

# The Relationship Between Non-Interest Revenue and Sustainable Growth Rate: A Case Study of Commercial Banks in Jordan

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## Abstract

As expansion of interest income business faces several limitations, non-interest revenue can play a vital role in increasing the net profit margin and the productivity of the assets to sustain the growth rate. This study aims to analyze the Effect level (partial or total) of a bank's size on the relationship between non-interest revenue and the sustainable growth rate of Jordanian commercial banks. Baron and Kenny's methodology (1986) was adopted to test and analyze the effect of non-interest revenue: including the bank's size, on the sustainable growth rate during the period from 2008–2019. Data collection was done for thirteen commercial banks which constituted 100% of the study population. Testing four hypotheses by using Amos program and a regression model to diagnose the partial and total effect of size. Findings indicate that there is a nonlinear relationship between Non-IR and SGR due to the total effect of bank size on the sustainable growth rate. The results of this study is expected to enable the banks to diversify their revenue to support financial performance towards healthy growth without facing additional financial problems. This study adopted a different methodology from the prior efforts, by using the mediation effect role to verify the effect of non-interest revenue.

**Keywords:** Sustainable Growth Rate, Non-Interest Revenue, Bank Size

**JEL Classification Code:** F65, G21, G32, G39

## 1. Introduction

Over the last two decades, the banking industry faced many challenges due to an increase in competition, forcing it to adopt the diversification strategy to play a new role in the financial sector (Gutierrez-Lopez & Abad-Gonzalez, 2020) and make changes structurally in the infrastructure regarding the banks business model. The new generation of information technology and communication allowed banks to contain these changes by adopting financial inclusion as a new philosophy of income diversification rather than the activity concentration on the acceptance

of deposit and lending process. Besides that, financial liberalization and globalization, contributed to downsize the net profit from interest income (Net-II) (Nguyen, 2020, p. 215), as well as the declining interest rates of most banks, in general, and the commercial banks especially. These challenges paid the banks to choose the principle of revenue (income) diversification toward non-interest revenue activities (Non-IR) to continue the growth rates sustainability and improve the performance. This shift from revenue concentration to diversify the revenue sources (Net-II, Non-IR) became more interesting in the context of the 4th industrial revolution and adopt the digital economy of the financial product mix offered by the banks to the customers. The revenue (income) diversification and innovation in banking is not only shown by the use of new technology, software, but is also crucial in the growth of new products and services along with the development of new business models (Kumar et al., 2019, p. 11575). Also, banks choosing to expand their non-interest income activities are confronted with increasingly severe interbank competition to grow, realize efficiency, and reduce idiosyncratic risk (Santomero & Eckles, 2000,

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pp. 11–23). Therefore, income diversification helps banks to benefit from the economies of scale and scope, reduces the unevenness in the geographical reach of the financial products and services offered by the banks (Ekanayake & Wanamalie, 2017, p. 644). And to reduce the volatility of the bank's revenues and reduce the risks, as non-interest income is less dependent on overall business conditions than traditional income. (Kumari, 2017).

Sun et al. (2017) mentioned that the implications of a bank's diversified revenue are subject to the three different schools of thought on optimal bank scope, as follows:

1. One set of argument holds that restricting scope of the banks to the traditional activities reduces the likelihood of failure related to business risks.
2. The second set argues that non-interest income enhances bank profitability and reduces the risk.
3. The third set holds that the impact of non-interest income on bank performance is uncertain.

Therefore, the study will adopt the direction of the third school to test the effect of non-Interest revenue on the sustainable growth rate as an indicator of bank performance, it is the first study that focuses on this concern regarding the banking industry in Jordan. The major contributions of the study are as follows: First, discussion of previous studies regarding the effect of non-interest income on a bank's profitability and risk, that have not come to uniform conclusions. Second; investigate practically, the extent to which these new directions in the income sources affect the sustainable growth rate in the case of Jordanian commercial banks, and third, this study adopted a different methodology from the prior efforts, by using the mediation effect of size and based on Baron and Kenny's method. The remainder of this research proceeds as follows. The second item reviews the relevant literature. The third item provides research methodology and procedures. The fourth and fifth items regarding the discussion of the test hypotheses and conclusions respectively.

