

# THE EFFECT OF NON-TRADITIONAL PRODUCT ON BANK'S RISK AND PROFITABILITY: A CASE STUDY OF INDONESIAN COMMERCIAL BANKS FOR THE YEAR 2007 – 2013<sup>1</sup>

**Febriyanti**

School of Business/Finance  
Faculty of Business Administration & Humanities  
Swiss German University, BSD City, Serpong, Tangerang, Indonesia  
Email: febriyanti@windowslive.com

**Yosman Bustaman**

School of Accounting  
Faculty of Business Administration & Humanities  
Swiss German University, BSD City, Serpong, Tangerang, Indonesia  
Email: jbustaman@gmail.com

## ABSTRACT

*The deregulation policies have made the borders between bank and non-bank financial institutions and financial products in the Indonesian banking industry start to break down. These policies have increased the competitive pressure and led to significant changes in banking strategies. Banks start to shift their business into less traditional financial activities and increase their involvement in non-traditional activities through product diversification that generates non-interest income. However, the effect of this shift is still questionable, whether it is significantly or positively related to the performance of the bank. The study aims to analyze the effect of non-traditional product offering on bank's risk and profitability. A balanced panel data of the 29 public listed banks in Indonesia during the period of 2007 – 2013 is employed in this study. This study found that diversification into non-interest income is positively related but does not significantly impact risk adjusted returns and insolvency risk. However, diversification in non-interest income is negatively related to insolvency risk and risk-adjusted returns. On the other hand, diversification into and within noninterest income is positively related to the bank's profitability.*

*Keywords: Finance and banking, non-traditional product, non-interest income, diversification, bank performance.*

## I. INTRODUCTION

Since the concept of banks were established, bank's basic function as a financial intermediary is to channel funds between surplus and deficit agents usually called depositors and borrowers. Being an intermediary allows bank to make a profit earned from the difference between interest income and interest charges from the borrowers and depositors. This difference is called the net interest margin (NIM).

Financial deregulation in Indonesia mainly involved eliminating Bank Indonesia's control over interest rates on deposits and loans, removing credit ceiling system for banks and recapitalizing state banks with funds provided by the World Bank (Low, 1997). According to Astiyah (2001), this deregulation was necessary to maintain economic stability and performance, efficient allocation of resources. However, in reality the financial deregulation contributes to economic overheating because of the increase in credit provision to the private sector and market interest rates by Bank Indonesia.

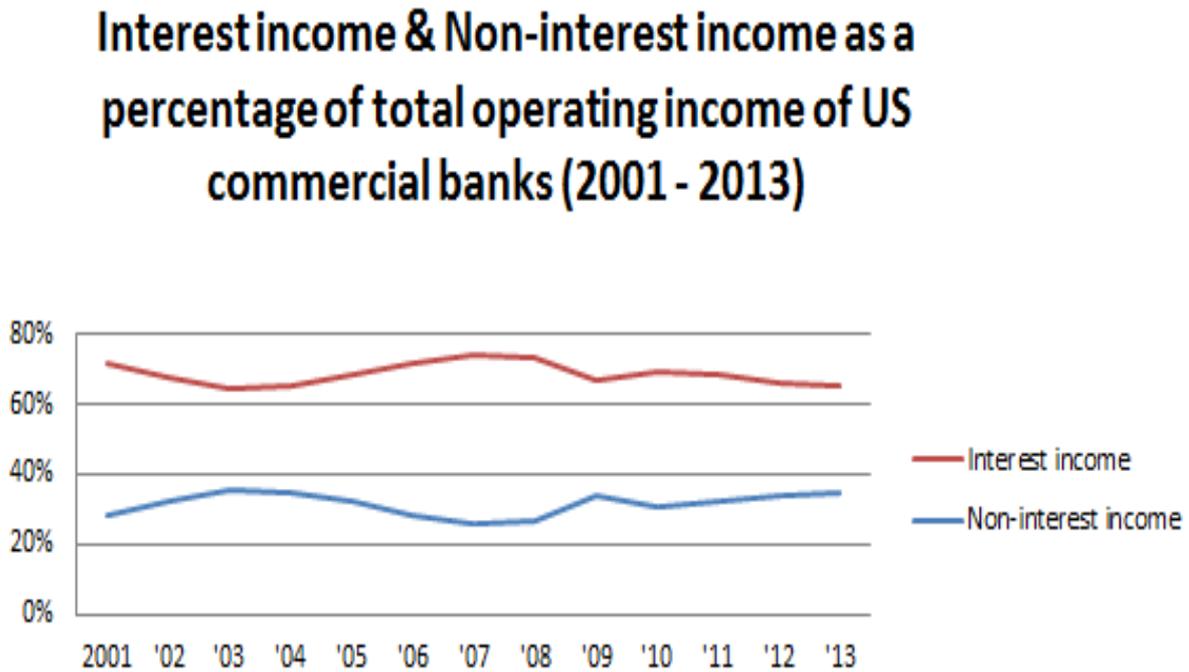
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Moreover, the profitability rate of banking sector also declined due to the increasing competition in the banking industry.

