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The Mediation Role of Interest Rate between Financial Liberalisation and Financial Stability

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Abstract
As a financial intermediary, the banking industry is critical in mobilising funds between surplus and deficit firms. The global financial market has changed dramatically as a result of the transition from financial repression to financial liberalisation, which has resulted in increased cross-border capital flows and financial sector expansion. Liberalisation of the banking industry has pushed commercial banks to take on more risk, which may have a detrimental effect on financial stability and the survival of smaller banks. As a result, the purpose of this study was to examine the function of interest rates as a mediating factor in the link between financial liberalisation and financial stability in Malaysian conventional and Islamic banks. Due to Shariah constraints, Islamic banks' mediating effects may differ from those of conventional banks. PLS-SEM analysis of the research model found that interest rates strongly mediated the association between financial liberalisation and financial stability. Islamic banks, on the other hand, must preserve their stability through interest rate mediation in the context of financial liberalisation.
Keywords: Financial Liberalization, Financial Stability, Interest Rate, PLS-SEM

Introduction

Financial stability is possible when the financial intermediation process operates smoothly and there is confidence in the financial institutions' actions. The banking sector acts as a financial mediator in order to facilitate the transfer of funds between surplus and deficit units. As a result, banks act as financial intermediates, interpreting monetary policy and implementing it throughout the financial system to ensure financial stability. The global financial system has seen tremendous changes as a result of the transition from financial repression to financial liberalisation, which has resulted in cross-border capital flows and the development of the financial industry. Thus, the transition from financial repression to financial liberalisation, i.e., deregulation or financial reform of the domestic financial market, will have an impact on the financial system's stability as a result of the banking policy reform. The pace of financial liberalisation must be commensurate with the system's ability and capacity to absorb these changes without jeopardising financial stability (BNM, 1999).

McKinnon (1973) and Shaw (1973) were the first to develop a theory of financial liberalisation in their seminal publications. These academics argue that financial repression impairs economic progress in emerging countries. As a result, they advocate for the use of financial liberalisation policies to stimulate investment and savings, as well as economic growth. Mckinnon and Shaw (1973) discovered that financial liberalisation could boost

growth rates by raising interest rates to a competitive market equilibrium while resources are efficiently distributed. To accomplish economic growth, the financial system must be sound and stable. Thus, financial system liberalisation is accomplished by interest rate deregulation, the elimination of obstacles to capital flows, and the elimination of impediments to competition among financial institutions (Allegret, Courbis, and Dulbecco, 2003). Financial stability in the banking industry is crucial because it can have a multiplier effect on the entire economy. Thus, financial stability in the banking industry is critical and has acquired considerable attention as a result of the global recurrence of financial crises. Financial liberalisation, according to Shehzad and Haan (2008) and Daniel and Jones (2007), is linked to financial stability and will inevitably result in financial crises. Gruben, Koo, and Moore (2003) provide more evidence for this view, concluding that in a liberalised regime, banks are more likely to collapse. Financial liberalisation, on the other hand, has two opposing perspectives. While financial liberalisation is associated with financial instability, it will also contribute to the strengthening of financial development and stronger economic growth (Ranciere, Tornell, and Westermann, 2006). Islamic banks frequently perform their functions in the most effective and efficient manner possible in order to contribute to the financial system's overall stability, as well as economic growth and development.

The effect of financial liberalisation on the financial stability of Islamic banks in comparison to conventional banks is an area that warrants additional study. Due to Shariah rulings and contract accountability, Islamic and conventional banks operate differently in terms of product offerings and asset liability arrangements (Ashraf, Rizwan, and L'Huillier, 2016). The bank's risk behaviour is dictated by the structure of its financial position, namely its asset and liability positions. Islamic banks handle their assets and liabilities according to the principles of Mudharabah and Musyarakah. Under this approach, banks' credit risk may be transferred to investment investors rather than debt holders. On the asset side, Cihák and Hesse (2010) assert that negative shocks might be transferred to investment depositors via this definition, in which the bank shares risk with the depositors. However, Islamic banks must be able to offer an acceptable rate of return in order to compete in the dual banking sector. There are numerous reasons why empirical evidence on the impact of financial liberalisation on financial stability remains inconclusive (Cubillas and González, 2014). There are numerous reasons why empirical evidence on the impact of financial liberalisation on financial stability remains inconclusive. Apart from competitiveness, financial deregulation may have a range of adverse effects on financial stability. One aspect affecting financial stability is the deregulation of interest rates during the financial liberalisation process (Abderzag and Hasnaoui, 2015; Ghosh, 2016; Moyo, Nandwa, Oduor, and Simpasa 2014; Rokhim and Susanto, 2013; Unite and Sullivan, 2003). As a result, this research was unified in analysing the mediating effect of interest rates on the relationship between financial liberalisation and financial stability.

