

# Net Profit Margin Determinants of Islamic Subsidiaries of Conventional Banks in Malaysia

*(Penentu Margin Untung Bersih di Subsidiari Islam Bank Konvensional Malaysia)*

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## ABSTRACT

*This study investigates the determinants of Net Profit Margin (NPM) in Malaysia's Islamic banking system for the period of 2011-2015 by using static panel data analysis. In Malaysia, conventional banks through its Islamic subsidiary banks are dominating the Islamic banking system in terms of total assets, total loans and total deposits. Therefore this paper attempts to investigate the impact of these Islamic subsidiaries of conventional banks towards the NPM. In relation to that, the impact of the conventional parent banks' Net Interest Margin (NIM) towards its Islamic subsidiary banks' NPM is also investigated. For the first objective, the displayed results shows positive relationship indicating that the Islamic subsidiaries of conventional banks' NPM is higher than the full-fledge Islamic banks' NPM. While the empirical results on the banks' specific variables suggest that size, risk aversion and operating cost are positively related to NPM. However, credit risk tends to reduce NPM. Besides that, this study also finds that market concentrations and GDP growth will influence NPM in negative ways whilst inflation and Islamic stock market developments will increase NPM. Liquidity however is found insignificant to NPM. As for the second objective, the Islamic subsidiaries of conventional banks' NPM is observed as being independent from its conventional parent banks' NIM.*

*Keywords: Net profit margin; Islamic bank; parent bank; subsidiary bank*

## ABSTRAK

*Kajian ini menyelidik penentu Margin Untung Bersih (MUB) dalam sistem perbankan Islam di Malaysia untuk tempoh 2011-2015 dengan menggunakan analisis data panel secara statik. Di Malaysia, bank-bank konvensional melalui subsidiarinya telah menguasai sistem perbankan Islam iaitu dari segi aset, pinjaman dan deposit. Oleh itu, kajian ini menyelidik kesan subsidiari Islam bank konvensional ke arah MUB. Sehubungan dengan itu, kesan dari MUB bank induk konvensional kepada MUB bank subsidiari Islamnya juga disiasat. Untuk objektif pertama, keputusan menunjukkan satu hubungan positif yang mana boleh ditafsirkan sebagai MUB subsidiari Islam bank konvensional adalah lebih tinggi berbanding dengan MUB perbankan Islam penuh. Manakala pemboleh ubah bank spesifik menunjukkan bahawa saiz, penghindaran risiko dan kos operasi berhubung secara positif dengan MUB. Walaubagaimanapun, risiko kredit cenderung untuk mengurangkan MUB. Selain itu, kajian ini juga mendapati bahawa kepadatan pasaran dan pertumbuhan KDNK akan mempengaruhi MUB dengan secara negatif manakala inflasi dan perkembangan pasaran saham Islam akan meningkatkan MUB. Bagaimanapun kecairan tidak signifikan kepada MUB. Manakala untuk objektif kedua, MUB subsidiari Islam bank konvensional dilihat tidak berkait dengan MUB bank induk konvensional.*

*Kata kunci: Margin untung bersih, bank Islam, bank induk, bank subsidiari*

## INTRODUCTION

Islamic banking in Malaysia had been practicing the dual banking system of Islamic and conventional banks since 1983. Bank Islam Malaysia Berhad (BIMB) was established in this year and was given the mandate of monopoly regarding the Islamic banking system in Malaysia for 10 years. In 1993, the government introduced the Interest Free Banking Scheme (IFBS)

where it allows conventional financial institutions to participate in the Islamic financial system. This is not only limited to conventional banking, but it also includes merchant banks, finance companies and discount houses. For the conventional commercial banks, this IFBS allowed those banks to offer Islamic banking products using the same and existing facilities of conventional banking operations. The government took these actions to increase the Islamic banks' market shares.



The second full-fledged Islamic bank was introduced in 1999 with the establishment of Bank Muamalat Malaysia Berhad (BMMB). In 2004, the central banks opened the door for foreign banks to operate in Malaysia Islamic banking in order to broaden global linkages and stimulate greater competition as well as effectiveness of domestic Islamic banking industry (*Central Bank of Malaysia, 2005*). In the same year, the central bank introduced the Islamic banking subsidiary which permits conventional banks' Islamic windows to convert into full Islamic banking operations. The banks are now enacted under the Islamic Banking Act 1983 from the previous act, the Banking and Financial Institutions Act (BAFIA) 1989. To date there are eleven conventional banks which operate under the Islamic subsidiary, which are Maybank, CIMB Bank, Public Bank, Ambank, RHB Bank, Affin Bank, Hong Leong Bank and Alliance Bank. This also includes foreign banks operating both Islamic and conventional approaches. The foreign conventional banks under the Islamic subsidiary are Standard Chartered, HSBC and OCBC.

