INCOME DIVERSIFICATION AND BANK PERFORMANCE IN DUAL BANKING SYSTEM

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DECLARATION

I hereby declare that:

(1) This Research Project is the end result of my own work and that due acknowledgement has been given in the references to all sources of information be they printed, electronic or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

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ABSTRACT

Bank in most countries is increasingly performing non-traditional bank activities in response to the declining role of financial intermediaries. Islamic bank is expected to follow the trend, sooner or later. However, non-traditional bank activities are limited to Islamic bank due to Shariah compliance. The purpose of this research is to examine competitiveness of non-traditional bank activities in Islamic bank and to find out whether it is as competitive as those in conventional bank. Specifically, this research examines the impact of non-traditional bank activities on profitability of Islamic bank and conventional bank across three performance stage, i.e. less profitable bank, average profitable bank and more profitable bank by using quantile regression. Within the same performance stage, the impact of non-traditional bank activities on profitability of Islamic banks and conventional banks are compared. Results show that income generated from the existing non-traditional bank activities permissible by Shariah has no impact on the profitability of Islamic bank. However, diversification effect, as a consequence of change in non-financing income share relative to financing income share, reduces profitability of Islamic bank when the bank is less profitable. On the other hand, conventional bank benefit from non-traditional bank activities either directly from the increase of non-interest income or diversification effect depends whether the bank is more profitable or less profitable. As a result, it is concludes that non-traditional bank activities permissible by Shariah is less competitive than those in conventional bank. The findings call for more profitable financial innovation in Islamic bank.

CHAPTER 1

INTRODUCTION

This chapter provides introduction for this research. It consists of four sections. First section provides background of the research which discusses the trend of activities in banking industry. Then it reviews the development of Malaysian financial market before look into what is Islamic bank, its history and competition intensity of the industry. Second section identifies some of the problems in existing literature that examine impact of non-traditional bank activities on bank profitability. Then research objective and questions are set in the next section. Fourth section provides justification of the research and the chapter ends with a research outline.

1.1 Background of the Research

1.1.1 Trends of Banking Activities

Traditionally, activities in commercial bank are mainly accepting deposits and offering loans. However, such traditional intermediary activities have been declining in recent decades. Instead, there is an increase of non-traditional bank activities such as brokerage, corporate advisory, financing syndications, portfolio management, remittance, underwriting, wealth management and other off-balance sheet items (Allen & Santomero, 2001; Edwards & Mishkin, 1995).

The trend of declining traditional intermediary activities and increasing non-traditional bank activities in commercial bank is driven by the changes in economic, regulatory, technical and financial innovations. These changes have increased the competition in financial markets and eroded the importance of bank

as financial intermediary which in turn reduce profitability prospect of traditional intermediary activities.

Changes in economic, regulation, technical and financial innovation have fuelled the competition in financial markets. Rise in inflation has made investors more sensitive to interest rates, and began to switch their deposits to higher yield investment such as mutual funds. This process is known as disintermediation (Edwards & Mishkin, 1995). Besides, regulation, technical and financial innovation have blurred the competition boundaries between banking institution and non-bank institution. Thus, banking institution has to compete with non-bank institution as well.

High level of competition in financial market has reduced bargaining power of commercial bank. Depositor and borrower are now able to choose from many alternative sources of investment and financing. As a result, cost advantage of commercial bank in funding and its position in loan market has reduced (Edwards & Mishkin, 1995). In United States, lending business of commercial bank has been losing ground to other financial intermediaries such as finance companies and securities markets (Allen & Santomero, 2001). To be competitive, banks have to keep their lending rates low while attracting funds with higher deposit rates. However, such action has resulted decline the interest margin. Annualized net interest margin in U.S. financial institution has dropped from 4.44 per cent in 1992 to 2.66 per cent in 2013 (Federal Reserve Bank of New York, 2013).

The role of the bank as financial intermediary has been diminishing. Advancement in information processing and telecommunication has reduced transaction costs and asymmetric information. Transaction costs and asymmetric information are the two essential elements that serve the central of capital market imperfection in intermediary theory, which is also the reason for financial intermediaries to exist (Allen & Santomero, 2001). However, the improved information technology has made evaluation of securities quality easier for households and corporations, thus business firms can borrow directly from public by issuing securities instead of relying on financial intermediaries (Edwards & Mishkin, 1995).

To face the declining profitability prospect of traditional bank activities, banks are increasingly involved in non-traditional bank activities. Product of technical and financial innovation, such as securitization, has changed bank's traditional source of income to non-traditional source of income. For example, instead of holding loan initiated to receive interest income, banks securitized it for originating fee (and possible servicing fees) to gain access for liquidity (Kaufman & Mote, 1994). In United States, non-interest income (as percentage of net operating revenue) has increased from 32.58 per cent in 1992 to 47.88 per cent (Federal Reserve Bank of New York, 2013). Besides United States, the trends of interest income declining and non-interest income increasing are also found in European Union (European Central Bank, 2000) and Canada (Calmès & Liu, 2009).

1.1.2 Financial Market Development in Malaysia

Financial markets in Malaysia have experienced a dramatically changes over the last decade, driven by two Masterplans initiated in 2001 (i.e. Financial Sector Masterplan and Capital Market Masterplan). Triggered by Asian financial crisis in 1997 to 1998, as well as the needs to strengthen domestic banks in facing the trends of globalization and liberalization, Financial Sector Masterplan has been implemented. One of the remarkable changes is the bank consolidation and rationalization. Prior to this, the banking system in Malaysia are fragmented (Table 1). In 1999, there were 34 commercial banks, 32 finance companies, 12 merchant banks, 5 universal brokers, 7 discount houses and 2 Islamic banks. Through consolidation and rationalization, finance companies have merged with commercial banks while discount houses, merchant banks, stock broking companies and universal brokers are merged and become investment banks. Upon completion of the process in 2007, there were 22 commercial banks, 14 investment banks, 11 Islamic banks and a universal broker. At the end of 2013, commercial banks and Islamic bank increased to 27 banks and 16 banks respectively, and Investment banks declined to 12 banks.

Table 1: Malaysia Banking Sector: Number of Players

Banking institution	1999	2007	2013
Commercial bank	34	22	27
Finance companies	32	-	-
Investment bank/ Merchant bank	12	14	12
Universal broker	5	1	-
Discount house	7	-	-
Islamic bank	2	11	16

Note. Adapted from Bank Negara Malaysia. (2007). *Financial stability and payment systems report 2007* and Bank Negara Malaysia. (2014). *Monthly statistical bulletin Dec 2013* [Data file, List of Banking Institutions].

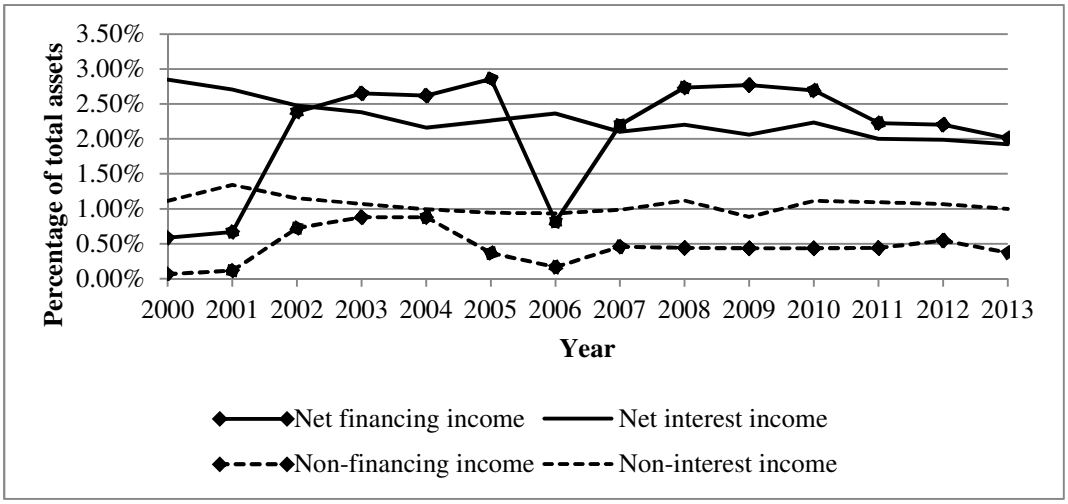
The increased number of players was due to the implementation of second and third phase of Financial Sector Masterplan. Second phase of Financial Sector Masterplan, which kick off in 2005, began to fuel competition level in Malaysia banking industry with the relax of foreign ownership limits, branching liberalization, establishment of shared Automated Teller Machines network for Hongkong and Shanghai Banking Corporation, Oversea-Chinese Banking Corporation, United Overseas Bank and Standard Chartered Bank incorporated in Malaysia, namely "HOUSe" and others (Bank Negara Malaysia [BNM], 2005a, 2006). Third phase of Financial Sector Masterplan started in 2008 introduced new foreign competition into the market by approving five new commercial banking licenses for foreign financial institutions in 2010 (BNM, 2010).

The development in the capital market has provided an alternative source of investment and financing for investors and borrowers. In the mid-1990, most of the firms were on relying bank finance to fund their investment project (Securities Commission Malaysia, 2011). However, in 2013, 61.5 per cent of total corporate financing was financed from debt securities market as compared to 36 per cent in 1999 (BNM, 2013c, 2007). There is also a change in the assets structure held by household. From 2002 to 2013, the percentage of unit trust (mutual fund) and equity has increased from 13 per cent to 20 per cent while deposits declined from 21 per cent to 19 per cent over the years (BNM, 2013a). This suggested the declining role of bank as financial intermediaries in Malaysia.

Figure 1 display trends of traditional bank income (i.e. net financing income in Islamic bank and net interest income in conventional bank) and non-traditional bank income (i.e. non-financing income in Islamic bank and non-interest income

in conventional bank) from year 2000 to 2013. The trends show that, as a percentage of total assets, net financing income in Islamic bank have been increasing from 2000 to 2005, peak at 2.86 per cent before plummet to 0.82 per cent. The plummet of net financing income could attribute to the transformation of Islamic window in several conventional banks into Islamic subsidiary, as well as entry of foreign Islamic bank in 2005 and 2006, which increased the number of player in the industry. Net financing income then rocket in 2007 and reach a new peak of 2.77 per cent in 2009 before declined to 1.92 per cent in 2013. As for conventional bank, net interest income as percentage of total assets declined from 2.85 per cent in 2000 to 1.92 per cent in 2013. Therefore, the decline of traditional intermediary activities in Islamic bank is less obvious than conventional bank.

Figure 1: Traditional and Non-traditional Source of Income



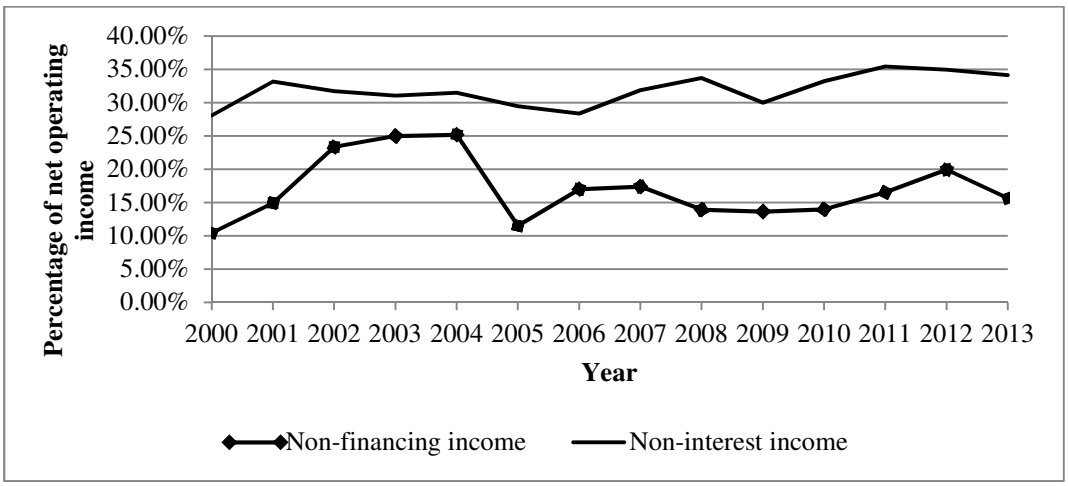
Note. Adapted from Bank Negara Malaysia's annual reports from 2000 to 2013.

As for non-traditional bank activities, non-financing income in Islamic bank shows similar trends like financing income at lower percentage of total assets before year 2007. However, after 2007, non-financing income in Islamic bank total assets remain relatively constant until 2011 before slight fluctuation in year 2012 and 2013. Non-interest income, on the other hand, shows quite stable since 2002 until 2013 with little fluctuation in 2009 due to the bankruptcy of Lehman Brothers.

Figure 2 displays an alternative view on the trends of non-traditional bank activities in Islamic bank and conventional bank from year 2000 to 2013. Non-

financing income has been increasing from year 2000 to 2004 at 25.20 per cent of net operating income (sum of financing income and non-financing income). Then, it hit a low point of 11.50 per cent in 2005 after transformation of Islamic window in several conventional banks into Islamic subsidiary and the entry of foreign Islamic bank in 2005 and 2006. After that, non-financing income reached a new peak in 2012 at 19.95 per cent before dropped to 15.65 per cent in 2013. As for conventional bank, non-interest income declined from 33.18 per cent in 2001 to 28.36 per cent in 2006. Then it increase rapidly to 34.11 per cent in 2013. Apparently, there is increasing non-traditional bank activities in both Islamic bank and conventional bank after 2005.

Figure 2: Non-traditional Income of Islamic Bank and Conventional Bank



Note. Adapted from Bank Negara Malaysia's annual reports from 2000 to 2013.

1.1.3 Islamic Banking in Malaysia

Islamic bank is a financial intermediary designed to comply Shariah principle with primary goal to serve the financial needs of Muslims. Shariah principle restricts Muslims from participating in any transaction that involves *riba*, an Arabic word which literally means interest. The acceptance of *riba* is deemed as an act of oppression, whereby it takes advantage of other needs and circumstances to immorally take their money (Botiş, 2013). Shariah prohibit *riba* that is pre-determined return on financial investment. Therefore, instead of pre-determined rate of interest, the ideal model of Islamic bank apply rate of return that depends

on profitability. This created the distinct feature of Islamic bank that is based on profit and loss sharing paradigm.

Under this paradigm, profit and loss are shared among borrowers, depositors as well as the bank. Depositors act as capital provider, provide funds to bank who act as entrepreneur to invest on quality investment. In turn, bank act as capital provider and provides funds to borrowers who will act as entrepreneur in managing the investment project. If the project succeeds, borrower will share the profit on a pre-determined sharing ratio with depositors. However, if the project suffers losses, it will be fully or partially borne by the bank, which will in turn transfer the losses fully or partially to depositors. Although depositors bear most of the monetary losses, borrowers and bank are considered losing their time and efforts.

In Malaysia, history of Islamic finance began with the establishment of Lembaga Tabung Haji (Pilgrimage Fund Board). The first full-fledged Islamic bank, Bank Islam Malaysia Berhad, established 20 years later. It has dominated the Islamic banking industry for a decade until Bank Negara Malaysia introduces Interest-free banking scheme, also known as "Islamic window", to increase the number of players. The scheme allows existing banks to offer Islamic products within their institution. This initiative has attracted 50 participants within six years. On 1st October 1999, the second full-fledged Islamic bank has established in the name of Bank Muamalat Malaysia.

The competition between Islamic banks became more intense in conjunction with the bank restructuring as participants of Interest-free banking scheme began to transform their Islamic window into Islamic subsidiaries, as well as the entry of foreign Islamic banks. At the end of 2013, there are 10 domestic Islamic banks and 6 foreign Islamic banks (BNM, 2014). Noman (2002) suggests that currently Islamic bank yet to suffer disintermediation process due to lack of competitive Islamic capital and money market. However, from 2000 to 2013, Islamic capital market has increased from RM 293.7 billion to RM1.54 trillion, which is an annual growth rate of 13.6 per cent (Securities Commission Malaysia, 2011, 2013).

With such a rapid growth of Islamic capital market, it is expected that the role of Islamic bank as financial intermediary would be threatened in near future.

1.2 Problem Statement

As Islamic capital and money market become more competitive, profitability of intermediary activities in Islamic bank are expected to decline, like what has been happening in conventional bank currently (Noman, 2002). Conventional bank has response to the declining profitability in intermediary activities with increase of non-traditional bank activities (Calmès & Liu, 2009; Edwards & Mishkin, 1995; European Central Bank, 2000). However, in order for Islamic bank to follow in conventional bank's footsteps, it has to ensure these activities are Shariah compliant. One implication of the requirement is that fewer instruments are available for Islamic banks to perform such activities as compared to its conventional counterpart. Thus, it is questionable on the competitiveness of non-traditional bank activities in Islamic bank. Specifically, this research questions whether impact of non-traditional bank activities on profitability of Islamic bank is same with those in conventional bank. This issue is important because lack of competitiveness in non-traditional bank activities is expected to threaten a bank business and survival in future (Bahari, 2009; Noman, 2002).

