










“Reviewing the consequence of trade openness and financial openness on banking stability in developing countries”

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ARTICLE INFO	Sri Hidayati, Taufiq Marwa, Sri Andaiyani and Abukosim (2024). Reviewing the consequence of trade openness and financial openness on banking stability in developing countries. <i>Banks and Bank Systems</i> , 19(1), 112-125. doi: 10.21511/bbs.19(1).2024.10
DOI	http://dx.doi.org/10.21511/bbs.19(1).2024.10
RELEASED ON	Thursday, 29 February 2024
RECEIVED ON	Tuesday, 28 March 2023
ACCEPTED ON	Friday, 02 February 2024
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Banks and Bank Systems"
ISSN PRINT	1816-7403
ISSN ONLINE	1991-7074
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”
<div><div></div><div>NUMBER OF REFERENCES</div><div>53</div></div> <div><div></div><div>NUMBER OF FIGURES</div><div>0</div></div> <div><div></div><div>NUMBER OF TABLES</div><div>2</div></div>	

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BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 28th of March, 2023
Accepted on: 2nd of February, 2024
Published on: 29th of February, 2024

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Conflict of interest statement:
Author(s) reported no conflict of interest

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REVIEWING THE CONSEQUENCE OF TRADE OPENNESS AND FINANCIAL OPENNESS ON BANKING STABILITY IN DEVELOPING COUNTRIES

Abstract

The global economy has fostered a dynamic environment of economic globalization, leading to amplified interconnectedness, integration, and worldwide influence in both commercial transactions and monetary activities. This occurrence emphasizes the vital role of liberalizing capital and international trade in economic discussions, particularly in emerging economies where banking-centric systems wield considerable influence. The objective of this study is to investigate the correlation between trade liberalization and financial inclusivity, specifically concerning the resilience of the banking industry in developing nations throughout the period of 2010–2020. Utilizing the dynamic data model of Arellano-Bond's Generalized Method of Moment Estimator, this study yields a significant revelation. The interaction between trade openness and financial transparency exerts a noticeable and advantageous impact on banking stability, with each 1% increase in openness resulting in a remarkable improvement of 98.9445 in Net Interest Margin, 116.2575 in Z score, and 119.9189 in Non-Performing Loans. Consequently, this investigation confirms the presence of a diversification effect on stability while concurrently applying the concept of voltage fragility. In essence, trade openness propels the banking sector toward heightened competitiveness due to increased demand from local businesses, while financial openness fosters heightened competition within the credit market.

Keywords

banking stability, generalized method of moment, panel data, liberalization

JEL Classification

G21, C82, C13, C23, C33, F41

INTRODUCTION

The system of economic globalization has been felt by most countries of the world. This phenomenon can be seen when the economy is increasingly integrated, open, and globalized in terms of trade and finance. Globalization is a means that can be used by a country to expand its market share in both investment and international trade to encourage economic growth. This impacted society, globalization has widely promoted an increase in income and significantly reduced poverty, especially in developing countries.

Globalization also affects the flow of capital. The process of relaxing restrictions on the movement of capital has a beneficial effect on the economy, where this happens in developed countries, liberalization of capital flows in industrialized countries is the key to increasing efficient resource allocation and risk sharing internationally. As a result, the liberalization of capital flows can increase the growth and productivity of an economy. The more open a country's economy, the more its economic performance is measured not only by domestic economic variables but also by international economic turmoil.

Furthermore, the liberalization of capital flows and trade is also an important component of liberalization that can affect the improvement of a nation's economy. Economic growth is strongly impacted by the development of market-based and bank-based finance. The needs of the people in this country can be fulfilled through openness in the economic field, which can encourage every country to transact goods that cannot be produced within the country. Furthermore, other advantages, such as cost savings, increased competitiveness, and open employment opportunities can be achieved by expanding the market. However, in an open economy, the mobility of foreign capital flows drives an increasingly complex monetary policy, especially in managing exchange rate stability and inflation targets.

1. LITERATURE REVIEW

While a robust banking system significantly contributes to the economy's well-being, there remains a paucity of research concentrated on this topic. The interaction among nations that entails establishing economic or trade relations based on each country's interests is defined as international trade. A pivotal role lies in its capacity to stimulate a country's growth, development, and economic fortitude (Pace, 2002). Moreover, as exemplified in Bangladesh, commercial banks wield a crucial influence on economic advancement and international trade, particularly within developing nations. These banks extend substantial loans from their capital reserves to traders, and multiple countries endeavor to capitalize on the trade of production factors and products. Hence, the promotion of international trade holds immense significance (Alamgir Hossain et al., 2020).

