

**THE 9<sup>th</sup> INTERNATIONAL CONFERENCE AND CALL FOR PAPERS  
JOURNAL OF ISLAMIC MONETARY ECONOMICS AND FINANCE**  
*Accelerating Digitalization in Sharia Economy and Finance for  
Inclusive and Sustainable Growth in the Post Pandemic Recovery*

**Jakarta, 25 October 2023**

**PARALLEL SESSION I – Room 2 (Murai Room) | Chair: Akhmad A. Mahfudz, UNIDA Gontor  
| Facilitator: Nida Amalia**

- 01.30 PM - 01.55 PM      **Alwahidin; Novita Kusuma Maharani**  
*Foreign Ownership and Bank Stability: Are Islamic Banks More Resilient than Conventional Banks?*  
Discussant: Rahmatina A. Kasri
- 01.55 PM – 02.20 PM      **Henda Riofita**  
*Augmenting Islamic Digital Payment Effect on MSME's Muslim Customer Purchase Decision*  
Discussant: Rahmatina A. Kasri
- 02.20 PM – 02.45 PM      **Nuraini Desty Nurmasari; Novita Rahayu Pratiwi; Ninditya Nareswari**  
*How Good ESG Practices are to Financial Performance During the Crisis Period?*  
Discussant: Rahmatina A. Kasri
- 02.45 PM – 03.10 PM      **Syaifullah Al Maslul; Anita Priantina**  
*Halal Awareness: Impact on Purchasing Halal Medicines Unveiled*  
Discussant: Rahmatina A. Kasri

**PARALLEL SESSION II – Room 2 (Murai Room) | Chair: Tika Arundina, Universitas Indonesia | Facilitator: Nida Amalia**

- 03.40 PM – 04.05 PM      **Bayu Adi Nugroho; Dewi Fiscalina Kusumawardhani**  
*Optimal Hedge Ratio of Sukuk and Islamic Equity: A Novel Approach*  
Discussant: Raditya Sukmana
- 04.05 PM – 04.30 PM      **Aimatul Yumna; Atikah Rukminastiti Masrifah; Dadang Muljawan; Feri Noor; Joan Marta**  
*The Impact of Cash Waqf Linked Sukuk Empowerment Programs: Empirical Evidence from Indonesia*  
Discussant: Raditya Sukmana
- 04.30 PM – 04.55 PM      **Ooi Kok Loang**  
*From Crisis to Recovery: Monetary and Fiscal Policies on Market Stability and Contagion in Shariah-Compliant Stocks across Indonesia, Malaysia, and GCC Countries*  
Discussant: Raditya Sukmana



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**ROOM 2**

**FOREIGN OWNERSHIP AND BANK STABILITY:  
ARE ISLAMIC BANKS MORE RESILIENT THAN CONVENTIONAL BANKS?**

Alwahidin, Novita Kusuma Maharani

This study aims to analyze the effect of foreign ownership on financial stability between Islamic and conventional banks. The data used includes 109 banks in Indonesia from 2011 to 2021, which come from Bank Focus and World Bank Data. The regression method was used to examine the relationship between the identified variables. The analysis results show that the number of foreign banks (FBN) positively and significantly influences bank stability. In contrast, foreign bank assets (FBA) growth has a negative and significant influence. This finding is consistent with previous literature, which stated the different impacts of foreign banks on the stability of the domestic banking sector. In addition, the test results of differences in influence between Islamic and conventional banks show that Islamic banks tend to be more stable, with foreign banks having higher assets than conventional banks. Other findings indicate that control factors such as the level of bank equity (EQA) positively influence bank stability and can moderate the negative impact of FBA on stability. The results of this study provide additional relevant insights for policymaking and regulations in maintaining the banking sector's stability, especially in the context of Islamic and conventional banks. This finding has important implications in dealing with global banking dynamics and needs to be considered in efforts to strengthen banking supervision and regulation. This study provides empirical evidence that Islamic banks are more resilient to the negative impact of foreign bank asset growth than conventional banks, which can explain the unique characteristics and principles of Islamic banks. This research also provides recommendations for regulators and policymakers to consider the factors that affect the banking sector's stability, especially in the context of Islamic banks and banking conventions, as well as develop strategies and mechanisms that can improve the performance and resilience of the banking sector in Indonesia.

**AUGMENTING ISLAMIC DIGITAL PAYMENT EFFECT  
ON MSME's MUSLIM CUSTOMER PURCHASE DECISION**

Hendra Riofita

This study aims to augment the effect of Islamic digital payments on Muslim customer purchase decision on MSME's products. The data processed with SPSS and Amos program is collected using the questionnaire sent via google form link to Muslim customers having experiences to purchase MSME's products using both Islamic digital payments and cash payments. The findings show that Islamic digital payments and perceived values respectively are the predictors of Muslim customer purchase decision, however cash payments do not. As expected, perceived values can augment the effect of Islamic digital payments on Muslim customer purchase decision, but cannot on the effect of cash payments on the Muslim customer purchase decision. The findings also reveal that this study can implement Technology Acceptance Model (TAM) to elaborate the role of Islamic digital payments on Muslim purchase decision on MSME's products augmented by perceived values. The findings are the important evidences from Indonesia for developing countries since the use of the Islamic digital payments in the countries cannot defeat the use of cash payments.

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Attachment: -

13  
Jakarta, October 2023

**To:**

Alwahidin; Novita Kusuma Maharani  
INDONESIA

**Subject: INVITATION TO PRESENT AT THE PARALLEL SESSIONS OF THE 9<sup>TH</sup> INTERNATIONAL ISLAMIC MONETARY ECONOMICS AND FINANCE CONFERENCE AND CALL FOR PAPERS (9-IIMEFC) 2023**

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We are pleased to invite you to participate in The 9-IIMEFC 2023 which will be held on October 25<sup>th</sup>, 2023, at Jakarta Convention Center (JCC), Jakarta, Indonesia. As part of this invitation, you are expected to contribute to be a presenter in the following activities (attached the tentative agenda):

1. Participate in person in the Plenary Session on October 25, 2023, with the theme "Accelerating Digitalization in Sharia Economy and Finance for Inclusive and Sustainable Growth in the Post-Pandemic Recovery".
2. Become a presenter during the Call for Papers on October 25, 2023 (**In-person Parallel Session**). Each presenter will present the paper using PowerPoint slides (flyer parallel session and presenter guideline as attached).

