory from any discussion platform.

The liberalisation of the financial sector leads banks to a total paradigm shift in bank activities and carried out one of the prominent solutions which is providing non-interest income activities. However, banks had now become a provider of a wide range of solutions which contribute and improve substantially to bank performance and profitability by lowering cost and reducing operational problems. Arise from severe competition issue and adherence to various prudential norms, as stated in Basel II and Basel III, whereby business opportunities have been narrowed down and the traditional interest based business activities are growing at slow-paced and slowly getting restricted.

All banks have non-interest income activities, and the revenue from these sources has been growing at a fast pace that is consistent with the bank's balance sheet. In many cases, it is growing even faster than lending activities, which have been part of banking for a long time. Banks have to offer various services to their customers at lower cost and as early as possible to attract the customer base. Craigwell and Maxwell (2006), Smith et al. (2003), Staikouras and Wood (2003) stated that almost all banks' non-interest income increased by 20% to 25% over the years between 2000-2005. In more specific, banks earned huge income from these sources; however, not all banks offer various services and these banks earn less non-interest income globally due to banks' specialised sector.

Most countries in the early 1980s faced financial deregulation issue and lead banks compete for source of funds on the basis of interest rates. Therefore, banks' net interest spreads, which are the net interest profit margin, the differences between the cost of fund received and the average cost of fund interest paid begun to shrink. The initial effect of the process was slow and unclear to be observed in the early 1990s. The effect then pinpointed as banks begun to restore their profit margin by offsetting the high levels of bad debts that had been incurred initially. Thereafter, federal banks started to research interest based related activities, the interest rate competition rose up again in mid-1990s by non-bank competitors which tried to challenge banks' most profitable interest based activities, especially in mortgage, interest based profit margins began to narrow again, and interest spreads were subsequently reduced across interest based products not only in household but also in business segments.

Major banks from U.K and European banks' overall interest based profit margin has been declined in the early 1980s. The scope for banks to use the margins earned from traditional financial intermediation to cross-subsidise the other services they provide has been reduced. There has been a tendency for new banks and non-bank rivals to compete selectively for the more profitable banking activities. In response, banks have unbundled financial services and priced them separately.

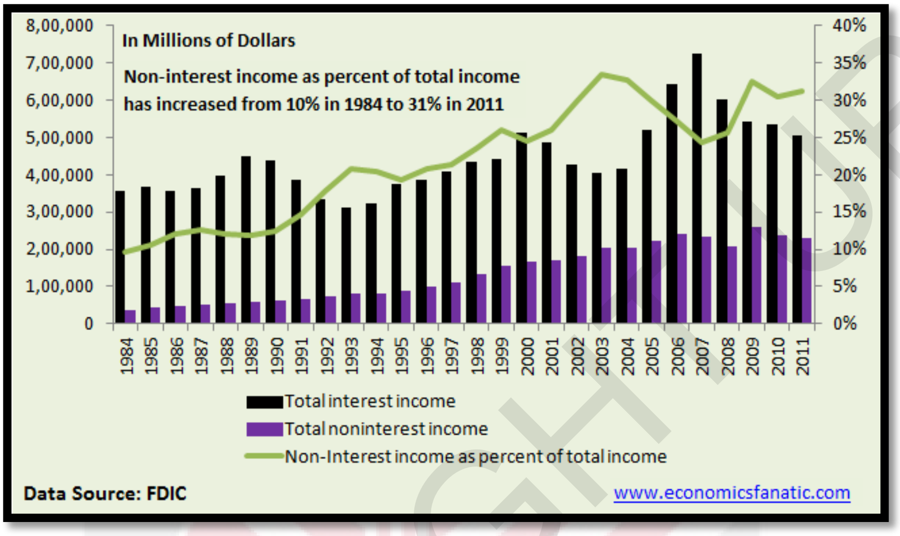


Figure 1.1 : Non-interest income against years
(Source: Federal Deposit Insurance Cooperation. Non-interest income as percent of total income for the US banking sector from 1984 to 2011.)

The core income activity for the banking sector is related to interest income. Therefore, in a healthy economic scenario, the interest income as a percentage of the total income for the banking sector is usually high. Figure 1.1 shows that interest income, non-interest income, as a percentage of total income for the US banking sector from 1984 to 2011, the non-interest based income gradually grew. This is a substantial increase which reflects the divergence from core banking activities.

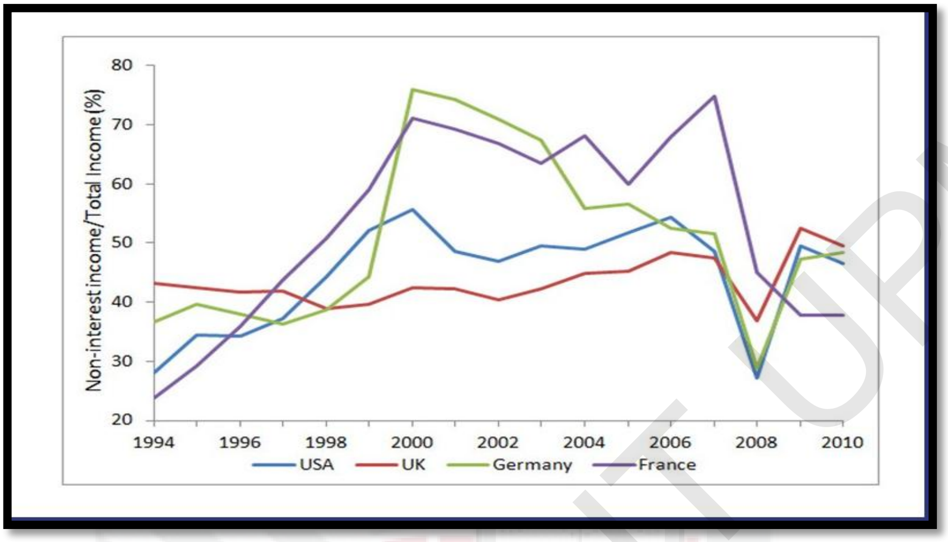


Figure 1.2 : Non-interest income / Total income against years
(Source: Bankscope, World Bank Financial Development and Structure Database, and authors' calculations. The loan-to-asset and non-interest income ratios are computed as the average across the four largest banks in each country.)

Figure 1.2 shows that the non-interest income ratios computed as the average across the four largest banks in USA, United Kingdom, Germany and France. The average non-interest income in the developed countries allocated more than 40 % of the overall total income, except during the financial crisis in 2008.