1.3 Research Objective and Research Questions

Objective of this research is to examine the competitiveness of non-traditional bank activities in Islamic banks. To achieve this objective, first, this research examines the impact of non-traditional bank activities on Islamic bank profitability and conventional bank profitability respectively. Then, both impacts are compared in order to assess the competitiveness of non-traditional bank activities in Islamic bank.

To address possible non-constant relationship between non-traditional bank activities and bank profitability across bank performance stage, this research uses

quantile regression to estimates the relationship of non-traditional bank activities and bank profitability at three performance stage: less profitable (quantile 0.25), average profitable (quantile 0.50) and more profitable (quantile 0.75).

This research asks the following questions:

i. Does increase of non-traditional bank activities increase profitability of Islamic bank?
ii. Does increase of non-traditional bank activities increase profitability of conventional bank?
iii. Do changes in profitability of Islamic bank and changes in profitability of conventional bank as a result of increase non-traditional bank activities are the same?

1.4 Justification of the Research

Objective of this research is to examine the competitiveness of non-traditional bank activities in Islamic bank. Due to less competitive in Islamic capital and money market, Islamic bank is temporarily relieved from the pressure of disintermediation (Noman, 2002). However, with the trends of innovation and deregulation, many expect Islamic bank would face the same problem in the future (Bahari, 2009; Iqbal, 2007; Noman, 2002). Therefore, knowing the competitiveness of existing non-traditional bank activities in Islamic bank would help the management to prepare for the upcoming challenge.

This research is similar to Molyneux and Yip (2013), the only study that examine impact of non-traditional bank activities in Islamic bank. However, this research differs in two ways. First, they study the bank in both Malaysia and Gulf Cooperation Council (GCC) countries while this research only focus on Malaysia. Thus, this research provides findings within a uniform environment. Moreover, Shariah interpretation in Malaysia and GCC countries is different, which makes Islamic bank in Malaysia has more non-traditional bank activities than those in GCC countries (Bahari, 2009). Therefore, there is more strategies could be form by Islamic bank in Malaysia to benefit from such activities.

Second, like most of the literature, Molyneux and Yip (2013) use standard linear regression which only describes average behavior of the sample. Motivated by Lee and Li (2012), which finds non-constant behavior of diversification-performance relation in non-financial firm, this research is the first study in the literature of non-traditional bank activities which use quantile regression to provide wider view of the impact of non-traditional bank activities on bank profitability at different quantile of bank profitability distribution.

1.5 Outline of the Research

The remaining structure of this research is as follows: Chapter 2 reviews existing literature, develops hypothesis for the research and displays research framework. Chapter 3 demonstrates the methodology in data collection and empirical analysis. Chapter 4 reports descriptive statistics of the data collected, comparative result and regression result. The chapter also includes interpretation of regression result. Last chapter concludes this research with implications, recommendations and limitation of this research. Suggestion for future research is also provided.

CHAPTER 2

LITERATURE REVIEW

This chapter consists of three sections. First section reviews the literature in non-traditional bank activities, income diversification and bank-specific characteristics. Specifically, bank-specific characteristics include bank size, asset growth, bank financing (bank loan) and bank equity. From the literature reviewed, hypotheses are developed in the next section. Last section of this chapter displays framework of this research.

2.1 Non-traditional Bank Activities

Bank may prefer non-traditional bank activities over financing (lending) activities due to less variable cost, such as income attributable to depositors (interest expense) involved. As a result, an increase of income generated from non-traditional bank activities could translate higher profits than an increase of income generated from financing (lending) activities. However, as compared to financing (lending) activities, most of the non-traditional bank activities incur substantial fixed cost because labour with more experienced and better qualification is required to perform such activities (DeYoung & Roland, 2001). This would make the bank operates with high leverage (fixed-to-variable cost). As a consequence, an income decline will cause bank profits to drop further (DeYoung & Roland, 2001).

In Islamic bank, income generated from non-traditional bank activities is known as “non-financing income” (Bahari, 2009; Molyneux & Yip, 2013) or “non-profit income” (Karakaya & Er, 2013). It is equivalent to non-interest income in

conventional bank (Batchelor & Wadud, 2004). Non-financing (Non-interest) income can be broadly divided into fee income, trading income and other non-financing (non-interest) income. In Islamic bank, fee income is generated from service provided to client, such as safekeeping of savings and current account under *Al-Wadiah* (safekeeping) contract; safekeeping of gold under *Ar-Rahnu* (pawn-broking) contract; securities trading, payment and clearing of cheques, money transfers, purchase and sale of foreign currency and financial advice under *Al-Wakalah* (agency) contract; issuing letters of credit and guarantees under *Al-Kafala* (guarantee) contract (Bahari, 2009; Schaik, 2001). Fees charged should be fixed and reflect costs and efforts (Schaik, 2001). It should not base on transaction size, and repeated service is not allowed to charge without extra costs and efforts incurred (Schaik, 2001).

Islamic bank generates trading income by trading stock (which is a legal form of trust financing) and derivatives trading that is permissible such as commodity derivatives and profit rate swap (Schaik, 2001). However, Islamic bank is prohibited to trade stock and derivatives that involving element of *riba* (interest), *maisir* (gambling and speculation), *gharar* (uncertainties) and *haram* (forbidden) activities such as alcohol and pig farming. These constraints have reduced the number of instruments tradable by Islamic bank, especially derivatives.

Past literature rarely examines the impact of non-traditional bank activities on Islamic bank profitability. Izhar and Asutay (2007) in their examination of internal determinants of Bank Muamalat Indonesia's profitability for the period 1996 to 2001 find service activities have no significant contribution on the bank profitability. Karakaya and Er (2013) incorporate non-profit income generated by Islamic bank into non-interest income generated by conventional bank find income generated from non-traditional activities increase Turkish bank shareholder's return but no effect on the return of bank assets. These findings, however, are not clear with the impact of non-traditional bank activities on Islamic bank profitability as the result is blurred with the impact of conventional non-interest income. Molyneux and Yip (2013), on the other hand, examine and compare the impact of non-financing income on Islamic bank performance and the impact of non-interest income on conventional bank performance. Using

accounting data of Islamic banks in Malaysia and GCC countries (i.e. Saudi Arabia, Kuwait, United Arab Emirates, Bahrain and Qatar) from 1997 to 2009, they find non-financing income as a share of total income improve Islamic bank performance and this impact is no different from those in conventional bank.

Compared to Islamic bank, there is more research on the impact of non-traditional bank activities on conventional bank profitability. However, the empirical findings remain inconsistent despite within the same country. For example, in United States, DeYoung and Rice (2004) measure non-traditional bank activities with non-interest income find positive impact on bank shareholders' return for the period 1989 to 2001 while Stiroh (2004a) using same measurement of non-traditional bank activities and profitability does not find any significant relationship for the period 1978 to 2000. Stiroh (2004b) examine impact of non-interest income on profitability of community bank, "bank with assets less than $300 million (in 1996 dollars) and with no affiliation to another bank through a multi-bank holding company" (Stiroh, 2004b, p. 139), finds non-interest income negatively affects community bank profitability. Instead of using non-interest income, Apergis (2014) measure non-traditional bank activities with sum of a list of off-balance sheet activities: structured asset-backed securities (ABS), collateralized debt obligations (CDOs) backed by loans, CDOs backed by ABS, CDO-squareds, CDO-cubeds, tender-option bonds, asset-backed commercial paper, single-seller mortgage conduits, multi-seller conduits, and single-seller credit card conduits. The results support DeYoung and Rice (2004) that non-traditional bank activities improve bank profitability for the period 2000 to 2013.

Meslier, Tacneng and Tarazi (2014) find that the non-traditional bank activities in emerging countries affect bank profitability differently from those in United States due to the difference in non-interest income structure. Specifically, trading income generated from government securities, private securities, equity securities, commercial papers, derivative instruments, foreign exchange, gold trading and etc. stand almost half of the non-interest income generated by bank in emerging countries. Trading income generated by banks in United States, on the other hand, is less than 10 per cent of non-interest income generated. Since trading activities are least correlated with traditional intermediary activities, according to standard

portfolio theory, it benefit bank via diversification effect. Consistent with this argument, Meslier et al. (2014) find non-traditional bank activities improve bank profitability in Philippine for the period 1999 to 2005.

Lee, Yang and Chang (2014) find that the impact of non-interest activities on profitability is different depends on the type of bank specialization. Specifically, non-interest activities increase cooperative bank and investment bank profitability, but decrease savings bank profitability and no impact on bank holding companies and commercial bank. Commercial bank can further sub-categorize into interest-based (conventional bank) and interest-free (Islamic bank). However, little know about the different impact of non-traditional bank activities between these two groups.

2.2 Income Diversification

As bank performs more non-traditional bank activities, *ceteris paribus*, proportion of non-interest income will increase while proportion of net interest income will decrease in bank's income source portfolio. As a result, income diversification effect will change accordingly. Therefore, it is important to examine the effect of income diversification on bank profitability as a result of non-traditional bank activities increase (Stiroh & Rumble, 2006).

Bank can diversify income source by offering wider range of products and services. More products and services offer will generate more demand, thus expected to earn higher profits. Baele, De Jonghe and Vander Vennet (2007) suggest bank which offer more products and services could obtain more information via these activities, and facilitate across other activities. For example, part of the reasons that European universal bank has superior profit efficiency over other banks because the information gained from corporate insider status allows other activities to be performed more efficiently (Vander Vennet, 2002). Besides sharing information, bank may also share inputs, such as labour and technologies, across various activities thus enjoy economies of scope by lowering operating costs and leveraging fixed costs in the bank (Stiroh, 2004a).

A diversified bank has the potential to enjoy lower funding costs depends on market perception. If market view diversification reduces bank risk, bank would benefit from the increase of its share price and lower costs of debt (Baele et al., 2007; Deng, Elyasiani & Mao, 2007). However, diversification could intensify agency problem and increase conflict of interest among client and activity-areas of bank, thus increase exposure to reputation risk. As a result, share price would decline and costs of debt may increase (Laeven & Levine, 2007; Schmid & Walter, 2009).

Diversification is beneficial when two source of income are less co-varying with each other. Part of the reasons that conventional bank diversify into non-traditional bank activities is due to the believed that non-traditional bank activities is less sensitive to interest rate movement. Although it has been argued that Islamic bank is no different from conventional, that is Islamic bank is also affected by interest rate risk (Adebola, Wan Yusoff & Dahalan, 2011; Chong & Liu, 2009), other macroeconomic factors still affect Islamic bank profitability and conventional bank profitability differently. For example, in Malaysia, economic growth positively affects Islamic bank profitability (Wasiuzzaman & Ahmad Tarmizi, 2010) while negatively affects conventional bank profitability (Sufian, 2009). Therefore, the degree of covariance between intermediary income and non-traditional bank activities in Islamic bank is expected to differ from those in conventional bank. As a result, it is expected to produce different diversification effect on Islamic bank profitability.

Income diversification in Islamic bank is also rarely being examined. Shaban, Duygun, Anwar and Akbar (2014) find income diversification lower cost and profit efficiency of Islamic bank in Indonesia. They conclude that Islamic banks may lack of expertise in monitoring different source of income, thus result in less efficient in resources allocation. Molyneux and Yip (2013) also find part of the gains from non-financing income in Islamic bank has been offset by the diversification effect.

2.3 Bank-specific Characteristics

2.3.1 Bank Size

Many factors that affect bank profitability are closely related to bank size (Dermiguc-Kunt & Huizinga, 2000). Bank operates differently in terms of costs, products and risk diversification across size. A positive relationship between size and profitability is supported by the theory of economies of scale. Large bank tends to have better resources in terms of quantity and quality. For example, staffs with more experience and better qualification tend to work for large bank, and advance technology tend to acquire by large bank. With more resources, large bank is in better position to finance more profitable investment to generate higher returns, better accessibility of different business lines for diversification opportunities, and acquire latest technology to reduce operating costs (Rozzani & Rahman, 2013). Also, large bank tends to have less expensive capital funding costs (Short, 1979).

Literature on bank size and efficiency suggests gains from economies of scale is limited (Amel, Barnes, Panetta & Salleo, 2004; Delis & Papanikolaou, 2009). The positive effect of bank size may up to certain limit, which beyond that, could lead to negative impact on bank performance (Amel et al., 2004; Athanasoglou, Brissimis & Delis, 2008). This suggests a non-linear function of bank size (Eichengreen & Gibson, 2001). This may be due to managing complexity and bureaucracy in large institutions (Amel et al. 2004; Flamini, McDonald & Schumacher, 2009; Nigmonov, 2010). Nigmonov (2010) suggest medium sized bank has better management of available resources, thus better performance.

According to risk-return theory, large bank has lower credit risk due to high diversification, therefore, less returns are expected (Sufian & Habibullah, 2010). External environment also could cause negative relationship between bank size and profitability. A competitive environment, together with the fact that government is less likely to allow big banks to fail, larger bank is less required to profits, therefore, may earn lower profits (e.g. through lower interest rates charged to borrowers). On the other hand, in an environment where processing ‘soft’

information is more important to generate income, larger bank may face lower profitability. Information is considered 'soft' when it cannot be credibly communicated and verifiably documented in report, for example, characteristic of borrower. In such environment, large bank is less operating flexible and difficult to act on 'soft' information regarding their borrowers (Berger, Miller, Petersen, Rajan & Stein, 2005; Chiorazzo, Milani & Salvini, 2008).

Past researches of size effect on Islamic bank profitability remain inconclusive. Using Ordinary Least Squares (OLS), Wasiuzzaman and Ahmad Tarmizi (2010) examine 16 Islamic banks in Malaysia for the period 2005 to 2008 find no significant relationship between bank size and Islamic bank profitability. In contrast, Idris, Asari, Taufik, Salim, Mustaffa and Jusoff (2011) use Generalized Least Square (GLS) on quarterly data derived from annual reports and financial statements of nine Malaysian Islamic bank find bank size is the only factor, among other variables (i.e. capital adequacy, credit risk, liquidity and expense management), that improves Islamic bank profitability.

On the other hand, past researches on conventional bank are quite conclusive that bank size has no impact on conventional bank profitability. Guru, Staunton and Shanmugam (2000) using OLS do not find bank size as a significant determinant of Malaysia commercial bank profitability for the period 1985 to 1998. This finding is supported with the analysis on panel data fixed effect model by Sufian (2009) on Malaysian local and foreign commercial bank for the period 2000 to 2004, and Said and Tumin (2011) on nine local commercial bank for the period 2001 to 2007.

2.3.2 Asset Growth

Growth rate reflects risk preference of a bank. A risk-loving bank has different operating strategies to speed up the growth of bank size (Demirguc-Kunt & Huizinga, 2010; Mercieca, Schaeck & Wolfe, 2007; Meslier et al., 2014; Stiroh & Rumble, 2006)

Growth may improve bank profitability based on the argument of economies of scale, first mover advantages, network externalities and experience curve effects (Steffens, Davidsson & Fitzsimmons, 2009). However, such benefits are difficult to achieve by young bank (Lee, 2014).

Managerial theory, on the other hand, suggests that manager want to maximize growth of the bank because bank size, rather than profit, is more often related to their personnel benefits, such as salaries, non-pecuniary benefits, power and prestige (Goddard, Molyneux & Wilson, 2004; Lee, 2014). This often drives manager's focus away from bank profitability. Moreover, Goddard et al. (2004) suggest that the diversification strategy, that overcome the limited growth in a particular market size, cannot be implemented continuously as there is limits to the rate of success, whereby exceeded would bring profitability decline.

Past research on the impact of non-traditional bank activities on bank performance has been keeping bank growth in control (Chiorazzo et al., 2008; Demirgüç-Kunt & Huizinga, 2010; Lee, Hsieh & Yang, 2014; Mercieca et al., 2007; Meslier et al., 2014; Sanya & Wolfe, 2011; Stiroh & Rumble, 2006). However, the impact of bank growth on bank performance has rarely been examined in Malaysia.

Chunhachinda and Li (2014) and Lee, Yang, et al. (2014) find bank growth improve profitability of bank in Asia, including Afghanistan, Bangladesh, Brunei, Cambodia, China, Hong Kong, India, Indonesia, South Korea, Laos, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, and Vietnam. However, Sanya and Wolfe (2011) find it is detrimental as banks are more likely to diversify indiscriminately and take myopic investment decision to purse rapid growth strategy.

2.3.3 Bank Financing (Bank Loan)

Bank financing (bank loan) is considered as the most risky assets in commercial bank, partly due to its illiquid characteristic. Therefore, the proportion of bank financing (bank loan) in bank asset composition reflects the riskiness of the bank.

An aggressive bank may make more financing (loan) to grow rapidly regardless of its profitability relative to other earnings asset (Stiroh & Rumble, 2006). On the other hand, a conservative bank may diversify its asset composition to other earnings assets such as government securities that also generate financing (interest) income.