Bank Indonesia will be pleased to cover hotel accommodation and transportation during this event with a **reimbursement** mechanism, of up to IDR 10.000.000 (inclusive tax). For reimbursement proof, the invited presenter must deliver all travel documents namely transportation ticket and hotel booking invoice, payment receipt, and boarding pass to BI Institute. For any further information and assistance, do not hesitate to contact us at [jimf@bi.go.id](mailto:jimf@bi.go.id), cc: [mohammad\\_aly@bi.go.id](mailto:mohammad_aly@bi.go.id).

We look forward to welcoming you to Jakarta. Thank you.

**BANK INDONESIA INSTITUTE**



MHA Ridhwan  
Deputy Director

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# The Presence of Foreign Bank Ownership and Financial Stability: Are Islamic Banks More Resilient Than Conventional Banks?

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## Abstract

This study aims to analyze the effect of foreign ownership on financial stability between Islamic and conventional banks. The data used includes 109 banks in Indonesia from 2011 to 2021, which come from Bank Focus and World Bank Data. The regression method was used to examine the relationship between the identified variables. The analysis results show that the number of foreign banks (FBN) positively and significantly influences bank stability. In contrast, foreign bank assets (FBA) growth has a negative and significant influence. This finding is consistent with previous literature, which stated the different impacts of foreign banks on the stability of the domestic banking sector. In addition, the test results of differences in influence between Islamic and conventional banks show that Islamic banks tend to be more stable, with foreign banks having higher assets than conventional banks. Other findings indicate that control factors such as the level of bank equity (EQA) positively influence bank stability and can moderate the negative impact of FBA on stability. The results of this study provide additional relevant insights for policymaking and regulations in maintaining the banking sector's stability, especially in the context of Islamic and conventional banks. This finding has important implications in dealing with global banking dynamics and needs to be considered in efforts to strengthen banking supervision and regulation. This study provides empirical evidence that Islamic banks are more resilient to the negative impact of foreign bank asset growth than conventional banks, which can explain the unique characteristics and principles of Islamic banks. This research also provides recommendations for regulators and policymakers to consider the factors that affect the banking sector's stability, especially in the context of Islamic banks and banking conventions, as well as develop strategies and mechanisms that can improve the performance and resilience of the banking sector in Indonesia.

**Keywords:** Foreign Ownership, Islamic Banks, Conventional Banks, Bank Financial Stability, Equity

**JEL Classification:** G21, G32, F23

## 1. Introduction

The banking sector plays a critical role in maintaining global economic stability, and bank ownership changes significantly impact their operations and the economic health of the countries in which they operate. Since the last decade, foreign ownership in the banking sector has grown rapidly in many countries, including Asia (Claessens et al., 2021; Claessens & Van Horen, 2014). Previous studies have shown that foreign banks tend to be more stable than domestic ones, and they help diversify banking portfolios (Detragiache & Gupta, 2006, 2021).

However, the role of foreign ownership in financial stability is still a topic of debate. Most of the literature has focused on conventional banks. Still, there is increasing interest in the influence of foreign ownership

in the Islamic banking sector, which has experienced significant growth in recent years. Islamic banks operate based on Sharia principles, which prohibit the giving and receiving of usury and investing in businesses that are unlawful under Islamic law. These banks share risks and rewards with their customers, and this structure has the potential to make them more stable than conventional banks (Cihak & Hesse, 2021; Rajhi, 2012).

However, little literature explores how these differences might affect the relationship between foreign ownership and financial stability. Therefore, this study aims to fill this gap in the literature by comparing the effect of foreign ownership on financial stability between Dea Islamic banks and conventional banks. Therefore, this study will use a regression model that includes key variables from previous literature to affect financial stability. These variables include asset growth, sufficient capital (car), debt, equity to total assets, foreign bank ratios (fba and fbn ratios), fixed assets, GDP growth, liabilities, loans, net loans to assets, employee costs, total interest costs, total operational costs, and total assets. This study will also use the Z-Score, a common measure of financial stability in the literature (L. A. Laeven & Levine, 2011; L. Laeven & Levine, 2009). So, this study aims to evaluate the effect of foreign ownership on financial stability in the context of Asian banking, especially in Indonesia.

The Asian banking sector is a very relevant subject for this study. Asia is home to some of the world's largest and most dynamic banking markets, with a strong mix of domestic and foreign banks (Morgan & Pontines, 2018). In addition, the Asian banking sector is also unique in that many Islamic banks apply banking principles and practices that are different from conventional banks. This research is expected to provide new insights into how foreign banks can affect banking stability in the Asian context, especially in Indonesia, and how this effect may differ between Islamic and conventional banks. The findings from this research are expected to be useful for policymakers, regulators and banking practitioners in formulating strategies and policies that will enhance financial stability in Asia.

Previous research has extensively discussed the effect of foreign ownership on financial stability in various countries and contexts (Ashraf et al., 2016; Atellu et al., 2021; Fakhrunnas et al., 2023). However, the research addressing this issue is still limited so it can be developed with more specific issues. Previous studies have not simultaneously and comprehensively compared the effect of foreign ownership on financial stability between Islamic and conventional banks. Previous research has also tended to focus on only one type of bank or ignore the differences in characteristics and principles between Islamic and conventional banks (Albaity et al., 2019; Ali et al., 2020; Asutay & Othman, 2020).

Then, some recent studies have not considered the impact of foreign bank asset growth as an indicator of the intensity of competition between foreign and domestic banks. Previous research tends to use the number of foreign banks or the proportion of foreign bank assets as the main independent variable (Ashraf et al., 2016; Atellu et al., 2021; Fakhrunnas et al., 2023). In addition, their research has not tested the role of bank equity as a control factor that can affect financial stability. Previous research uses macroeconomic control variables like interest rates, inflation, and GDP growth.

Based on the limitations above, this study tries to fill the knowledge gap by contributing in several ways. This research theme is one of the few studies comparing the effect of foreign ownership on financial stability between Islamic and conventional banks in Indonesia, using panel data from 109 banks during the 2011-2021 period. This research can provide a more accurate and holistic picture of the impact of foreign banks on the stability of the domestic banking sector.