Bank Managers, in general, and commercial banks especially face a major challenge in achieving the efficient operation of their assets to maximize the net interest income and the sustainability of the growth. Also, the decline in the interest rate on lending portfolio and frequent financial crisis conditions may lead the bank business toward the abyss and bankruptcy, due to the downsizing of the cash flows and liquidity. Besides that, banking environment challenges contributed to prevent achieving continuity of the stability income from interest to maintain the sustainable growth rate. In light of these challenges, the importance of the problem at the current position calls to maximize the efficient asset utilization

to diversify activities of the bank, in particular, the non-interest activities to maximize the total revenue level and maintains the sustainability of the growth. Therefore, the current research tries to answer the main question (Can the non-interest revenue influence commercial banking's sustainable growth rate?).

## 2. Theoretical Relationship Between Non-IR and SGR

The sustainable growth rate (SGR) is essential for measuring the bank's performance and is a planning instrument that can be used by a firm's financial manager and bankers alike to gain a better understanding of the bank's performance (Burger & Hamman, 1999). Besides that, Zeidan (2020) confirms that the institutional investors are interested in SGR due to the fact they are considered stakeholders in regard to sustainable finance. A sustainable growth rate is a simulation of sales growth that should be achieved with retained earnings policy, such as internal funding and constant external funds (Isnurhadi et al., 2020) Therefore, SGR provides a big picture of performance that grants the investors and management insights into the factors affecting growth rate (Pandit & Tejani, 2011, pp. 38–44), and that related to the income sources which maintain the bank's survival in the long-term. In this context, non-Interest revenue is a vital factor to diversify the bank's income (Huang & Chen, 2006) and plays a vital role in sustaining the cash inflows to support the net interest income that surfaces due to the financial crisis and tight competition.

Nisar et al. (2018) observe that banks can get positive outputs if they diversify their revenues mainly in the non-interest source of income that can increase the total level of income of banks in several ways (Sun et al., 2017).

1. Satisfying diversified needs for financial services, investment consultation, and so forth by continuous innovation of new financial products and services to gain more fees and communication and strengthen the market competitiveness.
2. Improving the investment level of the commercial banks in financial markets to gain the income from bonds and stocks. This requires sound investment ability.
3. Enriching income from gains and losses of exchange and profits or losses from changes of fair value and other business.

Although the Non-Interest revenue may suffer from volatility, but it supports the net profit to increase the return of equity. This kind of revenue has much lower costs than

that of interest income most fee-based activities are not relationship-based (Deyoung & Roland, 2002). Based on Torna and DeYoung (2013), non-interest income includes from non-traditional activities of shareholders, such as proprietary trading and investment banking, non-traditional fee-for-service activities such as insurance sales, and traditional fee banking activities that are permitted by the regulator. In the light of the above discussion, the relationship between non-interest revenue and SGR can be expressed by the model of Ross et al. (2010). Ross and his colleagues stated that the SGR is a function to return on equity (ROE) and undistributed profit ratio (*b*) with a stable fixed debt-equity ratio. Their formula of the SGR explains as follows (Kijewska, 2016, pp. 139–142):

$$SGR = \frac{ROE \times b}{1 - (ROE \times b)} \quad (1)$$

Based on equation (1), the bank will increase its revenue at the rate dependent on the market conditions, the bank management is not willing to sell any newer equities, and maintain its current dividend policy and capital structure. Since the growth requires a corresponding increase in the supporting assets, without the issuance of new equities, any such increase in the assets has to be funded by the additional liabilities and by undistributed earnings (Pandit & Tejani, 2011). Besides that, the ratio of the retained earnings (*b*) is an important factor that indicates the vital role played by the return on equity (ROE) in increasing the SGR. Return on equity is a result of two indicators (Return on Asset ROA), Equity Multiplier EM) as which are explained in the following equation:

$$ROE = ROA \times EM \quad (2)$$

Rewrite the equation (1) to get the following formula:

$$SGR = \{ROA \times EM \times b\} / 1 - \{ROA \times EM \times b\} \quad (3)$$

In the context of equation 3, efficient operation of the bank's assets occupy a great importance to maximize the percentage of non-interest revenue to enhance the return on assets and support the internal fund (retained earnings), because this kind of income source is no requirement to hold huge fixed assets, and may require a little or no regulation capital. ROA variable affects the efficiency level of the bank and banks that have higher ROA will have a better level of efficiency because banks that operate efficiently can generate higher returns (Abidin et al., 2021). Therefore the productivity of the per dollar investment (asset turnover), or/and increase in operating efficiency

(net profit margin) will increase the bank efficiency. Based on the above mentioned, ROA provides information on business performance and expectations for sustainable growth and, indeed, survival over time (Ullah et al., 2021). Consequently, SGR is valuable because it combines operating (profit margin and asset efficiency) and financial (capital structure and retention rate) elements into one comprehensive measure (Mamilla, 2019, p. 273).

Here, and with the limitations faced by the expansion of interest income business, non-interest revenue can play a vital role in increasing the net profit margin and the productivity of the assets. Therefore, the formula (3) explains the elements that increasing the bank's SGR, as follows:

- An increase in Non-IR will increase the total income to support the ROA and the bank's capability to generate the funds internally and thus increase the SGR.
- An increase in the retention ratio (*b*) increases the internally generated equities and increases the SGR.
- An increase in the Equity Multiplier (EM) ratio helps to increase SGR.
- An increase in the Non-IR is seen to improve the income generated for every dollar invested in the assets. Thus, it improves the asset utilization efficiency, which further improves the SGR.

### 3. Literature Review and Hypotheses

#### 3.1. Literature Review

Many studies of the growth of non-interest revenue have measured the effect of this kind of bank's revenue on the performance (Profitability and Risk). Williams and Prather (2010) stated non-interest income increases the bank risk. While Sanya and Wolfe (2011) test the effect of non-interest income sources on performance and insolvency risk, they conclude that Net interest and non-interest sources of income decrease a bank's insolvency risk. In this context, De Haan and Poghosyan (2012) reported that large banks enjoy the benefits of reducing risk wherein large banks get benefits of economies of scale and thus avoid risk. Delpachitra and Lester (2013) confirm revenue diversifications (Non-IR) reduced profitability and did not improve the overall default risk of banks and any further expansion into non-interest income activities would not benefit banks. (Bian et al., 2015) find non-interest income has negative effects on the profit and risk efficiency of Chinese commercial banks, although it is statistically insignificant. (Abugri et al., 2016) show that smaller banks are exposed to higher risk than the larger banks when the income share of non-traditional banking

activities rise, also they find strong evidence of differences in risk exposure of banks to non-interest income after controlling for ownership structure. While, Williams (2016) concludes that Non-interest income is generally found to be risk increasing, but some types of non-interest income are risk-reducing when bank specialization and bank size effects are considered.

Sang (2017) indicates that the degree of income diversification (Non-II, Net-II) has positive effects on the operational efficiency (input/output) of vietnamese commercial banks. (Chen et al., 2017) found that bank non-interest income, both trading and non-trading revenue components, positively and significantly affect bank risk. (Yudha et al., 2017) found Non-Interest Income and Loan to Deposit Ratio to have a negative but not to have a significant effect on Return on Assets. (Hamdi et al., 2017) found that diversification (Non-II) increases bank performance for both ROA and ROE measures and non-interest income appears to be negatively and significantly correlated with the effect on the level of risk. Ahmed (2017) shows that a higher share of non-interest income yields higher risk-adjusted profits; in particular when banks are involved in more trading activities. Income diversification is more beneficial for the banks that have poor asset quality.