This deregulation enhances banks to be more creative for profit seeking. In spite of channeling the third-party funds and making a high spread for NIM, De Young and Rice (2004) mentioned how banks earn substantial amount of non-interest income through product diversification, i.e. checking and cash management, deposit and trust account services, wealth management, securities brokerage, mutual fund sales, insurance agency and underwriting and investment banking.

**Figure 1: Trend of net interest income and non-interest income as a percentage of total operating income of US commercial banks (2001-2013)**



Source: FDIC

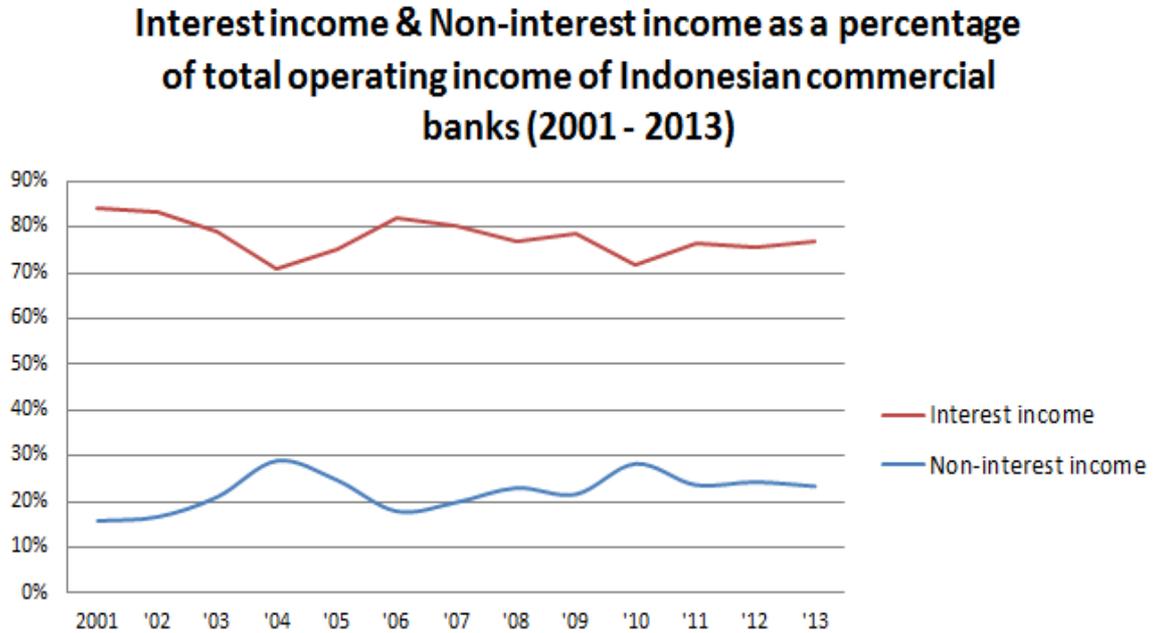
Since the early 1980's, non-interest income generated by the US commercial banks accounted for nearly half of operating income. The shift had been higher than that of the expectation of industry experts. Refer to Figure 1. While the Indonesian commercial banks also had increasing amounts of non-interest income in the mid 2000's as that shown in Figure 2. It proved that Indonesian banks also considered using noninterest income as alternative funding sources due to the increasing competition and maintaining their customers' satisfaction.

Triggered by deregulation policies, changes in macroeconomic forces and global economic and technology developments, the banking industry was trying to change the old way of doing business. This is evidenced when the borders between bank and non-bank financial institutions and financial products start to break down.