This research tends to be relatively new research that uses the growth of foreign bank assets as one of the main independent variables in analyzing the effect of foreign ownership on financial stability. This research can provide new insights into how the dynamics of foreign bank asset growth affect the stability of domestic

banks, both directly and indirectly. In addition, this research is one of the few studies examining the role of bank equity as a controlling factor in analyzing the effect of foreign ownership on financial stability. This research can provide empirical evidence on how the level of bank equity can moderate the positive or negative impact of foreign ownership on bank stability.

The main research question in this study is: Is the effect of foreign ownership on financial stability different between Islamic and conventional banks? Given their different principles and structures, this study hypothesizes that Islamic and conventional banks may react differently to foreign ownership. The research approach involves separating the sample into Islamic and conventional banks and running separate regressions for each, enabling the study to compare the effect of foreign ownership on the two types of banks. The results of the study show that there are significant differences between Islamic banks and conventional banks in responding to foreign ownership. Islamic banks tend to positively influence bank stability by increasing foreign bank assets, whereas testing generally shows the opposite result. Meanwhile, the growth in the number of foreign banks positively influences the financial stability of banks, whether it be Islamic or conventional banks.

## **2. Literatur Review**

The growth and role of foreign banks in the global economy have received much attention in the economic and financial literature. According to Claessens & Horen (2021b) and Stijn & Neeltje (2014), most of the research has focused on the influence of foreign banks in diversifying banking portfolios and their contribution to the economic stability of host countries. Their research results show that foreign banks tend to be more stable than domestic banks, which can affect overall economic stability.

Foreign ownership in the banking sector is a global phenomenon that has been going on for the last few decades. Claessens & Van Horen (2014) found the number of foreign banks worldwide increased from 1,200 in 1995 to 1,800 in 2009, with an average market share of around 20 percent. The main reasons behind this increase are globalization, deregulation, regional integration and financial crises, which pushed foreign banks to seek new opportunities in emerging markets (Claessens et al., 2021).

Foreign banks can benefit host countries by increasing efficiency, diversification, innovation, and access to finance (Claessens et al., 2021). However, foreign banks can also pose risks to financial stability, such as increasing volatility, contagion and unfair competition (Detragiache & Gupta, 2021). Therefore, it is important to examine the impact of foreign ownership on financial stability from the perspective of the host bank.

One of the banking sectors that has experienced rapid development in recent years is the Islamic banking sector. Islamic banks are banks that operate according to Sharia principles or Islamic law. Islamic banks have unique characteristics that distinguish them from conventional banks, such as the prohibition of usury (interest), gharar (uncertainty), maysir (speculation), and investing in illicit activities (such as alcohol, gambling, and pornography) (Iqbal & Molyneux, 2006). Islamic banks also use special contracts involving profit sharing (such as mudharabah and musyarakah), leasing (such as ijarah), buying and selling (such as 3urabaha and salam), and others.

According to the Islamic Financial Services Board (IFSB), the number of Islamic banks worldwide will reach 306 in 2020, with total assets of US\$ 2,048 billion. Islamic banking has spread to over 60 countries and has become systemically important in 14 countries (Soualhi, 2020). Indonesia is one of the countries

with the largest Islamic banking industry in the world, with a market share of around 6 percent in 2020 (OJK, 2020).

### **Foreign Ownership in the Banking Sector**

Foreign ownership in the banking sector can be seen from two perspectives: the point of view of the country of origin and the point of view of the host country. From the point of view of the home country, foreign banks can expand their market, increase their profitability, reduce their risk, and take advantage of their comparative advantage by entering the host country's market (Demirgüç-Kunt, 1998; Freeman, 2013). From the host country's perspective, foreign banks can positively and negatively impact the domestic banking sector.

Foreign banks can have several positive impacts on the domestic banking sector. Increasing the efficiency of domestic banking through the transfer of technology, management and best practices from foreign banks (Claessens et al., 2001). Increasing the diversification of the domestic banking portfolio by offering more diverse products and services that follow customer needs (Corbae & Levine, 2022). Increase domestic banking innovation by introducing new, more sophisticated products and services from foreign banks (Dages et al., 2005; Miller, 2001). Increasing financial access for underserved or underserved customers by domestic banks, such as micro, small and medium enterprises (MSMEs), rural areas and women (Clarke et al., 2006).

However, foreign banks can also negatively impact the domestic banking sector. Increasing domestic banking volatility through sudden withdrawals or flight to quality by foreign banks during a financial crisis or political instability in the host country (Detragiache & Gupta, 2021). They also found that foreign banks may be more vulnerable to financial crises than domestic banks, which could harm economic stability. Their findings suggest that it is important to evaluate carefully the implications of increased foreign ownership in the banking sector. Increasing domestic banking contagion through the transmission of financial crises or political instability from the country of origin to the host country through a network of foreign banks (Van Rijckeghem & Weder di Mauro, 2021). Increasing unfair competition between foreign and domestic banks, especially if foreign banks have information, capital, or better reputation advantages than domestic banks (Claessens & Van Horen, 2014; Stijn & Neeltje, 2014).

From the above review, it can be concluded that foreign ownership in the banking sector has a complex and varied impact depending on the specific conditions of the host country, country of origin, and the characteristics of foreign and domestic banks. Therefore, it is important to conduct an empirical analysis to examine the effect of foreign ownership on financial stability from the perspective of the host bank.

### **Bank Financial Stability**

Financial stability can be defined as a condition in which the financial system can channel funds effectively from parties with excess liquidity to those who need liquidity without experiencing significant disturbances (Schinasi, 2021). Financial stability is one of the main objectives of regulating and supervising the financial sector because financial stability can support sustainable economic growth and social welfare (Ascarya et al., 2016; MacHdar, 2020; Miller, 2001).

Several other studies were conducted in connection with this issue (Beck et al. (2013). They examined how foreign ownership affects bank performance and stability, showing that foreign banks tend to have lower profitability and efficiency but are more stable than previously (El-Gamal & Inanoglu, 2005) and examined the differences between Islamic and conventional banks in the context of foreign ownership. They found that Islamic banks with foreign ownership tend to be more efficient than domestic banks. However, the

literature surrounding the role of foreign ownership in the banking sector of Islamic banking is still limited. Several studies, such as the study by Morgan & Pontines (2018), have suggested that various factors, including ownership structure, can influence the financial stability of Islamic banks.