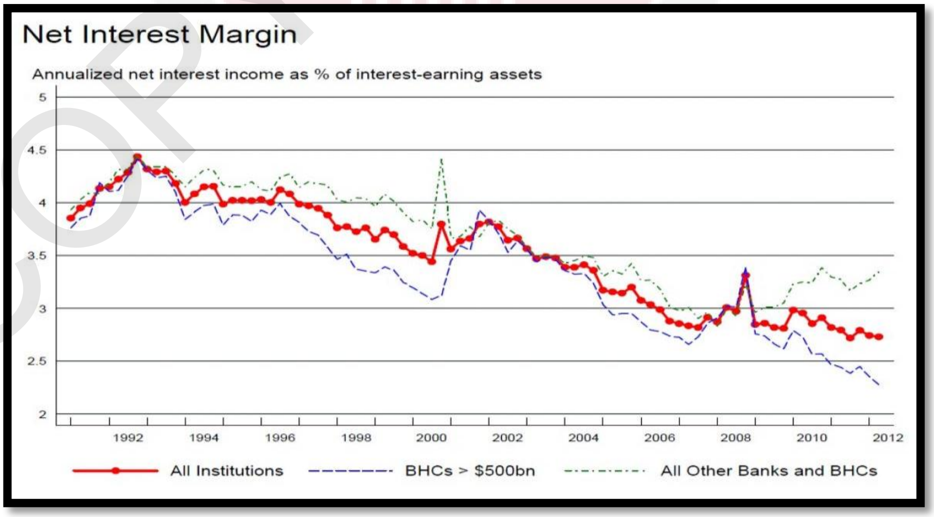


Figure 1.3 : Annualised net interest margin income against years
(Source: New York Federal Bank. Annualized net interest income from 1990's to 2012.)

Banking profit margins, measured by net interest margin, refers to the difference between interest income and interest expenses divided by total interest earning assets. At the level of individual banks, a higher net interest margin is considered better as it indicates higher profitability. A higher net interest margin may also indicate that banks have better pricing power for loans and deposits. Net interest margin for banking sector continues to decline. The trend of falling net interest margins in the sector continued in 2012. In fact, net interest margins had continued to fall since the 1990. This might due to the competition among banks and bank holding themselves, as well as banks making proportionally fewer loans and deriving less interest income, as shown in Figure 1.3.

In recent years, deregulation and technological innovation have permitted almost all financial institutions to capture an increasing share of their income stream from non-interest sources. According to DeYoung and Rice (2004a; 2004b), US commercial banks, for example, generated 42% of their operating income from non-interest sources in 2004 compared to 32% in 1990 and 20% in 1980. While part of the increase in the non-interest income was due to diversification into lines of business such as investment banking, venture capital and insurance underwriting, with significant growth in fee-paying and commission-paying services linked to traditional retail banking services. In order to sustain or increase additional revenue or sustain their competitive edge forces, banks are going to merge and exquisite other non-bank businesses.

However, the shift towards non-interest income has not improved the risk-adjusted returns of banks in recent years (Hirtle & Stiroh, 2007). Clark and Siems (2002) documented a recent shift in the strategic behaviour of banks in developed economies and demonstrated that a return to retail occurred because retail business offered relatively stable returns that could help offset volatility in non-retail business. The main motive for diversification is to minimised risk of loss. In general, banks considered both the costs and benefits of different alternatives available when making investment decisions. Much analysis has indicated that portfolio asset allocation is by far the most important decision made by banks. If banks choose to invest in loans and advances, their default risks associated with these investments will increase. Such investments potentially have negative consequences for banks' earnings because some of the loans and advances to customers may end up as bad or doubtful debts. This risk may or may not be covered by collateral securities or high interest rates. If the risk is covered by high lending rates, these compensate for the high risks and the costs incurred in valuing collateral securities, negotiation and debt servicing.

The portfolio theory of investment seems appropriate to counter the problem of investment risk that banks face. This issue triggers awareness for banks to diversify into non-interest based activities. Profits from traditional lending were declining as creditworthy corporations funded themselves in the bond and stock market. Meanwhile, investment banks were expanding their scope and seeing their profits soar. Access to investment banking activities will provide commercial banks with sources of non-interest income as an alternative to seeking capital-intensive interest income from ever riskier sources. Universal banking became the norm in an increasingly globalised financial world, especially once the UK put an end to its tradition of specialised financial institutions in the mid-1980s. More and more companies were able to finance themselves in the commercial paper market, leaving banks to choose between enduring shrinking profits or raising their levels of risk. It was surprising that they sought non-interest sources of revenue, especially when competing in an international economy against universal commercial banks that had none of their restrictions.

This study provides an in-depth analysis of bank non-interest activities. It also covers why and how these activities pose risks to banks and banking crises. Finally, this study investigates the role of regulatory capital and implications of the shift to non-interest income generating activities in the Asia Pacific regional banking perspective.

1.2 The rise of Asia Pacific banking non-interest income activities

Non-interest based income activities in Asia Pacific have steadily increased over the last decades, interrupted only by the Great Financial Crisis of 2007−09. In the years leading up to the crisis, most of the non-interest income based activities in the region had been driven by foreign banks. In the wake of the crisis, this global intermediation lost most of its foreign bank legs in Asia Pacific. Since the crisis, however, foreign banks have held back and banks from Asia-Pacific have stepped in, so the bulk of the intermediation is now conducted within the region.

With its relatively less developed financial markets and less complex financial products, Asia Pacific's banking system is very different from those of the US and Europe. In Asia, bank loans have traditionally been the source of funding for businesses but not all businesses have access to bank lending. Banking in the Asia Pacific region receives increased attention from regulators and policy makers over the potential for systemic risk. The rapid growth in the sale of fee-based products such as wealth management products has seen large amounts of money entering the financial system. This has been used to invest in real estate and local government's infrastructure projects, building up risks in the banking system.

The rapidly evolving regulatory landscape is pushing up compliance costs. Minimum wage rules and talent shortages are driving up labour costs and reducing the opportunities for labour arbitrage. Although Asia Pacific has an increasing number of online banks associated with existing bricks and mortar banks, only a few successful pure online players have emerged to date. Regulation in different markets has constrained the development of stand-alone direct banks. However, governments are now keen to open up financial services and encourage innovation, more online-only banks to emerge.