Literature review

Financial liberalization liberalisation and Financial Stability

Federal government interference in the financial system is part of the financial liberalisation effort. Historically, the research community has assumed that financial liberalisation is the vital factor of banking crises, despite the fact that the mechanism by which this link is established is unknown (Demirgüç-Kunt and Detragiache, 1999; Kaminsky and Reinhart, 1999; Demirgüç-Kunt and Detragiache, 1999). According to the financial liberalisation theory developed by Mckinnon and Shaw (1973), financial liberalisation is expected to promote bank stability. Theoretically,bank's stability is expected to be strengthened as a result of financial deregulation (Berger and Humprey, 1997). According to Gluzmann and Guzman

(2017) there is a considerable positive association between financial liberalisation and a rise in the frequency of crises. Batuo, Mlambo and Asongu (2018), claimed that financial liberalisation and economic growth impact positive on financial instability.
Ding, Wu, and Chang (2013) investigated the dynamic changes in bank performance before, during, and after the government's intervention in response to the global financial crisis in 2007 (i.e., during and after the government's intervention). Based on empirical evidence, it appears that the government's intervention resulted in an improvement in bank profitability, solvency, and credit risk. Based on their findings, foreign banks are generally more efficient than their domestic counterparts, and their presence in a country could ensure that their banking technology and knowledge is transferred to the host country's banks, which would be necessary for the host country's banks to improve their efficiency. Claessens and colleagues (2001) conducted an empirical study to determine the impact of foreign banks' entry into domestic banking markets. In their findings, they demonstrate that the admission of a foreign bank has a positive impact on the expenses, revenues, and profitability of domestic financial institutions. However, according to Lee, Sapriza, and Wu (2016), there is a strong and negative significant relationship between financial liberalisation and the likelihood of experiencing both currency and systemic banking crises in the future. It was discovered after a study of 39 countries was conducted that financial liberalisation reduced the likelihood of financial crises occurring. Al-Ajlouni (2008) investigated whether Islamic banks could benefit from the globalisation of the financial markets. The conclusion reached is that financial globalisation will have a negative effect on the profit margins of Islamic financial institutions and businesses. Financial liberalisation will therefore have an impact on the financial stability of both conventional and Islamic financial institutions.

H1 = Financial liberalisation has a significant effect on financial stability for conventional banks.
H2 = Financial liberalisation has a significant effect on financial stability for Islamic banks.

Financial liberalization, interest rate and financial stability

Detragiache and Demirgüç-Kunt (1998) empirical evidence that financial liberalisation increases the probability of banking crises; they provide several theoretical considerations to support their claim. Interest rate liberalisation will increase short-term deposit rates; they argue that banks will be unable to increase lending rates on long-term loans, which have fixed interest rates, because of the policy. The result could be lower bank profits because interest rates on long-term loans cannot be changed quickly, and if they do, the result could be a rise in the number of non-performing loans. Consequently, in a financial liberalisation environment, the disparity between lending and borrowing rates is likely to cause problems for banks and contribute to instability in the financial system. Furthermore, because of adverse selection, loosening credit allocation and interest rate ceilings may increase the likelihood of lending to high-risk borrowers in the future. As a result of banks' limited liability and moral hazard, a liberalised financial market may result in banks making risky lending decisions. The relationship between interest rate deregulation and financial stability is strengthened because of financial liberalisation (Cubillas and Gonzales, 2013)
Financial liberalisation works by allowing interest rates to float freely to stimulate economic growth. McKinnon (1973) and Shaw (1973) argue that, following deregulation, the market determines the interest rate that is charged to consumers. It is preferable to raise interest rates during a period of financial liberalisation to encourage savings while also stimulating economic growth. As a result of this interest, the bank is exposed to an asset liability