These Islamic subsidiaries of conventional banks were established to avoid ambiguities of Islamic banking operations and to enhance the legitimacy of the profits generated. This offers more autonomy for the Islamic subsidiaries to conduct their business comparable to the Islamic window. As a result, the Islamic subsidiary banks now have its own management teams. This will increase the banks' credibility and indirectly show that banks have more commitment to conduct business based on the *Shariah* principle. These banks play the same role as an intermediary just like the conventional banks, which includes facilitating funds transfer between the depositors to the borrower. However, the Islamic banks are forbidden to get involved in interest operations. As an alternative, Islamic banks operation apply permitted contracts such as the *bay* (sales) and profit and loss contracts. Yet, the rest are the same.

Based on Table 1 above, it clearly shows that the Islamic subsidiaries of conventional banks dominate the market in total assets, financing and deposit. With a total of RM430.68 billion in total assets, these banks have captured about 82.25 % of the market share. For total financing, the market share that it has captured is 83.77% with RM321.27 billion whilst the remaining 16.23% market share holds by the full-fledged Islamic banks. For the total deposit, from RM436.92 billion total deposits in

the market, the Islamic subsidiaries of conventional banks hold RM356.50 billion. The full-fledged Islamic banks only hold the remaining 18.41% of the market share.

These Islamic subsidiaries of conventional banks will offer a return to depositors for the money given and charge the borrower for the financing they take. To be an efficient intermediary, the banks are encouraged to give reasonable deposit and financing rates. If the banks pay lower deposit rates and higher financing rates, it might drive higher intermediation costs and jeopardise the welfare of the society (Hutapea & Kasri 2010; Islam & Nishiyama 2016). Not only that, the banks will be at risk in losing their depositors and borrower. This high intermediation cost can be reflected by high Net Profit Margin (NPM) for Islamic banks. This term on the other hand is known as Net Interest Margin (NIM) for the conventional banks.

As the Malaysian Islamic banking system is dominated by the Islamic subsidiaries of conventional banks, therefore its impact towards the market NPM is something to be discovered. This is because these Islamic subsidiary banks existed from the conventional parent banks' starting capital. Being the largest shareholder of the Islamic subsidiary banks, it heightens our curiosity that the parent banks might give impact to its Islamic subsidiary banks' NPM. Furthermore, according to Mili et al. (2015) the parent banks have the ability to influence its subsidiary's policy in deposit and financing. Therefore, we believe that there exists a tendency for that kind of influence to take place between the conventional parent banks and its Islamic subsidiary banks.

In addition, since the conventional banks has loosened some of its market share and profit to the Islamic banks, therefore these conventional banks might wish to generate profit through their Islamic subsidiary banks via higher NPM. Therefore, the interest of the conventional banks participating in the Islamic banking system is something to be pondered upon. This is because the conventional parent banks either truly want to offer Islamic banking products and support the Islamic principles or be solely driven by the profit motive. The Islamic subsidiaries of conventional banks might follow its conventional parent banks' principle and meet the expectations of the parent banks (Zada et al. 2016). They further added that the board of directors of the conventional parent banks have the ability to influence the decision making of the Islamic banking subsidiary.

TABLE 1. Islamic banks total assets, financing and deposits in 2015 (in billion RM)

	Islamic subsidiaries of conventional banks (a)	Full-fledged Islamic banks (b)	All Islamic Banks (a + b)
Total Asset	430.68	92.89	523.57
Total Financing	321.27	62.26	383.53
Total Deposit	356.50	80.42	436.92

Source: Bankscope

Nevertheless, in some cases, these Islamic subsidiaries of conventional banks may contribute towards a lower NPM. This is because both the conventional parent banks and its subsidiary are operating under the dual branch approach. These Islamic subsidiary banks can still take advantage of its conventional parent banks. Firstly, it allows for cost saving in opening a new branch as it can leverage on the parent banks' branch. Secondly, in terms of the Islamic banking products being offered, they are still in the same branch where the conventional product is being offered. Therefore, it can be argued that the banks can still absorb some cost saving in terms of overhead, information technology system and marketing (Zada et al. 2016). On the other hand, full-fledge Islamic banks have to absorb all these costs that might result in a higher NPM.

Therefore, along with other bank specific, market specific and macroeconomic determinant factors, this paper is interested in understanding the interactions of the Islamic subsidiaries of conventional banks towards NPM. Next, this study seeks to reconfirm whether the NIM of the conventional parent banks have any impact towards the Islamic subsidiary banks' NPM. In general, there are studies relating to the determinant of NIM, while investigation has revealed that there is lack of in-depth studies relating to the NPM of the Islamic banks. Besides that, as far as our knowledge is concerned, this is the first study that investigates the impact of conventional Islamic subsidiary banks towards the NPM and also the first study to explore the impact of conventional parent banks' NIM towards its Islamic subsidiary banks' NPM.

This paper is organized as follows. The next section provides a review of related literature on the determinant of NIM and NPM. Section 3 describes the empirical model, methodology and the measurement of the data used. In section 4, we present the results and discussion. Finally, the last section concludes the paper.