1.2.1 Australia

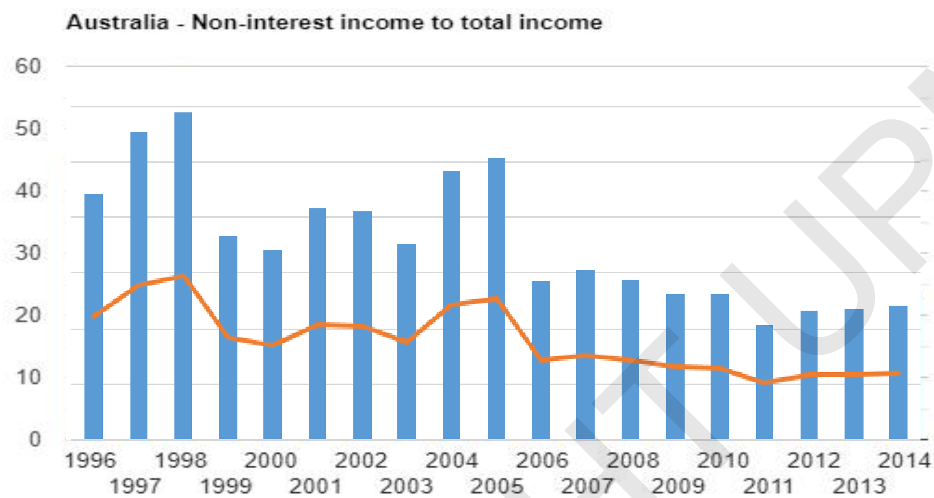


Figure 1.4 : Australia: Bank non-interest income to total income, in percentage
(Source: The global economy. Bankscope.)

From Figure 1.4, it shown the bank non-interest income to total income (in percentage) for Australia from 1996 to 2014. The average value for Australia during that period was 35.68 percent with a minimum of 20.5 percent in 2011 and a maximum of 58.79 percent in 1998. It obviously shown that non-interest income activities drop dramatically after Asian Financial Crisis 1997 and 1998 while the effect of Global Financial Crisis 2007 factored in earlier between 2005 and 2006. It indicates that non-interest income can be used as early indicator for financial crisis in Australia.

1.2.2 Hong Kong

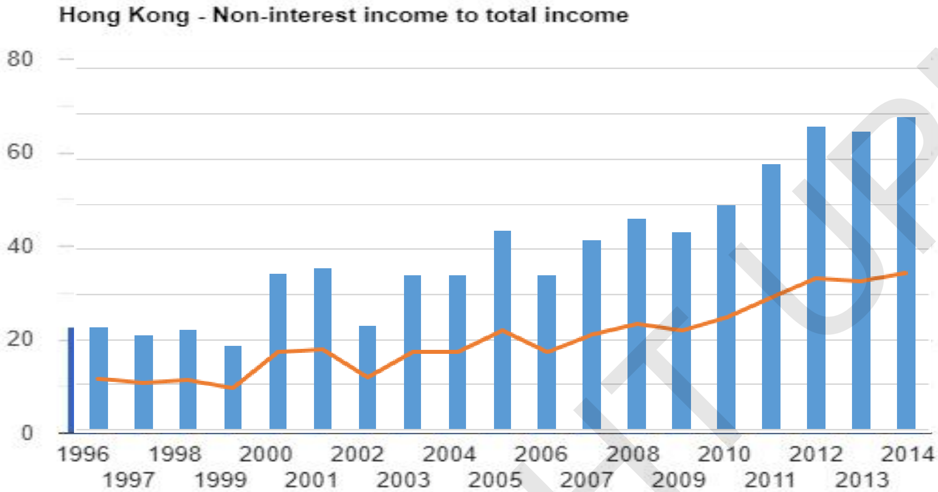


Figure 1.5 : Hong Kong. Bank non-interest income to total income, in percentage
(Source: The global economy. Bankscope.)

Figure1.5 shown bank non-interest income to total income (in percentage) for Hong Kong from 1996 to 2014. The average value for Hong Kong during that period was 40.44 percent with a minimum of 18.44 percent in 1999 and a maximum of 69.36 percent in 2014. It is noticeable that non-interest income increases gradually throughout the year regardless financial crises years.

1.2.3 Singapore

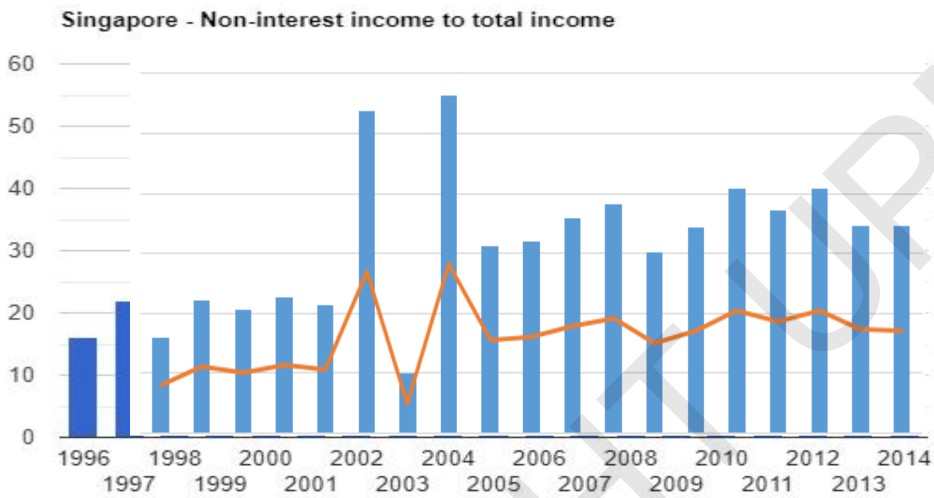


Figure 1.6 : Singapore. Bank non-interest income to total income, in percentage (Source: The global economy. Bankscope.)

Figure1.6 shown bank non-interest income to total income (in percentage) for Singapore from 1996 to 2014. The average value for Singapore during that period was 32.27 percent with a minimum of 10.02 percent in 2002 and a maximum of 56.33 percent in 2003. The non-interest income does not affected by Asian financial crisis 1997 but marginal affected during global financial crisis 2007. In general, the trend of non-interest income for these five years still fluctuate in the range of 30-40%.