In addition, international trade is a force that can create world peace and prosperity and that, through product specialization, can ensure long-term sustainability in life (Marion, 2000). The evidence demonstrates that there is a positive long-term connection between trade openness and financial development, alongside a drawbacks short-term association. However, upon dividing the data based on income or inflation levels, this observation is apparent primarily in lower-income states or economies with elevated inflation (Kim et al., 2009). Liargovas and Skandalis (2011) state that trade openness exerts a beneficial effect on attracting foreign direct investment (FDI) in developing economies.

Over the past three decades, the marginal effect of openness on volatility has approximately doubled, indicating a stronger relationship between trade and volatility as time has progressed.

Globalization is a means that can be used by a country to expand its market share in both investment and international trade, to encourage economic growth. Moreover, Ashraf (2018) stated that increased financial openness encourages diversification opportunities, lower borrowing costs for consumers, resource allocation, more production, and economic growth. As a result, free trade has a significant contribution to the growth and development of the country (Tahir & Azid, 2015). However, openness also exposes developing countries to challenges, especially in the short term. Sehwat (2015) stated that regardless of whether it is a consequence of inherent openness or trade policy-induced openness, economic liberalization enhances the susceptibility of a country to external shocks.

The task of amalgamating specific data into a comprehensive index capable of serving as a universal gauge of trade openness poses a formidable challenge. In practice, despite the development of various indicators, Pritchett (1996) revealed that these metrics exhibit minimal correlation, casting doubts on their coherence and reliability. The World Bank, on its side, identifies the proportion of overall trade to Gross Domestic Product (GDP) as a practical measure for assessing trade openness.

The theory was initially postulated by two Swedish economists, Eli Heckscher and his protégé Bertil Ohlin, during the 1920s. The fundamental premise put forth by this theory suggests that a country tends to export goods if it possesses an abundance of certain factors of production. According to this framework, trade is driven by disparities in prices. Consequently, Heckscher Ohlin's theory posits that a country rich in particular factors of production will export commodities that heavily rely on the factors it has in abundance. As a result, coun-

tries engage in a pattern of inter-industrial trade wherein variations in the capital-to-labor ratio or the availability of production factors play a pivotal role. Drawing from conventional economic theory, Ersoy and Gülcan (2017) conjecture that reduced borrowing costs, efficient allocation of resources, international risk sharing, and heightened investment collectively contribute to heightened development and financial growth.

The increasing financial openness leads to the expansion of private credit and bank assets, and the expansion of both the equity market and the private bond market. Additionally, it brings about efficiency improvements within the banking system. Nevertheless, the influence of financial openness on the development of domestic finance might depend on factors like institutional quality, measures for protecting investors, and the extent of trade openness (Calderón & Kubota, 2009).

Huang (2006) states that financial openness plays a crucial role in explaining the variations observed across countries in the development of their financial systems. When examining the impact of financial openness on the growth of the banking sector and the stock market independently, compelling and consistent evidence was discovered indicating a strong connection between openness and development, specifically in stock markets. In the long run, financial openness has a clear impact on financial development. The interaction term demonstrates a positive and statistically significant relationship with the banking sector development index, indicating a favorable impact.

Nonetheless, it demonstrates an unfavorable and statistically noteworthy correlation with both the bond market and stock market development indices, indicating a potential adverse impact (Ozkok, 2014). The studies by Chinn and Ito (2008) show that the liberalization of finance (particularly the opening of capital accounts) fosters the expansion of financial infrastructure in equity and stock markets, promoting advantages for both developing and emerging economies.

However, the disparity exists between the dispersion of trading entities and the allotment of financial assets, emphasizing a disparity concern (Zhang et al., 2015). Additionally, this suggests

that locally established entities could pose significant obstacles to advancing financial development in China. Directly, financial openness diminishes the efficiency of bank profits without any involvement of changes in bank risk. Indirectly, financial openness amplifies bank risk via diminished bank profit effectiveness (Luo et al., 2016).

Ashraf (2018) also stated that financial openness encourages competition between the capital market and banks to encourage a decrease in the cost of credit. To survive in the financial markets, banks will relax credit standards and improve asset balances by lowering borrowing costs. Therefore, financial openness will indirectly encourage increased banking risk and reduce banking stability. Several studies have examined the transmission mechanism of monetary policy through bank lending and have found that banks tend to align their loan rates with deposit costs, which are largely influenced by monetary policy rates (Espinosa-Vega & Rebucci, 2003; Becker et al., 2012; Gregor & Melecký, 2018). Additionally, another line of research suggests that lenders consider the risks associated with borrowers when determining interest rates on loans (Asquith et al., 2005; Qian & Strahan, 2007; Valta, 2012; Waisman, 2013).