mismatch, which has the potential to jeopardise financial stability. Akyuz (1993) argues that liberalize financial markets may result in higher interest rates and more risk-taking behaviour than would otherwise be expected. Researchers Claessens, Demirguc-Kunt, and Huizinga (2001) discovered that higher levels of consumer price inflation and real interest rates result in higher bank margins and profits. As a result, financial liberalisation leads to an increase in interest rates, which has an impact on financial stability. Moyo and Roux (2019) emprical results, suggested that when financial liberalisation is captured by real rate of interest, it reduce the financial crises.

Because of financial liberalisation, interest rates will rise to stimulate savings, thereby increasing the availability of credit throughout the economy (Mckinnon, 1973; Shaw, 1973). Higher financing rates, on the other hand, will increase the cost of borrowing as financial liberalisation progresses further. Economic activity is stimulated by a reduction in the interest rate on borrowing. It will increase the ability of debtors to repay their debts. Because of this, there is a greater chance of default. Increase in real interest rate, according to Ghosh (2016), significantly increases the likelihood of a banking crisis, whereas Barrell, Karim, and Ventouri (2013) argue that interest rate liberalisation reduces the impact of crises and increases the size of capital buffers in financial institutions. As a result, financial liberalisation through deregulation of interest rates has an impact on the stability of financial markets.

H5: Interest rate mediates the relationship between financial liberalisation and financial stability for conventional banks.

H6: Interest rate mediates the relationship between financial liberalisation and financial stability for Islamic banks.

This study tried to fill a gap in the literature on Islamic and conventional banks by examining the transmission of how financial stability will be affected by financial liberalisation. Therefore, this research focuses on the interaction or mediating effect of the interest rate by contextualising the role, i.e., how the presence of mediating variables affects the relationship between financial stability and financial liberalisation.

Research methodology

The financial stability of Malaysia was examined by using secondary data and a quantitative technique. The sampling criterion for this study was that it included all commercial banks in Malaysia, including conventional and Islamic banks, from 1994 to 2019. It also includes all Malaysian commercial banks, both conventional and Islamic. Two databases, Dijk's and FitchConnect, as well as Bureau van Dijk's BankScope, were used to gather secondary information. The International Monetary Fund (IMF) and Bank Negara Malaysia provided the macroeconomic data used in this analysis. The structural equation modelling – partial least squares (SEM –PLS) method was employed in this study. The researchers conducted this study to evaluate the role of interest rates as mediating variables in the relationship between financial stability and financial liberalization for Islamic and conventional banks in Malaysia. Financial stability was measured by insolvency risk (Z-score), while bank performance was measured by return equity (ROE) and return on assets (ROA) (ROA).

Insolvency risk

Financial liberalisation's deregulation of the financial system increased the likelihood of banking sector instability and added to concerns about the financial system's soundness. The volatility of returns was used to measure the insolvency risk. The Z-score is a risk indicator

of insolvency (Hannan and Hanweck, 1988). As demonstrated in the literature, the Z-score is the most frequently used proxy for financial stability measurement (Beck, Demirgüç-Kunt, Levine, 2007; cihák and Hesse, 2010; Demirgüç-Kunt, Detragiache, and Tressel, 2008; Laeven and Levine, 2009). The return on assets, volatility of return, and capital basis of banks are all considered in the calculation. A higher Zscore indicates that the danger of insolvency is reduced. The Zscore is used to forecast bank failures, which has an impact on financial stability. The Zscore was chosen in this study because it combines the capital buffers of banks (capital and earnings) with the risk level as evaluated by the standard deviation. Zscore is calculated as follows:

$$\mathrm{Z-score} = \frac{\mathrm{E(ROA_{it})} + E/A_{it}}{SD\ (ROA_{it})}$$

Where E (ROA) is the expected return on assets, SD (ROA) is the standard deviation of the expected return on assets, and E/A is the equity capital to total assets ratio. The Z-score's strength is that it is a fairly objective indicator of financial institution soundness across various categories of financial institutions. The Z-score is regarded as an objective indicator because to its emphasis on insolvency risk, i.e., the danger that a bank (commercial, Islamic, or otherwise) may run out of reserves and capital.

