

# Islamic banks' fee income, characteristics and risk: Panel data analysis evidence from Indonesia

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## ABSTRACT

One of the non-operating income in Islamic banking operation, which is fee income has become progressively vital in expanding their income to counter decreasing net earnings due to rivalry from other financial competitors. However, it is important for Islamic banks to find out any potential risk that will distress their performance due to this activity. This is because, mixed results on this issue derived from the previous studies especially in the Western context such as in the US, Germany and other European countries. Using Indonesian Islamic bank's quarter data between 2009 and 2013, this study adopts the panel data regression analysis to examine the relationship between Indonesian Islamic banks fee income and risk. The empirical results signified that fee income activities able to reduce Indonesian Islamic bank's risk.

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## 1. Introduction

Bank's traditional business activities of accepting deposits and providing loans have been steadily declining over the years during the era of liberalisation. Banks have been forced to be more advanced in offering variety of products and services in order to compete with one another. Therefore, banks adopt the proactive strategy by developing more innovative products in their operations. Product innovations have resulted in an increase in non-interest income. This situation allowed banks to shift to non-traditional activities that may present more advantages to them (Shahimi, Ismail & Ahmad, 2006). The share of non-traditional incomes become alternative to the diminished share of traditional interest income and has developed extensively and contributes to half of a bank's operating revenues (Matthews & Thompson, 2008). A significant share of non-traditional based income not only expanded in conventional banking sector, but also in Islamic banking sector. From Islamic banking view, the development of new liberalisation strategies are aimed to expand the growth of the Islamic finance industry. This allowed Islamic banking institutions to broaden their financial business line activities. Thus, they have to develop their own aggressive positioning and construct appropriate strategies in order to survive in this dynamic

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and progressive growth sector (Aziz, 2007). Therefore, Islamic banks can diversify their business lines that may provide more advantages to them to enhance their performance, become more competitive to each other and at the same time able to give a stiff competition to conventional competitors.

Recently, one of the bank's non-traditional activities which is fee income have become increasingly important to the Islamic bank's operations. Ismail (2010) defined fees and commission income as a collection of income other than financing, dealing and operating income activities. This type of income is known as non-interest income in the conventional banking sector, while it is regarded as non-financing income in the Islamic banking sector since payment and receipt of interests are forbidden in Islam (Molyneux & Yip, 2013). Fee income acts as a catalyst for off balance sheet activities (Ismail, 2010). It is also one of the viable methods for Islamic banks in raising their earnings to offset declining net incomes due to competition raised from other financial competitors (Ismail, 2010). By expanding into fee income activities, will diversify Islamic bank's source of fund and provides them with greater access to the financial markets while simultaneously reducing their risk exposure, even though there is an additional cost involved to finance the operations (Shahimi et al., 2006). Fee-producing activities may also lead to the expansion of the bank's profitability and stabilisation of income. Hence, it will help Islamic banks to reduce over dependence on debt-financing activities as the main source of revenues.

However, income diversification practice by shifting into fee earning activities to raise or reduce the bank risk had become a controversial issue. Several reasons regarding inefficiency of these activities have also been highlighted. It is vital to discuss whether Islamic banks have the capabilities especially in term of financial resources, necessary knowledge and skills to manage the activities efficiently (Ismail, 2010). DeYoung and Roland (2001) have also discussed three main reasons that fee income activities may expose banking institutions to risks. First, this business activity can experience larger fluctuations which will encourage customers to easily switch to other banks. Second, expanding into fee income activities may entail a rise in fixed costs, for instance when additional staff may be required to manage the activity and the operational leverage of banks will increase. Lastly, there is no regulation for banks to hold capital against fee income activities. Hence, this will cause earning volatility to increase due to a higher degree of financial leverage.

In the previous paper, the author discussed the result of the study for Malaysian Islamic banks scope. For this paper, the authors intend to analyse Indonesian Islamic bank's fee income and risk as these activities also currently increase Indonesia Islamic banking sector (Indonesia Financial Services Authority, 2015). This paper aims to access whether fee income able to reduce risk in Indonesia Islamic banks and to identify the relationship between selected Indonesia Islamic bank's characteristics with risk. Therefore, from empirical results of this study we can know where we stand compared to our neighbouring country. This study will also provide information regarding the level of risk for fee income activities and the potential business opportunities in Indonesia's financial market. Panel regression data analysis and quarter data from 2009 to 2013 of Indonesia Islamic banks are adopted to address the objective of this study. The findings of this study revealed that risk can be reduced when Indonesia Islamic banks engage with fee income activities.