1.2.4 South Korea

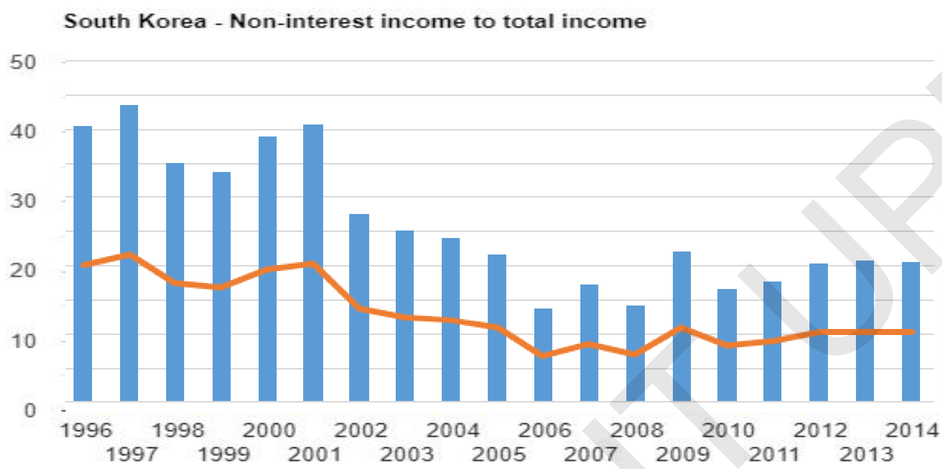


Figure 1.7 : South Korea. Bank non-interest income to total income, in percentage
(Source: The global economy. Bankscope.)

Figure1.7 shown bank non-interest income to total income (in percentage) for South Korea from 1996 to 2014. The average value for South Korea during that period was 25.99 percent with a minimum of 13.75 percent in 2006 and a maximum of 43.53 percent in 1997. The non-interest income does not affected by Asian financial crisis 1997 but positively affected during global financial crisis 2007.

1.2.5 Malaysia

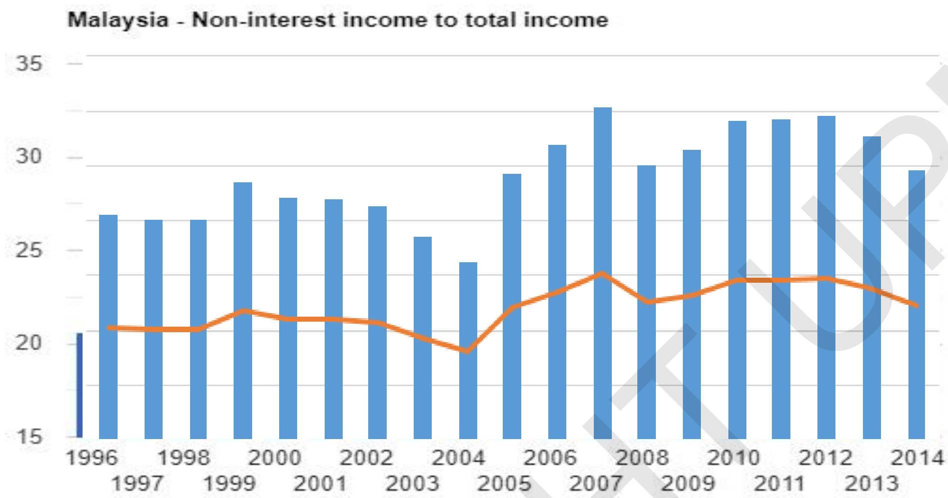


Figure 1.8 : Malaysia. Bank non-interest income to total income, in percentage
(Source: The global economy. Bankscope.)

Figure1.8 shown bank non-interest income to total income (in percentage) for Malaysia from 1996 to 2014. The average value for Malaysia during that period was 24.08 percent with a minimum of 16.16 percent in 2004 and a maximum of 30.0 percent in 2007. The non-interest income does not affected by Asian financial crisis 1997 but positively affected during global financial crisis 2007. In general, the trend of non-interest income for these five years still fluctuate in the range of 25-30%.

1.2.6 Thailand

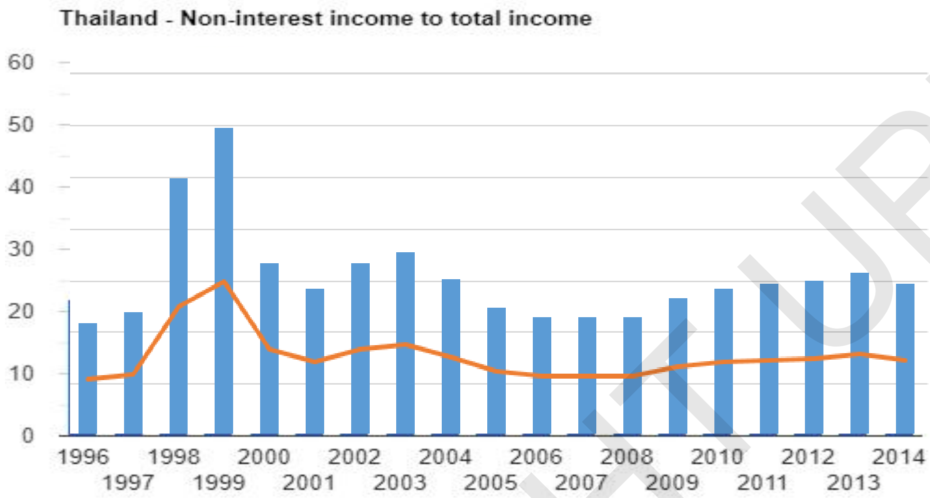
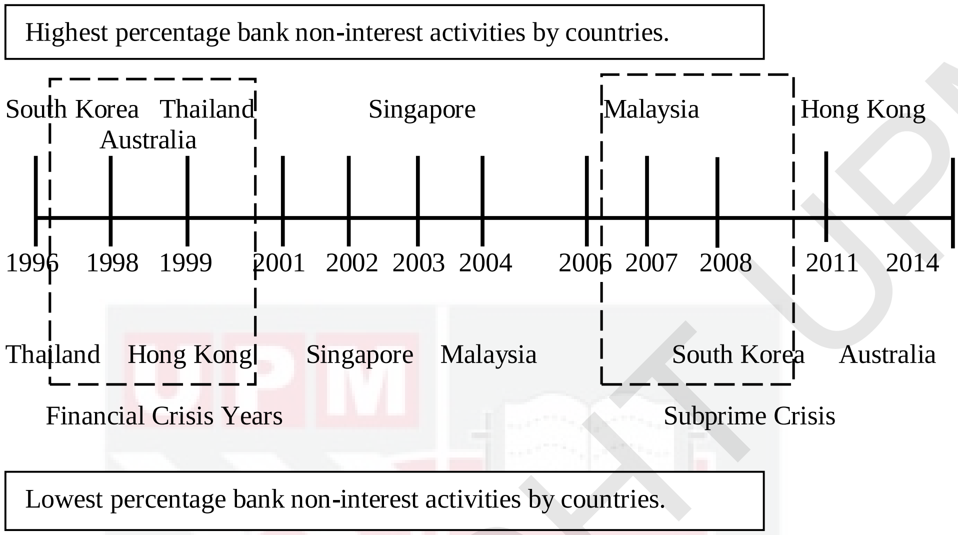


Figure 1.9 : Thailand. Bank non-interest income to total income, in percentage
(Source: The global economy. Bankscope.)