One important component of the financial system is the banking sector. The banking sector has the main function as a financial intermediary, namely collecting funds from parties with excess liquidity (customers) and channeling them to parties who need liquidity (debtors). The banking sector also has other functions such as payment service provider, credit guarantor, risk manager and financial advisor. Therefore, the banking sector's stability greatly influences the financial system's stability.

The banking sector's stability can be measured by various macro and micro indicators. Macro indicators reflect the overall condition of the banking sector in a country, such as the ratio of credit to gross domestic product (GDP), the ratio of non-performing loans to total credit, the ratio of reserves to non-performing loans, the ratio of capital to risk-weighted assets (RWA), the ratio of liquidity to total assets, and others. Micro indicators reflect the specific conditions of each bank in a country, such as return on assets (ROA), return on equity (ROE), net interest margin (NIM), operating costs to operating income (BOPO), the ratio of non-performing loans to total assets, the ratio of capital to total assets, the ratio of liquidity to total deposits, and others.

One micro indicator often used to measure the banking sector's stability is the Z-score, which measures the distance between the average ROA and the cost of capital with a standard deviation of ROA (Boyd & Runkle, 1993). The higher the Z-score, the lower the bank's probability of failure. The Z-score can be used to compare stability between Islamic and conventional banks by controlling for other variables that can affect stability, such as size, concentration and foreign ownership. This study uses the Z-score as the dependent variable in the regression analysis.

### **Islamic Banks and Conventional Banks**

Islamic and conventional banks fundamentally differ in principles, products and operational processes. This difference can affect the performance and risk between the two types of banks. Previous studies have compared performance and risk between Islamic and conventional banks without considering foreign ownership. For example, Beck et al. (2013) found that Islamic banks are more efficient but less stable than conventional banks. Meanwhile, Cihak & Hesse (2021) found that Islamic banks are more stable than conventional banks, especially for small and medium-sized banks.

The emergence and growth of the Islamic banking sector have resulted in new literature exploring the factors influencing Islamic banks' operation and stability. For example, The emergence and growth of the Islamic banking sector has resulted in new literature exploring the factors influencing Islamic banks' operation and stability. For example, (Al-Awadhi et al. (2020), Hidayat et al. (2021), Rajhi (2012), and Wan Jusoh et al. (2019) show that Islamic banks, which operate based on Islamic principles, tend to be more resilient to shocks in macroeconomics compared to conventional banks. Show that Islamic banks, which operate based on Islamic principles, tend to be more resilient to macroeconomic shocks than conventional banks.

Several factors can explain the difference in performance and risk between Islamic and conventional banks. Sharia principles that prohibit usury, gharar, maysir, and illicit activities can limit sources of income and investment portfolios for Islamic banks but can also reduce moral risk and bad selection for customers and debtors (Iqbal & Molyneux, 2006). Production-sharing contracts used by Islamic banks can increase the participation and involvement of customers and debtors in making financial decisions but can also increase operational and financing risks for Islamic banks (Alhammedi et al., 2020; Khattak et al., 2022). Zakat

obligations that Islamic banks must pay can reduce net income and available capital for Islamic banks but can also increase social responsibility and reputation for Islamic banks (Farook et al., 2011). The existence of a Sharia Supervisory Board (DPS) tasked with overseeing compliance with Sharia principles can increase transparency and accountability for Islamic banks but can also increase operational and coordination costs for Islamic banks (Fakhruddin & Jusoh, 2018; Srairi et al., 2022).

### **Financial Stability between Islamic Banks and Conventional Banks**

This research is one of the few studies that specifically examine the effect of foreign ownership on financial stability between Islamic and conventional banks in Indonesia. This research uses panel data from 109 banks in Indonesia during the 2011-2021 period. This study uses the regression method with the dependent variable Z-score and the independent variables number of foreign banks (FBN) and foreign bank asset growth (FBA), as well as control variables such as equity, size, concentration, and dummy Islamic banks. This study also conducted the Chow test to examine the differences in the effect of financial stability between Islamic banks and conventional banks.

This study uses several relevant theories to explain the relationship between the identified variables. Agency theory explains the contractual relationship between an organization's principals (owners) and agents (managers). This theory states that a conflict of interest between the principal and the agent can lead to agency problems, such as moral risk and bad selection. This theory can be used to explain how foreign ownership can have a positive impact on financial stability, assuming that foreign banks have better capabilities and incentives to monitor and control the management of host banks (Dekle & Kletzer, 2013; Kletzer & Dekle, 2005; Kouki & Mabrouk, 2016).

Information theory, which explains the role of information in economic decision-making. This theory states that there is information asymmetry between parties involved in financial transactions, such as between a bank and a customer or debtor. This theory can explain how foreign ownership can negatively impact financial stability, assuming foreign banks have less or worse information about market conditions, customers or debtors in the host country than domestic banks (Detragiache & Gupta, 2021).

The financial stability theory explains the factors that affect the financial system's stability. This theory states that interactions between macroeconomic factors, macroprudential factors, and macroprudential factors influence financial system stability. This theory can be used to explain how foreign ownership can affect the stability of the domestic banking sector through the transmission of mechanisms such as competition effects, diversification effects, contagion effects, and volatility effects (Claessens et al., 2021).

This study contributes significantly to the literature by exploring how foreign ownership can affect the financial stability of Islamic and conventional banks. Therefore, this study will use various control variables that have been shown by previous literature to influence financial stability, such as asset growth, sufficient capital (car), debt, equity to total assets, foreign bank ratios (FBA and FBN ratios), fixed assets, GDP growth, liabilities, loans, net loans to assets, employee costs, total interest costs, total operating costs, and total assets. In this study, the Z-Score will be used to measure financial stability. The Z-Score is commonly used in the financial literature to measure financial stability and has been used in various previous studies (L. A. Laeven & Levine, 2011).