## **2. Literature review**

Income diversification practice by shifting into fee income to raise or reduce the bank risk has become a controversial issue. Several reasons regarding inefficiency of these activities have been highlighted by De Young and Roland (2001) and Ismail (2010) and clearly discussed in the previous section. Several studies also had questioned the implications of this business line on bank risk as the results obtained from prior studies showed mixed results. This issue also had been widely discussed in the Western context such as the US, German and other European countries, especially for the conventional banking system. DeYoung and Roland (2001) conducted a study to ascertain the effect of bank's mix business lines comprised traditional lending and accepting deposit, trading and investment activities and

fee income activities on earning volatility of US commercial banks. The results showed that high total leverage and income volatility are involved when US banks replacing these traditional activities with fee income activities. Empirical results of Stiroh (2004) proved that when US banks implemented non-traditional activities such as fee income in their operation will increase income volatility and lessen bank's profitability. Then in 2006, Stiroh and Rumble proved that income diversification will decrease the volatility of profit. However, an increase in non-interest income activities like fee and fiduciary income will increase FHC's profit volatility.

Merceica, Schaeck and Wolfe (2007) measured the diversification of European small credit institution's revenue categorized into net interest income (loan portfolio concentration) and non-interest income (commission revenue, trading income etc.) on risk-adjusted performance. The results suggested that concentrated revenue streams adversely impacted bank's profitability and caused revenue volatility. However, when banks shifted into non-interest income activities, it will reduce bank's return. In terms of risk-adjusted performance, there was no benefit obtained from revenue diversification and negative association when shifting into non-interest income. In contrast, Chiorazzo, Milani and Salvino (2008) study indicated that there is a positive relationship between Italian bank's revenue diversification included interest and non-interest income activities with risk-adjusted performance. The rise in non-interest income generating activities has been connected with the rise in profits per unit of risk. The link between risk-adjusted return and non-interest income is stronger in large banks. Meanwhile, small banks can also generate revenues from non-interest income, but with very little shares of this type of income.

Besides that, Zhrekar (2012) conducted a study to have a clear interpretation about the importance of non-interest income consisting of fee, commission, exchange fees, charges and others in the total of net operating income of the banks in India. The data sample showed that the share of non-interest income has increased over the years. This study also emphasized the significance of non-interest income which are generating employment opportunities to the society, offering a better and quick service to customers, covering bank's operation expenditure and paying taxes to the government thus contributing to the nation's GDP. A study conducted by Lepetit et al (2008) determined the link between European bank's risk and non-interest income generating activities that split into trading activities and commission and fee income activities. The findings revealed that banks with higher dependence on non-traditional activities were allied with higher risk. Meanwhile, Bush and Kick (2009) examined the impact of non-interest income activities on German banks' performance and risk. The empirical results showed that, there was a positive and significant relationship between the share of fee income activities with risk-adjusted return on total equity and total assets of all banks. However, a greater share of fee income was accompanied with profit volatility only with commercial banks. Savings and commercial banks will impose low interest margin when they are more involved in fee income business.

Besides that, Demircuc-Kunt and Huzinga (2010) assessed the implications of a bank's activity mix consisting of non-interest income activities (fees, commission and trading income) and non-deposit short term funding on bank's performance and risk. The empirical analysis implied that the increase in fee income activities will increase bank's revenue and risk. It also caused some risk diversification gain at a low level. The growth in non-deposit short term funding activities lowered the level of a bank's return but offered some risk reduction benefits at very low levels. As a conclusion, banking strategies that have greater reliance on non-interest and non-deposit generating activities are very risky. Hidayat, Kakinaka and Miyamoto (2012) studied the correlation between Indonesia commercial bank's product diversification (fee and commission income and trading income) and risk. The results revealed that the relationship between product diversification and bank risk is highly reliant on the bank's asset's size. The degree of product diversification is positively related to bank risk for large sized banks rather than small sized banks. But, small sized banks greater expansion into commission and fee activities is reflected in higher bank risk that increased earnings volatility. Contrast with a study conducted by Kohler (2013) that clarified an increase of the share of non-interest income activities in German bank's significantly benefit more for banks that practised retail oriented business model such as cooperating and savings banks. But,

it became significantly less stable in non-retail oriented bank such as investment bank. The impact of bank stability was from the higher share of non-interest income which was from fee and commission income. Trading income was more exposed into income volatility in which it had no significant impact on bank stability.