## LITERATURE REVIEW

### PREVIOUS LITERATURE ON NIM

According to the dealership model by Ho and Saunders (1981), the intermediary experiences uncertainty in the arrival of deposits and the demand for loans. This uncertainty creates difficulties for banks to manage the funds. To overcome this, the banks must participate in the money market and face the risk of interest. This results in the banks becoming a risk averse dealer with an outcome which leads to greater NIM. Therefore, many studies try to include risk aversion as the potential determinants in their model. For example, Kumari (2014) analysed the domestic banks in Sri Lanka's banking system from 2002 to 2011. The banking system in Sri Lanka was reported to be positively significant to risk aversion. Another positive impact of risk aversion is in the Indonesian banking

system where Trinugroho et al. (2014) studied the impact of NIM after the 1997/1998 economic crisis. This study concentrated on the years 2001 to 2009. Similarly, Aboagye et al. (2008) in Ghana and McShane and Sharpe (1985) in Australia supported the same findings. In contrast, Poghosyan (2013) concentrated on several low-income countries and several emerging market countries found that in these two types of countries, the risk aversion tends to reduce NIM. It is expected that banks avoid being profitable in a risky way.

Previous studies also include the operating cost in the model as was introduced by Maudos and Guevara (2004). For instance, Afanasieff et al. (2002) investigated the Brazilian banking system and found that the operating cost is positively related to NIM. This is supported by Khediri (2011) in Tunisia's banking industry and Kasman et al. (2010) in Central and Eastern European. In another study, Gounder and Sharma (2012) who studied the Fiji banking system, their result also revealed a positive relationship between operating cost and NIM. A recent study by Almarzoqi and Naceur (2015) in Caucasus and Central Asia (CCA) from the years 1998 to 2013 highlighted that the most significant impact of NIM in CCA is from the operation cost. This operating cost is positively significant to NIM due to the banks transferring the cost to the customer through higher financing rates and lower deposits rates. However, in Malaysia, based on the study from the years 2000 to 2008, Sufian (2012) found that the operating cost negatively impacts NIM of the financial institutions. This negative impact of operating cost is supported by the findings concentrated in five South East Asian countries made by Sufian and Hassan (2012).

In term of size, Marinkovic and Radovic (2014) in their study done in Serbia found that large banks will charge lower NIM due to economies of scale. This is supported by Islam and Nishiyama (2016) in South Asian countries and Hussain (2014) in Pakistan. In low and middle income countries, Dietrich and Wanzenried (2014) found that large banks fail to fully occupy the economies of scale, which resulted in higher costs in managing the banks. This indirectly drives higher NIM. Besides that, this positive result might be due to large banks having market power where it allows them to exploit the NIM. Similarly, the study done by Aboagye et al. (2008) concentrating on Ghanaian's banking over the period of 2001 to 2006 also found a positive relationship with NIM. In Japanese banking system, though insignificant, Nasserinia et al. (2014) also reported a positive result. Therefore, to have a negative relationship, the bank needs to have quality management so that economies of scale can be attained.

Next, Hussain (2014) found a negative impact of liquidity towards NIM. This study concentrated on Pakistan's banking system. Subsequently, Were and Wambua (2014) did a study on Kenya's banking system and also supported the same findings. For Amuakwa-

Mensah and Marbuah (2015), they calculated the liquidity by the ratio of liquid assets to total liabilities and found that large banks will increase the NIM in accordance to high liquidity. In contrast, small banks tend to reduce NIM in accordance to high liquidity. Another relevant study done in Estonia by Mannasoo (2013) corroborated that the liquidity will lessen the NIM. Valverde and Fernandez (2007) focused on European banks, reported a positive coefficient of liquidity as proxied by liquid assets to short term funds toward NIM. There are also studies which found that liquidity does not bring any effect to NIM. For example, the study by Marinkovic and Radovic (2014) reported insignificant results of liquidity. In terms of liquidity risk, there is evidence showing that liquidity risk matters in determining NIM. For instance, Gounder and Sharma (2012) concentrated their study in Fiji for the Small Island Developing State (SIDS) in years 2000 to 2010. The ratio of total liquid assets to total assets will negatively impact NIM. Sufian (2012) also studied the impact of liquidity risk towards NIM where he studied liquidity risk by loans over total assets. In this study, there were different results located in commercial and merchant banks. The result denoted that it is only merchant banks' NIM associated with liquidity risk with positive effects.