Abedifar et al. (2018) found that non-interest activities have no adverse influence on bank credit risk, moreover large banks can benefit from synergies in joint production of non-interest income and lending. Jiang and Han (2018) found a nonlinear relationship between diversification and profitability or risk, and they suggested that banks of different sizes should adopt the corresponding diversification strategy to achieve sustainable development. Kumar et al. (2019) reported that the diversification in non-interest income sources may have a positive impact on overall profitability and risk-adjusted-performance along with improvement in the stability of the banking system. Minh and Thanh (2020) Stated Non-interest income has a positive impact on the performance (ROA, ROE) of Vietnamese commercial banks. Chen and Budidarma (2020) find that non-interest income would raise bank risks, however, the roles of regulation, concentration, and corporate governance changes the relationship between non-interest income and bank risk. Hunjra et al. (2020) conducted their study in South Asia, and found that non-interest source income and revenue concentration significantly affect bank risk for Pakistan, India, and Bangladesh. Regarding the bank size studies, Pham (2021) found that bank size (log of assets) has a negative impact on banks' credit risk. Whereas Isnurhadi et al. (2021) mentioned that bank Size (Log of Capital) positively affects bank stability and negatively affects credit risk.

### 3.2. Research Hypotheses

Based on the previous study, formulating the following hypothesizes:

**H1:** *There is no statistically significant relationship at ( $\alpha \geq 0.05$ ) between non-interest revenue and sustainable growth rate.*

**H2:** *There is no statistically significant relationship at ( $\alpha \geq 0.05$ ) between non-interest revenue and bank size.*

**H3:** *There is no statistically significant relationship at ( $\alpha \geq 0.05$ ) between the bank's size and sustainable growth rate.*

**H4:** *There is no statistically significant effect at ( $\alpha \geq 0.05$ ) of the bank's size (mediator variable) on the relationship between non-interest revenue and sustainable growth rate.*

The following model is adapted to present the specific views of the problem, questions, and its features concerning the impact of the Firm size (mediator variable) on the relation between spare financial leverage and market value-added, as follows:

## 4. Methodology

### 4.1. Population and Sample

The study population is all the commercial banks that are operational in the Jordanian banking market. This sector provides facilities and qualify for access to the data and needed information to calculate the research variables. Thirteen banks were chosen as a statistic sample, which constituted 100% of the study population, wherein the following conditions met during the period (2008–2019):

1. The annual financial reports are available to each bank during the period
2. There is no merger of the sample or under liquidation during the study period.

### 4.2. Data Collection

Scientific periodicals, journals, and books were used for the theoretical and literature review of the study topic. The data and information needed for testing the hypotheses were collected from the financial reports published on the *e*-sites of banks and the Amman stock exchange.

### 4.3. Statistical Method

Baron and Kenny's methodology (1986) were adopted to test and analyze the mediator variable hypothesize. An independent variable (Non-IR) affects the dependent

variable (SGR) through a mediating variable (bank’s Size) (Figure 1). This methodology requires three conditions (Baron and Kenny, 1986, p. 1176):

- a) Variations in the independent variable levels significantly account for variations in the presumed mediator (i.e., path *a*).
- b) Variations in the mediator significantly account for variations in the dependent variable (path *b*).
- c) When paths *a* and *b* are controlled, a previously significant relation between the independent and dependent variables is no longer significant, with the most important demonstration of mediation occurring when path *c* is zero.