A study conducted by Fengju et al (2013) examine the effect of interest and non-interest income activities on Iranian bank's return and risk By using regression estimation analysis, the result of the study revealed that interest based activities had a significant relationship only with bank return. In contrast, non-interest based activities had a positive significant relationship with bank risk and return on equity. In addition, Lee, Yang and Chang (2014) ascertained the outcome of non-traditional activities on bank's performance and risk from 22 selected countries in Asia. Their results showed that non-interest income reduced risk but did not increase profits. However, when a factor of bank specialization and a country's income level was taken into consideration, the result was interpreted inversely. Different with investment, commercial and cooperative banks, non-traditional activities will reduce the profit and increase the risk of savings banks. Non-interest income activities also will increase bank's risk in high income countries. But, it will expand the profits and reduce the risk for banks in middle and low income countries.

Chunhachinda and Lili (2014) examined the effect of exchange-listed commercial banks from eight Asian countries on profitability, risk and competitiveness for the year 2005 to 2011. The results revealed that a greater share of net non-interest income increased asset risk and market risk but lowered insolvency risk, bank's return on total assets and total equity. However, higher exposure of net fees and commissions reduces return volatility, market risk and asset risk, but increased insolvency risk and bank's return. Meslier, Tacneng and Tarazi (2014) determined the effect of bank's income diversification by considering non-interest income (fee income, trading income etc.) on Philippines commercial bank's performance and risk. The findings show that a shift into non-interest income activities caused a positive impact on bank's profit and risk adjusted performance and highly associated with trading income. However, when bank reliance was more on fee-based income, it negatively impacted bank's risk-adjusted performance.

There is a lack of empirical study related with Islamic financial industry that shows the effect of greater reliance only on fee generating earnings activities on risk. Among the few studies that exist, Shahimi et.al (2006) evaluated the relationship between bank's participation in various fee income generating activities as the dependent variable with several determinants variables consisting of the bank's asset size, profitability, core deposits, capital risk and credit risk. The results indicated Islamic banks with higher involvement in fee income activities were inclined to have a significant relationship with bank's asset size and core deposit as well as exhibited less risk. Grassa (2012) explored the effects of the diversification of 42 Gulf Cooperation Council (GCC) countries Islamic banks income structure on risk by focusing on Profit and Loss Sharing (PLS) and Non-Profit Loss Sharing (Non-PLS) financing income generating activities. The results signified that higher risk and higher insolvency risk is associated when Islamic banks depended more on PLS products. In contrast, there was no detection of risk relation when Islamic banks depend more on the share of Non-PLS products.

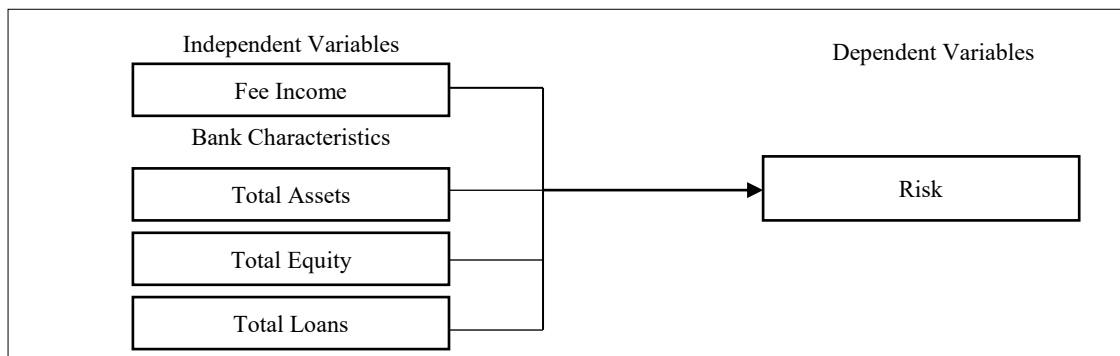
Besides that, Molyneux and Yip (2014) ascertained the consequences of income diversification consisting financing and non-financing income generating activities on the performance (return and risk) of conventional and Islamic from selected countries included Qatar, Bahrain, United Arab Emirates, Kuwait, Saudi Arabia and Malaysia. The robust regression showed that there is an inverse relationship between the diversification measure with risk-adjusted returns and insolvency risk for both Islamic and conventional banks. However, the share of financing income appears positively linked to risk adjusted return and insolvency risk for both types of banks. It proved that, banks with a higher share of non-financing income also appear less risky. Islamic banks also appeared to be less inclined with income volatility compared to conventional banks since they were more concentrated on traditional deposit/loan financing. But, Islamic banks still had lower profitability compared to conventional banks. Currently, by