Moving on to credit risk, Chortareas et al. (2012) measured it by the ratio of loan loss reserves to gross loans. The finding was negative for Costa Rica and positive for Uruguay. In some countries like Argentina, Brazil, Chile, Colombia, Paraguay, Peru and Venezuela, it seemed that there is no impact of credit risk towards NIM. In a study made by Sufian and Hassan (2012) in South East Asian countries, they disclosed that the credit risk measured by the loan loss provision to total loans will not impact NIM. Meanwhile, Hawtrey and Liang (2008) measured credit risk by loan to average total assets revealed positive result. In Sub-Saharan Africa, Ahokpossi (2013) chose to measure the credit risk by the ratio of loans over deposits and short-term funding also obtained the same positive impact. The negative impact of credit risk to NIM can be traced in Trinugroho et al. (2014) who focus on Indonesian commercial banking from the years 2001 to 2009. This confirmed the findings in the Russian banking system by Fungacova and Poghosyan (2011) for the years 1999 to 2007.

Islam and Nishiyama (2016) chose to study the factors influencing the South Asian countries' NIM, which include Bangladesh, Nepal, Pakistan and India. The fixed effect model was used to regress the data of 230 banks in these countries during the years 1997 to 2012. The market concentration was found to have a negative impact on NIM. The authors suggested that the foreign ownership operating in the markets contribute to this result since the banks have better management. Next, Dietrich and Wanzenried (2014) measured market concentration by the percentage of the three largest banks' total assets over

overall total assets in the commercial banking market. It was negative for high income countries and positive for low income countries. This was because the banks in high income countries have better operational efficiency compared to banks in low income countries. However, the market concentration seems not to have impact on middle income countries. Almeida and Divino (2015) further observed this topic in recent years by using data in Brazilian banking from 2001 to 2012. They observed that the margin was significant and positively related to market concentration as measured by the Herfindahl-Hirschman Index (HHI). This is supported by Tan (2012) who confirmed that HHI positively impacts the Philippines's commercial banking's NIM. Whilst in Sri Lanka, Kumari (2014) who used the same proxy for market concentration discovered that there were no effects of market concentration towards NIM.

The stock market development is measured by the stock market capitalization to GDP. It allows us to see the size of the equity market in the country. There are very few studies investigating the impact of stock market development towards NIM. For example, Dietrich and Wanzenried (2014) found that in high income countries, this stock market development tends to reduce NIM. This shows that the equity market acts as an alternative to the banking system. People opt to buy equity instead of placing their money in banks. For firms, they can issue equity instead of obtaining financing from the banks. However, there was no impact of stock market development towards the low and middle income countries found in this study. Another study was by Kasman et al. (2010) who concentrated on European Union countries consisting of 29 countries from years 1995 to 2006 found that market capitalization was insignificant to NIM. The results of Tan (2012) also indicated that stock market development does not reduce the NIM, but works in the opposite. A study by Demircukunt and Huizinga (1999) that investigated 80 countries' NIM determinants also showed a positive result of stock market development to NIM.

Next, for inflation, Entrop et al. (2015) who chose to study the German banking industry found that inflation would positively influenced NIM. In Kenya, Tarus et al. (2012) discovered the same relationship of inflation and NIM. However, a negative relationship of inflation towards NIM can be traced in Egypt as reported by Naceur and Kandil (2009). Few insignificant results of inflation can be traced in Chortareas et al. (2012) and Dabla-Norris and Floerkemeier (2007). Another supporting study was in Bangladesh and Honduras's banking sector where both were not impacted by inflation (Hossain 2012; Nassar et al. 2014). Subsequently, for the gross domestic product growth, Valverde and Fernandez (2007) who focused on European banks consisting of Sweden, the Netherlands, the United Kingdom, Italy, Germany, Spain and France obtained a negative result. This was supported by (Entrop et al. 2014; Tarus et



al. 2012) who obtained the same findings in Kenya and Germany's banking system. Dabla-Norris and Floerkemeier (2007) conducted a study in Armenia during years 2002 to 2006 and found out that the GDP positively influences the NIM. The insignificant relationship of GDP growth can be traced in Brock and Suarez (2000), Kumari (2014) and Nassar et al. (2014).

#### PREVIOUS LITERATURE ON NPM

The literature on NPM can be traced to Malim et al. (2016), who concentrated on OIC countries with dual banking systems from the years 2005 to 2011. The findings were that banks tended to charge higher NPM due to higher risk aversion, inflation and credit risk. The size proxy by log of total assets seemed to reduce the NPM in these countries. Compared to conventional banks, the Islamic banks faced scale inefficiency. The overhead cost, market concentrations and institutional factors such as governance index, rule of law, regulatory quality, control of corruption, political stability were all insignificant to NPM.

Sun et al. (2017) also investigated the Islamic banks' NPM in OIC countries. The study involved 15 OIC countries for 14 time frames. There were many variables used in this study which separated the banks by specific variables, specialization variables and diversification variables. By using the generalized method of moments, only the Lerner Index proxy of market concentrations seemed significant for the Islamic banks whereas all the other bank specific, specialization and diversification variables were insignificant to the NPM. The same goes to the risk aversion variable where the Islamic banks in OIC showed an insignificant result.