Bank financing (bank loan) is the main source of bank income (Sufian, 2009). The more deposits transformed into loans, *ceteris paribus*, the higher financing (interest) margin, and thus higher profits (Wasiuzzaman & Ahmad Tarmizi, 2010). The positive relationship between financing (loan) and profitability is also supported by risk-return theory whereby higher financing (loan) in bank asset composition means fewer funds tied up in liquid investments, therefore, higher profitability can be expected (Eichengreen & Gibson, 2001). However, higher risk may leads to higher funding requirements which may reduce bank profits (Gul, Ishad & Zaman, 2011; Ramadan, Kilani & Kaddumi, 2011).

The relationship between bank financing (bank loan) and bank profitability is subjected to economic condition. Strong economic may enhance the positive relationship due to less default cases whereas weak economic may change the relationship to negative due to high default cases (Sufian, 2009).

In Malaysia, Wasiuzzaman and Ahmad Tarmizi (2010) find positive relationship between bank financing and profitability in Islamic bank for the period 2005 to 2008. In terms of conventional bank in Malaysia, Guru et al. (2000) find bank loan improves profitability during 1985 to 1998. They suggest the investment in securities is less profitable due to volatility in Malaysian stock market, as well as the regulatory constraints imposed on loans to finance securities. This finding is supported by Sufian and Habibullah (2010), with a later period, i.e. 1999 to 2007, after control for economic freedom. Sufian (2009), however, finds loan concentration has negative impact on bank profitability during the period 2000 to 2004.

2.3.4 Bank Equity

Bank equity shows bank's non-apparent risk preference (Mercieca et al., 2007; Meslier et al., 2014). An aggressive bank is more likely to hold less equity to speed up growth (Mercieca et al., 2007; Stiroh & Rumble, 2006) while conservative bank is more likely to hold higher equity (Chiorazzo et al., 2008; Meslier et al., 2014).

Berger (1995) presents a number of hypotheses on positive relationship between equity and bank profitability. Among them are expected bankruptcy costs hypothesis, risk-related barriers-to-entry hypothesis, signaling hypothesis and etc. Expected bankruptcy costs hypothesis suggest increase equity in a lower than optimal capitalized bank will lower interest expenses on uninsured debt, thus improve bank profitability. His empirical findings show that higher equity not only reduces the amount of debt, but also reduce interest rates on uninsured debt. He attributes this finding to the less prospective bankruptcy costs as a result of improved leverage. Risk-related barriers-to-entry hypothesis suggest that higher capitalization provide opportunity for bank to access riskier source of income, such as off-balance-sheet investment, as well as funding, such as uninsured debt. Signaling hypothesis suggests that higher equity provides freedom for bank to decide its portfolio risk. Due to capital adequacy, bank required to increase equity if they intended to increase their portfolio risk in hope to generate higher return (Koehn and Santomero, 1980). Therefore, increase equity gives signaling that bank profitability will increase in future as a result of higher risk exposure.

However, bank may increase equity and reduce portfolio risk together to reduce insolvency risk voluntarily or involuntarily (forced by regulator). Thus, this may be associated with lower expected return (Berger, 1995). In fact, higher equity indicate less risk in the bank whereby according to risk-return theory, lower profitability is expected (Berger, 1995; Eichengreen & Gibson, 2001; Flamini et al., 2009). Higher equity also leads to higher tax because less deductibility interest payment, hence lower after-tax earnings (Berger, 1995). An over-capitalized bank has limited funds to finance more investments thus it may miss some of the opportunity for a higher profits (Goddard et al., 2004).

Past research on Malaysia has been inconsistent with the impact of bank equity on profitability. Wasiuzzaman and Ahmad Tarmizi (2010), using annual data for the period 2005 to 2008, find bank equity negatively affect Islamic banks in Malaysia, but Idris et al. (2011), using quarterly data for the period 2007 to 2009, find equity has no significant effect on Islamic bank in Malaysia.

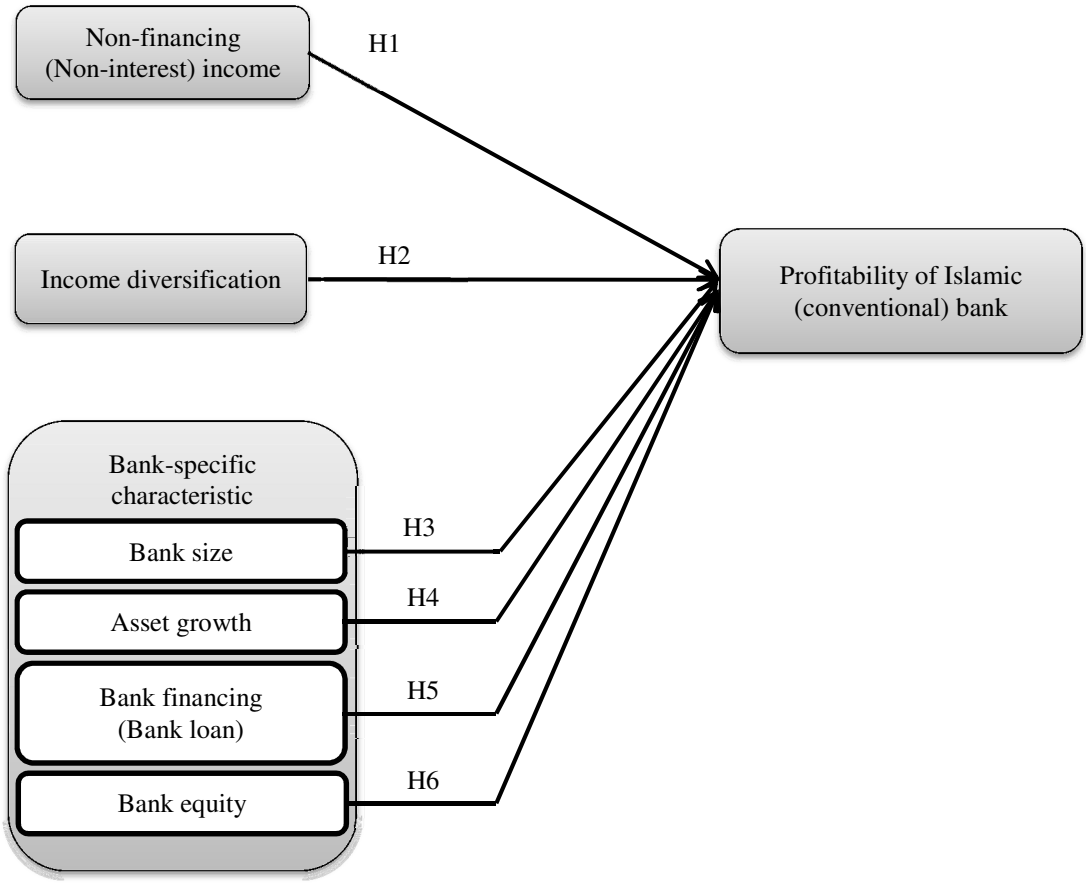
Likewise, in conventional bank, Guru et al. (2000) find increase of bank equity reduces bank shareholders' return during 1985 to 1998 while Sufian and Habibullah (2010) find bank equity positively affects bank profitability during 1999 to 2007 after control for economic freedom. The findings of Sufian and Habibullah (2010) are supported by Sufian (2009) for the period 2000 to 2004. Said and Tumin (2011), however, find equity positively affect China bank profitability, but no effect on Malaysia bank profitability for the period 2001 to 2007.

2.4 Research Framework

Figure 3 illustrates the framework of this research. The objective of this research is to examine competitiveness of non-traditional bank activities in Islamic bank. The competitiveness is measured by comparing the impact of non-traditional bank activities on Islamic bank profitability and the impact of non-traditional bank activities on conventional bank profitability. Non-traditional bank activities are measured by non-financing (non-interest) income. Therefore, the impact of non-financing (non-interest) income on bank profitability of Islamic bank and conventional bank is examined.

A change of non-financing (non-interest) income also leads to a change of non-financing (non-interest) income relative to financing (interest) income which in turn cause a different income diversification effect on bank profitability (Stiroh & Rumble, 2006). Therefore, this research takes income diversification into account when examine the impact of non-traditional bank activities on bank profitability.

Figure 3: Research Framework



The impact of non-traditional bank activities on bank profitability is examined by controlling four common bank-specific characteristics. They are bank size, asset growth, bank financing (bank loan), and bank equity. Each impact is tested with respective hypothesis to be discussed in the following section.

2.5 Hypothesis Development

Table 2 summarizes the null hypotheses to be tested in this research and respective expected sign. Hypothesis 1 examines relationship between income generated from non-traditional bank source and bank profitability. Based on studies available in Malaysia, both non-financing income and non-interest income are expected to have positive impact on profitability of Islamic bank and conventional bank respectively. These studies are Sufian (2009) and Sufian and Habibullah (2010) which find bank in Malaysia with higher profitability during

Table 2: Summary of Hypothesis to be Tested

Hypothesis	Null Hypothesis Statement	Expected Sign
Hypothesis 1		
$H1_A$	There is no relationship between non-financing income and profitability of Islamic bank.	+
$H1_B$	There is no relationship between non-interest income and profitability of conventional bank.	+
$H1_C$	There is no different between impact of non-financing income on profitability of Islamic bank and impact of non-interest income on profitability of conventional bank.	<
Hypothesis 2		
$H2_A$	There is no relationship between income diversification and profitability of Islamic bank.	-
$H2_B$	There is no relationship between income diversification and profitability of conventional bank.	+
$H2_C$	There is no different between impact of income diversification on profitability of Islamic bank and impact of income diversification on profitability of conventional bank.	<
Hypothesis 3		
$H3_A$	There is no relationship between bank size and profitability of Islamic bank.	+
$H3_B$	There is no relationship between bank size and profitability of conventional bank.	+
$H3_C$	There is no different between impact of bank size on profitability of Islamic bank and impact of bank size on profitability of conventional bank.	=
Hypothesis 4		
$H4_A$	There is no relationship between asset growth and profitability of Islamic bank.	-
$H4_B$	There is no relationship between asset growth and profitability of conventional bank.	+
$H4_C$	There is no different between impact of asset growth on profitability of Islamic bank and impact of asset growth on profitability of conventional bank.	<
Hypothesis 5		
$H5_A$	There is no relationship between financing assets and profitability of Islamic bank.	+
$H5_B$	There is no relationship between loan assets and profitability of conventional bank.	+
$H5_C$	There is no different between impact of financing assets on profitability of Islamic bank and impact of loan assets on profitability of conventional bank.	=
Hypothesis 6		
$H6_A$	There is no relationship between bank equity and profitability of Islamic bank.	-
$H6_B$	There is no relationship between bank equity and profitability of conventional bank.	+
$H6_C$	There is no different between impact of bank equity on profitability of Islamic bank and impact of bank equity on profitability of conventional bank.	<

period 2000 to 2004 and 1999 to 2007 respectively tend to have higher share of income from non-traditional sources. However, Karim and Chan (2007) do not find any significant impact arise from off-balance sheet activities on bank shareholders' return in Malaysia for the period 1995 to 2005.

Due to Shariah compliance, non-traditional bank activities permissible in Islamic bank are lesser as compared to conventional bank. Moreover, Islamic bank is not supposed to charge fees for non-traditional bank service based on transaction size and repeated service, like conventional bank does, if not extra costs and efforts incurred (Schaik, 2001). These constraints are expected to cause non-traditional bank activities in Islamic bank less beneficial as compared to conventional bank.

Hypothesis 2 examines relationship between income diversification and bank profitability. Among non-traditional bank activities, Meslier et al. (2014) suggest trading activities are less correlated with traditional intermediary activities, thus, according to standard portfolio theory, bank profitability gained from the income diversification effect. However, most of the trading activities involve element of *riba*, *gharar* or *haram* activities. Consequently, Islamic bank may have limited scope of trading activities to benefit from income diversification. On the other hand, Shaban et al. (2014) find income diversification in Islamic bank lower cost and profit efficiency. They suggest Islamic bank may lack of expertise in monitoring different source of income. Molyneux and Yip (2013) also find part of the gains from non-financing income in Islamic bank has been offset by the indirect diversification effect. Therefore, it is expected income diversification has a negative impact on profitability of Islamic bank.

Unlike Islamic bank, trading activities are likely to play an important role in non-traditional bank activities of conventional bank in Malaysia because Karim and Chan (2007) find off-balance sheet activities significantly influence the market risk of conventional bank in Malaysia. Therefore, when both source of income (traditional and non-traditional source) is evenly diversified, it is expected to increase profitability of conventional bank in Malaysia. So, Islamic bank is expected to less benefit from income diversification as compared to conventional bank.

Hypothesis 3 examines the relationship between bank size and bank profitability. Theory of economies of scale suggest bank profitability improve as size increase. Since large bank tend to have better resources in terms of quantity and quality, they are in better position to generate higher profitability than a small bank.

Therefore, it is expected that size has a positive impact on bank profitability, and that, the impact is no different between Islamic bank and conventional bank. However, empirical findings mostly suggest size do not affect Islamic bank profitability or conventional bank profitability in Malaysia (Guru et al., 2000; Said & Tumin, 2011; Sufian, 2009; Wasiuzzaman & Ahmad Tarmizi, 2010).

Hypothesis 4 examines the relationship between asset growth and bank profitability. Normally, a growing bank will be more profitable (Eichengreen & Gibson, 2001). However, if manager pursue its own interest, in managerial theory, asset growth would has a negative impact on bank profitability. Chunhachinda and Li (2014) and Lee, Yang, et al. (2014) find that bank growth positively improve bank profitability. Based on Lee (2014) argument, growth is more likely to benefit an established bank than young bank. As compared to conventional bank, Islamic bank is relatively young. Therefore, it is expected that asset growth has a negative impact on Islamic bank profitability while positive impact on conventional bank profitability. So, asset growth is expected to less benefit Islamic bank than conventional bank.

Hypothesis 5 examines the relationship between financing (loan) assets and bank profitability. Financing (loan) is Islamic (conventional) bank's main source of income. It is riskier and therefore higher rate of return than other bank assets, such as government securities, that generates financing (interest) income. Therefore, it is expected that higher share of financing (loan) in bank asset composition will lead to higher bank profitability. Empirical studies in Malaysia have mostly support the positive relationship between financing (loan) and bank profitability for both Islamic bank and conventional bank (Guru et al., 2000; Sufian and Habibullah, 2010; Wasiuzzaman & Ahmad Tarmizi, 2010). The impact is expected no different between Islamic bank and conventional bank.

Hypothesis 6 examines the relationship between bank equity and bank profitability. Well-capitalized bank may enjoy higher profitability via low interest expenses on uninsured debt and more opportunity to access risky source of income and funding, whereby risk-return theory suggests these sources tend to increase bank profitability (Berger, 1995). The increase of bank equity also

provides signal that the bank is prepared for riskier portfolio to increase its profitability. However, over-capitalized bank may have lower profitability due to limited funds for profitable investment. Therefore, whether equity could improve bank profitability depends on the adequacy. Islamic bank tend to be less risky than conventional bank. Therefore, it is expected that higher equity will reduce profitability of Islamic bank while increase profitability of conventional bank. Wasiuzzaman and Ahmad Tarmizi (2010) find bank equity negatively affect Islamic bank in Malaysia for the period 2005 to 2008 while Sufian (2009) and Sufian and Habibullah (2010) find profitability of conventional bank in Malaysia increase as a result of equity increase between the period 2000 to 2007. Thus, the impact of equity on bank profitability is expected to be different between Islamic bank and conventional bank.

2.6 Summary

An increase of non-traditional bank activities is expected to translate into higher bank profitability as compared to an increase of lending activities due to the relatively less variable cost such as interest expenses (DeYoung & Roland, 2001). Non-traditional bank activities in Islamic bank are limited due to the need to comply Shariah whereby activities that involve element of interest, gambling and speculation, uncertainties and forbidden are prohibited. Currently, Islamic bank generate non-financing income via safekeeping, pawn-broking, agency and guarantees contract. These contracts allow Islamic bank to generate non-financing income from safekeeping of savings and current account; safekeeping of gold; provides services such as securities trading, payment and clearing of cheques, money transfers, purchase and sale of foreign currency and financial advice; and issues letters of credit and guarantees. However, the impact of non-traditional bank activities on Islamic bank profitability is rarely examined by past research.

Stiroh and Rumble (2006) suggest the increase of non-traditional bank activities will affect bank profitability via two channels: direct exposure from the increased non-interest income and indirect diversification effect from the changes in non-interest income relative to interest income. Also, literature of four bank-specific

characteristics, specifically bank size, asset growth, Islamic bank financing or conventional bank loan, as well as bank equity, appear to influence bank profitability significantly. Therefore, their impact on bank profitability is of important consideration in examining the impact of non-traditional bank activities.

Framework of this research is form by profitability of Islamic bank and conventional bank that is affected by non-financing income and non-interest income respectively, as well as effect of income diversification. Other bank-specific characteristics, such as bank size, asset growth, Islamic bank financing or conventional bank loan, and bank equity also taken into consideration to control its effect on bank profitability. Six hypotheses have developed to test for the impact of non-traditional bank activities, as well as bank-specific characteristics, on bank profitability. Hypotheses also include impact comparison between Islamic bank and conventional bank.