The condition (c) requires testing for direct path *c*, the path *a*, *b*, and *c* are tested and estimated by the following three equations (Zhao, et al, 2010, p. 198):

$$M = i_1 + aX + e_1 \tag{4}$$

$$Y = i_2 + c'X + e_1 \tag{5}$$

$$Y = i_3 + cX + bM + e_1 \tag{6}$$

#### 4.4. Variables and Measurement

Amos program (V. 23) was used to test the relationship between the dependent and independent variables, including the mediator variable in the model, to verify the statistically significant relationship and also whether the mediation effect of a size is statistically significant. A regression analysis, also, was used to test the explanatory power of independent and mediator variables of a sustainable growth rate.

1. Dependent Variables: (SGR)  
The above equation (No.1) Presented by Ross and his colleagues was used to estimate the SGR of banks, due to this formula focus to calculate return on equity (ROE) and retained earnings ratio (*b*), which is regarding the sustainability of an owner’s wealthiness.
2. Independent Variable: (Non-IR)  
Kohler (2014) defined the non-interest income as a combination of heterogeneous components that generate income from other sources than income from interest. The non-interest income consists of fee and commission income from the bank’s traditional activities such as payment service fees and market-oriented activities such as underwriting, securitization, and financial asset profit. For the purpose of this study, non-interest revenue is calculated as a percent of total revenue of bank (Williams, 2016).

3. Bank’s Size  
Bank’s size proxied by capital paid is a key corporate characteristic (Dang & Li, 2014). Therefore, the study will use the natural logarithm of the bank’s capital paid (LOGCP) as an indicator of the size (Talebnia et al., 2010, p. 268).

## 5. Results

### 5.1. Descriptive Analysis

Table 1 explains the mean and the standard deviations of the dependent, independent, and mediator variables. It reveals that there is a convergence of sustainable growth rate results with a low standard deviation (0.11), despite the difference in size of the sample. This result reflects that all Jordanian commercial banks strive to diversify the income by increasing the non-interest revenue (Non-IR).

### 5.2. Person Correlations Matrix Analysis

Table 2 shows the correlation coefficient matrix between all variables, it reveals that all coefficients are positive and statistically significant at a level 1%. The result confirms the importance of non-interest revenue and bank’s size to increase the total level of income to support the sustainable growth rate. Therefore, the result is consistent with the perspective of the theoretical relationship between variables.

**Table 1:** Descriptive Statistics of Study Variables

Variables	N	Mean	Std. Deviation
Non-IR	156	23534421	48359284
Bank’s size	156	167412890	132203529
SGR	156	0.091	0.11

Whereas: Non-IR: Non-Interest Revenue, SGR: Sustainable Growth Rate.

**Table 2:** Person Correlations Matrix of Study Variables

Variables	Non-IR	Size	SGR
Non-IR	1		
Size	0.627**	1	
SGR	0.412**	0.496**	1

Whereas: Non-IR: Non-Interest Revenue, SGR: Sustainable Growth Rate.

Table 3 displays the Autocorrelation test and simple regression results for the first hypothesis. The Durbin-Watson value (2.109) confirms no autocorrelation exists amongst the regression equation’s errors due to within acceptable limits of 0–4. The C.R. (*T*-Test) and *F*-test results state the rejection of the null hypothesis (H01) and the acceptance of the alternative hypothesis H11, due to both have statistically significant lesser than 5%. *R*<sup>2</sup> coefficient value of 0.17 indicators that the non-interest revenue can explain 17% of the variation in the SGR.

Table 4 presented the Autocorrelation test and simple regression results for the second hypothesis. The Durbin-Watson value (2.105) reveals no autocorrelation exists amongst the regression equation’s errors within acceptable limits of 0–4. Hence, the value of C.R. (*T*-test) and *F*-test results confirm the rejection of the null hypothesis (H02) and the acceptance of the alternative hypothesis H12, because both have statistically significance lesser than 5%. Therefore, the model possesses an explanatory power for Non-IR, with an *R*<sup>2</sup> coefficient value of 0.393. In the other word, non-interest revenue can play a vital role based on the bank’s

size and provides a chance for the bank for expanding to improve the investment income level. This result is agreeing with Baron and Kenny’s methodology and helps go-ahead to complete the remaining research procedures.