Sun et al. (2014) studied 36 Islamic banks in 14 OIC countries ranging from years 1997 to 2010. The results showed that size was significantly positive to NPM, signifying that larger banks face larger risks. Capital adequacy, liquidity risk and operating cost showed significantly positive coefficients, with operating cost being the most significant followed by liquidity risk. The asset quality as the proxy for default and credit risk was negative towards the NPM with higher loan loss provision requiring a larger margin for banks to compensate the credit risk. Management efficiency, implicit interest payment, market power, risk aversion and opportunity costs of required reserves did not influence the NPM.

Additionally, Hutapea and Kasri (2010) evaluated NPM in Indonesia's banking system for the period of 1996 to 2006. This study aimed to see the long run relationship of NPM to the determinant factors. So far, liquidity risk, capital base, management quality, implicit cost, default risk, opportunity costs of bank reserves and interest rate volatility have a long run relationship to the NPM. The interest rate, volatility and liquidity risk showed a

negative impact while the other factors reacted positively. The ratio of operating cost to operating income proxy used for management quality showed a positive impact on NPM. This ratio does not seem to properly reflect the management quality as a better management quality should result in lower NPM, not otherwise.

#### METHODOLOGY

The data of this study comprised of 16 Islamic banks for the period of 2011 to 2015. The data on bank specific was taken from the Bankscope database provided by Fitch-IBCA. Meanwhile, market specific data i.e, the market concentration and Islamic stock market development was calculated based on data obtained from Bankscope and the Shariah Security Commission. The data from the World Bank World Development Indicators (WDI) was for gross domestic product growth and inflation. This model was regressed using the Pool, Fem, and Rem model. The model of this study is as below:

$$NPM_{it} = \alpha_i + \beta_1 B_{it} + \beta_2 MS_{it} + \beta_3 M_{it} + \varepsilon_{it} \quad (1)$$

That is,  $NPM$  is the net profit margin of the Islamic bank where  $i$  is the bank and  $j$  is the period. The  $B$  is the bank's specific variable, while the  $MS$  and  $M$  are the market specific and macroeconomic variables respectively. Next, the  $\varepsilon$  is the statistical disturbance term. The bank specific variable refers to the size (SZ), risk aversion (RA), operating cost (OC), liquidity (LIQ) and credit risk (CR). The market specific variable is market concentration (MC). The macroeconomic variables include Islamic stock market development (ISMD), GDP growth (GDP) and inflation (INF).

To assess the impact of the Islamic subsidiaries of conventional banks towards the NPM, dummy variable will be used.  $D$  is the dummy variable and equal 1 if it is Islamic subsidiaries of conventional banks and 0 if otherwise. Therefore, the equation 1 is expanded to Eq. 2.

$$\begin{aligned} NPM_{it} = & \alpha_i + \beta_1 SZ_{it} + \beta_2 RA_{it} + \beta_3 OC_{it} + \beta_4 LIQ_{it} \\ & + \beta_5 CR_{it} + \beta_6 MC_{it} + \beta_7 ISMD_{it} + \beta_8 GDP_{it} \\ & + \beta_9 INF_{it} + \beta_{10} D_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

Next, to evaluate whether the conventional parent banks' NIM has any impact on its Islamic subsidiary banks' NPM, we will include the NIM of the conventional parent banks to form Eq. 3. Here we restructure the sample to only 11 Islamic banks which is limited to Islamic subsidiaries of conventional banks. Therefore the NPM refers to the NPM of 11 Islamic subsidiaries of conventional banks and NIM is the value for 11 conventional parent banks.

$$\begin{aligned} NPM_{it} = & \alpha_i + \beta_1 SZ_{it} + \beta_2 RA_{it} + \beta_3 OC_{it} + \beta_4 LIQ_{it} \\ & + \beta_5 CR_{it} + \beta_6 MC_{it} + \beta_7 ISMD_{it} + \beta_8 GDP_{it} \\ & + \beta_9 INF_{it} + \beta_{10} D_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

DESCRIPTION OF VARIABLES

BANK SPECIFIC VARIABLES

*Size:* Size of banks is captured by logarithm of banks’ total assets. Some banks are able to benefit the economy of scale from its operations which then allows it to transfer the cost saving to the customer via lower NPM (Islam & Nishiyama 2016). In contrast, some banks might face a diseconomy of scales where it does not benefit in cost saving, thus are unable to offer lower NPM (Sun et al. 2014).

*Risk aversion:* Risk averse banks will have more equity compared to debt in its capital structure. Therefore, risk aversion is measured by equity over total assets ratio. In order to compensate the risk-taking behaviour of the shareholder funds, the banks will increase the NPM (Kumari 2014).

*Operating cost:* Operating cost is measured by the ratio of operating costs over total assets. High operating costs are expected to influence the banks to charge high NPM. This is because banks normally will transfer the cost of the operations to the customer via higher lending rates and lower deposit rates (Almarzoqi & Naceur 2015).