CHAPTER 3

RESEARCH METHOD

This chapter discusses data and methodology employed for this research. It consists of five sections. First section discusses about the research setting taken place and why Malaysia is being chosen to examine the impact of non-traditional bank activities. Second section discusses about the sample used in this research and why Islamic window is excluded from sample selection. Third and fourth section explain data collected and how variables being computed respectively. Last section shows methodology used in this research.

3.1 Research Setting

This research selects bank in Malaysia to examine and compare the impact of non-traditional bank activities on profitability of Islamic bank and conventional bank. Malaysia provides an interesting context to perform this research. First, it has a dual-banking system, that is Islamic bank and conventional bank operates side-by-side. This allows the impact of non-traditional bank activities on profitability of Islamic bank and conventional bank to be examined within a uniform environment. Second, Malaysia is the leading international hub for Islamic finance (BNM, 2011). The success of Islamic bank is of great concern to the country. Third, Malaysia, as compared to GCC countries, is less rigid in Shariah interpretation (Ghoul, 2008; Khan & Bhatti, 2008). As a result, the Islamic bank in Malaysia has more products to perform more non-traditional bank activities (Bahari, 2009). Therefore, Islamic and conventional banks in Malaysia are much closely alike. A difference found in such setting implies a strong influence of Shariah-compliant in Islamic bank operation despite the liberal in Shariah interpretation.

3.2 Sample Used

The sample used includes Islamic bank and conventional bank. For Islamic bank, this research only considers full-fledged Islamic bank and Islamic banking subsidiaries while disregard Islamic windows within conventional bank. The reason is because the practice of Islamic window is only serves as an addendum within greater organization framework of conventional bank (Molyneux & Yip, 2013). As a result, the decision to diversify may only reflect management's intention to improve conventional bank performance. Moreover, unlike full-fledged Islamic bank and Islamic banking subsidiaries which comes under governance of Islamic Banking Act 1983, Islamic window comes under governance of Banking and Financial Institution Act 1989 that prohibits bank to involve activities such as insurance, stock broking and other non-traditional bank activities (Bahari, 2009; Sufian 2010). By excluding Islamic window, all Islamic banks in the sample have equal opportunity to involve all available non-traditional bank activities that is permitted by Shariah.

The sample period of this research starts from 2008 because close to one-third (six out of 16) of the Islamic bank today only begin operation after 2007 (refer to Appendix A). The sample period end with 2013, therefore, there is a total duration of 5 years. At the end of 2013, there are 16 Islamic banks and 27 conventional banks.

3.3 Data Collection

This research uses quarterly data to analyze the impact of non-traditional bank activities on bank profitability. There are two reasons why this research uses quarterly data. First, the short sample period and limited number of Islamic bank operates in Malaysia would leads to small sample size if annual data employed. Second, small sample size makes the number of observations at departure from central region, such as quantile 0.25 and quantile 0.75, even less. Thus may reduce the explaining power of the variables.

All quarterly data are collected manually from interim report that is available from respective bank's website. For Islamic bank, data collected includes: total assets, financing and total equity from balance sheet; income distributable to depositors and profit (loss) after zakat and taxation from income statements; financing income from general investment deposits, specific investment deposits, other deposits, as well as from shareholders' fund (collectively known as financing income), and other dealing and operating income (collectively known as non-financing income) from explanatory notes. Likewise, for conventional bank, data collected includes: total assets, loan and total equity from balance sheet; interest income, non-interest income, interest expenses as well as profit (loss) after taxation from income statements.

Financing income (interest income) and non-financing income (non-interest income) are to ensured non-negative value to ensure diversification measure bounded from 0 to 0.5 as mentioned in several past researches (Chiorrazzo et al., 2008; Meslier et al., 2014). Data collected then calculated for return to assets (ROA) ratio, share of non-financing income (non-interest income) over net operating income (NFI/ NII), reversed Herfindahl index (DIV), natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing (loan) to assets ratio (FINANCING/ LOAN) and equity-to-assets ratio (EQUITY). Finally, observations with ROA quantile less than 0.01 and more than 0.99 are removed to avoid extreme outliers. The final data consists of 307 Islamic bank-quarter observations and 422 conventional bank-quarter observations.

3.4 Definition of Variables

3.4.1 Measure of Bank Profitability

This research measures bank profitability using ROA. ROA reflects the ability of bank management to utilize the financial and real investment resources to generate profits (Bashir, 2003). Bank profitability is best measured by ROA because, unlike return on equity, it takes financial leverage into account and the

measurement is not distorted by high equity multipliers (Rivard & Thomas, 1997; Flamini et al., 2009). ROA of bank *i* at time *t* is calculated as following:

$$ROA_{it} = \frac{Profit\ (loss)\ after\ zakat\ and\ taxation_{it}}{[(Total\ assets_{it} + total\ assets_{it-1})/2]} \quad (1)$$

A higher ROA ratio indicates higher bank profitability while a lower ROA ratio indicates lower bank profitability.

3.4.2 Measure of Non-traditional Bank Activities

To measure non-traditional bank activities, share of non-financing income in net operating income is used for Islamic bank while share of non-interest income in net operating income is used for convention bank. It is calculated as following:

$$NFI_{it} = \frac{Nonfinancing\ income_{it}}{Net\ operating\ income_{it}} \quad (2)$$

$$NII_{it} = \frac{Noninterest\ income_{it}}{Net\ operating\ income_{it}} \quad (3)$$

A higher $NFI_{it}(NII_{it})$ indicates higher non-traditional bank activities in bank *i* at time *t*.

3.4.3 Measure of Income Diversification

To measure income diversification, some of the researches use Herfindahl-Hirshman index to measure the degree of concentration of bank in a particular source of income (Mercieca et al., 2007; Sanya & Wolfe, 2011; Stiroh, 2004a). It is calculated as following:

$$HHI_{it} = (NET_{it})^2 + (NFI_{it})^2 \quad (4)$$

HHI_{it} is the Herfindahl-Hirshman index that measure the concentration of bank *i* at time *t*. NET_{it} is the share of income generated from traditional intermediary source, calculated as net of financing income and income distributable to depositors over net operating income in Islamic bank (net of interest income and interest expenses over net operating income in conventional bank). NFI_{it} is the share of non-financing income in Islamic bank. For conventional bank NFI_{it} is replaced with NII_{it}. Since all income that is not NET_{it} are NFI_{it} (NII_{it}), to avoid the HHI value always equal to one, NET_{it} and NFI_{it} (NII_{it}) are squared. The higher value of HHI indicates more concentration in one source of income.

By using one minus HHI, one could derive an indicator value ranged from 0.0 to 0.5. This method is used to measure the degree of diversification, instead of concentration, in bank income portfolio. This research uses this measurement following the study of Chiorazzo et al. (2008), Delpachitra and Lester (2013) and Stiroh and Rumble (2006).

$$DIV_{it} = 1 - HHI_{it} \quad (5)$$

DIV_{it} measures the degree of income diversification of bank *i* at time *t*. The value 0.0 indicates bank completely concentrate in single source of income, while value 0.5 indicates bank is evenly split the income between traditional intermediary source and non-traditional source (complete diversification).

3.4.4 Measure of Bank-specific Characteristics

i. Measure of Bank Size

Bank size is included in the regression to control for any systematic differences in profitability across classes (Stiroh & Rumble, 2006; Estes, 2014). It is measured as natural logarithm of total assets. This is similar to the studies of Stiroh (2004a, 2004b), Stiroh and Rumble (2006), Mercieca et al. (2007), Chiorazzo et al. (2008), Demirgüç-Kunt and Huizinga (2010), Sanya and Wolfe (2011), Lee, Hsieh, et al. (2014), and Meslier et al. (2014).

ii. Measure of Asset Growth

Asset growth is included in the regression as a proxy for bank manager's preference for risk taking. It is measured by growth rate of total assets. This is similar to the studies of Stiroh (2004a, 2004b), Stiroh and Rumble (2006), Mercieca et al. (2007), Chiorazzo et al. (2008), Demirgüç-Kunt and Huizinga (2010), Sanya and Wolfe (2011), Lee, Hsieh, et al. (2014), Lee, Yang, et al. (2014), and Meslier et al. (2014).

iii. Measure of Bank Financing (Bank Loan)

Bank financing (bank loan) is included in the regression to control bank lending strategy. This variable also captures the different in the banks' asset portfolio. It is measured as ratio of total financings (loans) to total assets. This variable is adopted in the studies of Stiroh (2004b), Stiroh and Rumble (2006), Mercieca et al. (2007), Chiorazzo et al. (2008), Sanya and Wolfe (2011), Lee, Hsieh, et al. (2014), Lee, Yang, et al. (2014), and Meslier et al. (2014).

iv. Measure of Bank Equity

Bank equity is included in the regression in order to control the degree of financial leverage. It is also shows how well a bank being capitalized as well as bank manager's risk aversion. This variable measured by capitalization ratio measured as the ratio of book value of equity to total assets. This is similar to the studies of Stiroh (2004a, 2004b), Stiroh and Rumble (2006), Mercieca et al. (2007), Chiorazzo et al. (2008), Demirguc-Kunt and Huizinga (2010), Sanya and Wolfe (2011), Lee, Hsieh, et al. (2014), Lee, Yang, et al. (2014), and Meslier et al. (2014).

3.5 Methodology

There are two streams of literatures examining the impact of non-traditional bank activities on bank profitability. One stream considers the indirect diversification effect resulted from the increase of income from non-traditional source relative to

traditional intermediary source (Chiorazzo et al., 2008; Delpachitra & Lester, 2013; Mercieca et al., 2007; Meslier et al., 2014; Sanya & Wolfe, 2011; Stiroh, 2004b; Stiroh & Rumble, 2006). Another stream does not take this effect into account (Apergis, 2014; Calmes & Liu, 2009; Chunhachinda & Li, 2014; DeYoung & Rice, 2004; Lee, Yang, et al., 2014; Stiroh, 2004a). Since this research interested in examine the diversification effect in Islamic bank due to its different model of intermediary activities, this research will follow methodology of former stream.

This research disregards model find in Mercieca et al. (2007) and Stiroh (2004a) because scope of this research does not consider diversification within loan components. Also, model find in Chiorazzo et al. (2008) which apply System Generalized Method of Moments and Sanya and Wolfe (2011) which apply panel regression with fixed effect is not suitable for the quantile regression estimation used in this research.

As a result, following regression equation is adopted from Stiroh and Rumble (2006) and Meslier et al. (2014):

$$ROA_{it} = \alpha_{it} + \beta_1 DIV_{it} + \beta_2 NFI_{it} + \delta Z_{it} + \varepsilon_{it} \quad (6)$$

where ROA_{it} is return on assets. DIV_{it} is measure of diversification between income generated from traditional intermediary source and non-traditional source. NFI_{it} is the share of non-financing income calculated as non-financing income over net operating income. For the regression of conventional bank, NFI_{it} will be replaced with NII_{it} which is the share of non-interest income calculated as non-interest income over net operating income. δZ_{it} is control variables includes bank size (SIZE), asset growth (GROWTH), bank financing (FINANCING) or bank loan (LOAN), and bank equity (EQUITY). To compare the impact of non-traditional bank activities on profitability of Islamic bank and conventional bank, a dummy variable, IB, set equal to one for Islamic bank and zero for conventional bank is added into the equation and interact with all variables.

Past literature mostly estimated equation 6 with ordinary least square (OLS) (Chunhachinda & Li, 2014; Mercieca et al., 2007; Stiroh, 2004b; Stiroh & Rumble, 2006). However, such estimator only estimates the conditional mean effects of a dependent variables, thus only describes average behavior of a sample (Ramdani & van Witteloostuijn, 2010; Lee & Li, 2012). The estimator is silent about the relationship for low- or high-performing bank (Ramdani & van Witteloostuijn, 2010; Lee & Li, 2012). This research is motivated by Lee and Li (2012), which find non-constant relation in diversification-performance of firm, to estimates equation 6 with conditional quantile regression developed by Koenker and Basset (1978). The statistical software used to perform quantile regression in this research is Econometric Views 8 (EViews 8).

Quantile regression could trace the entire distribution of a dependent variable, in this research, bank profitability. This research examines the impact of non-traditional bank activities on three quantiles of bank profitability: quantile 0.25 (less profitable bank), quantile 0.50 (average profitable bank) and quantile 0.75 (more profitable bank). Quantile regression is better in handling violation of the basic assumptions in OLS, such as normality (Ramdani & van Witteloostuijn, 2010). It is also very informative when data are heterogeneous (Fattouh, Scaramozzino & Harris, 2005), and it is robust to outliers and departures from skewed tails (Mata & Machado, 1996; Sula, 2011).

There are two general approaches for the estimation of the covariance matrix of the regression parameter vector: derives the asymptotic standard error of the estimator; bootstrap methods to compute standard errors and construct confidence intervals (Fattouh et al., 2005).

Due to the small sample size available in this research, estimation of standard errors for the coefficients in quantile regression is obtained using design matrix bootstrap method. As recommended by Buchinsky (1995), who based on Monte Carlo study, bootstrap performs well for relatively small sample and it is robust to the changes of bootstrap sample size relative to the data sample size.

One problem in applying design matrix bootstrap is to decide the number of bootstrap repetitions. "Different answers" could be obtained from different replications on the same data if the number of replications is too small, but an extremely large number of replications would be expensive to compute the bootstrap statistic of interest (Andrews & Buchinsky, 2000). While using bootstrap replications of 100 is common in literature, Andrews and Buchinsky (2001) suggest this number is too small. Andrews and Buchinsky (2000) suggest a relatively large number of bootstrap replication should be employed to construct confidence intervals whose length and conditional coverage probability are close to that of the ideal bootstrap confidence interval. Therefore, this research uses bootstrap replications of 1,000.

3.6 Summary

Malaysia is being chosen to conduct this research is because of its unique role in Islamic finance. Dual-banking system in Malaysia allows the impact of non-traditional bank activities to be examined under uniform environment. The liberal in Shariah interpretation makes Islamic bank and conventional bank much closely alike. Moreover, due to its leading position in Islamic finance, competitive of Islamic bank in Malaysia is of great concern.

Sample used in this research includes 16 Islamic banks and 27 conventional banks over the period 2008 to 2013. Only full-fledged Islamic bank and Islamic banking subsidiaries are considered in this research. Due to large sample size required in estimation, quarterly data is manually collected from bank's interim reports. Final data consists of 307 Islamic bank-quarter observations and 422 conventional bank-quarter observations.

A total of seven variables being computed, they are: bank profitability, diversification, share of non-financing income (non-interest income), bank size, asset growth, bank financing (bank loan) and bank equity. To examine the impact of non-traditional bank activities on bank profitability, this research employed quantile regression which provides wider view of bank profitability distribution.

To compare the impact of non-traditional bank activities on profitability of Islamic bank and conventional bank, this research intercept each explanatory variable with a dummy variable to indicate Islamic bank.

CHAPTER 4

RESULTS

This chapter reports and interprets results from quantile regression. It consists of four sections. First section describes statistics of data collected. To understand more about bank characteristic across profitability group, data is divided according to ROA quantile. Variables across bank profitability group are tested for difference across quantile group and between Islamic bank and conventional bank. Before run quantile regression, correlation and variance inflation factor are examined. Second section of this chapter reports results from quantile regression for Islamic bank and conventional bank, as well as comparison between both. Third section is robustness check for Islamic bank in concern of collinearity problem. Final section interprets results for Islamic bank and conventional bank, as well as comparison between the two.

4.1 Descriptive Statistics

Table 3 and Table 4 exhibit descriptive statistics of Islamic bank and conventional bank respectively. Each table consists of descriptive statistics based on all sample (Panel A) and samples grouped by ROA quantile: ROA quantile less than 0.25 indicates less profitable bank (Panel B); ROA quantile between 0.25 and 0.50 indicates below average profitable bank (Panel C); ROA quantile between 0.50 and 0.75 indicates above average profitable bank (Panel D); and ROA quantile more than 0.75 indicates highly profitable bank (Panel E).