### **3. Method**

This study uses a quantitative approach to analyze the effect of foreign ownership on financial stability between Islamic and conventional banks. The method used is panel data regression, with data collected from 2011 to 2021. The dependent variable in this study is the Z-Score, which indicates a bank's financial

stability. The formula used to calculate the Z-Score =  $ROA + CAR/STDEV ROA$ , where STDEV is the standard deviation of return on assets. The CAR variable is the bank's capital adequacy ratio. The ROA variable is net income to total assets (Yin, 2021).

The main independent variables include Foreign Bank Assets (FBA), the number of foreign banks compared to the number of all banks (FBN). Bank type, FBA, and FBN were chosen for this study to explore the differences between Islamic and conventional banks and the influence of foreign ownership on their stability. The measurement of bank assets uses a ratio of the total assets of foreign banks to the total assets of all banks (Claessens & Horen, 2021; Natsir et al., 2019; Stijn & Neeltje, 2014; Yin, 2021). Bank specific variables (Xn) as control variables include Capital Adequacy Ratio (CAR), Equity to Total Assets (EQA), Total Assets (SIZE), Loan to Total Assets (LOAN), and Asset Growth. The variables CAR, EQA, and SIZE were selected based on previous research, which shows their relationship with the bank's financial stability. Macroeconomic variables (MS) also includes in this model like Gross Domestic Product (GDP), Inflation Rate, and Interest Rate.

The regression model used in this study is:

$$Z \text{ score} = \beta_0 + \beta_1*(FBA) + \beta_2*(FBN) + \beta_3*(Bank \ Type) + \beta_4*(Bank \ Type \ x \ FBA) + \beta_5(Bank \ Type \ x \ FBN) + \beta_5(Xn) + \beta_6(MS) + \beta_7(Year \ Dummy) + \epsilon$$

This model is based on a theoretical framework that states that these variables can affect a bank's financial stability. The use of dummy and interaction variables allowed this study to explore how the effects of these variables might differ depending on the type of bank (Bank Type). The research hypothesis will be tested through the statistical significance of the regression coefficient. If the coefficient is significant at a certain significance level (e.g.,  $p < 0.05$ ), we can conclude that the independent variable significantly affects the dependent variable.

As part of the analysis, a multicollinearity test will be performed to check for a strong linear relationship between the independent variables. A sensitivity analysis will also be carried out to examine how small changes in assumptions can affect the results.

This test uses several control variables that may impact the relationship between competition and penetration of foreign banks. The CAR variable is the bank's capital adequacy ratio. The ROA variable is net income to total assets. Furthermore, Bank Size is the natural logarithm of total assets, and EQA is a proxy for bank funding using the ratio of equity to total assets. A LOAN is a proxy loan to total assets representing the bank's main activities. The G-ASSET variable is a representation of the percentage growth in bank assets. Then, proxies for economic variables use GDP variables. GDP is a proxy for a country's business and economic growth.

**Table 1.**  
Operation Variable Definition

Variable	Definisi	Data Source
<b>Dependent Variable</b>		
Z-Score	The Z-Score is a measure for assessing a bank's risk, with the formula: $(ROA+CAR) / STDV ROA$ .	Calculated with data from Bank Focus
<b>Independent Variable</b>		
Foreign Bank Asset (FBA)	The ratio of total assets owned by foreign banks to total assets of banks in the host country	Bank Focus

Foreign Bank Number (FBN)	The ratio of the number of foreign banks to the total number of banks in the host country	Bank Focus
<b>Bank Specific Variabel (Control)</b>		
CAR	The ratio of Bank Capital	Bank Focus
Asset_Growth	Asset Growth is the percentage growth of the bank's total assets yearly.	Bank Focus
LOAN	The percentage of loans to total assets as a proxy for the bank's business model	Bank Focus
EQA	Percentage of total equity to total assets	Bank Focus
ROA	Ratio's return to asset	Bank Focus
D_FOREIGN	Foreign bank ownership's dummy, foreign bank ownership > 51% = 1 and 0 = foreign bank ownership < 51%	Bank Focus
D_IB	Islamic banks' dummy, 1 = Islamic banks and 0 = non-islamic banks	Bank Focus
<b>Macroeconomic Variables</b>		
GDP	Percentage of GDP growth	World Bank Data
Inflation		Bank Indonesia
Interest Rate		Bank Indonesia

#### 4. Results and Discussions

Table 2 presents a statistical summary of the variables used in this study, providing a complete picture of the data distribution characteristics. These descriptive statistics provide important insights into each variable's central tendency, variability and range of values . In addition, this table also provides an initial understanding of data behavior, as well as the presence of extreme values or potential outliers.

**Table 2**  
Statistic Descriptive

Variables	Obs	Mean	Std. Dev	Min	Max
Z-SCORE	1,188	32.26572	461.3647	-8.119581	15909.79
FBA	1,188	0.2885384	0.017388	0.2570631	0.315391
FBN	1,188	0.3951957	0.010590	0.3855421	0.423076
SIZE	1,188	7.38x10 <sup>7</sup>	0.985409	78571.45	1.73X10 <sup>9</sup>
CAR	1,188	46.45488	501.2518	8.02	17270
ROA	1,188	0.968226	2.136345	-24.07467	11.22353
EQA	1,188	16.41666	11.80367	-69.54	98.88
LOAN	1,188	4.57x10 <sup>7</sup>	12.44513	0	9.81x10 <sup>8</sup>
GDP	1,188	4.505705	2.169523	-2.0650	6.16978
LIA	1,188	6.35x10 <sup>7</sup>	1.52	5755.85	1.50x10 <sup>9</sup>
ASSET_GRO	1,188	16.213	30.27	-84.66	464.822
D_IB	1,188	0.0833333	0.2765018	0	1
D_FOREIGN	1,188	0.3888889	0.4877033	0	1
Inflation	1,188	7.038897	1.993251	2.753759	9.985927
Interest	1,188	4.019091	2.178775	1.68	8.38

The dependent variable, "Z-Score," shows an average of 32.26572, with a standard deviation of 461.3647. This information indicates that, on average, the Z-Score is used to measure bank risk, ranging from -

8.119581 to 15909.79. The independent variables “FBA” and “FBN,” representing total assets owned by foreign banks and the ratio of foreign banks to total banks in the host country, have an average of 0.2885384 and 0.3951957, respectively. The standard deviations are 0.017388 and 0.010590.

