

Performance of Banks in Indonesia: The Importance of Bank Diversification and Corporate Governance

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ABSTRACT

This study aims to examine the effects of non-interest incomes and corporate governance on bank performance. The interaction between non-interest incomes and corporate governance is particularly investigated. The sample contains 31 publicly traded banks in Indonesia from 2012 to 2017. Bank performance is measured by return on assets, return on equity, and diluted earnings per share. Findings suggest that the level of non-interest incomes has a positive and significant effect on bank performance. In addition, the presence of independent commissioners increases a bank's performance. However, engagement in non-interest income activities by a bank with a large number of independent commissioners may undermine the bank's performance. Similarly, engagement in non-interest income activities by a bank with a large board of directors may reduce the bank's return on equity.

Keywords: Bank performance; Corporate governance; Non-interest incomes.

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1. INTRODUCTION

After the 1997 financial crisis, banks' diversification of incomes from traditional to non-traditional banking activities has become increasingly important because non-traditional banking activities partly offset the decline of the traditional ones. Although non-traditional banking activities were blamed as a major cause of the 2007–2009 global financial crisis, the recent trend suggests that non-interest income activities remain an important source of banks' revenues.

Since 1997, Bank Indonesia as the central bank has adopted various banking regulations (Hidayat, Kakinaka, and Miaymoto, 2012) including the Basel II Accord, the Indonesian Banking Architecture, the Indonesian Financial System Architecture, and the development of Sharia Banking. Bank Indonesia has also imposed regulations that induce Indonesian banks to increase their profitability by diversifying their income sources. For instance, the circular letter Number 6/23/DPNP 2004 states that the ratio of fee-based incomes is included as an indicator for determining a bank's profitability.

As a supervisory authority, Bank Indonesia is concerned whether non-traditional banking activities are harmful to a bank in terms of performance and risk. Owing to the increasing risk complexity of the banking industry and an attempt to improve bank performance, Bank Indonesia has issued Bank Indonesia Regulation Number 8/4/PBI/2006 entitled “Good Corporate Governance Implementation by Commercial Banks”. The regulation is issued to maintain the stability of the Indonesian banking industry. As decreased bank performance and/or increased bank risks will lead to instability of the entire banking system, the implementation of good corporate governance is anticipated to help banks in Indonesia minimize risks and improve performance.

There are mixed findings from studies on the relationship between diversification and bank performance. Majority of the past studies use data on the U.S. and European banks. Some of them find that diversification activities improve bank performance (Stiroh and Rumble, 2006; Lepetit *et al.*, 2008; De Jonghe, 2010; and Fiordelisi, Marques-Ibanez, and Molyneux, 2011). However, DeYoung and Roland (2001) and Stiroh (2004) find that bank diversification adversely affects bank performance.

Another strand of research relates the implementation of good corporate governance to bank performance. Caprio, Laeven, and Levine (2007); Rezaee (2008); De Andres and Vallelado (2008); Cornett, McNutt, and Tehranian (2009) find that weak governance has a negative impact on the performance of financial institutions. Zagorchev and Gao (2015) argue that the implementation of good corporate governance reduces excessive risk-taking and generates a positive influence on the performance of financial institutions in the U.S.

The objectives of this study are as follows. First, this study examines the impact of non-interest incomes on bank performance. Second, this study investigates the effect of corporate governance on bank performance. Finally, this study estimates the impact of the interaction between non-interest incomes and corporate governance on bank performance.

The main contribution of this study is the accommodation of the interaction term between non-interest incomes and corporate governance and the investigation of its possible impact on bank performance in Indonesia. As far as we know, this is the first study to investigate the impact of the interaction of non-interest incomes and corporate governance on bank performance in the context of the Indonesian banking industry.

The empirical findings show that the performance of banks can be maximized by engaging in non-traditional (non-interest income) activities and implementing good corporate governance. Return on assets (ROA), return on equity (ROE), and diluted earnings per share (EPS) are improved when banks engage in non-interest income activities. However, engagement in non-interest income activities by a bank with a large number of independent commissioners and a large board of directors (BOD) leads to a deterioration of the bank’s performance.