Figure1.9 shown bank non-interest income to total income (in percentage) for Thailand from 1996 to 2014. The average value for Thailand during that period was 30.85 percent with a minimum of 21.92 percent in 1996 and a maximum of 59.49 percent in 1999. The non-interest income positively affected by Asian financial crisis 1997 but does not has much fluctuction during global financial crisis 2007.

1.2.7 Summary of bank non-interest activities over period



Based on Figure 1.10, each countries had reached peak and through percentage of bank non-interest activities at different timelines. During the financial crisis period 1997/98, Australia, South Korea and Thailand have highest percentage of bank non-interest activities while Hong Kong has lowest percentage of bank non-interest activities. Furthermore, only Malaysia has highest percentage of bank non-interest activities at 2007 and South Korea has lowest percentage during subprime crisis 2007/08. Hong Kong ranked top among all countries in generating the bank non-interest activities and the percentage increase gradually throughout the years. While for other countries, the trends of bank non-interest activities are unpredictable and might be due to affected by bank specific factors and economic conditions and also due to how efficient and effective the financial system in developed and developing countries.

Table 1.1 : Summary of bank features by countries

	Australia	Hong Kong	Singapore	South of Korea	Malaysia	Thailand
Types of market	Developed	Developed	Developed	Developing	Developing	Developing
Focus	1) Mature and profitable market, dominated by the “big four” banks. 2) Economy transitioning from resources-dominant to broader based growth. 3) Low growth environment. 4) Offers niche opportunities.	1) Highly developed market in an open economy. 2) Gateway to China. 3) Offers opportunities from the increasing business integration with China and RMB internationalization.	1) A leading financial center in the region. 2) Offers opportunities for offshore and cross border business.	1) Challenging operating environment with intense competition. 2) Government push for finance tech and internet banks to encourage innovation. 3) Level of regulatory intervention a potential deterrent to foreign investment.	1) Highly competitive market, dominated by local banks. Banks looking to expand regionally. 2) Significant Islamic banking potential.	1) Fast-growing market. 2) Potential asset quality risk in certain sectors. 3) Opportunities in corporate banking, consumer banking and cross-border business.
GNI per capita	\$61,219	\$39,871	\$56,319	\$28,101	\$10,804	\$5,445
Banking penetration	98.90%	96.10%	96.40%	94.40%	80.70%	78.10%

(Source: World Bank. Country classification by income level.)

From Table 1.1, countries are divided into two major categories by the World Bank, which are developed countries and developing countries. Classification of developing and developed countries will be based on gross national income per capita. Income is measured using gross national income (GNI) per capita, in U.S. dollars, converted from local currency using the World Bank Atlas method. Estimates of GNI are obtained from economists in World Bank country units; and the size of the population is estimated by World Bank demographers from a variety of sources. The classification of countries can be based on the economic status such as GDP, GNP, per capita income, industrialization, the standard of living, etc.

The difference of financial system in developed and developing countries can viewed from the liberalisation of financial markets in the 1990s and 2000s which contributed to the 2007/2008 Global Crisis. In developing countries, investment, even foreign direct investment (FDI), is costly. Well-developed financial markets may help to fund such investment in developing countries to recover the economic development in shorter length of time.

To achieve efficient and effective liquidity flow, financial markets require depth, access, efficiency and stability. By these criteria, financial markets in different countries have varying levels of development. Not surprisingly, high-income countries have the most developed financial systems. Low-income countries have the least-developed financial systems. Average financial market development for this group improved during the 1990s, but it has declined since the financial crisis (Donaubauer, Meyer, & Nunnenkamp, 2016).

Economic development not only depends on the local financial system but also draw on the financial resources of another through FDI, especially in the form of joint ventures. In particular, affiliates of multinational enterprises (MNEs) in developing countries can take advantage of the financial markets in a parent's high-income country. Compared with purely domestic firms, MNE affiliates, in theory, are less likely to be credit-constrained, make greater use of firm-internal funds, make less use of external funds, and are less reliant on local financial institutions (Moran, Görg, Seric, & Krieger-Boden, 2017). Therefore, a host country's level of financial development to increase the use of funding from sources external to the firm, more so for domestic than for foreign-owned firms.

There are two conclusions the importance of developing and developed financial system. First, foreign-owned affiliates in developing countries face fewer financial constraints than purely domestic firms because they can draw on the resources of their parents, and of financial systems in the source country. Access to financial markets is crucial for activities such as exporting and innovating. Therefore, firms in developing countries strategically benefit if they become integrated in a MNE. This may also benefit the host economy.

Second, while well-developed financial markets help firms to fund investment, poor financial market development in developing host countries can be compensated by highly-developed financial markets in FDI source countries. This implies a reduced pay-off to financial market reforms in developing host countries. We should keep in mind the importance of financial institutions in the developed world for growth in the developing world when we discuss new rules for financial markets.

In summary, despite the differences in degree of non-interest income contribution compared to interest income across the countries, i.e. developing and developed countries, each of the six countries shared certain noticeable similarities in exposing the similar sources of economic uncertainties especially for the sub-prime crisis year 2007 and 2008.

1.3 Problem Statements

Since 1990, corporate capital raising in the Asia Pacific has been mainly through the stock and bond market, venture capital, initial public offering (IPO) funding, private equity capital, subordinated debt, structured and syndicated finance. Yet, organisations go to the banks to secure appropriate capital within the required time frame. The banking system still acts as a predominant source of business finance and stabilises financial position for various sectors in Asia Pacific due to developing financial system. However, most banks are diversifying increasingly into fee-earning activities especially in Hong Kong as shown in figure 1.4. Diversification across various sources of earnings is benefiting if diversification reduces risks and improves performance. This depends on how each non-fee based earning sources contributes as it varies across the selected countries as shown in figure 1.4 to figure 1.9. Traditionally, fee income is very stable as it contributes to a relatively large portion of the earning stream of most banks.

Banks in the selected Asia Pacific countries have looked beyond the traditional bank services to find new and different revenue sources, non-interest income sources and emphasised less on interest-based activities after the recent global crisis in 1997. Corporate and commercial loans and deposits are highly competitive and price sensitive, and banks typically charge a very tight premium over the base lending rate. This results in a rapid and sharp decline in net interest margins (Stiroh, 2004). After 1997, the banking industry is likely to shift its focus to non-interest income to mitigate a revenue decline resulting from a drop in lending rates and due to face increasing repayment defaults and insolvency risks created by companies while redeeming their loans especially in Singapore, Malaysia and Hong Kong as shown in figure 1.9.