Among the control variables, “CAR” (Capital Adequacy Ratio) has an average of 46.45488, while “ROA” (Return on Assets Ratio) has an average of 0.968226. Other control variables, such as “Asset\_Growth,” “EQA” (Ratio of Equity to Assets), “LOAN” (Ratio of Loans to Assets), and “GDP” (Percentage of Growth in Gross Domestic Product per country), also provide measures of their respective trends. Central and dispersion.

The results presented in the descriptive statistics table reveal significant variations and dispersions in the variables studied. For example, the wide range on a “Z-Score” indicates a bank’s diverse risk profile, which can be influenced by factors such as business model, risk management practices, and regulatory environment.

**Table 3**  
Research Variable Correlation Matrix

	Z-SCORE	FBA	FBN	SIZE	CAR	ROA	EQA	LOAN	GDP	D_IB	D_FOR	Inflation	Interest Rate
Z-SCORE	1												
FBA	0.0033	1											
FBN	0.0923	0.0124	1										
SIZE	-0.0100	-0.0642	-0.0095	1									
CAR	0.9992	-0.0066	0.0807	-0.0125	1								
ROA	0.0107	0.0961	0.0825	0.1332	0.0029	1							
EQA	0.0088	-0.1148	-0.0535	-0.0807	0.0270	-0.0261	1						
LOAN	-0.0096	-0.0464	-0.0120	0.9948	-0.0118	0.1361	-0.0740	1					
GDP	0.0277	0.5309	0.3327	-0.0429	0.0173	0.0807	-0.0819	-0.0299	1				
D_IB	-0.0071	0	0	-0.0909	-0.0046	-0.1379	0.0500	-0.0911	-0	1			
D_FOREIGN	0	-0	0	-0.0795	0.0358	-0.0635	0.0617	-0.0716	0	-0.1718	1		
Inflasi	0.0032	0.7299	0.0653	-0.0406	-0.0066	0.0983	-0.0952	-0.0283	0.4169	0	-0	1	
Interest Rate	-0.0393	0.2054	-0.3834	-0.0158	-0.0393	0.0079	-0.0256	-0.0388	-0.3768	-0	-0	-0.110	1

Table 3 contains a correlation matrix that provides an overall picture of the relationship between the research variables. This matrix is important to identify the strength and direction of the association between variables. The values in the matrix range from -1 to 1, where a positive value indicates a positive correlation, a negative value indicates a negative correlation, and a value close to zero indicates a weak correlation or no correlation. In addition to using a correlation matrix to show the reliability of the model tested in this study, the correlation matrix also provides initial information on the closeness of the relationship between each variable so that it becomes an early indication before testing with a more complex model.

From the correlation analysis between the dependent variable “Z-Score” and the independent variable, it can be seen that “CAR” has a strong positive correlation (0.9992), which indicates a significant relationship between bank capital adequacy and bank risk level. On the other hand, “LOAN” shows a negative correlation (-0.0096) with “EQA,” indicating an inverse relationship between the ratio of equity to assets and the percentage of loans to total assets. The LOAN and SIZE variables show a high enough correlation to avoid deviations from the classic multicollinearity assumption; the two variables in the model are never regressed in the same group of independent variables. Furthermore, the correlation matrix helps identify potential multicollinearity problems among the independent variables, which can affect the stability and interpretation of the regression model.

The correlation matrix provides insight into the relationship between the research variables. The strong positive correlation between the “CAR” and the “Z-Score” indicates that high capital adequacy is associated with increased financial stability. Likewise, a negative correlation between “LOAN” and “EQA” indicates that a bank with a higher equity ratio may have a more conservative lending approach.

**Table 4.**  
Foreign Bank Number and Bank Stability

Dependent variable: Z-Score	(1)	(2)	(3)	(4)
Coeffisien	-198.9030*** (-10.285663)	-195.9030*** (-9.883187)	-198.16079*** (-10.36722)	-195.3940*** (-9.870408)
FBN	455.6654*** (9.676737)	447.4222*** (9.1726309)	445.4470*** (9.669334)	447.2247*** (9.173129)
FBN x D_IB		100.82807 (0.650613)		98.57226 (0.648773)
SIZE	2.87x10 <sup>-09</sup> (1.121910)	2.87x10 <sup>-09</sup> (1.129127)		
CAR	0.919346*** (1034.176)	0.919359*** (1033.684)	0.919344*** (1033.928)	0.919357*** (1033.435)
EQA	-0.702265*** (-16.79945)	-0.702276*** (-16.79559)	-0.703496*** (-16.83560)	-0.703510*** (-16.83178)
ROA	1.141796*** (5.338651)	1.133597*** (5.429572)	1.178599*** (5.507827)	1.170437*** (5.458922)
GDP	1.023696*** (4.099293)	1.024087*** (4.099862)	1.017352*** (4.075152)	1.017730*** (4.075670)
D_IB	-0.907597 (-0.547799)	-39.97343 (-0.665475)	-0.986472 (-0.591178)	-40.91128 (-0.664279)
D_FOREIGN	1.226290 (1.314211)	1.226774 (1.310100)	1.182264 (1.285705)	1.195700 (1.281546)
LOAN			1.47x10 <sup>-09</sup> (0.826649)	3.48x10 <sup>-09</sup> (0.827667)
Inflation	1.198992*** (5.285466)	1.199701*** (5.287252)	1.195042*** (5.268102)	1.195741*** (5.269845)
Interest Rate	1.248280*** (4.921799)	1.248935*** (4.923155)	1.241623*** (4.897263)	1.242263*** (4.898565)
D_YEAR	Yes	Yes	Yes	Yes
N	1188	1188	1188	1188
R-Sq	0.998911	0.99	0.99	0.99
F	1200038	1235038	119980	107929

Table 4 reports regression results with clustering bank level. The dependent variable is proxied by Z-Score. The Independent variable FBN denotes the ratio between the number of foreign banks on the number of all banks in the host country. Control variables on bank levels include SIZE, CAR, G-ASSET, LOAN, EQA, and ROA. At the same time, the control variables on macroeconomic levels are GDP.

Regression analysis in Table 4 was carried out to test the effect of the number of foreign banks (FBN) on the financial stability of banks as measured by the Z-Score. The four regression models' results significantly influence the FBN variable and bank stability.