Drawing from existing literature, two concepts emerge for quantifying financial disclosure: *de jure* and *de facto*. *De jure* measurement of financial transparency becomes apparent through discernible changes and constraints on transactions within the capital account. Schmukler and Kaminsky (2003) employ a triad of openness levels – partial liberalization, full liberalization, and closed regimes. *De facto* assessment of financial disclosure aligns with the methodology outlined by Edison et al. (2002), utilizing seven distinct variables. These encompass four variables anchored in Foreign Direct Investment and portfolio flows, as well as amalgamations such as FDI combined with net portfolio flows, FDI coupled with inflows, and the amalgamation of capital inflows and portfolio inflows. Furthermore, the approach adopted by Lane and Milesi-Ferretti (2017) gauges financial openness *de facto* by aggregating capital inflows and outflows, subsequently dividing the sum by GDP.

In developing countries, the banking industry dominates the assets of the entire financial sys-

tem, as in Indonesia. The health and stability of the banking sector are closely related to the health of an economy (Crockett, 2020). The development of the banking business increases creativity and innovation in obtaining and developing sources of funds. Each bank competes to attract as much funds as possible from the public and redistributes them to people in need. Financial institutions use the stability trinity financial system to describe the condition of the financial system that allows more efficient and effective performance and is resistant to internal and external shocks so that the allocation of financing and funding can contribute to national economic stability and growth. Several indicator vectors forming the Financial System Stability Index consist of three variables such as the Banking Institutional Pressure Index (ITP), banking intermediation, and banking efficiency (Hauner et al., 2013). The level of pressure from banking financial institutions is reflected by indicator variables such as NPL, CAR, ROA, and delta of bank liquid assets.

The most dominant credit risk is reflected by the NPL indicator. NPL is a ratio used to measure the ability of banks to deal with debtors who are at risk of failing to repay loans. Besides that, Net Interest Margin is an indicator used to show how much profit the bank managed to get in running its business. NIM indirectly describes the performance of banks in implementing investment decisions compared to conditions of bank intermediation efficiency of debt conditions. This study also used the variable of financial distress by using the bank Z score. Financial distress is a condition where a company continuously experiences a decline in performance, which results in financial difficulties in fulfilling its obligations, so it can be said that the company is going bankrupt. In general, the score is calculated using the Altman methods score (Aminah & Sanjaya, 2013). Given the explanations and literature review provided, additional research is warranted to explore the correlation between trade, financial openness, and banking stability, particularly in developing nations that rely on foreign capital for economic advancement. The null hypothesis for this study posits a substantial and adverse impact between trade openness, financial openness, and the interplay of trade and financial openness on banking stability in developing countries.

2. RESEARCH METHODOLOGY

2.1. Data

The scope of this study focuses on the macroeconomic level. Examine how financial openness and free markets impact overall banking stability in 33 developing countries from 2010 to 2020, including Malaysia, Indonesia, Bangladesh, Pakistan, Thailand, South Africa, Kenya, Mauritius, Rwanda, Tanzania, Peru, Panama, Honduras, Bolivia, Guatemala, Colombia, Chile, Bosnia, Albania, Belarus, Brazil, Georgia, Lesotho, Moldova, Mexico, Romania, Russia, Costa Rica, the Philippines, Armenia, Cambodia, Vietnam, Brunei Darussalam. In Indonesia, banking plays a crucial role in maintaining financial stability, providing credit, and mobilizing funds from the public. This is also the case in Malaysia, where the banking sector plays a vital role in ensuring financial stability and achieving economic growth. Similar to Indonesia and Malaysia, other developing countries are selected for examination due to the pivotal role the banking industry plays within their economies (Simatupang, 2019). Given that developing nations often grapple with a saving-investment disparity that extends beyond the scope of government budgets, the contribution of banks becomes paramount. Banks play a vital role in mobilizing and directing funds back into the community, significantly bolstering economic development. Consequently, it is unsurprising that within the economies of developing countries, the prominence of the banking sector eclipses that of their counterparts in more advanced nations. Furthermore, these countries also represent about one-third of global GDP and are major engines of global growth (World Bank data). The dependent variables used are banking stability measures, namely NIM (Net Interest Margin), NPL (Non-Performing Loan), and Bank Z-score. Trade (as a percentage of GDP) and financial openness (as a percentage of GDP) are the independent variables. This study also used control variables such as GDP, inflation, interest rates, and bank concentration. The data used are secondary data from the World Bank and the official website of the relevant country. Research

methods and analysis techniques using a dynamic panel data model called the Generalized Method of Moments (GMM). These data were obtained primarily from the World Bank and the official banking website of the country concerned, as well as from various other sources, including books, journals, and literatures studies that support this research.