*Liquidity:* This liquidity is measured by the liquid assets to deposits and short term fund ratio. Basically, the higher the liquidity, the lower the liquidity risk. This will lead banks to set lower NPM as the banks need to bear less risk (Sun et al. 2017). However, there is an impact of opportunity cost where having more liquid assets means less investment opportunities for banks, thus encouraging the banks to set higher NPM (Poghosyan 2013).

*Credit risk:* The credit risk is calculated by loan loss reserve over gross loan ratio. It is expected that higher credit risk will result in higher NPM. This is because as the banks face high risk, it will compensate the risk exposure by passing the risk premium to the borrowers (Were & Wambua 2014).

MARKET SPECIFIC VARIABLE

*Market concentration:* The Herfindahl-Hirschman index (HHI) is used as a proxy of the market concentration which is measured by the sum of squares of bank total assets. The market concentration can be related to market power where the banks which hold the market can control the price of the financing and deposit (Sun et al. 2014). In this case, the bank has the option either to charge higher or lower NPM.

MACROECONOMIC SPECIFIC VARIABLES

*Islamic stock market development:* The Islamic stock market development is measured as a ratio of Islamic market capitalization over GDP. Islamic stock market development may influence NPM both positively and negatively. The positive relationship of the Islamic stock market development to NPM shows that the debt and equity financing complement one another (Demirguc-Kunt & Huizinga 1999). Accordingly, if the capital market becomes an alternative to the banking product, the banks may have to reduce its NPM to remain as the customer’s choice (Dietrich & Wanzenried 2014).

*GDP growth:* This GDP growth measures the growth in real GDP. Basically, economic growth will impact the supply of deposit and the demand of financing. When the economy is prosperous, there will be more demand

TABLE 2. Empirical model variables and formulas

Variables	Expected Sign	Formulas
Net Profit Margin		Net financing income to average total assets
Net Interest Margin	+/-	Net interest income to average total assets
Size	+/-	Log of total assets
Risk Aversion	+	Equity to total assets
Operating Cost	+	Operating costs to total assets
Liquidity	+/-	Liquid assets to deposits and short term fund
Credit Risk	+	Loan loss reserve to gross loan
Market Concentration	+/-	Herfindahl index for total assets
Islamic Stock Market Development	+/-	Islamic market capitalization over GDP
GDP Growth	+/-	Real GDP growth rate
Inflation	+/-	Consumer prices index
Dummy Islamic Subsidiaries of Conventional Banks	+/-	Dummy equal to 1 for Islamic subsidiaries of conventional banks and 0 for full-fledge Islamic banks

TABLE 3. Estimation results of Islamic subsidiaries of conventional banks on net profit margin

Variables	POOL	REM
lnSize	0.1333 (0.095)	0.220** (0.110)
Risk Averse	0.029 (0.031)	0.072*** (0.024)
Operating Cost	1.156*** (0.196)	0.675*** (0.233)
Liquidity	-0.007 (0.006)	-0.003 (0.002)
Credit Risk	-0.044 (0.029)	-0.042*** (0.010)
Market Concentration	-0.001** (0.000)	-0.002*** (0.000)
Islamic Stock Market Development	0.837 (2.398)	1.964*** (0.424)
GDP Growth	-0.102 (0.155)	-0.079*** (0.019)
Inflation	0.128 (0.150)	0.153*** (0.017)
Dummy Islamic Subsidiaries of Conventional Banks	0.876*** (0.234)	0.671** (0.285)
Constant	-0.179 (3.286)	-2.057 (2.100)
	Model Criteria	
Observations	80	80
Adjusted-R	0.407	0.249
S.E. of Reg	0.496	0.363
D-W Stat	0.614	0.904
F-stat (Overall)	6.442***	3.631***
Breusch Pagan Test		0.000***
Number of Bank	16	16

Note: Asterisks \*, \*\* and \*\*\* denote significant at 10%, 5% and 1% critical value, respectively. Parentheses refer to standard errors.

for financing where the banks may charge higher financing rates. However, some banks might charge a lower financing rate during the prospering economy as there will be less default risk (Entrop et al. 2014; Tarus et al. 2012).

*Inflation:* This inflation is proxied by the consumer price index. For the customer, during inflation, they will deposit more money and opt for less financing. The banks, however, will increase NPM during economic uncertainty especially when inflation is anticipated (Nasserinia et al. 2014). There will also be a negative relationship of inflation and NPM if the banks opt to boost the demand for financing (Naceur & Omran 2011).

#### RESULT AND DISCUSSIONS

This study began with Pool regression and the results showed that only the operating cost, market

concentration and the dummy Islamic subsidiaries of conventional banks are significant to NPM. The other variables do not give any impact to the NPM. This study, however, was unable to run FEM. Therefore, in choosing between the Pool and REM models, this study ran the Breusch-Pagan Lagrange Multiplier test. The result suggested REM as the best model and we later run the REM using white adjusted standard errors to minimize the heterogeneity.