Table 3: Descriptive Statistics of Islamic bank

Variable	Mean	Median	Standard Deviation	Minimum	Maximum	Skewness	Shapiro-Wilk
Panel A: All samples (N=307)							
ROA	0.002	0.002	0.002	-0.005	0.005	-1.147	0.934***
NFI	0.132	0.126	0.076	0.006	0.471	0.939	0.951***
DIV	0.218	0.220	0.103	0.011	0.498	0.197	0.988**
SIZE[a]	18,396	11,471	18,601	1,334	125,057	2.530	0.746***
SIZE[b]	16.319	16.255	0.923	14.104	18.644	-0.042	0.993
GROWTH	0.042	0.036	0.094	-0.210	0.527	0.861	0.950***
FINANCING	0.580	0.612	0.123	0.082	0.794	-0.957	0.936***
EQUITY	0.092	0.078	0.044	0.026	0.257	1.593	0.815***
Panel B: ROA quantile less than 0.25 (N=76)							
ROA	-0.0003	0.0002	0.002	-0.005	0.001	-1.449	0.845***
NFI	0.149	0.137	0.075	0.006	0.360	0.744	0.959**
DIV	0.242	0.236	0.099	0.011	0.461	0.108	0.989
SIZE[a]	8,671	6,392	6,772	1,334	33,052	1.544	0.850***
SIZE[b]	15.6897	15.670	0.784	14.104	17.314	-0.135	0.979
GROWTH	0.035	0.046	0.111	-0.210	0.494	0.724	0.956**
FINANCING	0.523	0.539	0.146	0.082	0.717	-1.061	0.918***
EQUITY	0.119	0.104	0.058	0.035	0.257	0.470	0.910***
Panel C: ROA quantile between 0.25 and 0.50 (N=77)							
ROA	0.002	0.002	0.0002	0.001	0.002	-0.185	0.949***
NFI	0.128	0.118	0.072	0.010	0.471	1.565	0.905***
DIV	0.213	0.208	0.094	0.020	0.498	0.252	0.990
SIZE[a]	16,006	11,050	12,488	1,410	52,803	1.384	0.844***
SIZE[b]	16.303	16.218	0.786	14.159	17.782	-0.206	0.981
GROWTH	0.049	0.030	0.104	-0.175	0.527	1.366	0.906***
FINANCING	0.545	0.545	0.115	0.320	0.794	-0.020	0.967**
EQUITY	0.084	0.075	0.043	0.026	0.231	1.878	0.785***
Panel D: ROA quantile between 0.50 and 0.75 (N=77)							
ROA	0.002	0.002	0.0003	0.002	0.003	0.188	0.935***
NFI	0.133	0.126	0.074	0.010	0.424	1.148	0.932***
DIV	0.219	0.220	0.098	0.019	0.488	0.197	0.985
SIZE[a]	26,693	18,116	27,143	1,389	125,057	1.920	0.769***
SIZE[b]	16.654	16.712	0.972	14.144	18.644	-0.013	0.985
GROWTH	0.035	0.042	0.078	-0.204	0.269	-0.068	0.977
FINANCING	0.609	0.648	0.102	0.375	0.773	-0.716	0.910***
EQUITY	0.081	0.079	0.031	0.036	0.237	2.464	0.791***
Panel E: ROA quantile more than 0.75 (N=77)							
ROA	0.004	0.003	0.0006	0.003	0.005	0.884	0.922***
NFI	0.119	0.095	0.082	0.019	0.299	0.696	0.906***
DIV	0.196	0.172	0.116	0.037	0.419	0.395	0.925***
SIZE[a]	22,089	20,020	16,469	2,903	81,263	1.389	0.877***
SIZE[b]	16.621	16.812	0.810	14.881	18.213	-0.284	0.962**
GROWTH	0.049	0.032	0.081	-0.113	0.303	0.939	0.939***
FINANCING	0.643	0.657	0.081	0.439	0.792	-0.610	0.965**
EQUITY	0.082	0.077	0.025	0.040	0.174	1.923	0.795***

Note. This table reports descriptive statistics of Islamic bank. Last column displays results of Shapiro-Wilk test. Null hypothesis for Shapiro-Wilk test is that population of explanatory variables is normally distributed. Variables include bank profitability: return on assets (ROA); Non-traditional bank activities: non-financing income over net operating income (NFI); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), equity-to-assets ratio (EQUITY).

[a] Size measured by ringgit (RM '000,000). [b] Size measured by natural logarithm of total assets

**$p < .05$. ***$p < .01$

Table 4: Descriptive Statistics of Conventional Bank

Variable	Mean	Median	Standard Deviation	Minimum	Maximum	Skewness	Shapiro-Wilk
Panel A: All samples (N=422)							
ROA	0.003	0.003	0.002	-0.004	0.008	-0.883	0.940***
NII	0.349	0.309	0.166	0.021	0.934	1.216	0.913***
DIV	0.400	0.419	0.087	0.040	0.500	-1.212	0.900***
SIZE[a]	53,980	41,674	58,834	400	252,839	1.428	0.817***
SIZE[b]	16.906	17.545	1.628	12.900	19.348	-0.509	0.914***
GROWTH	0.046	0.024	0.176	-0.466	1.790	4.954	0.592***
LOAN	0.485	0.566	0.220	0.000	0.798	-1.031	0.838***
EQUITY	0.120	0.086	0.095	0.036	0.762	3.865	0.594***
Panel B: ROA quantile less than 0.25 (N=105)							
ROA	0.0005	0.001	0.001	-0.004	0.002	-1.143	0.873***
NII	0.345	0.270	0.219	0.021	0.933	1.056	0.900***
DIV	0.358	0.366	0.114	0.040	0.500	-0.713	0.932***
SIZE[a]	18,642	3,446	38,941	400	222,555	3.206	0.502***
SIZE[b]	15.428	15.053	1.489	12.900	19.221	0.831	0.908***
GROWTH	0.083	0.030	0.267	-0.466	1.790	3.128	0.728***
LOAN	0.332	0.352	0.247	0.000	0.722	0.092	0.884***
EQUITY	0.186	0.141	0.151	0.054	0.762	2.387	0.710***
Panel C: ROA quantile between 0.25 and 0.50 (N=106)							
ROA	0.003	0.003	0.0002	0.002	0.003	-0.345	0.956***
NII	0.325	0.292	0.132	0.093	0.934	1.396	0.909***
DIV	0.405	0.410	0.079	0.124	0.500	-1.121	0.907***
SIZE[a]	62,277	45,925	57,026	1,035	234,604	1.233	0.862***
SIZE[b]	17.285	17.643	1.447	13.850	19.273	-0.905	0.867***
GROWTH	0.035	0.023	0.100	-0.179	0.603	2.541	0.759***
LOAN	0.532	0.585	0.163	0.007	0.732	-1.727	0.802***
EQUITY	0.103	0.081	0.057	0.041	0.335	2.057	0.723***
Panel D: ROA quantile between 0.50 and 0.75 (N=106)							
ROA	0.003	0.003	0.0002	0.003	0.004	-0.037	0.958***
NII	0.323	0.309	0.103	0.121	0.841	1.397	0.918***
DIV	0.416	0.426	0.064	0.213	0.500	-0.691	0.938***
SIZE[a]	68,950	52,616	50,444	1,599	247,091	1.285	0.884***
SIZE[b]	17.703	17.779	1.008	14.285	19.325	-1.442	0.856***
GROWTH	0.025	0.027	0.064	-0.144	0.322	1.276	0.872***
LOAN	0.586	0.625	0.130	0.046	0.798	-2.164	0.791***
EQUITY	0.087	0.080	0.029	0.038	0.228	2.848	0.714***
Panel E: ROA quantile more than 0.75 (N=77)							
ROA	0.004	0.004	0.0008	0.004	0.008	1.917	0.805***
NII	0.404	0.357	0.176	0.125	0.919	0.799	0.931***
DIV	0.420	0.428	0.071	0.149	0.500	-1.161	0.898***
SIZE[a]	65,829	45,991	70,302	862	252,839	1.241	0.808***
SIZE[b]	17.195	17.644	1.514	13.667	19.348	-0.508	0.921***
GROWTH	0.041	0.023	0.194	-0.315	1.605	5.661	0.508***
LOAN	0.491	0.540	0.233	0.003	0.785	-1.004	0.837***
EQUITY	0.103	0.078	0.060	0.036	0.386	2.466	0.727***

Note. This table reports descriptive statistics of conventional bank. Last column displays results of Shapiro-Wilk test. Null hypothesis for Shapiro-Wilk test is that population of explanatory variables is normally distributed. Variables include bank profitability: return on assets (ROA); Non-traditional bank activities: non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).

[a] Size measured by ringgit (RM '000,000). [b] Size measured by natural logarithm of total assets

***$p < .01$

4.1.1 Descriptive Statistics of Islamic Bank

Table 3 displays descriptive statistics of Islamic bank. On average, measured by mean (median), ROA of Islamic bank is 0.2 per cent (0.2 per cent). During the sample period, ROA of the most unprofitable bank is -0.5 per cent while ROA of the most profitable bank is 0.5 per cent. Skewness of the ROA distribution is -1.1, that is skewed to the left. This means that when explanatory variables are estimated with standard linear regression, such as OLS, the findings are more likely to describe the impact of explanatory variables on profitability of less profitable Islamic bank and silent about average profitable and more profitable bank.

When grouped by ROA quantile, data shows that less profitable Islamic bank has an average ROA of -0.03 per cent (0.02 per cent). ROA in this group is widely spread out as compared to other groups, as evidence in standard deviation of 0.2 per cent as compared to 0.02 to 0.06 per cent in other groups. The range of ROA is from as low as -0.5 per cent to as high as 0.1 per cent. Among profitability group examined, less profitable Islamic bank has the highest average of NFI, 14.9 per cent (13.7 per cent); DIV, 0.2 (0.2); and EQUITY, 11.9 per cent (10.4 per cent). However, it has the least average of SIZE, RM 8.7 billion (RM 6.4 billion), and FINANCING, 52.3 per cent (53.9 per cent).

On the contrary, highly profitable Islamic bank has an average ROA of 0.4 per cent (0.3 per cent). It has the least average of NFI, 11.9 per cent (9.5 per cent), and DIV, 0.2 (0.2), but highest average of FINANCING, 64.3 per cent (65.7 per cent). The median value suggests highly profitable Islamic bank has the largest average SIZE (RM 20.0 billion) and lowest GROWTH (3.2 per cent) despite above average profitable Islamic bank has highest mean value in SIZE, RM 26.7 billion, and lowest mean value in GROWTH, 3.5 per cent.

Above average profitable Islamic bank also has a lowest mean value of EQUITY, 8.1 per cent, but median value reveals that below average profitable Islamic bank has the least EQUITY (7.5 per cent). On the other hand, below average profitable

Islamic bank has the highest mean value of GROWTH, 4.9 per cent, but less profitable Islamic bank has highest median value of GROWTH (4.6 per cent).

Results of Shapiro-Wilk test indicate that most of the variables in Islamic bank across profitability quantile are not normally distributed. As a result, non-parametric test would be more appropriate for analysis.

4.1.2 Descriptive Statistics of Conventional Bank

Table 4 displays descriptive statistics of conventional bank. The statistics show conventional bank has an average, measured by mean (median), ROA of 0.3 per cent (0.3 per cent). During the sample period, ROA of the most unprofitable bank is -0.4 per cent while ROA for the most profitable bank is 0.8 per cent. Skewness of the ROA distribution is -0.9 that is skewed to the left but value is less than -1. This means that when explanatory variables are estimated with standard linear regression, such as OLS, the findings are more likely to describe the impact of explanatory variables on profitability of below average profitable conventional bank.

When grouped by ROA quantile, less profitable conventional bank has an average ROA of 0.05 per cent (0.1 per cent). ROA in this group is widely spread out as compared to other profitability groups as evidence in its standard deviation of 0.1 per cent as compared to 0.02 to 0.08 per cent in other groups. The range of ROA in this group is from as low as -0.4 per cent to as high as 0.2 per cent. Among the profitability groups examined, this group has the highest average of GROWTH and EQUITY, that is, 8.3 per cent (3.0 per cent) and 18.6 per cent (14.1 per cent) respectively. However, it has the least average of DIV, 0.4 (0.4); SIZE, RM 18.6 billion (RM 3.4 billion); and LOAN, 33.2 per cent (35.2 per cent).

The average ROA in above average profitable and highly profitable conventional bank is 0.3 per cent (0.3 per cent) and 0.4 per cent (0.4 per cent) respectively. While above average profitable has the largest SIZE, RM 69.0 billion (RM 52.6

billion), and LOAN, 58.6 per cent (62.5 per cent), highly profitable conventional bank has the largest NII, 40.4 per cent (35.7 per cent), and DIV, 0.4 (0.4).

In terms of GROWTH and EQUITY, the mean of these variables are lowest in above average profitable conventional bank, 2.5 per cent and 8.7 per cent respectively, while median of these variables are lowest in highly profitable conventional bank (2.3 per cent and 7.8 per cent respectively). The mean value also suggests above average profitable conventional bank has the least NII, 32.3 per cent, but median value suggests below average profitable conventional bank has the least NII (29.2 per cent).

4.1.3 Comparison across Profitability Quantiles

To find out whether explanatory variables are statistically significant different across profitability groups, Kruskal-Wallis test, a non-parametric version of one-way analysis of variance test (one-way ANOVA), is employed since most of the explanatory variables are not normally distributed.

Table 5 presents mean rank of explanatory variables across four profitability groups for Islamic bank (Panel A) and conventional bank (Panel B). Last column of the table shows Chi-square value of Kruskal-Wallis test. The null hypothesis tested is that mean rank of explanatory variables are the same across four profitability groups. The results reject the hypothesis for all variables examined except GROWTH. This means that all variables, except GROWTH, in at least one profitability group are statistically significant different from other groups.

The results in Table 5, however, do not tell which profitability group is different from the others. Hence, Kruskal-Wallis test is again tested for every two profitability groups for all explanatory variables except GROWTH.

Table 5: Kruskal-Wallis Test across Different Profitability Groups

Variable	Quantile				χ^2
	< 0.25	0.25–0.50	0.50–0.75	> 0.75	
Panel A: Islamic bank					
NFI	175.380	150.710	155.950	134.230	8.370**
DIV	175.380	150.710	155.950	134.230	8.370**
SIZE	94.920	153.750	183.350	183.210	50.420***
GROWTH	149.570	157.700	150.990	157.690	0.545
FINANCING	118.570	121.830	174.690	200.450	47.493***
EQUITY	192.320	134.560	144.160	145.470	19.512***
Panel B: Conventional bank					
NII	189.430	199.600	205.730	251.410	15.927***
DIV	166.030	215.410	226.180	238.210	21.274***
SIZE	110.720	235.580	264.580	234.370	99.592***
GROWTH	221.690	211.140	210.190	203.000	1.255
LOAN	138.460	222.380	262.800	221.770	58.001***
EQUITY	293.300	191.670	178.860	182.670	63.499***

Note. This table reports mean rank of variables across ROA quantile groups for Islamic bank (Panel A) and conventional bank (Panel B). Last column displays results of Kruskal-Wallis test. Null hypothesis for Kruskal-Wallis test is that mean ranks of explanatory variable population across ROA quantile groups examined are the same. Variables include non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).
**$p < .05$. ***$p < .01$

Table 6 presents Chi-square statistic of Kruskal-Wallis test between two profitability groups for both Islamic bank and conventional bank. Null hypothesis tested is that the mean ranks of explanatory variable between two ROA quantile groups are the same. The purpose of this test is to find out explanatory variable in which ROA quantile group is statistically different from the others.

In Islamic bank, the results show NFI is only statistically significant different at 1 per cent level between those in less profitable bank and highly profitable bank. There is also little evidence that NFI in less profitable bank is different from those in below average profitable bank. These show that the share of non-financing income in less profitable Islamic bank can be considered rather large. As suggested by Beck, Demirguc-Kunt and Merrouche (2013), Islamic bank may have the incentive to generate more non-financing income to compensate its financing income under profit-loss sharing model. The findings thus suggest less profitable bank intent to compensate the lack of profits in their financing activities with more non-traditional bank activities. DIV exhibits exactly the same results as NFI, possibly due to high correlation between NFI and DIV.

Table 6: Kruskal-Wallis Test between Two Profitability Groups

	Islamic bank			Conventional bank		
Quantile	< 0.25	0.25–0.50	0.50–0.75	< 0.25	0.25–0.50	0.50–0.75
NFI/ NII						
0.25–0.50	3.210*			0.798		
0.50–0.75	2.099	0.171		1.328	0.240	
> 0.75	7.233***	1.623	2.443	10.263***	10.516***	9.159***
DIV						
0.25–0.50	3.210*			9.214***		
0.50–0.75	2.099	0.171		13.248***	0.553	
> 0.75	7.233***	1.623	2.443	16.984***	1.831	0.774
SIZE						
0.25–0.50	19.463***			53.652***		
0.50–0.75	33.917***	4.584**		84.534***	2.614	
> 0.75	37.806***	5.274**	0.067	54.704***	0.004	3.487*
FINANCING/ LOAN						
0.25–0.50	0.123			30.727***		
0.50–0.75	14.849***	14.191***		53.388***	8.254***	
> 0.75	31.620***	30.587***	3.337*	20.050***	0.002	4.258**
EQUITY						
0.25–0.50	13.556***			36.609***		
0.50–0.75	13.315***	0.700		55.048***	0.286	
> 0.75	10.858***	0.859	0.001	35.315***	0.595	0.024

Note. This table reports Chi-square value of Kruskal-Wallis test for Islamic bank and conventional bank across ROA quantile groups. Null hypothesis for Kruskal-Wallis test is that mean ranks of explanatory variable population between two ROA quantile groups are the same. Variables include non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).
*p<.10. **p < .05. ***p < .01

SIZE of Islamic bank is statistically significant larger as the bank is more profitable except those in highly profitable bank is no different from those in above average profitable bank. On the other hand, asset composition of Islamic bank is statistically more concentrated in the form of financing as the bank more profitable except those in less profitable bank is no different from those in below average profitable bank. EQUITY in less profitable Islamic bank is statistically different from any Islamic bank with higher profitability. This reveals that holding large amount of equity is another unique characteristic of less profitable Islamic bank.