2.2. Model specification

Models that use dynamic panel data are suitable for using dynamic analysis for adjustment. According to Hauner et al. (2013), there is endogeneity between the NIM dependent variable and other bank control variables. For example, a bank with a high level of Net Interest Margin can accumulate sufficient capital reserves if, at any time, a bad credit event occurs, so that the bank can distribute credit to the public in large quantities, which will affect the bank's NPL. The same problem may arise in other bank control variables. Here is an illustration of the dynamic panel data model in this study:

$$\begin{aligned} Bankstab_{i,t} = & \alpha_0 + \delta Bankstab_{i,t-1} \\ & + \beta_1 TO_{i,t} + \beta_2 FO_{i,t} + \beta_3 Bankcont_{i,t} \\ & + \beta_4 MV_{i,t} + \varepsilon, \end{aligned} \quad (1)$$

where δ multiply is a switch and ε_{it} is assumed to follow the one-way error component model, namely: $\varepsilon_{it} = \varepsilon_i + i_t$, where $\mu_i \sim IID(0, \sigma^2)$ describes the influence of the individual, and $v \sim IID(0, \sigma^2)$ describes a transient error or interference that are mutually independent of each other. Specific models in this study are:

Model 1

$$\begin{aligned} NIM_{i,t} = & \alpha_0 + \delta NIM_{i,t-1} + \beta_1 TO_{i,t} \\ & + \beta_2 FO_{i,t} + \beta_3 CAR_{i,t} + \beta_4 LDR_{i,t} \\ & + \beta_5 IR_{i,t} + \beta_6 Growth_{i,t} + \beta_7 Inflasi_{i,t} + \varepsilon, \end{aligned} \quad (2)$$

Model 2

$$\begin{aligned} Zscore_{i,t} = & \alpha_0 + \delta Zscore_{i,t-1} + \beta_1 TO_{i,t} \\ & + \beta_2 FO_{i,t} + \beta_3 CAR_{i,t} + \beta_4 LDR_{i,t} + \beta_5 IR_{i,t} \\ & + \beta_6 Growth_{i,t} + \beta_7 Inflasi_{i,t} + \varepsilon, \end{aligned} \quad (3)$$

Model 3

$$\begin{aligned} NPL_{i,t} = & \alpha_0 + \delta NPL_{i,t-1} + \beta_1 TO_{i,t} \\ & + \beta_2 FO_{i,t} + \beta_3 CAR_{i,t} + \beta_4 LDR_{i,t} \\ & + \beta_5 IR_{i,t} + \beta_6 Growth_{i,t} + \beta_7 Inflasi_{i,t} + \varepsilon. \end{aligned} \quad (4)$$

This equation shows that *NIM* is net interest margin; *NPL* is a non-performing loan; *Zscore* is bank z score; *TO* is trade openness; *FO* is financial openness; *CAR* and *LDR* are financial ratio variables that indicates capital adequacy ratio and loan to deposit ratio; *GDP*, *Inflation* and *Interest Rates* are macroeconomics variables.

The GMM framework for estimating parameters has two estimation procedures, namely First-Difference GMM (FD-GMM), also called Arellano-Bond GMM (AB-GMM), and system GMM (SYS-GMM). The dynamic panel data Model on the equation will use the AB-GMM method, and from these estimates, the validity of the instrument is known. Otherwise, the equation model will use the SYS-GMM approach to overcome the problem of instrument validity in the AB-GMM approach. Furthermore, Welkom (2023) provides several criteria for selecting the best GMM model, specifically:

1. The validity of the instrument is if the Sargan test shows the rejection of the null hypothesis. If the results of the FD-GMM or AB-GMM approach show that the instrument used is not valid, then it will use the SYS-GMM method. The Sargan test is used to overidentify restrictions and test the validity of the instrument. If the instrument is declared valid, there is no correlation between the instrument and the error component.
2. Consistent, the Arellano-Bond test results indicate that the null hypothesis is rejected for M1, while it is not rejected for M2. The Arellano-Bond test is employed as an autocorrelation test within the Generalized Method of Moments (GMM) framework to assess the reliability and consistency of the estimates.
3. Unbiased, that is, the estimator is between the Pooled Least Square (PLS) and the Fixed Effect (FE). The lag coefficient of the depen-

dent variable by PLS results in an upward bias, while the lag coefficient of the dependent variable by FE results in a downward bias.

3. RESULTS

3.1. Statistical description

Table 1 presents the statistical description for the observed variables across 33 developing countries worldwide, including but not limited to Indonesia, Malaysia, Bangladesh, Pakistan, Thailand, South Africa, Kenya, Mauritius, Rwanda, Tanzania, Peru, Panama, Honduras, Bolivia, Guatemala, Colombia, Chile, Bosnia, Albania, Belarus, Brazil, Georgia, Lesotho, Moldova, Mexico, Romania, Russia, Costa Rica, the Philippines, Armenia, Cambodia, Vietnam, and Brunei Darussalam. The values depicted are all within reasonable ranges and exhibit a high degree of consistency with those commonly documented in previous research.