Accordingly, the result suggests that many banks' specific, market specific and macroeconomic variables influence the NPM in Malaysian Islamic banks. In Table 3, the size shows a positive relationship towards the NPM. The result is consistent with the result in several past studies such as Aboagye et al. 2008, Afanasieff et al. 2002 and Dietrich and Wanzenried 2014. According to Dietrich and Wanzenried (2014) and Pasiouras and Kosmidou (2007), the positive coefficient shows that the banks have diseconomies of scales. Besides that, this might

be the result of banks' expansion through its branches. Therefore, these Islamic banks might charge higher NPM to compensate for the cost of operations related to the expansions and related technology invested in it (Mensah & Abor 2014). Besides that, the large banks might face higher risks which results in higher NPM.

Next, our result for risk aversion is positive and significant to NPM. This is an expected result as banks with higher equity will charge higher costs to the customer, as the shareholder surely require returns for the money invested in the banks. Besides that, the banks must compensate for the shareholder's risk taking where the banks end up charging the customer (Ahokpossi 2013). Most studies (e.g., Kumari 2014; McShane & Sharpe 1985; Sun et al. 2017; Trinugroho et al. 2014) reported a positive impact of risk aversion except for Poghosyan (2013) who reported an inverted result.

As for the operating cost, we found that the operating cost has positive impact on NPM at 1 percent significant level. This means the banks do transfer the cost related to equipment and personnel to the customer by charging higher NPM. An increase of 1 percent in operating cost results in 0.675 percent increase in NPM. This result is consistent with the results found by Sun et al. (2014), Afanasieff et al. (2002) and Khediri and Ben-Khedhiri (2011). The Islamic banks therefore need to properly manage and minimizing its operating cost in order to offer better NPM.

Moving to another bank specific variable, liquidity found to be insignificant which is inconsistent with the previous studies who indicated mixed result of positive (Sufian 2012; Sun et al. 2014) and negative (Gounder & Sharma 2012; Hussain 2014; Mannasoo 2013). Next, the credit risk is negatively impacts the NPM. This is in accordance to the results found by Almarzoqi and Naceur (2015), Fungacova and Poghosyan (2011) and Williams (2007). According to Williams (2007), these negative effects are due to the banks' willingness to sacrifice its margin to gain higher market share. Another possible reason was given by Almarzoqi and Naceur (2015) who believed that this is due to the mispricing of the credit risk which resulted in banks charging lower NPM.

The market concentration in Malaysia Islamic banking as measured by the HHI shows that the higher the market concentration, the lower the NPM. This means the NPM has an inverse relationship towards market concentration. Therefore, this result contradicts our expected result that the banks will exploit its market power in charging higher NPM. In our case, the banks that dominate the market are efficient banks, which are then able to set low NPM. This enables the banks to gain more market share. Our result reconfirms the findings by previous authors include Islam and Nishiyama (2016) and Sufian and Hassan (2012).

The Islamic stock market development is positively significant to NPM. This finding is in line with the results obtained by Demirguc-Kunt and Huizinga (1999) and Tan (2012). Thus, the result shows that the Islamic capital market complemented the product offered by the Islamic banks to its customers in Malaysia. The capital market gives the banks better information of the traded firm. This allows the banks to better evaluate the credit risk of its customers and at the same time allows for lower lending cost related to monitoring and others (Naceur & Kandil 2009; Tan 2012). Indirectly this will stimulate the banking lending activity.

Turning to other macroeconomic variables, there is a negative impact of GDP growth to the NPM. This is, true specifically in a prosperous economy whereby the tendency towards default in financing is lesser. Therefore, the banks can reduce the NPM in view of lower credit risk during this economic term. Even though there are studies that reported a positive result such as study done by Dabla-Norris and Floerkemeier (2007), this study follows the results found in Entrop et al. (2014) and Tarus et al. (2012).

As for inflation, it creates uncertainty and risk in the banking market. Therefore, the banks will charge higher NPM in return for the risk it has to face. Besides that, this positive sign might indicate that the bank has anticipated the inflation in the country where it is able to adjust its financing rates accordingly. For instance, during inflation the banks will normally charge higher financing rates. These results are consistent with other studies such as Entrop et al. (2014) in German, Tarus et al. (2012) in Egypt and Beck and Hesse (2009) in Uganda. While for the dummy of Islamic subsidiaries of conventional banks, the result suggests that the Islamic subsidiaries of conventional banks are significant and have a positive coefficient towards the NPM. This indicates that these Islamic subsidiaries of conventional banks charge higher NPM on average. Possibly, the concept of dual branch approach and some operational cost sharing with the parent banks might only bring small advantage to these Islamic subsidiaries of conventional banks. Therefore it is worth to extend this study by checking whether the NPM of Islamic subsidiaries of conventional banks are influenced by its conventional parent banks' NIM. This will be further discussed in Table 4.