Moreover, these changes also led to those in improved banking strategies and increased the competitive pressure. In spite of that, the deregulation in the banking industry earlier makes banks increase their involvement in non-traditional activities, including that of diversifying activities in the generation of non-interest income through

product lines expansion and various financial service products reserved by other financial institutions beforehand (Gamra and Plihon, 2010).

**Figure 2: Trend of net interest income and non-interest income as a percentage of total operating income of Indonesian commercial banks (2001-2013)**



**Source: Bank Indonesia**

In addition, Goldber, L.S. (2008) emphasized that globalization of banking industry does not only increase the competition from within, but also from insurance companies, finance companies, security dealers and credit unions. These financial heavyweights bring firms from different industries to create conglomerate groups that offer multiple services. The decline of traditional activities encourages banks to engage more in non-traditional activities that earned more fee-based income. If traditional activities focus mostly on channeling funds from savers to borrowers, nontraditional activities are the newer services that banks currently invented. McDonald & Koch (2006) concluded that the current change in banking industry was a public confusion about what is or is not a bank. They also labeled banks and their competitors as “financial department stores” because of the multiple services offered to the public. In nontraditional activities, an insurance agency is suitable for any size of banking companies that aim to do cross-selling on new financial products and services to their retail (household) clients.

The affiliation of banking and insurance has produced the brokering (sales) of life insurance policies that protect businesses, families and individuals against any loss in the event of death, including that of saving accounts to prepare for future financial needs. Investment banking has also been added to the product lines automatically, especially for serving the large corporate clients. Friesen, G.C. & Sapp, TRA (2007) classified the products of investment banking into mutual funds, bonds, stocks, annuities and similar financial instruments from the points of timing ability in making returns. Mutual funds relatively offer high long-run yields and spread investor’s risk exposure because most of the funds are well diversified across different types of stocks, bonds and other financial instruments DeYoung and Torna (2013) classified investment banking as one that leads stakeholder and other activities to require the banks to hold risky assets.

They argued that stakeholder activities led to generate negative income more frequently than fee for service activities. Stakeholder income also tend to reduce the likelihood that financially healthy banks were to suffer financial distress and fail, besides that stakeholder activities are more exposed to the risk in their traditional activities that require banks to hold assets that can lose or gain value based on the movements in market prices, Therefore, these activities are also exposed to market risk. Trading revenue generated from the net gain or loss from trading cash instruments, sales of assets and other financial instruments, off-balance sheet derivatives, revaluation of interest rate, revaluation to carry the value of asset, equity derivative, foreign exchange, incidental income and expense related to the purchase and sale liabilities and assets, are generally due to marking to the market (Stiroh, 2002). Service charges consisting of excess check writing, early withdrawal or closure fees, ATM usage, maintenance of deposit accounts, failure to meet minimum balance, withdrawals from non-transaction accounts and dormant accounts are also illustrative those that are exposed to banking market risk (Stiroh, 2002).

## **II. LITERATURE REVIEW**

Literature reviews on the study are presented on the basis of some valid underlying points. These points consist of volatility of returns, practices of European and US banking, impacts on small banks, assets diversification in the emerging economies.

### **II.1. VOLATILITY OF BANKS' RETURNS**

DeYoung & Rice (2004) argued that fee-based income or non-interest income are more stable than that of loan based activities, because they are less sensitive towards economic downturn and movement of interest rates. He called this situation as conventional wisdom. While DeYoung & Roland (1999) were against this concept of conventional wisdom and commented that revenue from lending business tended to be stable over time and volatility of income is likely to increase when banks reduce their traditional lending activities and replace it by fee-based activities. Synthesizing both opinions, Stiroh (2002) commented that banks' non-interest income is indeed earned out of higher volatility of risk and returns.

### **II.2. PRACTICE OF EUROPEAN BANKING**

A closer investigation conducted by Lepetit, et.al. (2008) about European banking indicated that non-interest income activities are exposed to a higher level of risk compared to that of traditional intermediation activities, because risk and fee based activities are positively correlated. Except for trading activities, there is no evidence that shows a positive link between risk and trading activities because the supply of fee based activities might be altered by bank loan pricing behavior.

### **II.3. PRACTICE OF US BANKING**

Beyond a certain point over diversification, this fee based activities become less likely to be implemented because of cost inefficiency. Hidayat, Kakinaka & Miyamoto (2012) particularly observed the effect of risk on non-interest income activities to banks in Indonesia. Some parts of their research are concerned with large banks with an asset size of more than Rp 1 trillion and small banks for the rest of the respondents. They suggested that the effect of product diversification on insolvency risk depended on the banks' asset size. Thus, the negative impact of an unstable ratio of net non-interest income to net operating income becomes more significant for large banks than those of smaller banks. They

concluded that a deregulation actually encourage banks to engage more in non-traditional activities.