The results showed that the net interest margin of developing country banks averaged 5.836 with a standard deviation of 3.816. In addition, it was found that the lowest value of NIM was at a value of 1.087. Bank Z score developing country banks have an average of 16.492 with a standard deviation of 7.625, and the lowest value of the Bank Z score reached 4.376. The value of banking risk has an average of 5.114, a standard deviation of 4.370, and the lowest value of 0.695. Developing countries' trade openness level has an average of 77.167, with a standard deviation of 38.021 and the lowest value reaching 22.772. The average level of financial openness in developing countries is 5632.927, with a standard deviation of 13,489.24, and the lowest value reaches

negative 1,048.051. The average financial level of developing countries is 77.167, with a standard deviation of 38.021; the lowest value is 22.772. The average income of developing countries is \$10.877, with a standard deviation of 2.832 and the lowest value of 4.3. The average value, maximum, minimum and standard deviation with a median of NIM, Bank Z Score, NPL, Trade and Financial Openness, CAR, LDR, Interest rate, Inflation, and Growth have also been portrayed in Table 1.

This study has employed the Generalized Method of Moments (GMM) panel system estimator, first developed by Alonso-Borrego and Arellano (1999) and subsequently enhanced by Blundell and Bond (2000). This technique was applied to the dynamic panel dataset to tackle issues associated with endogeneity, unobserved heteroscedasticity, and autocorrelation within the model, as discussed by S. Moudud-Ul-Huq et al. (2018). The primary findings from the GMM estimator are showcased in Table 4. The analysis focuses on NIM, Bank Z Score, and NPL as dependent variables while incorporating control variables such as CAR, LDR, Interest rate, growth, and inflation. The primary objective is to uncover the relationship between openness and bank stability.

In line with the statistics shown in Table 2, all models exhibit first-order serial correlation, while no issues are identified with second-order serial correlation. Thus, it can be inferred that there are no deviations from the fundamental assumption of Arrelano-Bond's GMM. Furthermore, the Wald statistics value indicates that the empirical research model simultaneously examines each contributing factor with a statistically significant effect on the outcome variable.

Table 1. Statistical description

Variable	Definitions of variable	Mean	Std. dev	Min	Max	Observation
NIM	Net Interest Margin (%)	5.836	3.816	1.087	24.285	363
Z Score	Bank Z score = (ROA + Equity to Assets)/sd(ROA)	16.492	7.625	4.376	43.005	363
NPL	Non-Performing Loan	5.114	4.370	0.695	23.492	363
Trade Openness (TO)	trade (% of GDP)	77.167	38.021	22.772	210.400	363
Financial Openness	Financial Openness	5632.927	13489.24	-1048.051	97421.79	363
CAR	Capital Adequacy Ratio	10.877	2.832	4.3	20.238	363
LDR	Loan-to-deposit ratio	20.006	16.015	1.528	110	363
Interest rate	Policy rate	6.487	7.169	-33.597	41.714	363
Inflation	Consumer price index	4.376	4.978	-4.298	59.219	363
Growth	GDP growth	3.249	3.805	-17.949	11.314	363

Table 2. Empirical model estimation results

Independent variable	Model 1 Net-Interest-Margin		Model 2 Bank Z Score		Model 3 Non-Performing –loan	
	Coefficient	Prob	Coefficient	Prob	Coefficient	Prob
Net-Interest-Margin (–1)	0.644	0***	–	–	–	–
Bank Z Score (–1)	–	–	0.657	0***	–	–
Non-Performing Loan (–1)	–	–	–	–	0.867	0***
Trade Openness	–9.972	0.003**	–11.668	0.009**	–12.067	0.007**
Financial Openness	–9.832	0.004**	–11.613	0.009**	–12.050	0.007**
Fo*To	9.894	0.004**	11.625	0.009**	11.991	0.008**
Capital Adequacy Ratio	0.179	0.444	0.097	0.586	0.128	0.599
Loan to Deposit Ratio	0.179	0.567	0.131	0.102	–0.132	0.146
Interest Rate	–0.074	0.148	0.001	0.937	0.066	0.013
Growth	0.040	0.229	0.005	0.731	–0.046	0.329
Inflation	0.047	0.662	0.015	0.348	–0.067	0.059
Constanta	–0.013	0.77	0.430	0.597	0.858	0.013
Wald Stat (5)	176.16		71.16		290.11	
Number of Instrumental Variables	58		58		58	
Number of Observations	251		251		251	
Number of Groups (Country)	33		33		33	
Serial-Correlation Test Results						
Ordo 1						
Zstat	–3.065		–2.857		–2.864	
Prob	0.000		0.004		0.004	
Ordo 2						
Zstat	0.105		0.779		–0.331	
Prob	0.916		0.436		0.740	
Sargan Test (ST) Results						
Chi Squared (X2)	63.398		76.606		92.610	
Prob	0.067		0.005		0.000	

Note: ***, **, and * indicate that the probs are significant at 1%, 5%, and 10%, respectively.