using Malaysian Islamic bank's data of 2008 to 2013, and adopting panel data regression analysis, Mat Isa, Ma'in and Hanif (2015) proved that when these banks were associated with fee earning activities exhibit less risk. Most of the existing studies focused on the linkage between risk and non-interest based income especially for conventional banking system from Western context. There is a lack of empirical study related to Islamic financial industry that showed the effects of diversification that emphasized more on only generating fee earnings activities on risk. Due to the lack of empirical study conducted for Islamic financial industry, this study intends to explore the effects of diversification of the bank's earnings on risk by focusing only on fees income activities to enrich the Islamic banking and finance literatures.

### 3. Methodology

This paper is directed to examine the impact of Islamic bank's fee income and risk. There are two main objectives are formulated which are; to assess the relationship between Indonesia Islamic bank's fee income and risk, and to measure the relationship between Indonesia Islamic bank's characteristics and risk. Panel regression analysis was used to address the objectives of the study. Therefore, an insight into an analytical question can be answered compared to time series and cross-sectional data analysis method (Studenmund, 2011). Quarter data of six Islamic banks in Indonesia were extracted from the Quarterly Published Condensed Financial Statement sourced from Indonesia Financial Services Authority from the year 2009 to 2013. There is a limitation of Indonesia Shariah banking financial statement reports. Starting in year 2011, there is a new government agency known as Indonesia Financial Services Authority replaces the role of the Bank Indonesia and the Capital Market and Financial Institutions Supervisory Agency in regulating and supervising the capital market and financial institution in Indonesia. Thus, this is the reason why the study had a small sample. This theoretical framework of this study is adopted from Grassa (2012) and Lepetit et al. (2008).

Fig. 1: Theoretical framework



This study also modifies and adapts an empirical model to the particularities of Islamic banks. The empirical model is written as follows:

$$RISK_{it} = \alpha + \beta_1 FEE_{it} + \beta_2 TA_{it} + \beta_3 TL_{it} + \beta_4 TE_{it} + \varepsilon_{it} \quad (1)$$

Where  $RISK_{it}$  is the value for banks  $i$ ,  $t$  taken for the period 2009 to 2013 of accounting based risk measure computed over the period.  $RISK$  is referring to the measurement of standard deviation of return on assets (SDROA). It is one of the accounting risk measurements that directly reflect the bank's total risk (Dhoubi & Mamoghli, 2009). It is a comprehensive measurement to capture the bank's overall risk including operating risk, liquidity risk, credit risk, interest rate risk and other types of risks that are recognized in bank revenues (Naimy, 2005).  $FEE_{it}$  is the value for bank  $i$ ,  $t$  taken for the period 2009 to

2013 for fee income activities. The ratio of total fee income to total assets derived from shareholders and depositors fund (Shahimi et al., 2006). There are several bank characteristics included in this study which are:

- i.  $TA_{it}$  is the value for bank  $i$ ,  $t$  taken for the period 2009 to 2013 for the natural logarithm of total assets. It is included to capture bank size (Busch & Kick, 2009; Demirgüç-Kunt & Huizinga, 2010; and Lee et al., 2014).
- ii.  $TL_{it}$  is the value for bank  $i$ ,  $t$  taken for the period 2009 to 2013 for total loan to total assets. It is a proxy for bank managers' risk aversion (Lepetit et al., 2008; Mercieca et al., 2007; and Lee et al., 2014)
- iii.  $TE_{it}$  is the value for bank  $i$ ,  $t$  taken for the period 2009 to 2013 for total equity to total assets (Mercieca et al., 2007; Bush & Kick, 2009; Demirgüç-Kunt & Huizinga, 2010; and Lee et al., 2014). The equity and loan ratio are included to control for other factors that are likely to affect performance (Stiroh & Rumble, 2006).