In conventional bank, NII in highly profitable group is statistically significant different from all other profitability groups. This reveals a unique characteristic of highly profitable conventional bank in generates more non-interest income than

any other profitability group. DIV, on the other hand, shows that less profitable conventional bank is statistically significant less diversified than conventional bank in other profitability groups. Less profitable conventional bank also shows unique characteristic in terms of SIZE and EQUITY. Particularly, it is statistically significant smaller in size and highly capitalized than conventional bank in other profitability groups.

Asset composition of conventional bank is statistically significantly more concentrated in the form of loan as the bank is more profitable except highly profitable bank is no different from those in below average profitable bank. Like those in below average profitable bank, loan concentration in highly profitable bank is statistically significant less concentrated than those in above average profitable bank.

4.1.4 Comparison between Bank Types

Table 7 compares mean rank between variables of Islamic bank and conventional bank using Mann-Whitney U test, a non-parametric version of independent t-test, across bank profitability group. The null hypothesis tested is that mean rank of Islamic bank variable and conventional bank variable are the same. The purpose of this test is to find out the different characteristic between Islamic bank and conventional bank in different profitability stage.

Results show that profitability of Islamic bank is statistically significant lower than profitability of conventional bank across all profitability group examined. Islamic bank has less share of non-financing income and less diversified between financing income and non-financing income as compared to its counterpart.

In terms of bank-specific characteristics, Islamic bank size is statistically significant smaller than conventional bank size. There is little evidence that highly profitable Islamic bank is more aggressive in asset growth than conventional bank while other profitability groups of Islamic bank do not show any difference from conventional bank in asset growth. Financing is more concentrated in Islamic bank asset composition than loan concentration in conventional bank at less

Table 7: Mann-Whitney U Test between Bank Types

Variable	<0.25			0.25 – 0.50			0.50 – 0.75			>0.75		
	IB	CB	Z-value	IB	CB	Z-value	IB	CB	Z-value	IB	CB	Z-value
Bank Profitability												
ROA	69.980	106.210	-4.592***	39.000	130.500	-11.536***	39.000	130.500	-11.536***	59.140	115.230	-7.096***
Non-traditional bank activities												
NTI/ NII	56.660	115.860	-7.502***	45.090	126.080	-10.210***	44.400	126.580	-10.360***	44.010	126.320	-10.413***
Income diversification												
DIV	61.210	112.560	-6.508***	45.990	125.420	-10.015***	44.700	126.360	-10.295***	45.400	125.300	-10.109***
Bank-specific characteristic												
SIZE	105.240	80.700	-3.110***	64.950	111.650	-5.888***	60.250	115.070	-6.911***	74.340	104.090	-3.764***
GROWTH	89.830	91.850	-0.256	98.140	87.540	-1.337	99.550	86.520	-1.642	100.250	85.090	-1.918*
FINANCING/ LOAN	113.510	74.700	-4.918***	89.560	93.770	-0.531	98.310	87.420	-1.374	111.300	76.980	-4.342***
EQUITY	75.210	102.430	-3.449***	78.260	101.980	-2.991***	83.470	98.200	-1.857*	85.100	96.190	-1.403

Note. This table reports mean rank of variables across ROA quantile groups for Islamic bank (IB) and conventional bank (CB). Last column of each quantile displays result of Mann-Whitney U test (Z-value). Null hypothesis for Mann-Whitney U test is that mean ranks of explanatory variable population between Islamic bank and conventional bank are the same. Variables include bank profitability: return on assets (ROA); Non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).
*p<.10. **p < .05. ***p < .01

profitable level and highly profitable level, while no significant difference in between. Equity in Islamic bank is statistically significant less than equity in conventional bank. This is true despite less profitable Islamic bank group holding statistically significant more equity than other profitability groups of Islamic bank as shown in Section 4.1.3. This means less profitable conventional bank hold even more equity than less profitable Islamic bank. However, the differences become less evidence at above average profitable group and no different found in highly profitable group.

4.1.5 Pearson Correlation

Table 8 presents correlation of Islamic bank variables (Panel A) and conventional bank variables (Panel B). Coefficient sign of correlation establishes relationship between variables and coefficient value suggests how strong the two variables are associated. Generally, a value less than 0.35 means weakly associated, between 0.36 and 0.67 means moderately associated, and more than 0.68 means strongly associated (Taylor, 1990).

Accordingly, ROA of Islamic bank and conventional bank are moderately positive associated with SIZE and negative associated with EQUITY. In addition, ROA of Islamic bank is moderately positive associated with FINANCING while ROA of conventional bank is weakly associated with LOAN. The relatively weak linkage of profitability and conventional bank loan, as compared to profitability and Islamic bank financing, suggests profitability prospect of conventional bank lending activities is declining.

NFI and NII are both negatively associated with FINANCING and LOAN respectively. These results suggest a substitute relationship of non-traditional bank activities and traditional lending activities. NFI and FINANCING are weakly associated while NII and LOAN are moderately associated. This means that the increase of non-traditional bank activities in conventional bank is more related to the replacing of traditional bank lending activities and vice-versa.

Table 8: Correlation Matrix

Variable	ROA	NFI/NII	DIV	SIZE	GROWTH	FINANCING/ LOAN	EQUITY
Panel A: Islamic bank							
ROA	1.000						
NFI	-0.181**	1.000					
DIV	-0.191**	0.983**	1.000				
SIZE	0.423**	-0.167**	-0.135*	1.000			
GROWTH	0.033	-0.114*	-0.117*	0.102	1.000		
FINANCING	0.370**	-0.160**	-0.148**	0.360**	-0.015	1.000	
EQUITY	-0.436**	0.327**	0.289**	-0.620**	-0.163**	-0.241**	1.000
Panel B: Conventional bank							
ROA	1.000						
NII	0.091	1.000					
DIV	0.289**	0.383**	1.000				
SIZE	0.459**	-0.206**	0.219**	1.000			
GROWTH	-0.162**	0.166**	-0.101*	-0.180**	1.000		
LOAN	0.347**	-0.555**	0.016	0.566**	-0.234**	1.000	
EQUITY	-0.458**	0.058	-0.234**	-0.733**	0.128**	-0.445**	1.000

Note. This table reports correlation between explanatory variables. Variables include bank profitability: return on assets (ROA); Non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).
**$p < .05$. ***$p < .01$

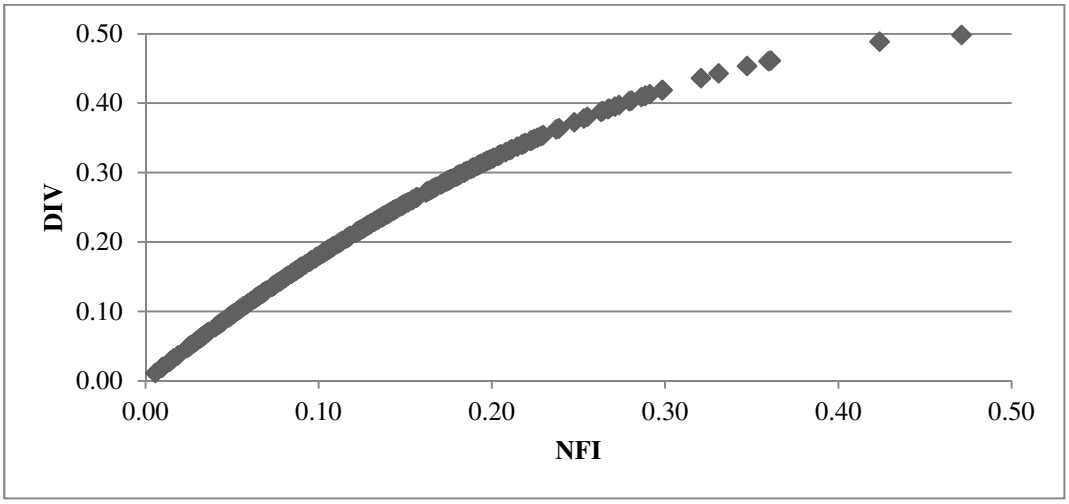
NFI in Islamic bank and NII in conventional bank are both positively associated with DIV respectively. However, the relationship of NFI and DIV are strong and close to perfectly correlated while the relationship of NII and DIV are moderately associated. To better understand on why degree of association is different between Islamic bank and conventional bank, scatter chart is plotted.

Figure 4 illustrates relationship of NFI and DIV in Islamic bank while Figure 5 illustrates relationship of NII and DIV in conventional bank. Figure 4 shows that the higher NFI, the higher DIV. This implies that almost all the Islamic bank is more concentrate on traditional source of income during the sample period. As non-financing income increase, Islamic bank become more income diversified. On the other hand, Figure 5 shows that higher NII does not necessary mean higher DIV in conventional bank. It could also mean lower DIV because income portfolio of the bank has been more concentrate on non-traditional bank source of income. In conclusion, an increase of non-interest income would lead to a more diversified (concentrated) income portfolio in conventional bank when the bank is initially concentrates on traditional (non-traditional) source of income.

Both Islamic bank and conventional bank show SIZE is positively related to FINANING/ LOAN while negatively related to EQUITY. But the negative relationship of SIZE and EQUITY is stronger in conventional bank. LOAN and EQUITY are negatively related to conventional bank but FINANCING and EQUITY are weakly negatively related.

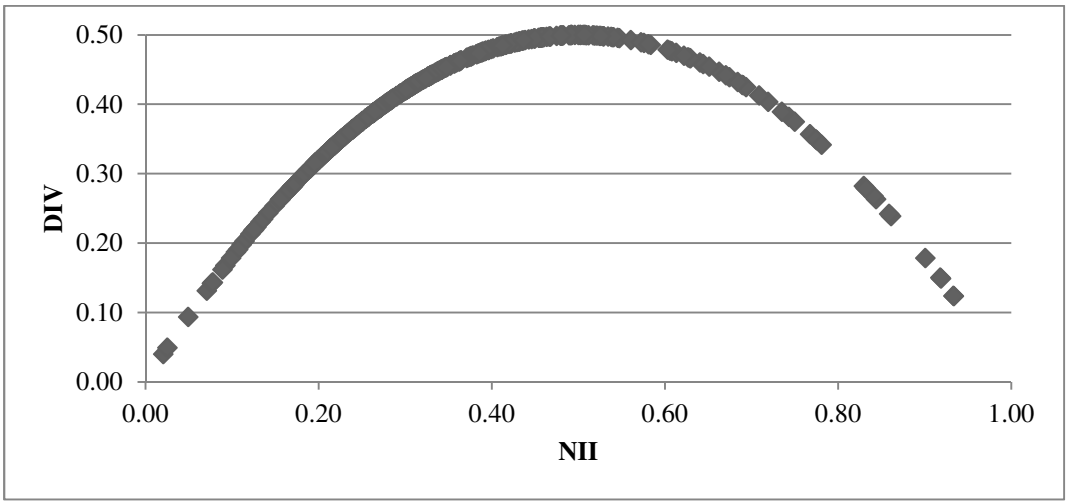
In regression, strong relationship between two explanatory variables raises a concern of collinearity. In this case, based on 0.68 as suggested in Taylor (1990), NFI and DIV in Islamic bank and SIZE and EQUITY in conventional bank are strongly correlated hence raise a concern of collinearity in regression. To investigate further on this issue, variance inflation factor is examined.

Figure 4: Relationship of Non-financing Income and Diversification in Islamic Bank



Note. This figure illustrates relationship of income diversification and non-traditional bank activities in Islamic bank. Non-traditional bank activities: non-financing income over net operating income (NFI); Income diversification: 1-Herfindahl-Hirshman index (DIV).

Figure 5: Relationship of Non-interest Income and Diversification in Conventional Bank



Note. This figure illustrates relationship of income diversification and non-traditional bank activities in conventional bank. Non-traditional bank activities: non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV).

4.1.6 Variance Inflation Factor

Table 9 presents the variance inflation factor (VIF) and tolerance of explanatory variables of Islamic bank and conventional bank. According to Menard (2002), a VIF of more than 5 (tolerance of less than 0.20) is a cause of concern and a VIF of more than 10 (tolerance of less than 0.10) is almost certainly indicates a serious collinearity problem.

Table 9: Variance Inflation Factor

Variable	Islamic bank		Conventional bank	
	VIF	Tolerance	VIF	Tolerance
NFI/ NII	32.623	0.031	1.938	0.516
DIV	31.851	0.031	1.368	0.731
SIZE	1.777	0.563	2.611	0.383
GROWTH	1.040	0.962	1.082	0.924
FINANCING/ LOAN	1.168	0.856	2.201	0.454
EQUITY	1.822	0.549	2.260	0.442

Note. This table reports variance inflation factor (VIF) for Islamic bank and conventional bank. Variables include non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).

Results show that the inclusion of NFI and DIV in the regression of Islamic bank poses a serious collinearity problem. To solve this problem, one could run the regression by dropping one of the variables, NFI or DIV. This technique would be appropriate if both variables are measuring the same thing (O'Brien, 2007). One could argue that NFI and DIV are essentially measuring the same thing since there is no observation that Islamic bank is more concentrate in non-financing income. As a result, the more non-financing income generated by Islamic bank would also means that income source is more diversified. Therefore, there is no problem in dropping one of the variables in order to avoid result affected by multi-collinearity.

However, dropping NFI or DIV in the regression of Islamic bank also means the need to drop NII or DIV in the regression of conventional bank in order to compare the impact of non-traditional bank activities between Islamic bank and conventional bank. Unlike NFI and DIV in Islamic bank, NII and DIV in conventional bank do not measure the same thing because there are some observations that conventional bank is more concentrate on non-interest income.

As such, an increase of NII could mean either a more income diversified or a more income concentrated conventional bank depends on which source of income is being concentrated initially. As a result, dropping one of the variables, NII or DIV, in conventional bank would no longer represent its relationship with bank profitability controlling for the other variables (O'Brien, 2007).

For these reasons, this research first examine the regression based on Equation 6, then results are checked with two additional regression (one excluded DIV and the other excluded NFI/ NII) for robustness.

4.2 Presentation of Results

Table 10 presents the results of quantile regression run on Equation 6 for Islamic and conventional bank at quantile 0.25 (less profitable), 0.50 (average profitable) and 0.75 (more profitable). For each quantile, coefficient of explanatory variable in Islamic bank regression and conventional bank regression are compared. Explanatory variables include non-financing (non-interest) income, diversification, bank size, asset growth, bank financing (bank loan) and bank equity. *Pseudo-*R^2, a measure of goodness-of-fit of model in explaining data at *p*th quantile (similar to R^2 in ordinary least square regression) is provided at the last row of the table (Chen & Chalhoub-Deville, 2014).

4.2.1 Regression Results of Islamic Bank

First column of each quantile in Table 10 presents regression results of Islamic bank. NFI exhibits positive relationship with Islamic bank's ROA. However, it is only statistically significant at 5 per cent level at quantile 0.25. DIV is negatively related to Islamic bank's ROA. It is significant at 1 per cent level at quantile 0.25, and 10 per cent level at quantile 0.50.

Table 10: Quantile Regression Results

Quantile	0.25			0.50			0.75		
	IB	CB	Difference	IB	CB	Difference	IB	CB	Difference
Intercept	-0.004	-0.007***	0.004	-0.004**	-0.003**	-0.0007	-0.003	0.001	-0.004
	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.003)
NFI/ NII	0.027**	0.0008	0.026**	0.013	0.003	0.010	0.019	0.007***	0.012
	(0.011)	(0.001)	(0.011)	(0.009)	(0.002)	(0.010)	(0.016)	(0.001)	(0.016)
DIV	-0.021***	0.004**	-0.025***	-0.011*	0.001	-0.012*	-0.015	-0.004**	-0.011
	(0.007)	(0.002)	(0.008)	(0.006)	(0.003)	(0.007)	(0.011)	(0.002)	(0.011)
SIZE	0.0003**	0.0003***	0.00001	0.0003***	0.0002***	0.0001	0.0003	0.00005	0.0002
	(0.0002)	(0.00007)	(0.0002)	(0.0001)	(0.00007)	(0.0001)	(0.0002)	(0.00009)	(0.0002)
GROWTH	-0.0009	-0.0002	-0.0007	-0.001	-0.0004	-0.0009	0.00009	-0.0007	0.0008
	(0.0009)	(0.0009)	(0.001)	(0.001)	(0.0008)	(0.001)	(0.002)	(0.0006)	(0.002)
FINANCING/	0.003***	0.003***	-0.0003	0.003***	0.002***	0.0009	0.004***	0.002***	0.002
LOAN	(0.001)	(0.0008)	(0.001)	(0.0008)	(0.0005)	(0.001)	(0.001)	(0.0006)	(0.001)
EQUITY	-0.016***	0.0001	-0.016***	-0.006	-0.002*	-0.004	-0.006	-0.004***	-0.001
	(0.004)	(0.002)	(0.005)	(0.004)	(0.001)	(0.004)	(0.005)	(0.001)	(0.005)
Pseudo R^2	0.232	0.313	0.298	0.146	0.209	0.228	0.115	0.165	0.175

Note. This table reports the results of quantile regression for Islamic bank (IB) and conventional bank (CB) based on Equation 6. Bootstrapped standard errors are in parentheses. The bootstrap standard errors are obtained using 1000 bootstrap replications. Last column of each quantile displays coefficient difference between variable in Islamic bank and conventional bank. Variables include bank profitability: return on assets (ROA); Non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).
*p<.10. **p < .05. ***p < .01

SIZE has a positive impact on Islamic bank's ROA. It is significant at 5 per cent level at quantile 0.25, and 1 per cent level at quantile 0.50. GROWTH has a different relationship with Islamic bank's ROA across quantile examined. Specifically, it is positive related at quantile 0.25 and 0.50, but become negative at quantile 0.75. However, none of the quantiles examined is statistically significant. FINANCING is positive and significant at 1 per cent level related to Islamic bank's ROA across all quantile examined. EQUITY is negatively related to Islamic bank profitability and only statistically significant in quantile 0.25 at 1 per cent level.