The regression results in models 1, 2, 3 and 4 show that the FBN variable significantly influences bank stability with a positive coefficient. Previous research has also found a relationship between foreign banks and financial stability. A study by Claessens & Horen (2021) states that the presence of foreign banks can reduce financial system risks and strengthen banking sector stability. Foreign bank penetration can also positively impact the strengthening of host banks' financial capacity and risk management (Barth et al., 2005).

Furthermore, models 2 and 4 have an interaction variable FBN with D\_IB (dummy for Islamic banks). The results show that this interaction has a positive but insignificant coefficient, indicating that the effect of the number of foreign banks on bank stability is stronger in countries with banking laws. Previous research by Alam et al. (2019) stated that foreign banks tend to be more stable in countries with Islamic banking laws due to tighter regulatory coverage and lower operational risks.

Besides the FBN variable, several control variables also significantly influence bank stability. The variable CAR (Capital Adequacy Ratio) strongly influences bank stability in all models. Previous research by (Claessens et al., 2001, Maharani, 2018, and Owoputi et al., 2014) found that a high capital adequacy level can increase a bank's resilience to economic shocks and financial crises. Conversely, the EQA variable (Equity to Assets Ratio) significantly negatively affects bank stability. Studies by Ghaffar (2014; Shaikh (2012) state that a high level of equity can increase a bank's bankruptcy risk and affect its stability. This finding can provide information that the bank is not operating as an intermediary institution as it should.

The variable ROA (Return on Assets Ratio) also has a significant positive influence on bank stability. Previous research by Athanasoglou et al. (2008) found that a high level of ROA can improve bank performance and stability. The results of this regression provide important implications for the banking industry and policymakers. It is necessary to pay attention to managing the number of foreign banks and the level of capital and bank equity to maintain the stability of the banking sector as a whole. In addition, the influence of other variables, such as ROA, is also important in increasing financial stability in Islamic and conventional banks.

**Table 5**  
Foreign Bank Asset and Bank Stability

Dependent variable: Z-Score	(1)	(2)	(3)	(4)
Coeffisien	4745.174*** (10.75443)	4749.916*** (10.79970)	4743.973*** (10.74838)	4748.856*** (10.79411)
FBA	-114.5011*** (-3.127773)	-136.8858*** (-3.671648)	-115.3020*** (-3.150312)	-137.7099*** (-3.694700)
FBA x D_IB		269.1601*** (2.929865)		269.7492*** (2.935752)
SIZE	0.000000 (1.145628)	0.000000 (1.124848)		
CAR	0.919333*** (1037.461)	0.919346*** (1040.797)	0.919331*** (1037.231)	0.919344*** (1040.582)
EQA	-0.703971*** (-16.87676)	-0.701549*** (-16.86943)	-0.705146*** (-16.91208)	-0.702667*** (-16.90354)
ROA	1.180755*** (5.532196)	1.197808*** (5.628026)	1.187250*** (5.550196)	1.203958*** (5.654628)
GDP	0.245741*** (1.740389)	0.245641*** (1.943029)	0.244091*** (1.933883)	0.244027*** (1.936654)
D_IB	-0.900632 (-0.544802)	-78.55370*** (-2.958134)	-0.937421 (-0.566982)	-78.758.42*** (-2.965391)
D_FOREIGN	1.229010 (1.320058)	1.229156 (1.324449)	1.203300 (1.292920)	1.204599 (1.298493)
LOAN			0.000000 (0.888109)	0.000000 (0.881096)
Inflation	1.224886*** (3.523799)	1.224186*** (3.533799)	1.223777*** (3.521622)	1.223134*** (3.530175)
Interest Rate	0.686163*** (2.099707)	0.686026*** (2.105571)	0.682685*** (2.088886)	0.682648*** (2.094946)
D_YEAR	Yes	Yes	Yes	Yes
N	1188	1188	1188	1188
R-Sq	0.998911	0.99	0.99	0.99
F	120573	109215	120519	109169

Table 5 reports regression results with clustering bank level. The dependent variable is proxied by Z-Score. The Independent variable FBN denotes the ratio between the number of foreign banks on the number of all banks in the host country. Control variables on bank levels include SIZE, CAR, G-ASSET, LOAN, EQA, and ROA. At the same time, the control variables on macroeconomic levels are GDP.

Table 5 presents the regression analysis results to test the effect of foreign bank assets (FBA) on bank stability as measured by the Z-Score. Four different regression models (1, 2, 3, and 4) were used to test this relationship.

The regression results show that in all models (1, 2, 3, and 4), the FBA variable significantly influences bank stability. These results indicate that increased foreign bank assets are significantly associated with decreased financial stability. This finding is consistent with previous studies indicating that foreign bank penetration can increase financial system risk and affect the banking sector's stability (Claessens et al.,

2001, 2021; Stijn & Neeltje, 2014). In contrast to the results of the previous analysis, which showed that increasing the number of foreign banks would increase bank financial stability, however, if an increase follows this increase in foreign bank assets, it will reduce competition between banks (Li, 2019; Natsir et al., 2019; Rana-Al-Mosharrafa & Islam, 2021).

This contradictory result between the increase in the number of foreign banks and the increase in foreign bank assets is because the majority of foreign banks entering Indonesia are mostly done through mergers, acquisitions and consolidation. The long-term and sustainable prospects of Indonesian banking are being exploited by foreign investors, so that many of them are merging and taking over part or all of bank assets (Mulyaningsih et al, 2015).

Furthermore, the regression results also show an interaction variable between FBA and D\_IB (dummy sharia) in models 2 and 4. This interaction has a significant positive coefficient, indicating that the negative influence of foreign bank assets on bank stability is stronger in countries with Islamic banking laws. Previous studies by (Hidayat et al., 2021, Mairafi et al., 2019, and Sakti, 2021) stated that foreign banks tend to be more stable in countries with Islamic banking laws due to tighter regulatory coverage and more operational risks. Low.