Bank performance

The financial system's opening and increased risk taking also have an effect on the financial system's stability and performance. This study considered the impact of financial liberalisation on bank performance while measuring its impact. Bank performance is included in the assessment of financial stability since the profitability of the financial institution is reflected in the return on equity (ROE) and return on assets (ROA) ratios. Kosmidou (2008) demonstrates that when banks operate at a low cost, they can earn a high rate of return on their assets. Without a doubt, if the banking sector is not profitable, this suggests that the entire system is on the verge of collapsing. This study analysed bank profitability using two widely used accounting measures: return on equity (ROE) and return on assets (ROA) (Rokhim and Susanto, 2013; Elryah, 2014). This metric was used to examine the banks' profitability in relation to the risk they chose to incur. ROA and ROE indicate how effectively the bank's management uses its real investment resources and also indicate the bank's ability to mitigate insolvency risk. The average return on equity (ROEA) and the average return on assets (ROAA) are calculated as follows:

$$\mathrm{ROAA} = \frac{\text{Net Income}}{\text{Average total assets}}$$

$$\mathrm{ROEA} = \frac{\text{Net Income}}{\text{Average total Equity}}$$

Determinants of financial stability

Financial liberalization

Financial liberalisation is the financial freedom granted to banks by the government as a result of deregulation to increase efficiency. As a result, the financial independence index was used in this study (Beck, Demirguc-Kunt, and Levine, 2016). The financial freedom index assesses the banking system's efficiency and independence from government control and intervention in areas such as credit allocation, banking regulations, the types of financial services offered, deposit accumulation, foreign ownership, and the banking system's dealings

with foreign currencies. Financial independence is projected to alter the banking system's market power, hence affecting financial stability.

The Heritage Foundation releases a financial freedom index for each country on an annual basis. This indicator quantifies a country's financial and banking system's relative openness. An index with a value between 0 and 100 reflects the degree to which enterprises are subject to regulatory constraints on their financial freedom. A higher value indicates fewer constraints and more freedom (Berger et al., 2009; Sufian and Hassan, 2012). This index is a composite measure of the extent to which the government regulates financial services, the extent to which the government exerts influence over credit allocation, the extent to which the state intervenes in banks and other financial services, and the difficulty of establishing and operating financial institutions (for both domestic and foreign individuals). It ranges from 0 to 100. A higher score suggests a less regulated financial system.

Interest rate

Interest rate is the mediating variable, financial liberalisation has resulted in the policymaker deregulate interest rates. Interest rates have an effect on financial stability due to their volatility. The nominal rate (loan rate) was used as a proxy for the interest rate in this analysis (Claessens, Demirgüç-Kunt, and Huizinga, 2001). Since the same benchmarking was used for conventional and Islamic banks, the nominal rate was covered for both (Usmani, 2002). Due to the fact that the nominal rate is unadjusted for inflation, it was this rate that was utilised to set the OPR target rate and the lending/financing rate.

Analysis of results

Descriptive statistics

Descriptive statistics is used to describe the essential properties of the data utilised in the investigation. The tables contain information about the standard deviation, mean, lowest and maximum values for the entire sample. The conclusion encompasses both conventional and Islamic banks operating in Malaysia's banking system. The descriptive data for Islamic banks are shown in Table 1, while the descriptive statistics for conventional banks are shown in Table 2.