#### 4. Findings and discussions

Table 1 summarises the results of descriptive analysis for Indonesia Islamic banks. The data have been verified using several techniques which were the mean-median comparison, standard deviation, test of skewness, kurtosis and Jarque-Bera. These techniques are implemented to determine whether these bank samples were normally distributed or not (Ma'in & Ismail, 2012). The findings shown in Table 1 indicated that the bank samples was not normally distributed. There were positive skew data measured except for FEE and LOANS. The kurtosis exceeded three which indicated a leptokurtic distribution. The JarqueBera statistics expressed that the data did not follow normal distribution.

The initial findings signified the estimation result of the relationship between this study's dependent variable which was risk and the independent variables which included fee income and several bank's characteristics which were total assets (ASSETS), total equity to total assets (EQUITY) and total loans to total assets (LOANS) for Indonesia Islamic banks could not produce reliable results with the Ordinary Least Squares (OLS) estimation method. Hence, the Generalised Least Square (GLS) method was used to address this issue (Ma'in & Ismail, 2012).

Table 1. Descriptive statistics analysis for Indonesia Islamic Banks

Variables	Mean	Median	Standard deviation	Skewness	Kurtosis	Jarque-Bera
SDROA	0.003688	0.001440	0.005268	2.355942	8.446369	259.3240 (0.000000)
FEE	0.003018	0.002919	0.003540	-0.468658	12.77466	482.1128 (0.000000)
ASSETS	14555521	6030649	17003698	1.379787	3.736899	40.79132 (0.000000)
EQUITY	0.081305	0.075921	0.041392	2.433644	12.11618	533.9757 (0.000000)
LOANS	0.759864	0.760681	0.090338	-2.360113	13.39812	652.0073 (0.000000)

Then, the independent variables were tested for multicollinearity problem based on a simple correlation matrix. As depicted in Table 2, all of them have no multicollinearity problems.

Table 2. Pearson correlation analysis of variables for Indonesia Islamic Banks

	SDROA	FEE	ASSETS	EQUITY	LOANS
SDROA	1.000000				
FEE	-0.010652	1.000000			
ASSETS	-0.108220	0.202613	1.000000		
EQUITY	-0.218234	0.122564	-0.144530	1.000000	
LOANS	-0.109327	-0.106286	0.194353	-0.136515	1.000000

Next, in Table 3 presents the results of Breusch-Pagan Test to detect the presence of heteroscedasticity. The results showed that the  $p$ -values of Indonesian Islamic banks are at 0.0000 and significant. The null hypothesis is excluded Indonesia Islamic banks and indicates that the presence of heteroscedasticity. GLS method can be used to account for heteroscedasticity (Rosenberg & Perry, 1981). Thus, this is the reason the study should be use the GLS as an alternative method of estimation.

Table 3. Heteroscedasticity test for Indonesia Islamic Banks

<b>Heteroskedasticity Test: Breusch-Pagan</b>			
F-statistic	19.85402	Prob. F(19,94)	0.0000
Obs*R-squared	91.25934	Prob. Chi-Square(19)	0.0000
Scaled explained SS	381.4996	Prob. Chi-Square(19)	0.0000

Table 4 reports the regression result of panel data for Indonesia Islamic banks equation to measure the relationship between bank's fee income and several bank's characteristic with the risk. To identify which empirical methodology was either fixed effect or random effect regression was most suitable, Hausman specification test were performed (Hausman, 1978). The result of Hausman test was based on chi-squared statistic as presented in Row 8. The results that advocated the corresponding effects were statistically significant, therefore  $H_1$  was failed to be rejected. It can be concluded that fixed effects model was appropriate. Further analysis was based on fixed effects model (Table 4, 2<sup>nd</sup> column).

The coefficient value of Indonesian Islamic bank's fee income was significant and uniformly negative at 10% level. This result showed that fee income activities could reduce Indonesia Islamic bank's risk with weak significant impact. Chunchachinda and Lili (2014) provided an evidence of the total ratio of fees and commissions that were significantly negative when correlated with the standard deviation of ROA (SDROA). This meant that, a higher portion of fees and commissions will lower earnings volatility. Molyneux and Yip (2013) regression results showed that, banks with the increasing share of fee or non-financing income able to reduce risk. The results of the study conducted by Shahimi et al (2006) also implied that, Islamic banks with higher level of fee generating income activities tend to exhibit less risk.