Apart from the FBA variable, several control variables also significantly influence bank stability. The variable CAR (Capital Adequacy Ratio) strongly influences bank stability in all models. These results are consistent with research findings by (Beck et al., 2013; Claessens et al., 2001), which state that a high capital adequacy level can increase a bank's resilience to economic shocks and financial crises. As explained in the previous model, the EQA variable (Equity to Assets Ratio) significantly negatively affects bank stability. Studies by Ghaffar (2014) and Shaikh (2012) state that a low level of equity can increase the bank's bankruptcy risk and affect its stability. The variable ROA (Return on Assets Ratio) also has a significant positive influence on bank stability. Previous research by Athanasoglou et al. (2008) found that a high level of ROA can improve bank performance and stability.

**Table 6.**  
Foreign Bank Number, Asset, Iteration and Bank Stability

Dependent variable: Z-Score	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Coefisien	4870.363*** (11.54030)	3452.288*** (7.861555)	4849.946*** (11.11988)	3402.868*** (7.495592)	4900.038*** (11.49421)	3494.855*** (7.879646)	4850.871*** (11.12424)	3479.804*** (7.660439)	-140.9828*** (-5.856741)
FBA	-116.2171*** (-3.322080)		-118.2749*** (-3.269683)		-114.6194*** (-3.243929)		-113.2408*** (-3.130864)		-190.5299*** (-3.113432)
FBN		118.5040** (2.246017)		121.3988** (2.225559)		118.1871** (2.218191)		113.4535** (2.079835)	454.7989*** (10.09846)
D_FOREIGN*EQU	0.730469*** (9.170232)	0.730376*** (9.147504)							0.746433*** (9.365161)
D_FOREIGN*LIA			-0.00000** (-1.964441)	-0.00000* (-1.921601)					
D_IB*EQU					-0.818359*** (-7.699930)	-0.820054*** (-7.697727)			
D_IB*LIA							0.00000** (2.084615)	0.00000** (2.106161)	
FBA*EQU									9.772041*** (4.424672)
D_IB	0.808830 (0.509312)	0.796392 (0.500302)	-0.517301 (-0.316495)	-0.525448 (-0.320700)	14.08649*** (5.687007)	14.10825*** (5.682356)	-2.172031 (-1.191883)	-2.201887 (-1.207095)	0.438439 (0.274898)
D_FOREIGN	-10.86919*** (-6.878225)	-10.86996*** (-6.861328)	-2.531077** (-2.161536)	-2.525448** (-2.130700)	0.654562 (0.726653)	0.651334 (0.721361)	1.114818 (1.212341)	1.112565 (1.207095)	-11.01059*** (-6.941822)
ASSET_GROWTH	-0.062429*** (-4.389435)	-0.062158*** (-4.359413)	-0.078370** (-5.362765)	-0.078071*** (-5.329545)	-0.085221*** (-5.687007)	-0.084969*** (-5.924278)	-0.084722*** (-5.636466)	-0.084550*** (-5.611891)	-0.054858*** (-4.143885)
Control	Yes								
D_YEAR	Yes								
N	1188	1188	1188	1188	1188	1188	1188	1188	1188
R-Sq	0.998911	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
F	105410	109215	120519	100664	105911	105410	101195	100727	85188.15

In Table 6, the regression analysis results were carried out to test the effect of several variables on the bank's financial stability as measured by the Z-Score. There are eight different regression models, including the effect of the number of foreign banks (FBN), foreign bank assets (FBA), control factors, and interactions between variables on bank stability.

Models 1,3,5, and 7 show that FBA significantly negatively affects bank stability (model 1: coefficient -116.2171, p-value 0.001); this value is consistent with the other three models. These results are consistent with the theory that foreign bank asset growth tends to bring higher risks to the stability of the domestic banking sector (Blum, 1999; Stijn & Neeltje, 2014). This issue can be caused by differences in regulation and supervision in foreign countries, exposure to global macroeconomic events, and the effect of fluctuations in foreign bank assets on the liquidity and solvency of domestic banks.

Other models show that FBN also significantly positively affects bank stability (Model 1: coefficient -118.5040, p-value 0.05); the other three models also show the same analysis results. This result is consistent with previous findings that an increase in the number of foreign banks can increase bank stability (Barth, Mary E. Schipper, 2008; Blum, 1999). This increase in stability can occur because the growing number of foreign banks can increase fiercer competition, thereby forcing banks operating in the host country to operate more effectively and efficiently (Bayraktar & Wang, 2004; Haber & Musacchio, 2013; Peria & Cull, 2010; Rakshit & Bardhan, 2019).

All models also test the effect of control factors such as D\_FOREIGN, D\_IB, ASSET\_GROWTH, and others on bank stability. In model 1 and model 2, D\_FOREIGN has a significant negative effect on bank stability (coefficient: -10.86919, p-value: 0.001). These results follow the assumption that banks operating in foreign countries face higher risks than domestic banks (Ratmono et al., 2021).

Models 1 and 2 examine the interaction between foreign banks and EQA on bank stability, showing that this interaction has a significant positive effect (coefficient: 0.730469, p-value: 0.001). This result implies that the level of bank equity can weaken the negative effect of FBA on bank stability. The theory can explain this finding that sufficient capital can help banks withstand risks caused by asset fluctuations and business performance (Blum, 1999). Meanwhile, models 3 and 4 test the interaction of foreign banks and liabilities, which show a significant negative effect on bank financial stability. This finding further explains why foreign bank asset growth can have a negative impact because high financial costs compensate for asset growth.

## **5. Conclusion**

This study examines the effect of foreign ownership on financial stability between Islamic and conventional banks in Indonesia. The results show that the number of foreign banks has a significant positive effect, while the growth of foreign bank assets significantly negatively affects bank stability. Islamic banks tend to be more stable than conventional banks in facing the negative impact of foreign bank asset growth.

Other factors that affect bank stability are the level of bank equity, operations in foreign countries, and interactions between foreign banks and bank equity. The level of bank equity has a significant positive effect, operations in foreign countries have a significant negative effect, and the interaction between foreign banks and bank equity has a significant positive effect on bank stability. The level of bank equity can moderate the negative effect of foreign bank asset growth on bank stability.

These findings contribute to the literature on the role and impact of foreign ownership on the banking sector's stability, especially in the context of comparisons between Islamic and conventional banks. These

findings also provide implications for policymakers and regulators to consider the factors that affect the banking sector's stability and develop strategies and mechanisms that can improve the performance and resilience of the banking sector in Indonesia.

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*Novita Kusuma Maharani*

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