The rest of the article is structured as follows. Section 2 provides a brief overview of the literature on non-interest incomes and corporate governance. Section 3 describes the dataset, the variables, and the methodology of this study. Section 4 presents the empirical results and discussions. Section 5 presents a robustness test. Section 6 concludes the study.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. Non-Interest Incomes and Bank Performance

The primary role of a bank is serving as an intermediary to channel savings to investments. A bank runs two primary activities – deposit-taking and lending activities. Trivedi (2015) suggests that the keen competition between banks induces them to diversify their activities to avoid a decrease in profitability. Several non-traditional banking activities are undertaken by banks to diversify their income sources, which include securities trading, underwriting, brokerage, and investment banking (Meslier, Tacneng, and Tarazi, 2014).

Trivedi (2015) mentions several factors that increase a bank's non-interest incomes. First, the deregulation introduced in 1990 allowed banks in the U.S. and Europe to diversify their activities to non-interest income activities. Such a change in regulation encouraged banks in the U.S. and Europe to diversify their operations. Second, the advances in information technology and communication channel motivate banks to expand their non-interest income activities because new technologies give banks opportunities to create new products beyond their traditional banking activities. The increase in non-interest income activities leads to an increase in banks' profitability.

Given that the deregulation allowing banks to diversify was first initiated in the U.S. and Europe, past studies in general support the benefits of non-interest income activities to bank performance. According to Stroh and Rumble (2006), Chiorazzo, Milani, and Salvini (2008), and Busch and Kick (2009), incomes diversification improves bank performance in terms of risk-adjusted returns and financial performance. However, several studies argue that non-interest incomes cause a deterioration of bank performance. For instance, Chiorazzo, Milani, and Salvini (2008) find that bank performance does not improve when the level of non-interest incomes is increasing. In addition, Köhler (2014) argues that non-interest income activities create limited potential benefits to investment-oriented banks. Lastly, Lee, Hsieh, and Yang (2014) highlight that a bank's profitability decreases when it engages more in non-interest income activities because such activities increase the bank's risk-taking.

H_{1a}: The utilization of non-interest incomes improves bank performance.

H_{1b}: The utilization of non-interest incomes undermines bank performance.

2.2. *Corporate Governance, Bank Performance, and Risk*

As with other industries, the banking industry needs to implement good corporate governance to improve bank performance. Several studies point out that corporate governance implementation for financial firms is different from that for non-financial firms (Caprio and Levine, 2002; Laeven, 2013; and Van der Elst, 2015). According to John, De Masi, and Paci (2016), two attributes distinguish the corporate governance of financial firms from that of other firms. First, banks usually have a high leverage because most of a bank's capital is provided by depositors and debtholders. The average leverage on a non-financial firm ranges from 20%–30%, whereas a financial firm typically has a leverage between 87%–95% (Gornall and Strebulaev, 2014). The higher leverage of financial firms increases their probability of failure. The second attribute is the opacity and complexity of banking assets. As noted by Laeven (2013), the financial instruments of financial firms are intricate and sometimes unobservable.

The Indonesian banking sector was seriously disrupted by the Asian financial crisis in 1997-1998. During the crisis, a total of 16 banks were liquidated, 51 banks were frozen, 13 banks were merged, and more than 35,000 employees were laid off (Nam and Lum, 2006). Therefore, IMF and World Bank urged the Indonesian government to place this sector at the core of the country's economic reform. In March 2001, the National

Committee of Corporate Governance issued the National Code for Good Corporate Governance and then completed the Indonesian Banking Sector Code in 2003. According to the Banking Code, corporate governance has five essential elements: fairness, transparency, accountability, responsibility, and independence.

John, De Masi, and Paci (2016) argue that the regulator of a financial institution has an essential role in the implementation of good corporate governance. Bank Indonesia as a regulator of the banking industry in Indonesia has issued regulation Number 8/4/PBI/2006 entitled “Good Corporate Governance Implementation by Commercial Banks”. This regulation emphasizes several aspects of corporate governance that should be implemented by banks in Indonesia. The first aspect includes the number, composition, criteria, and independence of the board of commissioners. The second aspect includes the number, composition, number of meetings, criteria, and independence of the board of directors. The third aspect is related to the committee structure and membership – three committees are related to this regulation, namely, audit committee, risk policy committee, and remuneration and nomination committee.