The results reveal that the Net Interest Margin (NIM) from the previous period maintains a positive and statistically significant association with the current NIM, with a coefficient of 0.644, all else being equal. This suggests that even a 1 percent increase from the preceding NIM leads to a remarkable 6,439 percent upsurge in the current NIM. Conversely, the Trade Openness variable exhibits a substantial and negative coefficient concerning the Net Interest Margin, measuring at –9.972. This implies that a 1 percent rise in the level of trade openness results in a significant 99.723 percent reduction in the Net Interest Margin value, and this effect is statistically significant under constant conditions.

Similarly, the Financial Openness variable demonstrates a substantial negative coefficient in relation to the Net Interest Margin, with a coefficient value of –9.832. This suggests that for each 1 percent increase in Financial Openness, there will be

a significant 98.323 percent decrease in the Net Interest Margin, assuming all other factors remain constant. This finding is statistically significant and aligns with Nguyen's (2020) emphasis on the compression of NIM due to excess liquidity.

Moreover, the financial and trade openness interplay emphasizes a substantial and positive association. This is evidenced by the coefficient value of 9.894 and a probability value of 0.004, indicating that a 1 percent growth in the collaborative impact of a country's participation in global trade and financial activities will lead to an impressive 98.945 percent increase in the Net Interest Margin. The results also reveal a favorable and significant correlation between the Z score variable and the coefficient from the previous period, registering at 0.657. This implies that every 1-point rise in the Z score value in the prior period will result in a 6.575 percent increase in the Z score variable, all else remaining constant.

Conversely, the trade openness variable bears an adverse and significant coefficient in relation to the increase in the Z score, marked at -11.668 . This signifies that each 1-point increase in trade openness will lead to a 116.685 percent decrease in the Z score variable, and this effect is statistically significant under constant conditions. This is consistent with Rahman et al.'s (2021) findings, indicating that banks in countries with greater openness tend to exhibit stronger performance during times of crisis, highlighting the benefits of diversification. Overall, trade openness has a positive effect on the stability of the financial sector.

Moreover, an inverse correlation is evident between financial openness and the independent variable Z score, with a coefficient value of -11.613 . This suggests that for every 1-point escalation in financial openness, there is a 116.131 percent reduction in the Z score variable. The interaction variable involving trade openness and financial openness displays a positive coefficient of 11.626, significantly affecting the Bank Z score variable. This implies that each 1-point rise in the impact of trade and financial openness variables will result in a 116.257 percent escalation in the Bank Z score.

In Model 3, it is observed that trade openness is associated with a negative coefficient, significantly impacting the level of banking risk for non-performing loans, with a probability of 0.007 and a coefficient of -12.067 . This implies that for every 1-unit increase in trade openness, non-performing loans are expected to decrease by 120.676 percent. This finding aligns with the results reported by Ashraf et al. (2017) but contrasts with those of Luo et al. (2016). The financial disclosure variable exhibits a negative and significant relationship with the level of banking risk for non-performing loans, showing a probability value of 0.007 and a coefficient of -12.050 . This suggests that a 1-unit increase in financial disclosure corresponds to a 120.509 percent reduction in non-performing loans. Additionally, the interaction variables of trade and financial openness demonstrate a positive and significant relationship, with a coefficient value of 11.991 and a probability value of 0.008. This implies that for every 1-unit increase in trade and financial openness, the Z score variable is projected to increase by 119.919 percent.

4. DISCUSSION

In this study, three key indicators are employed as dependent variables to assess banking stability: banking efficiency, quantified through the Net Interest Margin (which also serves as a gauge of credit-related costs); financial institution pressure, gauged by Non-Performing Loans; and the risk associated with bank credit, represented by the bank Z score. Across 33 developing countries, the overarching trend indicates that both trade openness and financial openness exert a detrimental impact on the Net Interest Margin, Bank Z score, and Non-Performing Loans, respectively. This implies that the individual independent variables contribute to the enhancement of banking stability.