In Table 4, as suggested by the Hausman test, the FEM is preferred as compared to the REM. In minimizing the heterogeneity risk, therefore we run the FEM using white adjusted standard errors. Based on the result, it is found that size, risk aversion and operating cost are positively impact on NPM at 1 percent significant level. While market concentration and GDP growth indicates negative relationship on NPM during period of study. The results also displayed that Islamic stock market development and inflations exerts positive impact on NPM. The most important finding in Table 4 is the result of conventional parent banks' NIM towards the Islamic



TABLE 4. Estimation results of conventional parent banks' net interest margin on net profit margin

Variables	POOL	FEM	REM
lnSize	0.200* (0.117)	2.767*** (0.498)	0.355 (0.213)
Risk Aversion	0.219*** (0.064)	0.528*** (0.054)	0.279*** (0.080)
Operating Cost	1.286*** (0.267)	0.737*** (0.263)	1.034** (0.439)
Liquidity	-0.000 (0.007)	0.001 (0.002)	0.001 (0.004)
Credit Risk	0.271* (0.134)	0.014 (0.058)	0.365*** (0.068)
Market Concentration	-0.000 (0.000)	-0.008*** (0.000)	-0.001* (0.001)
Islamic Stock Market Development	1.245 (2.664)	6.989*** (0.498)	2.255** (1.063)
GDP Growth	0.011 (0.166)	-0.402*** (0.042)	0.022 (0.029)
Inflation	0.102 (0.165)	0.645*** (0.057)	0.144*** (0.037)
Net Interest Margin	0.223 (0.324)	-0.046 (0.100)	-0.047 (0.336)
Constant	-5.252 (3.689)	-44.399*** (8.471)	-8.056 (5.025)
		Model Criteria	
Observations	55	55	55
Adjusted-R	0.614	0.928	0.450
S.E. of Reg	0.441	0.249	0.359
D-W Stat	0.879	1.971	1.279
F-stat (Overall)	9.614***	36.049***	5.420***
F-stat (Redundant-test)		13.890***	
Hausman Test			0.000***
Breusch and Pagan			0.034**
Number of Bank	11	11	11

Note: Asterisks \*, \*\* and \*\*\* denote significant at 10%, 5% and 1% critical value, respectively. Parentheses refer to standard errors. Figure for Hausman test is *p-value*.

subsidiaries of conventional banks' NPM. These NIM is found to be insignificant on NPM of Islamic subsidiaries of conventional banks. This means during the period of this study the NIM of conventional parent banks would not affect the NPM of its Islamic subsidiary banks. This result shows that the conventional parent banks not influencing its Islamic subsidiary banks' policy and actions towards lending and deposit activities. Islamic subsidiary banks have their own philosophy and directions which separated from its conventional parent banks. This result supported by Abdul-Majid and Hassan (2011) study which found that typically Islamic subsidiary banks is a separate legal entity from its parent banks and responsible for its own assets and liabilities.

## CONCLUSION

In Malaysia, conventional banks are permitted to participate in the Islamic banking sector through subsidiary banks. Thus, this allows us to further enrich the existing literature of the NPM by exploring the impact of the Islamic subsidiaries of conventional banks towards the NPM. Based on the results, we found that the Islamic subsidiaries of conventional banks positively impact NPM. This study also analysed the impact of conventional parent banks' NIM on its Islamic subsidiary banks' NPM. However, this study reported that there is no impact of the conventional parent banks' NIM on its Islamic subsidiary banks' NPM. Therefore, this result explains that during the period under this study, the conventional parent banks do not influence in the policy

of its Islamic subsidiary banks pertaining to deposits and financings.

This paper also analysed the impact of the bank's specific, market specific and macroeconomic variables toward the NPM. Some variables increase the NPM while some variables decrease NPM. For example, size and risk aversion have a positive impact on NPM. This means high size and risk aversion will increase NPM. Since the banks have diseconomies of scales, therefore the banks' management needs to monitor the banks' productivity to achieve economies of scales. Banks which enjoy economies of scales are able to reduce NPM.

Other bank specific variable which is the credit risk will decrease NPM. So far, we find this negative relationship of credit risk to NPM due to banks mispricing its credit risk where this higher credit risk will not be fully compensated by NPM charged by the banks. The liquidity however is found insignificant on NPM. Next, contrary to many previous studies, the result in market concentration suggests that it does not influence higher NPM, but rather influences it in an opposite direction. The same coefficient was obtained for the GDP growth where the economic growth has a negative relationship towards NPM. While the result of inflation and the Islamic stock market development revealed a positive impact towards NPM.

For policy implications, the result indicates the importance of good macroeconomic environment in ensuring an efficient intermediary. The government needs to implement the right monetary and fiscal policy which not only minimize the inflation but at the same time accelerating the GDP growth in the country. On the operating cost, the bank needs to reduce its operating cost by efficiently managed the cost using appropriate strategy which result in lowering the NPM. Lastly, the banks may enhance its risk management practice as the Islamic banks will face risk in meeting its daily business deals. Having proper risk management practice will be beneficial to lower the NPM.

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