#### **II.4. IMPACTS ON SMALL BANKS**

On the other hand, a different result on how this non-interest income behaves was shown by Mercieca, Schaeck & Wolfe (2006), who inferred that it was difficult for small banks with an asset size of less than €450 million to rely on non-interest income activities, because they lead to lower average profitability due to the lack of experience in non-interest income activities. Despite this, in order to restore profitability, underperforming institutions increase their risk profile by engaging in risky trading activities where they lack experience. They concluded that shifting into non-interest income activities is significantly and positively associated with revenue volatility.

#### **II.5. DIVERSIFICATION IN THE EMERGING ECONOMIES**

A research undertaken by Sanya & Wolfe (2010) about diversification in emerging countries is likely to support the conventional wisdom mentioned earlier. They proved that non-interest income was less volatile than net-interest income, as well as risk-adjusted return on asset of was closely aligned to the evolution of non-interest income profile. On this evidence, traditional lending activities in bank should not decline because it appears that fluctuating macroeconomic environment increase the attractiveness of fee based activities.

### **III. METHOD OF RESEARCH**

Method of research of the study is comprised of description on research questions and their hypotheses, sampling, data analysis, and research model.

#### **III.1. RESEARCH QUESTIONS AND HYPOTHESES**

Based on the conflicting views on non-interest fee-based income generation by banks as presented in the review of related literature, the study sought to answer the following research questions and their hypotheses.

1. First, did non-interest income earned by the Indonesian commercial banking sector significantly affect their risk? Based on this question the hypothesis at null form ( $H_0$ ) is stated as follows:
  - Non-interest income earned by the Indonesian commercial banking sector didn't significantly affect the sector's risk.
2. Second, was non-interest income earned by the Indonesian commercial banking sector significantly correlated with their profitability? Based on this question the hypothesis at null form ( $H_0$ ) is stated as follows:
  - Non-interest income earned by the Indonesian commercial banking sector from the non-traditional products didn't seem to correlate with the sector's profitability.

#### **III.2. SAMPLE OF THE STUDY**

Quantitative research design for unbiased result is used in this study. In descriptive method the raw data is processed using E-views and SPSS in order to measure and test the hypotheses. Cooper & Schindler (2011) stated that in a formal study clearly states a hypothesis based on a research question (Cooper and Schindler, 2011). This study uses

balanced panel data of Indonesian commercial banks during the year 2007 to 2013 as the samples. The criteria for selecting the data are as follows:

1. The yearly financial reports should be available in Bank Indonesia.
2. The must be publicly listed banks, except BPD and Syariah.

The study has observed 30 banks classified into two categories; namely, 20 large banks with a total assets of > Rp 100 billion and 10 small banks with a total assets of < Rp 100 billion comprising of observation of 2 foreign banks, 1 joint venture bank, 3 non-foreign exchange banks, 19 foreign exchange banks and 5 state owned banks in Indonesia.

**Table 1: Respondent Banks**

DESCRIPTIONS	Large Banks		Small Banks		Changes (%)	
	2007	2013	2007	2013	Large	Small
Commission	59	52	30	34	-2.1	2.1
Trading	18	30	11	50	8.9	28.7
Other Deals	23	18	59	16	-4.0	-19.5
Total	100	100	100	100		

### III.3. DATA ANALYSIS

#### III.3.1. DIVERSIFICATION MEASUREMENT

Herfindahl Hirschmann Index (HHI) was used to estimate the level of concentration or diversification of the sources of banks' income, because it considers diversification as equal exposure to every source of income, and is itself a relative measure (Kiweu, 2012). This approach accounts for variation in the breakdown of two major types of income-generating activities; namely, the net interest income (NII) and non-interest income (NON). Using this breakdown, the measurement of revenue diversification of Indonesian commercial banks computed as follows:

#### Equation 1: Revenue Diversification for Commercial Banks in Indonesia

$$HHI(\text{rev}) = \left(\frac{\text{NON}}{\text{TOI}}\right)^2 + \left(\frac{\text{NII}}{\text{TOI}}\right)^2, \text{ where TOI} = \text{NON} + \text{NII}$$