Pseudo R^2 shows that the model is more effective in explaining the relation between Islamic bank's ROA and explanatory variables at quantile 0.25. The explanatory variables examined explain 23.2 per cent of the variance in Islamic bank profitability. At quantile 0.50 and 0.75, the model explains 14.6 per cent and 11.5 per cent of the variance in Islamic bank profitability respectively.

4.2.2 Regression Results of Conventional Bank

Second column of each quantile in Table 10 presents regression results of conventional bank. NII exhibits a positive relationship with conventional bank' ROA. It is, however, only statistically significant at 1 per cent level at quantile 0.75. Relationship between DIV and ROA change across quantile examined. Specifically, DIV is positive and significant at 5 per cent level at quantile 0.25, but become insignificant at quantile 0.50. At quantile 0.75, the relationship between DIV and ROA become negative and significant at 5 per cent level.

SIZE has a positive impact on ROA but only significant at 1 per cent level at quantile 0.25 and 0.50. GROWTH is negative but insignificant related to ROA. LOAN is positive and significant at 1 per cent level related to ROA at all quantile examined. EQUITY is initially positive but insignificant related to ROA, but change to negative and significant at 10 per cent level and 1 per cent level at quantile 0.50 and 0.75 respectively.

4.2.3 Islamic and Conventional Bank Comparison

Third column of each quantile in Table 10 shows the different between coefficients in Islamic bank regression and coefficient in conventional bank regression. Results show that coefficient of NFI is higher than NII, however, statistically significant different between the two only found at quantile 0.25 at 5 per cent significant level. DIV, on the other hand, shows its coefficient in Islamic bank regression is lower than conventional bank. It is statistically significant different at quantile 0.25 and 0.50 at 1 per cent significant level and 10 per cent significant level respectively.

SIZE, GROWTH, and FINANCING (LOAN) do not show statistically significant between coefficient in Islamic bank regression and coefficient in conventional bank regression. EQUITY, on the other hand, shows its coefficient in Islamic bank regression is statistically significant at 1 per cent level lower than its coefficient in conventional bank regression at quantile 0.25.

4.3 Robustness Check

Table 11 and 12 provide regression results excluding DIV and NFI/NII respectively. As indicated in Section 4.1.6, regression results of Islamic bank in Table 10 would subject to serious collinearity problem due to the strong association of NFI and DIV. Dropping one of the strong associated variable, either NFI and DIV, would address the problem.

4.3.1 Regression Results excluded DIV

When DIV variable is excluded, the regression reveals that NFI in Islamic bank regression is negatively related to Islamic bank' ROA except quantile 0.75 is positive. However, the relationship is insignificant in all quantile examined. It is also reveal that negative relationship between GROWTH and Islamic bank's ROA is statistically significant at quantile 0.50.

Table 11: Quantile Regression Results (Excluded DIV)

Quantile	0.25			0.50			0.75		
	IB	CB	Difference	IB	CB	Difference	IB	CB	Difference
Intercept	-0.005	-0.006***	0.002	-0.003**	-0.003**	-0.0006	-0.003	-0.0002	-0.003
	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.004)
NFI/ NII	-0.002	0.002**	-0.005**	-0.002	0.003***	-0.005***	0.0003	0.006***	-0.005***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.0006)	(0.002)	(0.002)	(0.0009)	(0.002)
SIZE	0.0004**	0.0003***	0.00002	0.0002**	0.0002***	0.00004	0.0002	0.00005	0.0001
	(0.0002)	(0.00008)	(0.0002)	(0.0001)	(0.00006)	(0.0001)	(0.0002)	(0.0001)	(0.0002)
GROWTH	-0.0006	-0.0006	-0.00004	-0.001*	-0.0003	-0.001	0.0006	-0.0006	0.001
	(0.001)	(0.001)	(0.001)	(0.0008)	(0.0009)	(0.001)	(0.002)	(0.0007)	(0.002)
FINANCING/	0.002**	0.003***	-0.001	0.003***	0.002***	0.001	0.005***	0.003***	0.002*
LOAN	(0.001)	(0.0008)	(0.001)	(0.0007)	(0.0005)	(0.0009)	(0.0009)	(0.0007)	(0.001)
EQUITY	-0.014***	-0.0009	-0.013***	-0.005	-0.003**	-0.003	-0.0001	-0.003**	0.003
	(0.004)	(0.002)	(0.005)	(0.003)	(0.001)	(0.003)	(0.005)	(0.001)	(0.005)
Pseudo R^2	0.214	0.291	0.278	0.136	0.208	0.223	0.096	0.147	0.157

Note. This table reports the results of quantile regression for Islamic bank (IB) and conventional bank (CB) based on Equation 6. Bootstrapped standard errors are in parentheses. The bootstrap standard errors are obtained using 1000 bootstrap replications. Last column of each quantile displays coefficient difference between variable in Islamic bank and conventional bank. Variables include bank profitability: return on assets (ROA); Non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).
*p<.10. **p < .05. ***p < .01

Table 12: Quantile Regression Results (Excluded NFI/ NII)

Quantile	0.25			0.50			0.75		
	IB	CB	Difference	IB	CB	Difference	IB	CB	Difference
Intercept	-0.005*	-0.007***	0.002	-0.004**	-0.003**	-0.0003	-0.003	0.004*	-0.008*
	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.003)	(0.003)	(0.004)
DIV	-0.002*	0.005***	-0.007***	-0.002	0.004***	-0.006***	-0.0003	0.002**	-0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.0008)	(0.001)	(0.001)	(0.001)	(0.002)
SIZE	0.0004**	0.0003***	0.00005	0.0003***	0.0002***	0.00007	0.0002	-0.00005	0.0003
	(0.0002)	(0.00007)	(0.0002)	(0.0001)	(0.00007)	(0.0001)	(0.0002)	(0.0001)	(0.0002)
GROWTH	-0.0008	0.0001	-0.0009	-0.001*	-0.0005	-0.0009	-0.0001	-0.001	0.001
	(0.001)	(0.0008)	(0.001)	(0.0008)	(0.0006)	(0.001)	(0.002)	(0.001)	(0.002)
FINANCING/	0.003**	0.003***	-0.0008	0.003***	0.002***	0.002*	0.004***	0.00008	0.004***
LOAN	(0.001)	(0.0007)	(0.001)	(0.0007)	(0.0005)	(0.0009)	(0.0009)	(0.0009)	(0.001)
EQUITY	-0.013***	0.0003	-0.013***	-0.005	-0.002	-0.003	0.001	-0.007***	0.008*
	(0.004)	(0.002)	(0.005)	(0.003)	(0.001)	(0.003)	(0.004)	(0.002)	(0.005)
Pseudo R^2	0.217	0.312	0.291	0.138	0.191	0.215	0.096	0.069	0.114

Note. This table reports the results of quantile regression for Islamic bank (IB) and conventional bank (CB) based on Equation 6. Bootstrapped standard errors are in parentheses. The bootstrap standard errors are obtained using 1000 bootstrap replications. Last column of each quantile displays coefficient difference between variable in Islamic bank and conventional bank. Variables include bank profitability: return on assets (ROA); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).
*p<.10. **p < .05. ***p < .01

On the other hand, NII is statistically positive related to ROA of conventional bank across all quantile examined. The relationship between EQUITY and ROA of conventional bank at quantile 0.25 change to negative but the relationship remains insignificant.

Excluded DIV, the coefficient of NFI in Islamic bank regression is statistically significant lesser than coefficient of NII in conventional bank regression across all quantile examined. It is also find that coefficient of FINANCING in Islamic bank regression is statistically significant higher than coefficient of LOAN in conventional bank.

4.3.2 Regression Results excluded NFI/ NII

Excluded NFI, regression results reveal that the negative relationship of DIV and ROA in Islamic bank regression is only statistically significant at quantile 0.25. It is also reveal that negative relationship between GROWTH and Islamic bank's ROA is statistically significant at quantile 0.50, thus confirm the result in the regression without DIV as discussed in Section 4.3.1. Coefficient of GROWTH and EQUITY is found to change direction at quantile 0.75, however, no significant relationship identified.

On the other hand, DIV is found to be statistically significant and positive associated with ROA of conventional bank across all quantile examined. It is also found relationship of LOAN at quantile 0.75 and EQUITY at quantile 0.50 no longer significant with conventional bank ROA.

Without NFI/ NII, coefficient of DIV in Islamic bank regression remains statistically lower than coefficient of DIV in conventional bank at quantile 0.25 and 0.50. Consistent with regression without DIV, coefficient of FINANCING in Islamic bank is statistically significant higher than coefficient of LOAN in conventional bank at quantile 0.50 and quantile 0.75. It is also find that coefficient of EQUITY in Islamic bank regression is higher than coefficient of EQUITY in conventional bank regression.

4.4 Interpretation of Results

Table 13 summarizes the findings of hypotheses tested in this research. Panel A presents the findings of hypothesis 1 tested for the impact of non-financing (non-interest) income on bank profitability excluding the effect of income diversification. On the other hand, Panel B presents the findings of hypothesis 2 tested for the impact of income diversification on bank profitability excluding the effect of non-financing (non-interest) income.

Table 13: Summary of Hypothesis Findings

Variable	Hypothesis	Less profitable	Average profitable	More profitable
Panel A: Excluded DIV				
NFI/ NII	Hypothesis 1_A	Failed to reject	Failed to reject	Failed to reject
	1_B	Rejected	Rejected	Rejected
	1_C	Rejected	Rejected	Rejected
Panel B: Excluded NFI/NII				
DIV	Hypothesis 2_A	Rejected	Failed to reject	Failed to reject
	2_B	Rejected	Rejected	Rejected
	2_C	Rejected	Rejected	Failed to reject
Panel C: Included both DIV and NII				
NII	Hypothesis 1_B	Failed to reject	Failed to reject	Rejected
DIV	Hypothesis 2_B	Rejected	Failed to reject	Rejected
Panel D: Bank-specific characteristics				
SIZE	Hypothesis 3_A	Rejected	Rejected	Failed to reject
	3_B	Rejected	Rejected	Failed to reject
	3_C	Failed to reject	Failed to reject	Failed to reject
GROWTH	Hypothesis 4_A	Failed to reject	Rejected	Failed to reject
	4_B	Failed to reject	Failed to reject	Failed to reject
	4_C	Failed to reject	Failed to reject	Failed to reject
FINANCING/ LOAN	Hypothesis 5_A	Rejected	Rejected	Rejected
	5_B	Rejected	Rejected	Inconsistent
	5_C	Failed to reject	Inconsistent	Rejected
EQUITY	Hypothesis 6_A	Rejected	Failed to reject	Failed to reject
	6_B	Failed to reject	Inconsistent	Rejected
	6_C	Rejected	Failed to reject	Inconsistent

Note. This table summarizes the findings of hypothesis tested in this research. Variables include non-traditional bank activities: non-financing income over net operating income (NFI), non-interest income over net operating income (NII); Income diversification: 1-Herfindahl-Hirshman index (DIV); Bank-specific characteristics: natural logarithm of total assets (SIZE), asset growth rate (GROWTH), financing-to-assets ratio (FINANCING), loan-to-assets ratio (LOAN), equity-to-assets ratio (EQUITY).

4.4.1 Impact of Non-financing (Non-interest) Income

Excluded DIV, findings on Islamic bank failed to reject hypothesis 1_A. This suggests non-financing income does not exert an impact on profitability of Islamic

bank. This is not consistent with the findings of Molyneux and Yip (2013) which find non-financing income positively impact profitability of Islamic bank. Less profitable Islamic bank may want to compensate the lack of financing income with larger share of non-financing income, as shown in Section 4.1.3, it appeared that larger share of non-financing income does not improve their profitability like those average and more profitable Islamic bank with a relative smaller share of non-financing income do.

There are two possible reasons that non-financing income in Islamic bank has no impact on its profitability. First, despite the share of non-financing income in less profitable Islamic bank is the largest among Islamic banks, it is still considered less when compared to those in conventional bank. In descriptive analysis, Section 4.1.1 and Section 4.1.2, average non-financing income over net operating income in less profitable Islamic bank is 14.90 per cent as measured by mean (13.67 per cent as measured by median) while the least share of non-interest income in conventional bank has an average of 32.27 per cent as measured by mean (26.99 per cent as measured by median). Therefore, the share of non-financing income in Islamic bank, even in less profitable Islamic bank, is about twice as less as non-interest income in conventional bank. The relative small amount of non-financing income in Islamic bank, despite intend to compensate financing income, could be part of the result that some of the non-traditional bank activities are not permissible by Shariah to perform in Islamic bank.

Alternatively, the practice of Shariah compliance has restricted Islamic bank benefit from non-traditional bank activities. From fee income perspective, Islamic bank is not supposed to charge fee based on transaction size and repeated service if there is no extra costs and efforts incurred (Schaik, 2001). From trading income perspective, Islamic bank is prohibited from speculative trading (Schaik, 2001). Trading with motive of hedging would imply income from trading activities will be used to cover unexpected losses. For example, income from Islamic profit rate swap is supposed to cover the losses in environment where profit rate margin is shrinking. Therefore, profit from both component of non-financing income (fee income and trading income) are being neutralized by the costs.

On the other hand, findings on conventional bank reject hypothesis 1_B with a positive coefficient sign. This suggests non-interest income has a positive impact on profitability of conventional bank when effect of income diversification is excluded. This result is consistent with findings in United States conducted by Apergis (2014) and DeYoung and Rice (2004) which do not take the effect of income diversification into account. As mentioned previously, the share of non-interest income in conventional bank is higher than non-financing income in Islamic bank. Moreover, conventional bank charge fees for non-traditional bank service provided based on transaction size and repeated service. This allow conventional bank to generate additional income without much increase in variable costs (DeYoung & Roland, 2001). Also, conventional bank can speculate with securities trading, thus potential higher returns.

Compare the impact of non-financing income on profitability of Islamic bank and impact of non-interest income on profitability of conventional bank, the findings reject hypothesis 1_C. The result suggests non-financing income in Islamic bank is less beneficial than non-interest income in conventional bank.

4.4.2 Impact of Income Diversification

Excluding the effect of non-financing income, hypothesis 2_A is rejected when Islamic bank is less profitable while failed to reject when Islamic bank is average and more profitable. These findings suggest income diversification is detrimental to profitability of Islamic bank when it is less profitable but no impact when it is average and more profitable. The findings is partially consistent with Molyneux and Yip (2013) which uses weighted and robust regressions find income diversification reduce profitability of mean average profitable Islamic bank.

The findings could be a result of lack of expertise in Islamic bank, as argued by Shaban et al. (2014), which lead to excessive resources allocated to monitor different source of income. Such inefficient allocation of resources may have cost the bank profitability. Since less profitable Islamic bank earn less income and it has relative larger share of non-traditional bank activities, the cost of inefficient

allocation may have cause the bank profitability to decline. Contrarily, average and more profitable Islamic bank earn more income and have fewer shares of non-traditional bank activities. Therefore, the cost of inefficient resource allocation does not exert significant impact on the bank profitability.

On the other hand, excluding the effect of non-interest income, the findings on conventional bank reject hypothesis 2_B with a positive coefficient sign. This suggests evenly diversify income sources have a positive impact on profitability of conventional bank.

Compare the impact of income diversification on profitability of Islamic bank and impact of income diversification on profitability of conventional bank, the findings reject hypothesis 1_C when the bank is less and average profitable while fail to reject hypothesis 1_C when the bank is more profitable. Regression coefficient shows, as bank become more profitable, the decline of profitability in Islamic bank and the increase of profitability in conventional bank, as a result of income diversification, tend to be less. In conjunction with descriptive analysis, Section 4.1.3, income tends to less diversify in Islamic bank that is highly profitable while income tends to more diversify in conventional bank that is more profitable, these findings suggest that diversification only benefit at low level.