Table 1: Descriptive Statistics for Islamic Banks

Variable	Mean	Std. Dev.	Min	Max	skewness	kurtosis	N obs
ZSCORE	8.83	16.59	-5.27	171.93	5.63	47.03	440
ROAA	0.20	1.55	-25.78	2.83	-12.39	198.88	440
ROAE	2.95	29.99	-573.30	63.15	-17.49	337.07	440
FLIB	45.00	10.01	30.00	60.00	-0.38	-1.06	440
INT RATE	5.71	1.76	4.54	12.13	2.12	4.20	440

Table 2: Descriptive Statistics for Conventional Banks

Variable	Mean	Std. Dev.	Min	Max	skewness	kurtosis	N obs
ZSCORE	13.73	28.63	0.00	304.31	5.13	36.73	676
ROAA	0.38	0.60	-4.16	2.43	0.11	4.84	676

ROAE	4.33	7.17	-62.85	26.68	-0.39	11.94	676
FLIB	45.00	10.01	30.00	60.00	-0.38	-1.06	676
INT RATE	5.71	1.76	4.54	12.13	2.12	4.20	676

Notes: This table reports summary statistics on selected variables used throughout the paper from 1994-2019. It contains the means, standard deviations, minimum and maximum values for each variable.

The descriptive data in Tables 1 and 2 outline the endogenous and exogenous indicators for conventional and Islamic banks in Malaysia's banking industry. The data set spans the years 1994 to 2019. The mean Z-score of Islamic banks is 8.83, while that of conventional banks is 13.73, indicating that the insolvency risk of conventional banks is lower than that of Islamic banks. This also reflects the fact that conventional banks' ROA and ROE are slightly greater than those of Islamic banks. Profitability can be explained by the fact that conventional banks have the advantage of engaging in a broader range of activities than Islamic banks due to the Shariah limitation. In terms of loan rates, the Malaysian financial system as a whole averages 6.53 percent. The loan rate is identical for conventional and Islamic banks because Islamic banks adhere to the same benchmarking.

Results and discussion

This study employed the smartPLS3 software to test the research hypothesis. The PLS-SEM technique evaluates both the measurement model and the structural model.

Measurement model

Reflective and formative constructs are analysed. It is composed of control factors, such as bank-specific and macroeconomic variables, for the reflective construct. The following subsections summarise the findings of the analyses conducted to determine the validity of the measurement model used in this study.

Model assessment: formative construct

Several components of the formative measurement models are evaluated, including indicator collinearity, convergent validity, indicator weights relevance, and statistical significance (Hair et al., 2017.). When it comes to determining formative indicator collinearity, the variance inflation factor (VIF) is a popular method. A VIF value of 5 or above indicates significant collinearity between indicators of formatively measured components. Despite this, at VIF levels less than three, problems about collinearity can occur (Mason and Perreault, 1991; Becker et al., 2015). It is preferable to have VIF values that are close to or lower than 3.33. A variable assessing a comparable idea would be used to measure the model's correctness when it is developed using secondary data (Houston, 2004). In accordance with the VIF requirement for Islamic banks, all formative constructs were found to be valid in Table 3. Traditional banks' VIF ROA and ROE are both higher than the 0.70 levels, indicating that they are performing better than their peers. Hair et al. (2017a) recommends that the formatively measured construct and the single-item construct measuring the same issue have a correlation of 0.70 or higher. As can be seen in Table 3, only the Z score is statistically important. As shown in Table 4, all metrics except ROAE are significant for conventional banks, whereas none are significant for savings institutions. While not statistically significant, the indicator may still be used if its content validity justifies keeping it (Hair et al., 2017).

Table 3: Formative construct indicator

Construct	Item	Convergent Validity	Weights	VIF	t-value Weights	SIG
FINANCIAL STABILITY	ROAA	0.805	-0.316	1.241	1.273	0.204
	ROAE		0.069	1.244	0.32	0.749
	ZSCORE		0.975	1.011	16.461	0.000

Table 4: Formative construct indicator

Construct	Item	Convergent Validity	Weights	VIF	t-value Weights	SIG
FINANCIAL STABILITY	ROAA	0.760	-0.316	9.491	2.410	0.016
	ROAE		0.069	9.36	0.275	0.783
	ZSCORE		0.975	1.046	16.105	0.000

Structural model

Coefficient of determination

The R^2 of the endogenous construct was utilised to calculate the explained variance. Table 5 shows the R^2 for Islamic banks developed in this study, while Table 6 shows the R^2 for conventional banks. The model's R^2 is high, and the model is quite substantial. The effect of R^2 on the mediating variable of interest is stated to be 0.801 for Islamic banks and 0.759 for regular banks. These findings indicate that financial liberalisation can account for 80.1 percent of the variance in financial stability for Islamic banks via the effect of interest rates, and 75.9 percent of the variance in financial stability for conventional banks. Thus, the model can account for more than 70% of the observed variation.