Although the main business of banks is still lending, an increasing number of banks have shifted to investment-banking and other related activities during the last few years. This move towards financial intermediary activities like securities underwriting and trading, securitisation and derivatives has blurred the lines between different types of financial institutions. However, with the changing trends and increased competitiveness in the market place, the banking sector has entered into financial intermediary activities. The importance of these new activities in comparison to traditional banking intermediation has increased over time since financial institutions have intensified their diversification efforts (Baele, De Jonghe, & Vennet, 2007; Demirgüç-Kunt & Huizinga, 2010).

The perceived role of a bank has always been that of an intermediary; in the wake of increasing competition, however, the traditional intermediation activities have been gradually fading, especially in the US and UK (Allen & Santomero, 2001; Moshirian & Van der Laan, 1998; Rogers, 1998). In an era of financial deregulation, banks are left with no choice but to be more innovative in order to survive in the market place. Banks, therefore, have tried to offset this reduction in traditional profits with income derived from non-traditional banking activities.

Most research has mostly examined banks' activities efficiency, activities risks and performance in developing and developed countries through banks' interest-based activities but rarely on non-interest based activities. Banking is the business of receiving deposits and lending money in order to earn a profit and has rarely been considered as other alternative forms of banking. This study will investigate whether the effects of non-interest activities over interest based activities are different for developed and developing countries' banks in Asia Pacific. Fee-based income activities would be an important alternative sources of revenue by reducing banks' over-reliance on lending as their main source of revenue.

This research will specifically focus on the impacts of non-interest income of the banks on banks' overall income structure and also investigate whether banks are shifting away from their traditional business to a new era of non-interest-based business. Nonetheless, not much literature has addressed the Asia Pacific countries' economic impacts on banks' non-traditional activities. The bulk of research in this area has focused on the US banks only, as mentioned by Demsetz and Strahan (1997), and Stiroh (2004a, 2006). As impacts of economy level at the banks' non-interest activities have not much been researched on in the case of Asia Pacific countries, this study is an attempt to examine the economic effects on bank's non-interest based activities.

Most studies have addressed mainly on the relationship between interest-based income and banks' risks and performance, although they seldom take into account the relationship between non-interest income and banks' risks and performance. This study represents a more comprehensive analysis and examines the impacts of non-interest income on the performance and risks of a large sample of banks in Asia Pacific countries. The lack of research on non-interest activities in the Asia Pacific countries has motivated the author to scrutinise the effects of non-interest banking activities on performance and risks. This study will also determine whether the investors are able to impound the non-interest-based information disclosures in predicting banks' performance and risks.

Due to the important financial role played by these emerging economies in the global financial markets, the economic growth and volatility in the Asia Pacific countries cannot be overlooked and demand rigorous investigation. In addition, the banking development in these countries cannot be relegated and it deserves extensive exploration. Finally, as most of the existing literature is based on the US or European banks, these issues have to be sufficiently explored in the context of the Asia Pacific member countries.

1.4 Research Questions

This study seeks to highlight and understand several major questions pertaining to the Asia Pacific banks' non-interest based activities. The questions are as follows:-

1) Do bank specific and economic factors affect banks non-interest based activities in developing and developed Asia Pacific countries?
2) Do bank's non-interest activities affect bank risk in selected developing and developed Asia Pacific Countries?
3) Do bank's non-interest activities affect bank performance in selected developing and developed Asia Pacific Countries?

1.5 Objectives of the Study

This study was undertaken to analyse banks' non-interest income activities in the Asia Pacific banking sector. In specific, this study is designed to:

1) To examine whether bank specific and economic factors affect banks non-interest based activities banks in selected developing and developed Asia Pacific Countries.
2) To examine implications of non-interest income on bank risk of banks in selected developing and developed Asia Pacific Countries.
3) To examine implications of non-interest income on bank performance of banks in selected developing and developed Asia Pacific Countries.

1.6 Significance of the Study

This study firstly aims to examine the role of banks' non-interest based income activities in Asia Pacific countries on banks' revenue, performance and risk, as well as on banks' ownership of non-interest activities. Besides that, this study will allow policy makers to foresee and implement the new perspectives of banks via non-interest income activities. In particular, they will be able to use this study as a reference to conduct other studies related to non-interest based income structure and utilise the results to strengthen their understanding of information disclosures via interest based income and non-interest based income activities. Moreover, this study will also benefit the Basel Committee and other audit agencies in understanding the trend and growth of the banking industry in Asia Pacific countries. On top of that, this study will help country's banking policy makers to better understand this stream of banking and differentiate the efficiency of these banks.

1.7 Scope of the Study

This study aims to find out how bank non-interest income activities react to bank performance and bank risk by factoring in macroeconomic and bank specific factors in selected developed and developing Asia Pacific countries during the period 2000-2015. The selected developed countries are Australia, Hong Kong and Singapore while for developing countries are Malaysia, South Korea and Thailand. This study consists of five chapters and the contents are arranged in the following manner; the introduction and general explanation on the overview of this study in Chapter 1, followed by literature review that includes relevant literature and theoretical framework in Chapter 2. Subsequently, the research method describes the research design, data collection and methodology in Chapter 3, explains the data and methodology of this study. This chapter describes the data, specifies the empirical models, explains the estimation procedure and provides justification for the variables used in the study. Analysis of the study's findings and interpretation of the results are given in Chapter 4. Lastly, Chapter 5 discusses the research findings, policy implications and limitations of study.

REFERENCES

Acharya, V. V., Hasan, I., & Saunders, A. (2006). Should Banks Be Diversified? Evidence from Individual Bank Loan Portfolios*. The Journal of Business, 79(3), 1355-1412.

Afzal, A., & Mirza, N. (2012). Size, Diversification and Risk: Preliminary Evidence from Commercial Banks in Pakistan. Pakistan Journal of Commerce & Social Sciences, 6(2).

Agoraki, M.-E. K., Delis, M. D., & Pasiouras, F. (2011). Regulations, competition and bank risk-taking in transition countries. Journal of Financial Stability, 7(1), 38-48.

Altamuro, J., & Beatty, A. (2010). How does internal control regulation affect financial reporting? Journal of Accounting and Economics, 49(1), 58-74.

Altunbas, Y., Gambacorta, L., & Marqués-Ibáñez, D. (2010). Does monetary policy affect bank risk-taking? Journal of Accounting and Finance, 35(1), 78-86

Baele, L., De Jonghe, O., & Vander Vennet, R. (2007). Does the stock market value bank diversification? Journal of Banking & Finance, 31(7), 1999-2023.