In terms of bank's characteristic, only the coefficient value of Indonesia Islamic bank's total loans to total assets (LOANS) have a negative and significant relationship at 1% level on the risk. This result was consistent with Molyneux and Yip (2013) that showed Islamic banks with a greater value of total loans tend to have lower risk. According to Chen (2008), the negative and significant relationship between the total loans and risk showed that the banks have a superior monitoring power and thus charge higher spreads. Therefore, bank's risk can be reduced. Besides that, Bush and Kick (2009) also stated that, the negative relationship between bank's total loans with risk reflected that the banks are under a good and efficient management and enjoy a higher quality of loans.

Table 4. Panel data analysis for Indonesian's Islamic Banks

	Fixed Effect Model	Random Effect Model
Intercept	0.007365 (0.4051)	0.016127 (0.0497)
FEE	-0.085221 (0.0750) *	-0.046231 (0.7070)
LN TA	0.000508 (0.3603)	-0.000220 (0.6758)
EQUITY	0.006191 (0.4084)	-0.011270 (0.3752)
LOANS	-0.015651 (0.0000) ***	-0.010435 (0.0517) **
Likelihood test stat	(12.605554)***	
Hausman test stat	(18.673981)***	
R <sup>2</sup>	0.442207	0.040823
Adj R <sup>2</sup>	0.396570	0.007460
F stat	9.689537 (0.000000)***	1.223615 (0.304702)
Durbin-Watson Stat	1.666490	1.185212
Observations	120	120

Table 4 provides the regression results of fee income and bank's characteristics with the risk for Indonesian Islamic banks using alternative model (pooled regression model, fixed effect model and random effect model). The Likelihood test was used to test the fixed-effect model versus the pooled regression model and Hausman specification test was used to test fixed-effect model versus the random effect model. \*\*\*, \*\*, \* significant at the 1%, 5% and 10% respectively. Standard errors are given in parentheses.

In term of bank's size, the coefficient value of the natural logarithm of total assets (LN TA) for Indonesia Islamic banks had no relationship with the risk. This result was consistent with Stiroh (2006); Dhoubi and Mamoghli (2009) as well as Grassa (2012). According to Rosenberg and Perry (1981), bank's size is a good predictor of risk. However, in the multiple regression models, size is only one among a number of important descriptor and loses its dominant roles. Therefore, the larger banks are clearly more exposed to the risk but most causes for this exposure are captured by other descriptors in the models such as foreign deposits, federal funds borrowed, demand deposits, tax exemption, demand deposit, etc. According to Beck, Demirgüç-Kunt and Levine (2006), banks have to fulfil reserve regulation that required banks to hold some value of assets at a certain level in order to ensure bank's stability. Even though banks hold greater required reserves, there is still a tax imposition in the banking system which might reduce bank's profitability and raise the variability.

Last but not least, the coefficient value of the ratio of total equity to total assets (EQUITY) for Indonesia Islamic banks had no relationship with the risk. This result was consistent with Shrieves and Dahl (1992); Chiorazzo et al. (2008) and Grassa (2012). The results also in line with Beck, Demirgüç-kunt and Merrouche et al. (2010) whom highlighted that Islamic banks have higher capitalization ratios yet they are not significantly more or less stable. Insignificant relationship between total capital with the risk also might be due to the reasons that banks with total capital below the level deemed adequate by regulators behave differently in setting target capital and risk levels (Shrieves & Dahl, 1992).

## 5. Conclusion

Fee income has become increasingly important to the Islamic banks' operations because these banks can enrich their earnings to counter decreasing total income due to rivalry from other financial competitors. However, it is vital for Islamic banks to discover any potential risk that will distress their performance due to this activity. This is because, mixed results on this issue derived from the previous



studies especially in the Western context such as in the US, Germany and other European countries. Indonesian Islamic bank's quarter data for the period 2009 to 2013 and panel data analysis have been used to see whether fee income can exhibit less risk. The empirical results of this study emphasize that fee income activities can reduce risk in Indonesia Islamic banks. From these findings, the significance of fee income activities in Islamic banking services has been proved. Therefore, it is vital for Islamic financial institutions to further extend, establish and promote fee income generating activities in their operations, so that their capabilities and performance can be completely developed.

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