Trade openness influences policymakers to initiate changes that encourage the financial industry operating within a country's borders to be more open, such as improving the quality of regulation, implementing policies to develop securities markets, freeing up interest rates, and protecting banking privacy (Hauner et al., 2013). One of the reasons for banking reform is the pressure from international multilateral organizations such as the World Trade Organization (WTO) on Trade in Services (GATS), which sets bans on commonly used financial policies such as bank size limits, barriers between banking and investment services, restrictions on high-risk financial services, and various mechanisms for capital and financial management. More specific pressure is also coming from trading partners such as the United States and Vietnam under a bilateral trade agreement that calls on Vietnam to liberalize its banking sector. Another reason for the reform of the banking sector is the internal pressure originating from within the country as contained in the theory of political economy on the distribution of resources.

Trade openness and financial openness have a negative and significant impact on net interest margin in developing countries. Ashraf (2018) explained that trade openness encourages competition in the product market with the entry of more efficient foreign companies. The entry of foreign companies decreases revenue and cash from domestic companies, but on the other hand, the entry of foreign companies is also an opportunity to

defend domestic companies against superior foreign technology and increase profits for domestic companies by investing more. As a consequence, a company sees a cheap source of financing, which will be difficult to obtain at high borrowing costs. This makes the banking sector more competitive, the cost of rent from financial institutions and the cost of banking credit, or net interest margin, for companies in general decrease.

Conversely, financial openness enhances competition within credit markets by granting entry to global financial markets in developing countries. As borrowers gain access to both domestic bank loans and international financial resources, competition in the credit market intensifies. If this happens across the board, banks will lower lending rates to maintain market share. It will also lower the cost of bank credit for companies. An escalation in financial openness will lead to decreased stability in the financial system, primarily due to a significant influx of short-term capital during times of shocks. This influx of capital will subsequently be followed by volatile outflows (resulting in a decline in capital value in the stock market), and the depreciation of the currency will ultimately amplify the instability within the financial system (Dienillah et al., 2018).

Individually, both trade openness and financial openness exhibit a detrimental effect on the Z score in developing countries. This finding is consistent with the results of a study by Ashraf et al. (2021), where separate analyses of financial openness and trade openness unveiled a significant and statistically negative impact on the Z score of traditional banking in the GCC region. Importantly, when these variables interact simultaneously, a positive and statistically substantial correlation is observed. This implies that the negative impacts of trade openness on the stability of traditional banks become more pronounced at higher levels of financial openness. Conversely, the adverse effects of financial openness are heightened under conditions of increased trade openness.

The relationship between trade openness and banking credit risk is multifaceted. Increased trade openness has the potential to reduce bank credit risk by offering a range of possibilities and expanding the pool of potential borrowers, known

as the diversification-stability effect. For example, banks can diversify between investments in domestic companies and exporting companies. At the macro level, sectors that are more integrated with the international goods market benefit from international diversification and have little effect on domestic financial conditions (Wagner, 2013). In addition, at the micro level, it is proven that companies that participate in international trade have high productivity and a chance to survive compared to companies that are not involved in international trade (Wagner, 2012). Thus, banks can raise lending standards because of the higher demand for financing from companies caused by trade openness, which can lower the rate of adverse loans.

Financial openness leads to a decrease in the propensity of banks to take risks in both the short and long term. Furthermore, banks located in countries with higher levels of financial openness are more likely to withstand future financial crises, as demonstrated by Rahman et al. (2021). Consistent with this notion, Safuan (2021) found that financial openness acts as a mechanism to encourage banks to adopt risk-disciplined practices in order to foster stability.

Simultaneously, the interaction of trade openness and financial openness has a positive and significant impact on net interest margin, bank Z score, and non-performing loans in developing countries. This is following Ashraf et al. (2021), where positive and significant relationships with NIM, Bank Z score, and NPL indicate that the negative effects of trade openness on the stability of conventional banks are stronger at higher levels of financial openness and vice versa. Furthermore, according to Hauner et al. (2013), trade openness plays a role in shaping domestic financial development, although the impact of financial openness on financial development shows inconsistency.

As an advocate of this perspective, Ashraf (2018) identified a closely intertwined relationship between financial openness and trade openness. To illustrate, the heightened demand for financial resources propels the liberalization of domestic financial sectors and concurrently fosters an array of lending prospects, likewise fueled by increased trade openness. Conversely, this study has revealed

a constraint on the extent of financial openness vis-à-vis banking sector development. This is because, despite intensified competition within the credit market stemming from capital inflows into financially open nations, this dynamic encourages banks to curtail credit costs. Paradoxically, the resultant expansion of loan volumes to mitigate augmented banking risk-taking restrains the potential benefits of reduced credit expenses. Consequently, the borrowing costs established in tandem with each instance of banking risk-taking yield advantages by applying diminished borrowing expenditures.