Bahmani-Oskooee, M., & Fariditavana, H. (2015). Nonlinear ARDL approach, asymmetric effects and the J-curve. Journal of Economic Studies, 42(3), 519-530.

Barth, J. R., Caprio Jr, G., & Levine, R. (2004). Bank regulation and supervision: what works best? Journal of Financial intermediation, 13(2), 205-248.

Berger, A. N., Demirguc-Kunt, A., Levine, R., & Haubrich, J. G. (2004). Bank concentration and competition: An evolution in the making. Journal of Money, Credit, and Banking, 36(3), 433-451.

Berger, A. N., Demirgüç-Kunt, A., Levine, R., & Haubrich, J. G. (2004). Bank concentration and competition: An evolution in the making. Journal of Money, Credit and Banking, 433-451.

Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. Journal of financial economics, 37(1), 39-65.

Borio, C., Furfine, C., & Lowe, P. (2001). Procyclicality of the financial system and financial stability: issues and policy options. BIS papers, 1, 1-57.

Boyd, J. H., & De Nicolo, G. (2005). The theory of bank risk taking and competition revisited. The Journal of finance, 60(3), 1329-1343.

Brahmana, R., Kontesa, M., & Gilbert, R. E. (2018). Income diversification and bank performance: evidence from malaysian banks. Economics Bulletin, 38(2), 799-809.

Brunnermeier, M. K. (2009). Deciphering the liquidity and credit crunch 2007-2008. Journal of Economic perspectives, 23(1), 77-100.

Bushman, R. M., & Williams, C. D. (2012). Accounting discretion, loan loss provisioning, and discipline of banks' risk-taking. Journal of Accounting and Economics, 54(1), 1-18.

Casu, B., & Girardone, C. (2006). Bank competition, concentration and efficiency in the single European market. The Manchester School, 74(4), 441-468.

Chiorazzo, V., Milani, C., & Salvini, F. (2008). Income diversification and bank performance: Evidence from Italian banks. Journal of Financial Services Research, 33(3), 181-203.

Claessens, S., & Laeven, L. (2004). What drives bank competition? Some international evidence. Journal of Money, Credit, and Banking, 36(3), 563-583.

Cornett, M. M., Ors, E., & Tehranian, H. (2002). Bank performance around the introduction of a Section 20 subsidiary. The Journal of Finance, 57(1), 501-521.

De Nicolo, G. (2001). Size, charter value and risk in banking: An international perspective. Paper presented at the EFA 2001 Barcelona Meetings.

Delpachitra, S., & Lester, L. (2013). Non- Interest Income: Are Australian Banks Moving Away from their Traditional Businesses? Economic Papers: A journal of applied economics and policy, 32(2), 190-199.

Demirgüç-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: some international evidence. The World Bank Economic Review, 13(2), 379-408.

Demirgüç-Kunt, A., & Huizinga, H. (2010). Bank activity and funding strategies: The impact on risk and returns. Journal of financial economics, 98(3), 626-650.

Demirguc-Kunt, A., Laeven, L., & Levine, R. (2003). Regulations, market structure, institutions, and the cost of financial intermediation: National Bureau of Economic Research. Ohio State University Press, 36(3), 593-622.

Demsetz, R. S., & Strahan, P. E. (1997). Diversification, size, and risk at bank holding companies. Journal of Money, Credit, and Banking, 300-313.

DeYoung, R., & Rice, T. (2004a). How do banks make money? The fallacies of fee income. Economic Perspectives-Federal Researve Bank of Chicago, 28(4), 34.

DeYoung, R., & Rice, T. (2004b). Noninterest income and financial performance at US commercial banks. Financial Review, 39(1), 101-127.

DeYoung, R., & Torna, G. (2013). Nontraditional banking activities and bank failures during the financial crisis. Journal of Financial Intermediation, 22(3), 397-421.

Dietrich, A., & Wanzenried, G. (2014). The determinants of commercial banking profitability in low-, middle-, and high-income countries. The Quarterly Review of Economics and Finance, 54(3), 337-354.

Doliente, J. S. (2005). Determinants of bank net interest margins in Southeast Asia. Applied Financial Economics Letters, 1(1), 53-57.

Donaubauer, J., Meyer, B. E., & Nunnenkamp, P. (2016). A new global index of infrastructure: Construction, rankings and applications. The World Economy, 39(2), 236-259.

Drake, L., Hall, M. J., & Simper, R. (2006). The impact of macroeconomic and regulatory factors on bank efficiency: A non-parametric analysis of Hong Kong's banking system. Journal of Banking & Finance, 30(5), 1443-1466.

Focarelli, D., & Pozzolo, A. F. (2005). Where Do Banks Expand Abroad? An Empirical Analysis*. The Journal of Business, 78(6), 2435-2464.

Fraser, D. R., Madura, J., & Weigand, R. A. (2002). Sources of bank interest rate risk. Financial Review, 37(3), 351-367.

Fungáčová, Z., & Poghosyan, T. (2011). Determinants of bank interest margins in Russia: Does bank ownership matter? Economic systems, 35(4), 481-495.

Haniffa, R., & Hudaib, M. (2006). Corporate governance structure and performance of Malaysian listed companies. Journal of Business Finance & Accounting, 33(7-8), 1034-1062.

Hidayat, W. Y., Kakinaka, M., & Miyamoto, H. (2012). Bank risk and non-interest income activities in the Indonesian banking industry. Journal of Asian Economics, 23(4), 335-343.

Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. Stata Journal, 7(3), 281.

Hsiao, C. (2007). Panel data analysis—advantages and challenges. Test, 16(1), 1-22.

Hsieh, M. F., Chen, P. F., Lee, C. C., & Yang, S. J. (2013). How does diversification impact bank stability? The role of globalization, regulations, and governance environments. Asia- Pacific Journal of Financial Studies, 42(5), 813-844.

Hutchinson, M., & Gul, F. A. (2004). Investment opportunity set, corporate governance practices and firm performance. Journal of Corporate Finance, 10(4), 595-614.

Jha, R., & Whalley, J. (2015). The environmental regime in developing countries. World Scientific Reference on Asia and the World Economy, (pp. 29-54).

Jiménez, G., Lopez, J. A., & Saurina, J. (2013). How does competition affect bank risk-taking? Journal of Financial Stability, 9(2), 185-195.

Keeley, M. C., & Furlong, F. T. (1990). A reexamination of mean-variance analysis of bank capital regulation. Journal of Banking & Finance, 14(1), 69-84.

Kim, P. K., & Rasiah, D. (2010). Relationship between corporate governance and bank performance in Malaysia during the pre and post Asian financial crisis. European Journal of Economics, Finance and Administrative Sciences, 21(1), 39-63.