The purpose of Good Corporate Governance Implementation is to improve bank performance. A robust governance mechanism has a positive impact on the performance of a financial institution (Lemmon and Lins, 2003; Akhigbe and Martin, 2008; Zagorchev and Gao, 2015 and Salim, Arjomandi, and Seufert, 2016). According to Lutfi, Silvy, and Iramani (2014), higher efficiency and profitability can be achieved if a bank has good independent commissioners (IC). Nabila and Younes (2012) and Andrieş and Nistor (2016) find that corporate governance is negatively related to insolvency risk. Another corporate governance mechanism, audit committee (AC), is essential because it ensures that the firm complies with standards and regulations (Piyawiboon, 2015). Akhigbe and Martin (2008) also highlighted the significant role played by AC in reducing firm risks. In addition, a high intensity of board meetings leads to sound corporate governance implementation that minimizes firm risks (Ayadi and Boujèlbène, 2012).

The effectiveness of corporate governance implementation partly depends on the motivation and characteristics of bank managers. According to Chen and Lin (2016), corporate governance is a motivating mechanism to reduce the agency problem. A bank’s corporate governance and risk-taking behavior are associated with the executives’ compensations. In general, bank managers tend to be risk-averse because their career and employment status are essential to them (Hirshleifer and Thakor, 1994; Laeven and Levine, 2009). However, several studies found that managers take high risks to pursue their own interests. Such risk-taking behavior undermines bank performance because excessive risk taking offsets the advantages of bank activity diversification (Gorton and Rosen, 1995; Knopf and Teall, 1996).

H_{2a}: The implementation of good corporate governance improves bank performance.

H_{2b}: The implementation of good corporate governance undermines bank performance.

2.3. Interaction of Non-interest Incomes and Corporate Governance, Bank Performance, and Bank Risk

The relationship between non-interest incomes and corporate governance is described below. Several studies show that non-interest incomes improve bank performance (Sanya and Wolfe, 2011 and Lee, Hsieh, and Yang, 2014). However, engagement in non-interest income activities by a bank tends to increase bank risks because such activities are considered to be risky (Williams and Prather, 2010 and Hidayat, Kakinaka, and Miyamoto, 2012). Srivastav and Hagendorff (2016) argue that corporate governance

mechanism in the banking system lowers banks' risks and maintains their financial stability because corporate governance tends to restrain bank managers' risk-taking behavior. Given that banks' diversification activities are considered risky, corporate governance mechanism may reduce banks' engagement in non-interest income activities. On the one hand, the implementation of good corporate governance maintains the financial stability of a bank, which in turn enhances the bank's performance. On the other hand, corporate governance mechanism may undermine a bank's performance because the bank may not be able to fully benefit from its engagement in diversification activities. Two hypotheses related to the interaction of non-interest incomes and bank performance are stated as follows:

H_{3a}: The interaction between non-interest incomes and corporate governance improves bank performance.

H_{3b}: The interaction between non-interest incomes and corporate governance undermines bank performance.

3. METHODOLOGY

3.1. Data

This study collects annual data from a sample that contains 31 publicly traded commercial banks in Indonesia. The sample period of the study is 2012 to 2017. The sample is constructed based on two criteria: (1) the sample banks must be publicly traded commercial banks and have never been delisted during the sample period. (2) the sample banks must have completely published annual reports during the sample period. As a result, the sample represents approximately 72% of all Indonesian publicly traded banks.

The data on non-interest incomes and bank performance are obtained from banks' annual reports. Corporate governance data, such as the size of IC, the number of board meetings held, the number of independent commissioners, and the size of AC, are hand-collected from each bank's annual report and corporate governance report published on the bank's website. Macroeconomic data are obtained from the World Bank database.

3.2. Model and Variables Definition

Panel data regression analysis is performed to examine the effect of non-interest incomes and corporate governance on bank performance. According to Hsiao (2007), panel data analysis has several advantages including a larger degree of freedom and larger sample variabilities, compared with cross-sectional data and time-series data. Panel data analysis is also better in detecting and measuring effects that cannot be observed in either cross-sectional or time-series data. Moreover, panel data are more suitable than cross-sectional data for studying the dynamics of changes over time. The model constructed for this study is as follow:

$$Y_{it} = \alpha_{it} + \beta_1 NON_{it-1} + \beta_2 CG_{it-1} + \beta_3 NON_{it-1} \times CG_{it-1} + \delta Z_{it} + \epsilon_{it} \quad (1)$$

where Y_{it} is a measure of bank performance, NON_{it-1} is a measure of non-interest incomes, CG_{it-1} is a corporate governance measure, and Z_{it} is a vector of control variables. β_1 measures the impact of non-interest incomes and β_2 measures the impact of corporate governance on bank performance. This model also includes an interaction term between non-interest incomes and corporate governance, i.e., $NON_{it-1} \times CG_{it-1}$.