As the HHI increases, bank becomes less diversified and more concentrated. In line with Mercieca, Schaeck & Wolfe (2006), the HHI computations were also used to construct measures of diversification within the non-interest income activities:

#### Equation 2: Measuring Diversification for Non-Interest Income Activities

$$HHI(\text{non}) = \left(\frac{\text{COM}}{\text{NON}}\right)^2 + \left(\frac{\text{TRD}}{\text{NON}}\right)^2 + \left(\frac{\text{OTOP}}{\text{NON}}\right)^2, \text{ where NON} = \text{COM} + \text{TRD} + \text{OTOP}$$

COM captures commission revenue, TRD captures trading income and OTOP captures other operating income; and greater value indicates greater concentration

#### III.3.2. PROFITABILITY MEASUREMENT

To measure the profitability, the author uses the bank's income statement return on asset (ROA). Following Acharya, Saunders & Hasan (2006) return on equity (ROE) is the average of profit after tax to total equity, return on asset (ROA) is the average of profit after tax to total asset and E/A is the average of equity to asset. Gamra & Plihon (2010) clearly stated that a higher ratio indicated higher risk-adjusted profits and lower probability of bank insolvency. It was interpreted as the number of standard deviation that a bank's rate of return on asset should fall in order to make the bank become more insolvent.

### III.3.3. RISK MEASUREMENT

Stiroh (2004) and Mercieca, et. Al. (2010) argued that in consistence with the available literatures on revenue diversification, the calculation of risk-adjusted returns on equity and assets were also used as additional measures of performance as shown by the formulas below:

#### Equation 3: Risk-Adjusted Returns on Equity and Assets

$$Z - Score = \frac{ROA + \left(\frac{E}{A}\right)}{ROA}$$

$$RA - ROA = \frac{ROA}{ROA} \text{ and } RA - ROE = \frac{ROE}{ROE}$$

Where the return on equity (ROE) is the average of profit after tax to total equity, return on asset (ROA) is the average of profit after tax to total asset and E/A is the average of equity to asset. A higher ratio indicates higher risk-adjusted profits and lower probability of bank insolvency. It is interpreted as the number of standard deviation that a bank's rate of return on asset should be fall to make the bank become insolvent (Gamra and Plihon, 2010).

### III.3.4. CONTROL VARIABLES

Control variables are included to reflect banks' characteristics and strategic choices that can affect risk and performance. The primary objective of these variables is to prevent that any potential independent effects they may have on performance and insolvency risk influence the primary relationship being investigated (Sanya and Wolfe, 2010). Commonly, studies on revenue diversification used the following variables:

**Size**

As Baele, Jonghe & Vennet (2007) put it, large banks may have better diversification opportunities and more stability, because the idiosyncratic risk tends to decline with size, while Kiweu (2012) argued if small banks tend to be less flexible in dealing with the risks exposed in diversification activities, which suggests they might be better off with traditional banking activities.

**Equity/Asset.**

According to Sanya and Wolfe (2010), this ratio of book value of equity to total asset controls the relationship between bank fragility and level of capitalization. Lehar (2005) found an evidence to support the fact that capital protects banks from failure and enables them to absorb large shock especially when the asset of value is decline.

**Loan/Asset.**

Bank with strong lending policy may find it more profitable to expand into fee based activities rather than non-interest income activities, because they can simply improve their earnings and make loans. Kiweu (2012) then commented that this ratio of total loans to total assets is included as a proxy for bank managers' risk aversion. This aversion captures the differences in loan asset portfolio and the effect of the bank lending on its performance.

**GDP Growth and Inflation.**

Sanya & Wolfe (2010) reminded that the link between financial stability and

economic development has long been established in the literature, even its impact on bank investment strategy as a determinant of bank stability is unclear and ambiguous.

### **III.3.5. RESEARCH MODEL**

To measure the impact of non-interest income on bank's profitability and risk, the impact of non-interest income on bank's risk and profitability are estimated in terms of their regressions to measure the following effects:

- The shifts and diversification for risk.
- The shifts and diversification for profitability

## **IV. FINDINGS AND DISCUSSION**

Prior to the discussion of the first and second hypotheses, a general discussion on descriptive statistics was presented to give a better background for comprehending the hypotheses. The hypotheses have used level of significance of 1% and/or 5%.