Klomp, J., & de Haan, J. (2014). Bank regulation, the quality of institutions, and banking risk in emerging and developing countries: an empirical analysis. Emerging Markets Finance and Trade, 50(6), 19-40.

Kotrozo, J. E., & Choi, S. (2006). Diversification, Bank Risk and Performance: A Cross-Country Comparison. 상업교육연구, 21, 179-213.

Kwan, S. H. (1998). Securities activities by commercial banking firms' section 20 subsidiaries: risk, return, and diversification benefits. Federal Reserve Bank of San Francisco.

Kwast, M. L. (1989). The impact of underwriting and dealing on bank returns and risks. Journal of Banking & Finance, 13(1), 101-125.

Laeven, L., & Levine, R. (2009). Bank governance, regulation and risk taking. Journal of financial economics, 93(2), 259-275.

Laeven, L., & Majnoni, G. (2003). Loan loss provisioning and economic slowdowns: too much, too late? Journal of financial intermediation, 12(2), 178-197.

Lane, P. R. (2012). The European sovereign debt crisis. Journal of Economic perspectives, 26(3), 49-68.

Lee, C.-C., & Hsieh, M.-F. (2013). The impact of bank capital on profitability and risk in Asian banking. Journal of International Money and Finance, 32, 251-281.

Lepetit, L., Nys, E., Rous, P., & Tarazi, A. (2008a). Bank income structure and risk: An empirical analysis of European banks. Journal of Banking & Finance, 32(8), 1452-1467.

Lepetit, L., Nys, E., Rous, P., & Tarazi, A. (2008b). The expansion of services in European banking: Implications for loan pricing and interest margins. Journal of Banking & Finance, 32(11), 2325-2335.

Levine, R. (2002). Bank-based or market-based financial systems: which is better? Journal of financial intermediation, 11(4), 398-428.

Lin, J. Y. (2008). The impact of the financial crisis on developing countries. Economics Letters, 113(1), 1-4.

Lu, J. W., & Beamish, P. W. (2004). International diversification and firm performance: The S-curve hypothesis. Academy of management journal, 47(4), 598-609.

Meslier, C., Tacneng, R., & Tarazi, A. (2014). Is bank income diversification beneficial? Evidence from an emerging economy. Journal of International Financial Markets, Institutions and Money, 31, 97-126.

Mizik, N., & Jacobson, R. (2018). 17. Panel data models for evaluating the effectiveness of direct-to-physician pharmaceutical marketing activities. Handbook of Marketing Analytics: Methods and Applications in Marketing Management, Public Policy, and Litigation Support, 402.

Moran, T. H., Görg, H., Seric, A., & Krieger-Boden, C. (2017). How to attract Quality FDI? : Kiel Centre for Globalization (KCG).

Moshirian, F. (2011). The global financial crisis and the evolution of markets, institutions and regulation. Journal of Banking & Finance, 35(3), 502-511.

Nerlove, M. (2005). Essays in panel data econometrics: Cambridge University Press.

Ntim, C. G., & Oseit, K. A. (2011). The impact of corporate board meetings on corporate performance in South Africa. African Review of Economics and Finance, 2(2), 83-103.

Pesaran, M. H. (2015). Time series and panel data econometrics: Oxford University Press.

Ponnu, C. H. (2008). Corporate governance structures and the performance of Malaysian public listed companies. International Review of Business Research Papers, 4(2), 217-230.

Popov, A., & Udell, G. F. (2012). Cross-border banking, credit access, and the financial crisis. Journal of international economics, 87(1), 147-161.

Puri, M. (1996). Commercial banks in investment banking conflict of interest or certification role? Journal of financial economics, 40(3), 373-401.

Reinhart, C. M., & Rogoff, K. S. (2008). Is the 2007 US sub-prime financial crisis so different? An international historical comparison. American Economic Review, 98(2), 339-344.

Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a Time of Debt. American Economic Review, 100(2), 573-578.

San Ong, T., & Gan, S. S. (2013). Do Family-Owned Banks Perform Better? A Study of Malaysian Banking Industry. Asian Social Science, 9(7), p124.

San, O. T., & Heng, T. B. (2011). Capital structure and corporate performance of Malaysian construction sector. International Journal of Humanities and Social Science, 1(2), 28-36.

Santomero, A. M., & Chung, E.-J. (1992). Evidence in support of broader bank powers (Vol. 1): Blackwell.

Shrieves, R. E., & Dahl, D. (1992). The relationship between risk and capital in commercial banks. Journal of Banking & Finance, 16(2), 439-457.

Stiroh, K. J. (2004a). Diversification in banking: Is noninterest income the answer? Journal of Money, Credit and Banking, 853-882.

Stiroh, K. J. (2004b). Do community banks benefit from diversification? Journal of Financial Services Research, 25(2-3), 135-160.

Stiroh, K. J. (2006). A portfolio view of banking with interest and noninterest activities. Journal of Money, Credit, and Banking, 38(5), 1351-1361.

Stiroh, K. J. (2012). Revenue Shifts and Performance of US Bank Holding Companies. Journal of banking & finance, 30(8), 2131-2161.

Stiroh, K. J., & Rumble, A. (2006). The dark side of diversification: The case of US financial holding companies. Journal of Banking & Finance, 30(8), 2131-2161.

Sufian, F., & Habibullah, M. S. (2009a). Bank specific and macroeconomic determinants of bank profitability: empirical evidence from the China banking sector. Frontiers of Economics in China, 4(2), 274-291.

Sufian, F., & Habibullah, M. S. (2009b). Determinants of bank profitability in a developing economy: Empirical evidence from Bangladesh. Journal of business economics and management, 10(3), 207-217.

Templeton, W. K., & Severiens, J. T. (1992). The effect of nonbank diversification on bank holding company risk. Quarterly Journal of Business and Economics, 3-17.

Uzhegova, O. (2010). The relative importance of bank-specific factors for bank profitability in developing economies. Mediterranean Journal of Social Sciences, 6(3), 277-288.

Webb, I., & Martin, G. (2017). The effect of banking and insurance on the growth of capital and output.

Werner, R. A. (2014). Can banks individually create money out of nothing?—The theories and the empirical evidence. International Review of Financial Analysis, 36, 1-19.

Zahavi, T., & Lavie, D. (2013). Intra- industry diversification and firm performance. Strategic Management Journal, 34(8), 978-998.

Zulkafli, A. H., & Samad, F. A. (2007). Corporate governance and performance of banking firms: evidence from Asian emerging markets. Advances in Financial Economics, 12, 49-74.