The dependent variables in this study is bank performance. Alternative measures for bank performance are ROA, ROE, and diluted EPS. ROA is calculated as net incomes divided by total assets. ROE is net incomes divided by total equity. Diluted EPS is the bank's net incomes minus the dividend of preferred stocks and then divided by the weighted average of stocks outstanding, which is added to the impact of the bank's convertible and other dilutive securities. Dilutive EPS is more favorable to investors because it reflects the fair value of EPS rather than the standard EPS.

Independent variables in this study are non-interest incomes and corporate governance. The measure of non-interest incomes is the ratio of non-interest incomes to interest incomes. Measures for corporate governance include the number of independent commissioners as a percentage of the entire board of commissioners (IC), the size of the board of directors (BOD), and the size of the audit committee (AC). Indonesia adopts a two-tier system or dual board system; therefore, the Indonesian corporate structure involves the board of commissioners and the board of directors (EMERHUB, 2018). On the one hand, the duty of the board of commissioners is to supervise the company and the board of directors. In addition, the board of commissioners also gives advices to the directors. On the other hand, the board of directors is responsible for the management of the company in compliance with the Indonesian company law. Therefore, the BOD in this study refers to the size (or the number) of the bank management (executives). Five control variables are used in this study. GDP growth and inflation are proxies of macroeconomic conditions. In addition, proxies of bank characteristics include the total loan to assets ratio, the total costs to incomes ratio, and the executives' annual total remunerations. Samina and Zaman (2015) emphasize that the management of a company plays a vital role in achieving good financial performance. One driver for the management to improve performance is the compensation package. Previous studies show that executives' compensations play a critical role in improving bank performance (Chen *et al.*, 2006; Brockman *et al.*, 2010; Fahlenbrach and Stulz, 2011). Given that management compensations are important in determining bank performance, this study includes executives' annual total remunerations as a control variable. The year dummy variable is also added to control for the time trend. Table 1 presents the variables used in this study along with their definitions.

Table 1. Description of variables

Variables	Description	Data sources
<i>Bank performance:</i>		
Return on Assets (ROA) in %	Net incomes / Total Assets	Bank's annual report
Return on Equity (ROE) in %	Net incomes / Total Equity	Bank's annual report
Diluted Earnings-per-shares (EPS)	(Net incomes - preferred stock dividend)/(weighted average of stock outstanding + the impact of bank's convertible securities + other dilutive securities)	Bank's annual report
<i>Non-interest incomes:</i>		
NON in %	Non-interest incomes/Interest incomes	Bank's annual report
<i>Corporate governance</i>		
IC	Independent commissioners / Total board of commissioners	Bank's annual report
BOD	The number of directors on the board	Bank's annual report
AC	The number of audit committees	Bank's annual report

Interaction variables:

NON × IC	NON_ratio x IndepComm_ratio
NON × BOD	NON_ratio x TotBoD
NON × AC	NON_ratio x TotAC

Control variables:

GDPG in %	Gross domestic product growth	World bank
INF in %	Inflation rate	World bank
TLTA	Total Loan / Total Assets	Bank's annual report
CIR in %	Total interest expense / Interest incomes	Bank's annual report
EXCOM (in million)	Total annual management (executive) remuneration that consists of salary, bonus, routine allowance, and other additional allowances and facilities.	Bank's annual report

4. EMPIRICAL RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 2 presents descriptive statistics on the sample of this study. The figures show that the means of ROA, ROE, and EPS are 0.89%, 5.75%, and 103.15 IDR, respectively. The minimum and maximum values are -11.73% and 3.41% for ROA, -353.34% and 28.83% for ROE, and -499 and 945 for EPS. The sample banks' average utilization rate of non-interest incomes (NON) is 14.21%, which means that non-interest incomes is only 14.2% of interest incomes. Engagement in non-interest income activities by banks in Indonesia is considered to be lower than those in other countries such as U.K., U.S., and Singapore, which have non-interest income ratios of 56%, 40%, and 35%, respectively (World Bank, 2014).