Table 5 reveals the Autocorrelation test and simple regression results for the third hypothesis. The Durbin-Watson value (2.236) confirms no autocorrelation exists amongst the regression equation’s errors within acceptable limits of (0–4). Hence, the value of C.R. (*T*-test) and *F*-test results confirm the rejection of the null hypothesis (H02) and the acceptance of the alternative hypothesis H12, because both have statistically significance lesser than 5%. Therefore, the model possesses an explanatory power for the bank’s size (LOGCP), with an *R*<sup>2</sup> coefficient value of 0.246. In the other word, bank’s Size can play a vital role to support the sustainable growth rate, because the large banks are exposed to lower risk than small banks when the income share of non-traditional banking activities rise Abugri et al. (2016). This result is consistent with Baron and Kenny’s methodology and helps go-ahead to complete the remaining research procedures.

**Table 3:** First Hypotheses Testing Result

Method: Amos Output, Regression Weights					
Variables	Estimate	S.E.	C.R.	P-Value	Support
SGR ← Non-IR	0.450	0.080	5.628	***	Accepted
Methods: SPSS Output Simple Regression Model					
Durbin-Watson	Beta	R Square	F-Change		
2.109	0.412	0.17	31.472		

**Table 4:** Second Hypotheses Testing Result

Method: Amos Output, Regression Weights					
Variables	Estimate	S.E.	C.R.	P-Value	Support
Size ← Non-IR	0.621	0.062	10.016	***	Accepted
Methods: SPSS Output Simple Regression Model					
Durbin-Watson	Beta	R Square	F-Change		
2.105	0.627	0.393	99.671		

**Table 5:** Third Hypotheses Testing Result

Method: Amos Output, Regression Weights					
Variables	Estimate	S.E.	C.R.	P-Value	Support
SGR ← Size	0.547	0.077	7.120	***	Accepted
Methods: SPSS Output Simple Regression Model					
Durbin-Watson	Beta	R Square	F-Change		
2.236	0.496	0.246	50.365		

The fourth hypothesis explores the direct and total effect of the relationship between the independent and dependent variables according to the Baron and Kenny test. Table 6 display the Amos program (V. 23) results, which reveal that the regression coefficients of the path *a* (0.621) and path *b* (0.432) are statistically significant at a level 5% based on the C.R. (10.016 and 4.434, respectively).

While, the direct effect of path *c* (third condition), including the mediator variable, was not statistically significant at a level 5%, with an estimated value (0.181) and C.R. (1.875) which less than the tabulated value (1.96). It must mention here, the estimated value of direct effect (0.181) was closer to zero than the total effect (0.45) (Non-IR affect SGR) and not statistically significant, so, there is a total mediation of the bank’s size effect on the relationship between Non-IR and sustainable growth rate. Therefore, rejection of the null hypothesis (H04) and the acceptance of the alternative

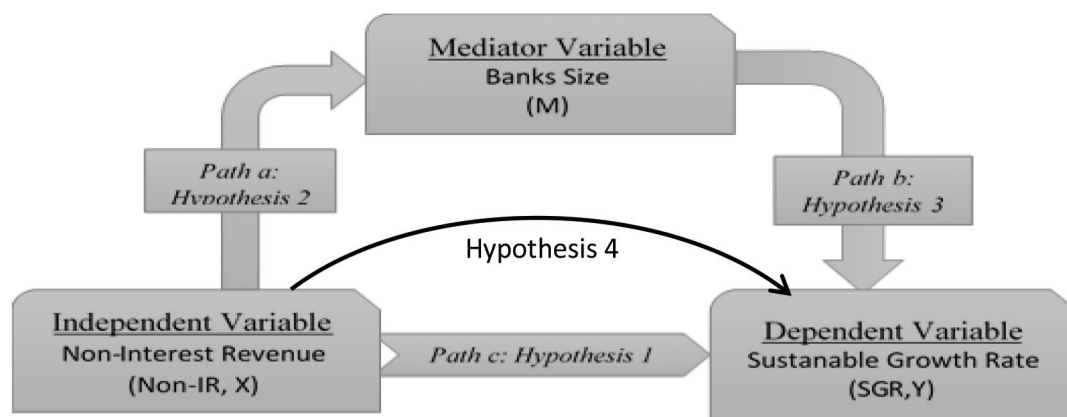
hypothesis due to the total effect of the bank’s size, as shown in Figure 2 which explains the path values of the study model.