### **IV.1. DESCRIPTIVE STATISTICS UNDERLYING THE HYPOTHESES**

As the HHI increases, banks become less diversified and more concentrated. It means that Indonesian commercial banks are less diversified and more focused on each diversification measurement as the mean of HHIR of Indonesian commercial banks was recorded at 0,69. It meant that Indonesian banks were not really diversified in terms of their income. On the other hand, in comparison with the European banks; Mercieca, et. al (2010) argued that Indonesian banks were generally more diversified and less concentrated as the mean of HHIN in Indonesia was recorded at 0.54 in comparison to 0.8 in Europe. The average values of Z-score, RAROA and RAROE were computed at 662.09, 58.17 and 11.41, respectively. Compared with the European banks, the Indonesian commercial banks are generally more resilient in maintaining the level of their business solvency risk and risk-adjusted return. Sanya and Wolfe (2010) commented commercial banks in emerging countries have an ROA average of 0.026 which is generally low. Refer to Appendix A.

### **IV.2. FIRST HYPOTHESIS ( $H_{1,0}$ ) OF NON-INTEREST INCOME AND RISK.**

As far as revenue diversification was concerned, this study found that HHI (rev) was positively related with Z-score, RAROA and RAROE, even though they did not significantly impact at any significance level. As Gamra and Plihon (2010) also found based on the similar finding, they stated that diversification opportunities existed because as an economic growth diversification was an alternative technique for banks to reduce portfolio risk when the economic conditions were volatile. Inflation did seem to positively relate to risk, which meant that if inflation rate increased, banks wouldn't be exposed to any insolvency risk as well as risk-adjusted return. Moreover, diversification into non-interest income should not be hazardous for the banks to earn if they really know the right optimized weight for diversification.

In contrast, HHIN was negatively related and didn't significantly impact on Z-score, RAROA and RAROE. Consistent with these findings, Mercieca, et. al. (2006) reconfirmed that lack of diversification within non-interest income would literally increase bank risk due to underperformance possibility and lack of experience. Banks may try to increase their risk profile in order to increase profitability by engaging in risky trading activities. Furthermore, as the HHIN increased, bank was less diversified and would only focus on one product. It means banks are less competitive compared to that of the other bank that are highly diversified.

ETA was negatively related and didn't significantly impact on RAROE at 1% significant level. According to Carlson (2004), to finance bank operation, equity is a relatively costly way, and highly capitalized banks may decrease their performance; especially if the owners prefer to invest conservatively to protect their equity, as well as to minimize losses. Based on this theory, the author concluded that if the performance of the bank declines, the probability of the lenders/shareholder to lend/invest their money is also decreased. It therefore, makes banks to become riskier, because they might not have sufficient funds to pay their debts. Refer to Appendix B.

### **IV.3. SECOND HYPOTHESIS (H<sub>2.0</sub>) OF NON-INTEREST INCOME AND PROFITABILITY**

At a significance level of 5%, HHI (non) was positively related and did significantly affect ROA, while HHI (rev) was positively related and did significantly affect NIM at 1% significance level. Gamra and Plihon (2010) stated that non-interest income remains a prudent way for banks to increase their revenue.

Inflation was negatively related to NIM as profitability measurement. In the opinion of the author, when inflation rate is increased, the amount of money in public is expanded causing the banking system to automatically offer higher interest rate. In consequence, bank will charge high interest rates to business loans to maintain their spread and control their profitability. Due to higher interest rates on loan, business tends to issue bonds as an alternative way to finance their operations. If business offers higher return on their bonds compared to that of the deposit interest rates', then the public will likely invest their money in bonds, causing the profitability of bank to decrease.

In the equation, HHIR and ETA as measurement of capitalization, had negative relationship to ROA and NIM. In contrast, the equation HHIN and ETA were positively related to ROA and NIM. Thus, they seemed to give an impression that capitalized banks were more likely to diversify within non-interest income, because they could increase their profitability. Another supporting reason according to Gamra & Plihon (2010) was that bank would claim as profitable that led to diversify into new opportunities, rather than increasing their activities in the market that was already captive.

Total assets indicated a negative relationship with ROA and NIM in the HHI (non) equation. Both ROA and NIM have total assets as their denominators. If they increased, ROA and NIM will automatically decrease. Banks with large assets are more likely to monopolize the market and there is a possibility for big bank to set high interest rates on loans and lower interest rate on deposit to boost their revenue. Refer to Appendix C.