Regarding the corporate governance variables, the mean of independent commissioners is 59%, which is above the minimum level required by Bank Indonesia. Bank Indonesia requires the number of independent commissioners to be at least 50% of the entire board of commissioners for each bank. On average BOD has seven directors, which ranges from 3 to 13 persons. The mean size of AC is 3.90, which ranges from 3 to 9 persons. Given that Indonesia implements a two-tier board system, the interests of shareholders are represented by the board of commissioners that supervises the management (BOD). Therefore, an increasing size of the board of commissioners is a signal that the bank is becoming a shareholder-controlled firm. In contrast, an increasing size of the BOD reflects the tendency of the bank to become a management-controlled firm. The shareholders and the management seem to have balanced control of publicly traded banks in Indonesia.

Table 2. Descriptive statistics

	No Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
ROA (%)	186	0.89	1.05	3.41	-11.73	1.87
ROE (%)	186	5.75	8.26	28.83	-353.34	29.51
EPS (in IDR)	186	103.15	35.22	945.45	-498.82	174.82
NON (%)	186	14.21	9.66	77.71	0.99	13.36
IC (%)	186	0.59	0.6	1	0	0.11
BOD	186	6.70	6	13	3	2.62
AC	186	3.90	3	9	3	1.23

GDPG (%)	186	5.45	5.30	6.17	4.88	0.51
INF (%)	186	5.39	5.86	6.41	3.53	1.14
TLTA	186	0.64	0.66	0.82	0.32	0.09
CIR	186	49.59	51.01	85.95	12.33	13.51
EXCOM (in million)	178	58282.23	26253.28	353807.00	1062.40	77042.81

4.2 Correlation Between Main Independent Variables

Table 3 shows the correlation matrix among the main independent variables. The matrix shows that non-interest incomes are positively correlated to all corporate governance variables. The relationship between them is shown as follows. First, IC is negatively correlated to BOD and AC ($r = -0.35$ and -0.20). In addition, BOD is positively correlated to AC ($r = 0.58$). None of the coefficients of correlation exceeds 0.80; hence, multicollinearity is not substantial.

Table 3. Correlation matrix

	NON	IC	BOD	AC	GDPG	INF	TLTA	CIR	EXCOM
NON	1								
IC	0.09	1							
BOD	0.32	-0.35	1						
AC	0.15	-0.20	0.58	1					
GDPG	0.06	0.06	-0.04	0.01	1				
INF	0.03	-0.01	-0.01	-0.04	-0.23	1			
TLTA	-0.36	-0.32	0.06	0.10	0.04	0.05	1		
CIR	-0.47	0.05	-0.42	-0.27	-0.19	0.08	-0.08	1	
EXCOM	0.41	-0.21	0.74	0.44	-0.08	-0.01	0.04	-0.57	1

4.3 Effect of Non-Interest Incomes and Corporate Governance on Bank Performance

This study employs panel data regression analysis. The Hausman test is conducted to obtain the best panel data model. Table 4 presents the regression results, which show a positive relationship between non-interest incomes and bank performance (ROA, ROE, and EPS). The coefficients of non-interest incomes are 0.4532, 9.5791, and 11.0035, respectively, and these estimates are significant at the 1% and 10% significance levels. The results reveal that the diversification of bank activities (such as non-interest income activities) positively affects ROA, ROE, and EPS. The results confirm the hypothesis H_{1a} of this study that the utilization of non-interest incomes improves bank performance. This finding is consistent with those from previous studies such as Chiorazzo, Milani, and Salvini (2008), Goddard, McKillop, and Wilson (2008), Delpachitra and Lester (2013), and Lee, Yang, and Chang (2014).

The corporate governance effect on bank performance is significant primarily for independent commissioners. The results in Table 4 show that independent commissioners improve bank performance (ROA, ROE, and EPS). The coefficients of IC are 10.4580, 262.7266, and 163.8070, respectively, and they are all significant at the 1%, and 10% significance levels. The results demonstrate the effectiveness of independent commissioners in supervising the management. Independent commissioners as shareholder representatives tend to have a more objective perspective than non-

independent commissioners in pursuing the interests of shareholders. Non-independent commissioners can be the shareholders of the bank and thus they can force the management to be more aggressive in risk-taking, while independent commissioners may be more objective and rational in supervising the BOD. According to Bank Indonesia regulations, the ratio of independent commissioners must be at least 50% of the total number of commissioners.