According to Rahman (2021), the absolute advantage theory proposed by Adam Smith implies that greater trade openness can enable improved access to international markets, leading to enhanced productivity through increased circulation of money and labor (referred to as banking mobility) (Aslam et al., 2020; Bazih & Vanwalleghem, 2021). Liberalization caused by trade openness increases competition and lowers the cost of bank credit. As a result of a decrease in banking, rents will increase the average rate on loans. In a more competitive environment, banks will provide more loans by loosening credit standards, resulting in an increase in loans with poor credit quality on bank balance sheets. The same is stated by Mohieldin et al. (2019) in their study, which states that financial liberalization positively affects systemic risk, increases market risk, weakens the function of financial institutions, and inhibits economic growth (Malik & Kurnia, 2017).

In addition, financial openness can also increase banking risk due to competition in the credit market, also known as the volatility effect. Higher financial openness will increase capital supply within a country due to the ease of accessing capital from abroad. Increased domestic capital supply will increase competition in the banking lending market and force banks to lower interest rates on loans. As a result, banks will implement strategies

to overcome the effects of reduced interest rates (Gygli et al., 2019); this is also supported by Rajan and Zingales (2003) in the theory of openness of financial development, which states that the industry, authorities, and banks of a country avoid financial development through liberalization because it can cause competition with the ease of entry of new companies into the market, so as to reduce the monopoly power of the authorities and banks.

Every macro-level study and measurement of the banking development sector has limitations. First, each state level does not provide information about the rent from each bank as a cost of financial interaction. This limitation has substantial implications as one of the key propositions of the openness theory suggests that international trade and capital flow openness foster financial development by expanding loan volumes and reducing bank rents (Ashraf, 2018). Openness brings foreign competition into the country; this can cause pressure on local banks, especially those with low operating costs. Market conditions can prompt a reduction in the dominance of the banking monopoly due to high rental costs policies, which can ultimately diminish the efficiency of the banking system. Additionally, a limitation of macro-level analysis is its inability to provide insights into the effects of openness on specific banking risks at an individual level. According to the most recent theory, the appropriate level of credit is determined by the economic conditions of a country and the extent of excessive borrowing. Optimal levels of credit, along with low credit standards, promote increased risk in the financial sector (Cecchetti & Kharroubi, 2012). With the openness of trade comes increasing financial needs. Meanwhile, financial openness provides new financial sources that give rise to an increase in the individual credit of each country to its GDP ratio. This will lead to loan speculation, which, if this happens along with low credit standards, will increase the risk to individual banks.

CONCLUSION

This study analyzes the impact of trade openness and financial openness on banking stability across 33 developing nations during the period spanning 2010 to 2020. The banking sector witnesses increased competitiveness as a consequence of trade openness, leading to heightened loan

demands from local enterprises. This, in turn, prompts banks to lower lending rates, subsequently resulting in a reduction of their net interest margins. Concurrently, heightened financial openness instigates heightened competition within the credit market, with borrowers gaining access to international financial resources beyond domestic bank loans. In an effort to preserve their foothold in the banking arena, financial institutions opt to reduce loan interest rates, thereby effectively diminishing the cost of bank credit for businesses.

Both trade openness and financial openness exert a notable and adverse impact on the Bank Z score. Enhanced trade openness facilitates banks in enhancing credit quality standards by assessing borrower potential, owing to the diversification effect. Simultaneously, financial openness suppresses financial distress by expanding the scope of banking involvement in businesses. Additionally, both trade openness and financial openness substantially contribute to the reduction of non-performing loans. This is attributed to banks' ability to enhance lending criteria due to heightened demand for bank funding stemming from trade openness. Moreover, the presence of financial openness serves to mitigate lending risks, as it permits domestic banks to diversify their investments across a range of enterprises.

Hence, grounded in the research findings, there emerges a clear imperative to prioritize policy attention towards openness as a pivotal determinant impacting financial stability within developing nations. Furthermore, openness stands to yield substantial benefits for emerging economies, aligning with the contemporary discourse favoring multilateralism and globalization. Particularly, financial institutions, notably commercial banks in developing countries, are strongly advised to harness the opportunities presented by liberalization, capitalizing on the stabilizing potential of diversification. Consequently, regulatory bodies are tasked with fostering an environment that encourages transparent operations within the banking sector, while simultaneously facilitating healthy competition.

However, it is important to acknowledge that this study bears limitations, both on the theoretical and empirical fronts. On the empirical plane, certain constraints are notable: 1) The study does not encompass economic and financial crises as influential variables on banking stability, even though such crisis-related factors may possess significant relationships with stability; and 2) There exists a necessity to incorporate additional pertinent variables better suited to ascertain financial openness in a more precise manner.

AUTHOR CONTRIBUTIONS

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