Table 5: Coefficient of Determination (R^2) for Islamic Banks

RELATIONSHIP OF EXOGENOUS → ENDOGENOUS	R^2
FINANCIAL LIBERALISATION → INTEREST RATE → FINANCIAL STABILITY	0.801

Table 6: Coefficient of Determination (R^2) for Conventional Banks

RELATIONSHIP OF EXOGENOUS → ENDOGENOUS	R^2
FINANCIAL LIBERALISATION → INTEREST RATE → FINANCIAL STABILITY	0.759

Path coefficient

The following table depicts the relationship between interest rates and financial stability: Bootstrapping analysis indicates that the indirect effect = 0.005 is significant for conventional banks with a t-value of 1.63, whereas the indirect effect =-0.006 is significant for Islamic banks with a t-value of 1.61, according to the findings of this study. The findings in Table 7 indicate that the mediation effect is statistically significant, which supports the hypotheses H1 and H2 (the relationship between financial liberalisation and financial stability is

considerably mediated by interest rates). This study discovered that the influence of the interest rate as a mediating variable is marginally significant at the 5 percent level for both Islamic and conventional banks, according to its empirical findings on interest rates. It is, however, significant for traditional banks, but not for Islamic banks, which is a distinction worth making. For conventional banks, this suggests that interest rates act as a moderating variable between the effects of financial liberalisation and the effects of financial stability. This means that the likelihood of going insolvent is reduced. But Islamic banks that are subject to the mediating influence of interest rates face a greater or less consistent insolvency risk, requiring the government intervention to maintain financial stability and stability. Therefore, it is possible to conclude that interest rates play a role in the mechanism of financial liberalisation.

Table 7: Path Coefficient

Types of Banks	Relationship	Standard Beta	t-Values	p-Values	LL	UL
CONVENTIONAL BANKS	FL -> FS	0.086	3.890	0.000	0.27	0.377
	FL -> IR-> FS	0.005	1.634	0.051	0.001	0.012
ISLAMIC BANKS	FL -> FS	-0.124	3.475	0.000	0.186	0.261
	FL -> IR-> FS	-0.006	1.619	0.053	-0.017	-0.002

Conclusion and discussion

According to financial liberalisation theory, the interest ceiling should be removed, and financial liberalisation should promote a higher interest rate in order to stimulate savings and investment for economic growth and stability. However, the findings indicate that only conventional banks, not Islamic banks, support the theory. Islamic banks must monitor regulation and interest rates when they are mediated by interest rates in order to avoid making risky decisions. This is because Islamic and conventional banks use the same interest rate benchmarking in the system. As a result, because conventional banks have a larger market share than Islamic banks, regulation will bolster Islamic banks' ability to compete with conventional banks. Additionally, due to the product profile of Islamic banks, which is governed by Shariah principles, regulation is required when interest rates are used as a medium of exchange. Islamic banks require regulation because they will affect their stability and are said to resemble conventional banks (Nosheen and Rashid, 2020). As a result, it will avoid the negative consequences of financial liberalisation through regulation. Conventional banks are also better protected against interest rate movements than Islamic banks, as conventional banks can maintain a proper match between the duration of assets and liabilities without violating Shariah. Thus, it is concluded that the role of interest rates in financial liberalisation influences the stability of Islamic and conventional banks. This study would suggest to include two phases of study; before and during the pandemic in order to capture core impacts of financial liberalisation towards banking industry. Hence, the implication of the study will be more relevant and could prove a mediating role of an interest rate in linking the financial liberalisation and financial stability within a dual banking system in the case of Malaysia.

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