In addition, the board size positively affects ROE. The coefficient of BOD is 3.9554 and it is significant at the 10% level. This implies that a larger size of the board of directors improves ROE. Executive compensation is an effective way to motivate the board of directors (the management) to achieve the shareholders' goal of maximizing the share price through increasing the bank's profitability. The management tends to achieve the targets set by the remuneration committee to receive performance bonus. The actions or policies taken by the management may be effective in the short-term. However, they may have negative consequences in the long run. The results confirm hypothesis H_{2a}.

4.4 Effect of the Interaction Variables on Bank Performance

The previous session presents the impact of each non-interest incomes and corporate governance variable on bank performance. Previous results show that non-interest incomes and corporate governance have positive impacts on bank performance; however, the interaction variable between non-interest incomes and corporate governance suggests the opposite. Table 4 suggests that the interaction variable NON × IC has a negative effect on ROA, ROE, and EPS. The coefficients are -0.5682, -11.8207, and -12.2758, respectively, and these estimates are all significant at the 1% and 10% levels. In addition, the interaction of non-interest incomes and BOD has a negative effect on ROE. The coefficient of NON × BOD is -0.1623 (significant at the 10% level). These findings reveal that the utilization of non-interest incomes with a high independent commissioner ratio and/or a large BOD undermines the profitability of a bank. There are several possible reasons for these findings. First, independent commissioners are strictly focused on bank stability; therefore, they avoid excessive risk-taking that may reduce bank stability. In addition, a large board of directors may increase the bank's tendency to be risk-averse. A risk-averse BOD may impede the bank's ability to benefit from diversification. Moreover, a large BOD is vulnerable to internal conflicts that may be detrimental to the bank's ability to improve its performance. The results confirm H_{3b} that the interaction of non-interest incomes and corporate governance undermines bank performance.

Table 4. Relationship between non-interest incomes, corporate governance, and bank performance

Dependent Variable	ROA	ROE	EPS
Constant	-35.8464 (-2.68)***	-393.4192 (-1.77)*	-1035.4170 (-1.43)
NON	0.4532 (3.40)***	9.5791 (5.07)***	11.0035 (1.70)*
IC	10.4580 (5.78)***	262.7266 (9.41)***	163.8070 (1.74)*
BOD	0.1462 (0.73)	3.9554 (1.92)*	2.4919 (0.31)
AC	0.5162 (1.57)	4.7440 (1.22)	16.1713 (1.13)
NON × IC	-0.5682 (-3.86)***	-11.8207 (-5.44)***	-12.2758 (-1.67)*

NON × BOD	0.0023 (0.31)	-0.1623 (-1.69)*	0.0837 (0.24)
NON × AC	-0.0295 (-1.49)	-0.2981 (-1.45)	-0.9877 (-1.24)
GDPG	3.8276 (1.47)	29.9473 (0.69)	159.6710 (1.13)
INF	0.1131 (0.82)	4.0025 (1.79)*	1.3996 (0.19)
LN_TA	13.2390 (4.76)***	41.8473 (1.33)	244.9812 (2.06)**
CIR	-0.0251 (-1.18)	-0.1263 (-0.51)	-1.7144 (-1.86)*
EXCOMP	3.66×10^{-12} (0.76)	4.23×10^{-11} (0.74)	1.38×10^{-9} (6.68)***
R-Square	0.4186	0.3643	0.6784
No of Obs.	178	178	178

This table shows the results of panel data analysis to estimates the relationship between non-interest incomes, corporate governance, and interaction variables toward bank performance. The dependent variables are ROA, ROE, and diluted EPS. The main independent variables are the non-interest ratio (NON), independent commissioners' ratio (IC), size of the board of directors (BOD), size of audit committees (AC). The interaction variables are the non-interest incomes multiply by corporate governance variables. Control variables include GDP growth, inflation, the total loan to total assets, cost to total incomes ratio, and board of directors' compensation. All independent variables are a one-year lag variable, including the control variables. t-Statistics are reported in parenthesis. ***, **, and * denote significant level at 1%, 5%, and 10% respectively.