4.4.3 Impact of Non-interest Income and Income Diversification

This research fails to find the impact of non-financing income and income diversification simultaneously due to their high correlation which cause by less Islamic bank that is more concentrate in non-traditional bank activities relative to traditional intermediary activities. As for conventional bank, the findings suggest hypothesis 1_B being rejected only at more profitable level with positive coefficient sign, and hypothesis 2_B being rejected at less profitable and more profitable level with positive and negative coefficient sign respectively.

From non-interest income perspective, descriptive analysis in Section 4.1.3 suggests highly profitable conventional bank has statistically significant higher

share of non-interest income than those less and average profitable conventional bank. This may explain the reason why there is an impact on profitability of more profitable conventional bank while no impact on those less profitable and average profitable conventional bank, that is, a substantial income need to be generated from non-traditional bank activities in order to exert a positive impact on bank profitability. This suggests that conventional bank may enjoy economies of scale by generate more non-interest income. This is consistent with the findings of Hou, Wang and Li (2015) that bank realize more scale economies by increasing off-balance sheet operations. This is possibly because additional non-interest income will only requires little increment of variable costs (DeYoung & Roland, 2001).

Income diversification exhibits different impact on profitability of conventional bank at different bank profitability quantile. Specifically, income diversification increase profitability when the bank is less profitable while decrease profitability when the bank is more profitable. No impact found in average profitable conventional bank. These findings are consistent with Lee and Li (2012) which find less profitable non-financial firm benefit from diversification while more profitable non-financial firm adversely affected by diversification. They also find no significant impact from diversification when non-financial firm is average profitable. In the descriptive report of Lee and Li (2012), high-performing firm tend to be more diversified. This is consistent with the descriptive statistics of conventional bank in this research, whereby high-performing bank tend to be more diversified. These, again, confirmed previous argument that diversification only beneficial at low level, similar to Dermiguc-Kunt and Huizinga (2010) which find non-traditional bank activities provide risk diversification benefit at very low level.

4.4.4 Impact of Bank Size

Based on all regression examined, hypothesis 3_A and hypothesis 3_B are rejected at low profitable and average profitable level while failed to reject at more profitable level. These findings suggest increase of bank size benefits bank profitability when it is less and average profitable but not when it is more profitable.

Hypothesis 3_C is failed to reject, suggesting no different impact, in terms of bank size, on profitability of Islamic bank and conventional bank.

In descriptive analysis, Section 4.1.3, bank size of both Islamic bank and conventional bank is larger as it is more profitable. As a result, the lack of evidence that more profitable bank benefit from the increase of bank size supports the argument that gains from economies of scale is limited (Amel et al., 2004; Delis & Papanikolaou, 2009). Scale economies may have exhausted at more profitable conventional bank due to increasing management complexity and bureaucracy in the bank (Amel et al., 2004; Flamini et al., 2009; Nigmonov, 2010).

Compared to conventional, Section 4.1.4, size of Islamic bank is smaller. But, scale economies exhausted at more profitable level like conventional bank. This suggests scale economies exhausted faster than conventional bank, possibly due to complexity of financing activities in Islamic banking model.

4.4.5 Impact of Asset Growth

The findings on Islamic bank reject hypothesis 4_A at average profitable level with negative coefficient sign while failed to reject hypothesis 4_A at less profitable and more profitable level. This suggests asset growth has negative impact on profitability of Islamic bank when it is average profitable.

On the other hand, the findings on conventional bank fail to reject hypothesis 4_B. This suggests asset growth has no impact on profitability of conventional bank. This is not consistent with Chunhachinda and Li (2014) and Lee, Yang, et al. (2014) which finds asset growth positively affect conventional bank profitability in Asian countries.

Compare the impact of asset growth on profitability of Islamic bank and impact of asset growth on profitability of conventional bank, the findings fail to reject hypothesis 4_C. This suggests the impact of asset growth in Islamic bank and the impact of asset growth in conventional bank is no different.

4.4.6 Impact of Bank Financing (Bank Loan)

The findings on Islamic bank reject hypothesis 5_A with positive coefficient sign. This suggests higher share of Islamic financing in Islamic bank asset composition will lead to higher bank profitability. The findings are consistent with Wasiuzzaman and Ahmad Tarmizi (2010). This means more deposits transformed into financing, the higher profitability in Islamic bank.

The findings on conventional bank reject hypothesis 5_B with positive coefficient sign when the bank is less profitable and average profitable. At more profitable level, the findings are inconsistent. While two regressions find hypothesis 5_B is rejected at more profitable level, without consider effect of non-interest income, hypothesis 5_B is failed to reject.

Compare the impact of financing on profitability of Islamic bank and impact of loan on profitability of conventional bank, the findings fail to reject hypothesis 5_C at less profitable level, inconsistent at average profitable level and reject at more profitable level. These findings suggest while impact of financing and loan are the same when bank is less profitable, as the bank becoming more profitable, conventional bank is less benefit from loan concentration in asset composition.

4.4.7 Impact of Bank Equity

The findings on the impact of bank equity on profitability of Islamic bank reject hypothesis 6_A at less profitable level but fail to reject at average profitable and more profitable level. The findings show the increase of bank equity has an adverse impact on profitability of Islamic bank only if the bank is less profitable. This is consistent with Wasiuzzaman and Ahmad Tarmizi (2010) which find bank equity has a negative impact on profitability of Islamic bank in Malaysia during period 2005 to 2008 using OLS on negatively skewed bank profitability distribution. Therefore, their findings tend to describe less profitable Islamic bank.

In descriptive analysis, Section 4.1.3, less profitable Islamic bank is holding the most equities as compared to average profitable and more profitable Islamic bank. Therefore, the findings may suggest over-capitalization in less profitable Islamic bank, whereby any increase of equity may miss opportunity to generate higher profits (Goddard et al., 2004).

The findings on the impact of bank equity on profitability of conventional bank fail to reject hypothesis 6_B at less profitable level but reject at more profitable level. At average profitable level, the hypothesis is rejected when income diversification is not controlled while it is failed to reject when non-interest income is excluded.

The findings show bank equity has an adverse impact on profitability of more profitable conventional bank and possibly average profitable conventional bank. Descriptive analysis in Section 4.1.3 shows equities held in less profitable conventional bank is larger while equities held in more profitable bank is lesser. Despite these, an increase of bank equity has no impact on less profitable conventional bank but negative impact on more profitable conventional bank. Tax concern may be the reason for such behavior. Higher equity will lead to higher tax because the bank less depending on debt, thus less deductibility interest payment (Berger, 1995). Hence, lower after-tax earnings. However, tax may not be a concern of less profitable bank because less profits available to be taxed.

The findings on the different between impact of bank equity on profitability of Islamic bank and impact of bank equity on profitability of conventional bank rejected hypothesis 6_C at less profitable level but fail to reject at average profitable level. The hypothesis is failed to reject when income diversification is not controlled while rejected when non-financing (non-interest) income is excluded. The findings show negative impact of bank equity in Islamic bank is greater at less profitable level while negative impact in conventional is greater at more profitable level.

4.5 Summary

Descriptive analysis shows less profitable Islamic bank has rather large share of non-financing income and fairly more diversified than other profitability group of Islamic bank. It is also holding statistically significant large amount of equity than any other profitability group. Islamic bank tend to be larger in size and more financing concentrated as it is more profitable.

On the other hand, highly profitable conventional bank has a statistically significant higher share of non-interest income as compared to other profitability groups. However, lack of significant different in diversification suggests highly profitable conventional bank also having a significant share of interest income. Despite these, there is no indication that conventional bank holds more equity than other profitability groups. Like Islamic bank, conventional bank tend to be larger in size and more loan concentrated as it is more profitable.

Generally, as compared to conventional bank, Islamic bank is less profitable. It has less share of non-financing income and thus less diversified. It is also smaller in size. Highly profitable Islamic bank is more aggressive and more financing concentrated while less profitable Islamic bank is more financing concentrated but holds lesser equity than conventional bank in the same profitability group. The equity hold in highly profitable Islamic bank is not statistically different from highly profitable conventional bank.

Due to dilemma on the collinearity issue in Islamic bank and the need to control diversification effect on the impact of non-interest income in conventional bank, three regressions, one with both NFI/ NII and DIV while another two exclude NFI/ NII and DIV respectively, are tested. Empirical results show that income generated from non-traditional bank activities does not exert an impact on Islamic bank profitability. The more evenly diversify between financing income and non-financing income would reduce Islamic bank profitability if the bank is less profitable.

Result on conventional bank shows non-traditional bank activities benefit less profitable conventional bank via diversification effect while benefit more profitable conventional bank via net effect (positive effect of non-interest income and negative effect of income diversification).

All in all, the impact of non-traditional bank activities on Islamic bank profitability and the impact of non-traditional bank activities on conventional bank profitability are different. Profitability of Islamic bank is less beneficial from non-traditional bank activities than conventional bank.

The effect of bank-specific characteristic on bank profitability is no different between Islamic bank and conventional bank except for bank equity. Bank size increases profitability of both Islamic bank and conventional bank except when bank is more profitable. Asset growth does not exert an impact on bank profitability except when Islamic bank is average profitable. However, the impact is not significant different from those in conventional bank. Impact of bank financing (bank loan) on bank profitability is no different between Islamic bank and conventional bank when bank is less profitable, but as bank becomes more profitable, conventional bank is less beneficial from loan concentration. The negative impact of bank equity on profitability of less profitable Islamic bank is due to over-capitalization while the negative impact of bank equity on profitability of more profitable conventional bank is due to tax concern.

CHAPTER 5

DISCUSSION AND CONCLUSION

This chapter consists of four sections. First section discusses implications of this research. Second section suggests some recommendations for Islamic bank in order to face the upcoming challenge in traditional intermediary activities. Third section identifies limitation of this research. Last but not least, this research concludes with suggestion on future research.

5.1 Implications

The findings of this research show that non-traditional bank activities in Islamic bank are less competitive than those in conventional bank. These results have an implication to bank management, Shariah committees, as well as Central Bank of Malaysia.

To Islamic bank manager, the increase of non-traditional bank activities does not increase profitability of Islamic bank. Moreover, the intention to compensate the lack of revenue in financing activities by less profitable Islamic bank is backfired because income diversification effect, caused by the increase of non-financing income relative to financing income, would further reduce profitability of the bank.

The fact that conventional bank could benefit from non-traditional bank activities when the bank is less profitable and more profitable make things worse to Islamic bank. This is because conventional bank could draw profit from non-traditional bank activities in order to effectively cross-subsidize the costs to accommodate low interest rates in loan market and high interest rates in deposit market

(Valverde & Fernández, 2007). Since deposit rates of Islamic bank are closely related to conventional deposit rates (Bacha, 2004; Cevik & Charap, 2011; Chong & Liu, 2009; Ito, 2013; Khattak, Ur-Rehman, Naqvi & Anwar, 2009; Zainol & Kassim, 2010), Islamic bank also need to pay more to prevent depositor from switching to conventional bank. As a result, financing margin of Islamic bank would be narrowed, and thus reduce profitability and threaten survival of Islamic banking industry. These urge Shariah committees to innovate more profitable Islamic products to enable Islamic bank to compete with conventional bank. Central bank of Malaysia need to ensure Islamic bank remains competitive in order to maintain Malaysia's position as the leading hub for Islamic finance.

This research also makes a number of contributions from academic perspective. This research confirms findings of Lee and Li (2012) on non-constant relationship between diversification and performance with the evidence in conventional bank. Also, this research confirms that scale economies would exhaust after size exceeded certain point, and this effect is no different between Islamic bank and conventional bank.

5.2 Recommendations

Islamic bank is recommended to concentrate less in non-traditional bank activities, especially less profitable Islamic bank. This is because there is evidence that income diversification will reduce profitability of the bank.

It is recommended that Islamic bank should focus on its financing activities since it could increase bank profitability regardless of the performance stage of the bank. Currently, most of the financing is in the form of debt-like instrument (Cevik & Charap, 2011; Chong & Liu, 2009; Ito, 2013). As Islamic capital and money market becomes more competitive, the focus on debt-like instrument may not be beneficial since it would face the same challenge like conventional bank. Therefore, it is recommended that Islamic bank should enhance profit-loss sharing practice. Under this practice, bank agreed profit-loss sharing ratio with borrower on one hand, and with depositor on the other hand. The return of the three parties

are ultimately depends on the return of borrower's investment. Islamic bank will not suffer profitability reduction as a result of narrowed margin of financing because, as long as return of borrower's investment is high, despite the difference between profit-loss sharing ratio with borrower and profit-loss sharing ratio with depositor is narrow, the return of the bank remain profitable. Besides, borrower would not suffer monetary losses if turn out the investment futile while depositor with higher risk tolerance stand a chance to profit more than conventional deposits. These make traditional intermediary activities that based on profit-loss sharing practice remain competitive despite Islamic capital and money market becomes more competitive. However, Chong and Liu (2009) suggest the reason why profit and loss paradigm is not implementing in Islamic bank may be due to the competition from conventional bank because substantial deviation of depositor's return could cause Islamic bank to face withdrawal risk. Therefore, while profit-loss paradigm may be ideal solution, it may not practical in dual banking system such as in Malaysia.

For less profitable Islamic bank, it is advised to be more aggressive in growing resize of the bank since bank size would increase bank profitability while asset growth has not impact on the bank profitability. As Islamic bank size becomes larger, it would have more resources to employ new technology, as well as provide training, that is necessary to improve the lack of efficiency in monitoring multiple income sources. New and more sophisticated products could be developed with highly qualified personnel that are more likely to work for large organization (European Central Bank, 2000). However, bank managers are advised to be cautious as aggressive growth of bank size would reduce profitability when bank profitability is at an average stage. Also, the benefit of economies of scale is not unlimited. This is especially true for Islamic bank as the scale economies in the bank exhaust faster than those in conventional bank.

5.3 Limitation

Due to the methodology employed, as well as the relatively short period of most Islamic bank being formed, this research uses quarterly data which is retrieved

from interim reports instead of annual data from annual reports. Unlike audited annual reports, interim reports are not required to be audited. As a result, quarterly data is often deemed to be less reliable than annual data. However, the banks in Malaysia are required to submit their interim report to the Department of Financial Conglomerates Supervision and Department of Banking Supervision of Bank Negara Malaysia (BNM, 2005b, 2013b). These departments are responsible for the safety, soundness and robustness of financial institution in Malaysia (BNM, n.d.). Therefore, it is expected that bank manager would prepare the interim report as accurately as possible

5.4 Conclusion

The objective of this research is to evaluate competitiveness of non-traditional bank activities in Islamic bank. This research examines whether existing non-traditional bank activities available for Islamic bank are as competitive as those in conventional bank. To achieve this objective, the impact of non-traditional bank activities on profitability of Islamic bank and the impact of non-traditional bank activities on profitability of conventional bank are examined and compared.

The findings suggest the increase of non-traditional bank activities has no impact on profitability of Islamic bank with the increase of non-financing income. However, income diversification, as a result of increase non-financing income relative to financing income, has an adverse impact on profitability of Islamic bank when the bank is less profitable. For conventional bank, non-traditional bank activities increase profitability of the bank via income diversification effect when bank is less profitable, and via net effect (positive effect of non-interest income and negative effect of income diversification) when bank is more profitable. When compared, profitability of Islamic bank is less beneficial from non-traditional bank activities. Thus it is concludes that non-traditional bank activities in Islamic bank is less competitive than those in conventional bank.

It is expected that non-traditional bank activities in Islamic bank will continue to grow as more financial innovation in Shariah-compliant products. Therefore,

future research could use a more reliable source of data, annual reports, to examine the impact of non-traditional bank activities on profitability of Islamic bank.

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APPENDIX A

COMMENCEMENT DATE OF ISLAMIC BANK IN MALAYSIA

No.	Islamic banks	Date of commenced operation
1	Affin Islamic Bank Berhad	1 April 2006
2	Al Rajhi Banking & Investment Corporation (Malaysia) Berhad	16 October 2006
3	Alliance Islamic Bank	1 April 2008
4	AmIslamic Bank Berhad	1 June 2006
5	Asian Finance Bank Berhad	19 January 2007
6	Bank Islam Malaysia Berhad	1 July 1983
7	Bank Muamalat Malaysia Berhad	1 October 1999
8	CIMB Islamic Bank Berhad	15 April 2005
9	Hong Leong Islamic Bank Berhad	1 July 2005
10	HSBC Amanah Malaysia Berhad	24 August 2008
11	Kuwait Finance House (Malaysia) Berhad	8 August 2005
12	Maybank Islamic Berhad	1 January 2008
13	OCBC Al-Amin Bank Berhad	1 December 2008
14	Public Islamic Bank Berhad	1 November 2008
15	RHB Islamic Bank Berhad	16 March 2005
16	Standard Chartered Saadiq Berhad	12 October 2008