### 6. Conclusion

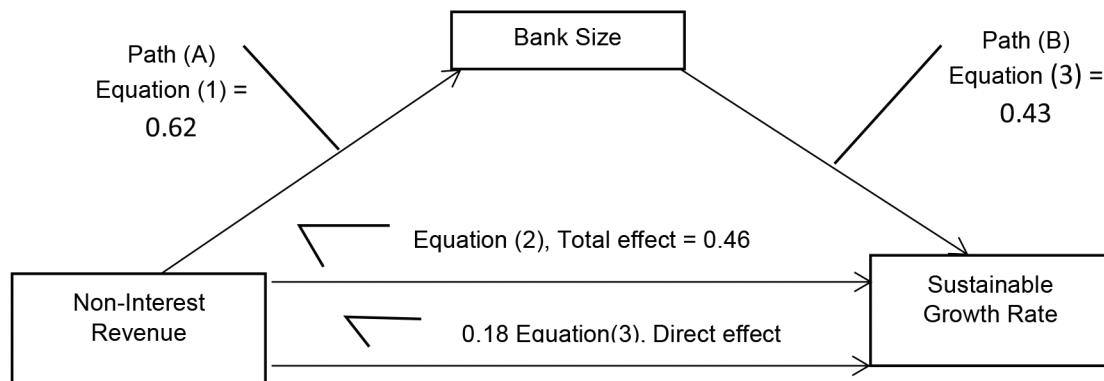
Many previous studies around the world have focused on a bank’s performance (profitability or/and risk). Some studies confirm the linear relationship of Non-IR with SGR which can improve the profitability and reduce the bank’s risk. Others stated the negative relationship and the non-interest income may increase the operating risk, whereas mentioned the nonlinear relationship. In the context of Jordanian commercial banks, what are the conclusions of this study?. To answer this question, based on Baron & Kenny methodology, the study concludes that despite the Non-IR possesses an explanatory power for SGR and can sustain the bank’s growth rate, but the direct effect is not statistically

**Table 6:** Fourth Hypotheses Testing Result

Method: Amos Output, Regression Weights					
Direct Effect					
Variables	Estimate	S.E.	C.R.	P-Value	
Size ← Non-IR	0.621	0.062	10.016	***	Path A
SGR ← Size	0.432	0.097	4.434	***	Path B
SGR ← Non-IR	0.181	0.097	1.875	0.061	Direct effect
Total Effect					
Variables	Non-IR	Bank’s Size			
Size	0.621	0.000			
SGR	0.450	0.432			



**Figure 1:** Conceptual Model



**Figure 2:** Analysis Results According to Test (Baron and Kenny 1986)

significant, because of the total effect of the bank's size on the sustainable growth rate is based on Amos program output (figure 1). In other words, there is a non-linear relationship between non-interest revenue and SGR, and the size of bank' play vital role to expand the capacity banks to diversify their income to sustain the growth rate. Therefore, this study confirms the results studies each of Jiang and Han (2018); Abugri et al. (2016) regarding the nonlinear relationship and the size effect, Pham (2021), and Isnurhadi et al. (2021) regarding the effect of bank size on the risk.

Based on the aforementioned, it is suggested to the investors selected the large banks size due to the potential for increased chance the profitable investments with a reasonable income diversification. Besides, they provide better income opportunities derived from their investments and enable them to compete and survive.

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