5. ROBUSTNESS TEST

In this section, a robustness test is performed to confirm the main findings. Table 5 presents the results of panel data regression for the robustness test. This study uses Tobin's Q, the return on invested capital (ROIC), and the price to earnings ratio (PER) as alternative dependent variables. The results support the main findings that non-interest incomes and independent commissioners improve bank performance. The coefficients of NON are 0.0271 and 2.7760, respectively, and these estimates are all statistically significant at the 5% and 10% significance levels. IC has a significantly positive relationship with Tobin's Q and ROIC (significant at the 5% and 10% levels). Although the coefficient of BOD becomes insignificant, it is in the same direction as the corresponding coefficient from the main findings.

The negative coefficient of NON × IC suggest that the interaction term is negatively related to a bank's Tobin's Q and ROIC. It reveals that engagement in non-interest income activities by a bank with a larger number of independent commissioners undermines the bank's performance. Finally, NON × BOD has a negative and significant relationship with PER. All in all, the results of the robustness test on the interaction variables confirm the main findings.

Table 5. Robustness test

Dependent Variable	Tobins'Q	ROIC	PER
Constant	2.2288 (2.03)**	-164.0523 (-2.08)**	127.4172 (0.45)
NON	0.0271 (2.59)**	2.7760 (3.69)***	2.2007 (0.99)
IC	0.2739 (1.89)*	77.7414 (7.47)***	-7.1022 (-0.21)
BOD	0.0202 (1.26)	0.9638 (0.84)	2.4356 (1.09)
AC	0.0084	2.5093	-3.6033

	(0.33)	(1.35)	(-0.83)
NON × IC	-0.0333	-3.5937	-1.1762
	(-2.84)***	(-4.26)***	(-0.46)
NON × BOD	0.0006	0.0154	-0.2118
	(1.00)	(0.36)	(-1.96)**
NON × AC	-0.0019	-0.1698	0.2112
	(-1.26)	(-1.52)	(0.95)
GDPG	-0.4620	13.9823	-23.6188
	(-2.16)**	(0.91)	(-0.43)
INF	-0.0310	1.2870	1.0081
	(-2.70)***	(1.56)	(0.36)
LN_TA	0.1409	56.9182	-51.7203
	(0.48)	(2.71)***	(-1.39)
CIR	-0.0007	-0.1373	0.5575
	(-0.35)	(-0.92)	(1.97)**
EXCOMP	-5.02×10^{-15}	-7.84×10^{-12}	-3.89×10^{-12}
	(-0.01)	(-0.29)	(-0.06)
R-Square	0.2275	0.4307	0.2728
No of Obs.	162	162	162

This table shows the results of panel data analysis to estimate the relationship between non-interest incomes, corporate governance, and interaction variables toward bank performance. The dependent variables are Tobin's Q, ROIC, and PER. The main independent variables are the non-interest ratio (NON), independent commissioners' ratio (IC), size of the board of directors (BOD), size of audit committees (AC). The interaction variables are the non-interest incomes multiply by corporate governance variables. Control variables include GDP growth, inflation, the total loan to total assets, cost to total incomes ratio, and board of directors' compensation. All independent variables are a one-year lag variable, including the control variables. t-Statistics are reported in parenthesis. ***, **, and * denote significant level at 1%, 5%, and 10% respectively.

6. CONCLUSION

This study aims to examine the impact of non-interest incomes and corporate governance on bank performance. In addition, this study investigates the role of corporate governance in the relationship between non-interest incomes and bank performance. The investigation is conducted on a sample of 31 public banks in Indonesia from 2012 to 2017.

The empirical results indicate that non-interest incomes and corporate governance are essential determinants of a bank's performance. When they are considered separately, both non-interest incomes and corporate governance improve bank performance. Therefore, a bank's managers are encouraged to engage in non-interest income activities if the objective is to increase the banks' profitability.

However, a larger number of independent commissioners and/or a large board of directors (BOD) should draw the attention of regulators and shareholders because a larger number of independent commissioners and/or a large BOD may increase the tendency of risk-averse behavior. In addition, a large BOD tends to be less efficient in the decision-making process and increases the possibility of conflict of interests among the directors. As a result, the management may not be able to fully capture the opportunity to benefit from income diversification. These findings imply that regulators and shareholders should be concerned about the optimal number of independent commissioners as well as the optimal BOD size while maintaining the effectiveness of the corporate governance mechanism.

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