## **V. CONCLUSION AND RECOMMENDATION**

Diversification into non-interest income was positively related, but did not significantly affect Z-score, RAROA and RAROE. It therefore became an alternative technique for banks to reduce their risk in the volatile economic conditions. On the same count, the positive relationship of HHI (non) would lead banks to maximize their ROA and yet minimize risk if banks would diversify in the non-traditional products' non-interest income.

Based on the above conclusion, the following recommendations were made:

1. Especially for less experienced banks who aspire to expand their business, policy makers are advised to be prudent in determining the composition of diversification

within and into non-interest income.

2. As inflation rate was negatively related to profitability, but positively related to risk, economic policy makers should focus more attention in managing consumers' price index, more investments in the economy, and more employment.

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**APPENDIX A**

Remarks	Mean	Median	Max	Min	$\sigma$
<b>Z</b>	662.090	28.696	30856.360	0.361	3683.311
<b>RAROA</b>	58.171	4.961	3409.124	-2.065	344.844
<b>RAROE</b>	11.412	2.121	398.964	-3.649	36.559
<b>ROA</b>	0.0128	0.013	2.15E-01	-0.184	2.240
<b>NIM</b>	0.046	0.042	0.138	0.010	0.019
<b>HHIN</b>	0.541	0.494	1.000	0.334	0.160
<b>HHIR</b>	0.690	0.677	0.950	0.500	0.113
<b>TA</b>	79150874	18201135	6.47E+08	1166503	1.29E+08
<b>ETA</b>	0.119	0.109	0.276	0.050	0.042
<b>LOTA</b>	0.727	0.657	7.865	0.337	0.731
<b>GDP</b>	0.058	0.060	0.060	0.050	0.003
<b>Inflation</b>	0.063	0.066	0.111	0.028	0.027

Source: EViews

**APPENDIX B**

Remarks	Z SCPRE		RAROA		RAROE	
	HHI (rev)	HHI (non)	HHI (rev)	HHI (non)	HHI (rev)	HHI (non)
<b>C</b>		-2862.4	36.239	-518.505	0.959	43.496
		0.563	0.236	0.248	-2.739	0.339
<b>HHIR</b>	0.050		15.930		21.864	
	0.450		0.210		0.406	
<b>HHIN</b>		-358.172		-4.616		-25.105
		0.833		0.976		0.201
<b>TA</b>	-0.120	79.558		2.320	12.802	14.062
	0.330	0.930		0.980	0.257	0.215
<b>EQ/TA</b>	-0.14	2781.78	-49.59	991.331	-364.41	-361.509
	0.110	0.667	0.170	0.092*	0.000***	0.000***
<b>LO/TA</b>	0.230	-61.590	1.560	-26.871	15.990	15.808
	0.092*	0.899	0.55	0.532	0.088*	0.091*
<b>GDP</b>	-19.000	59201.24	-547.68	9014.802	472.948	116.642
	0.280	0.500	0.280	0.257	0.567	0.883
<b>Inflation</b>	0.250	-555.906	38.08	-142.765	6.052	46.377
	0.003***	0.960	0.570	0.894	0.954	0.646
<b>R<sup>2</sup></b>	0.136	0.340	0.043	0.025	0.311	0.315

\*0.10 level of significance  
\*\*0.05 level significance  
\*\*\*0.01 level of significance

Source: EViews

**APPENDIX C**

Remarks	ROA		NIM	
	HHI (rev)	HHI (non)	HHI (rev)	HHI (non)
<b>C</b>	-0.034	-0.036	-0.002	0.0492
	0.267	0.175	0.072	0.001
<b>HHIR</b>	0.007		0.002	
	0.608		0.004***	
<b>HHIN</b>		0.024		0.000
		0.011**		0.966
<b>TA</b>	0.000	-0.007	0.000	-0.003
	0.940	0.093*	0.160	0.390
<b>EQ/TA</b>	-0.019	0.051	-0.001	0.084
	0.637	0.146	0.352	0.000
<b>LO/TA</b>	0.003	-0.004	7.360	0.001
	0.435	0.107	0.474	0.746
<b>GDP</b>	0.812	0.625	0.028	-0.267
	0.103	0.625	0.157	0.300
<b>Inflation</b>	-0.087	-0.078	-0.002	0.031
	0.166	0.224	0.405	0.345
<b>R<sup>2</sup></b>	0.037	0.053	0.053	0.709

\*0.10 level of significance

\*\*0.05 level of significance

\*\*\*0.01 level of significance

**Source: EViews**