Analysis of Financial Technology Impact on Financial Stability in order to support the National Strategy for Financial Inclusion of ASEAN Countries

Dian Fajarini[1], Nurbetty Herlina Sitorus[2], Emi Maimunah[2]

{dianfajarini@feb.unila.ac.id[1], nurbetty.herlina@feb.unila.ac.id[2], emi.maimunah@feb.unila.ac.id[3]}

[123]Economic Development Department, Universitas Lampung, Lampung, Indonesia

Abstract. FinTech has proven to not only facilitate the financial sector in recording and evaluating the financial data, but also provide easy access for customers. However, on the other hand, the presence of FinTech presents a dilemma related to the risks that may occur due to cybercrime practices. Due to the emergence of this debate, a study on the impact of FinTech on financial stability is important to discuss. This study uses panel data involving eight ASEAN countries for the period 2016 – 2020 using panel regression method. The dependent variable used to indicate financial stability is the banking z-score. The independent variables used include digital loan, digital capital, GDP per capita, and inflation. The results show that the digital loan variable has a negative and significant effect on the financial stability of countries in ASEAN. GDP as a macroeconomic indicator has a positive and significant effect on the financial stability of countries in ASEAN. Inflation and digital capital does not affect the financial stability of countries in ASEAN.

Keywords: Financial Stability, Financial Technology, GDP per Capita, Inflation.

1 Introduction

In the last few decades, technological innovation has been a debatable topic that continues to be discussed. All countries are competing to push technological progress in the digital era so that technological developments are seen to be massive, especially in the financial sector including banking which plays an important role in economic activities. As an intermediary institution that brings together capital owners with borrowers who need funds, technological progress can support the performance and competitiveness of intermediary institutions [1]. Technological advancement in financial institutions is called Financial Technology or often known as FinTech. The Financial Stability Board defines FinTech as a process where borrowers and capital owners who are brought together at intermediary institutions make transactions through electronic platforms. [2]. In addition, FinTech is defined as a source of financing for the business world and end users. [3]. Furthermore, FinTech is defined as a new topic in the financial aspect that is applied either in a minor or comprehensive manner with the

ICEBE 2024, September 04-05, Shah Alam, Malaysia

DOI 10.4108/eai.4-9-2024.2353814

aim of providing changes to financial services such as insurance, retail financing, capital participation and digital lending. [4], [5], [6].

With the emergence of FinTech, some studies naturally group banking and other financial services into traditional and digital banking. The significant difference in traditional banking is the high operational costs for opening bank branches and providing ATMs while digital banking can eliminate these operational costs through the implementation of FinTech by providing online transactions [7], [8], [9]. This is different from the statement made by the Financial Services Authority in Indonesia in the 2021 OJK Regulation that OJK does not dichotomize between traditional banks that do not yet have digital services, banks that already have digital services, banks that implement a hybrid digital bank business model or fully digital banks so that these three things are seen as business models of banking. [10].

[11] stated that there are five areas related to FinTech including finance and investment such as crowdfunding and P2P lending, operational and risk management, payments and infrastructure, data security that supports the efficiency of financial services and mobile financial services. Furthermore, the Cambridge Center for Alternative Finance maps FinTech in a FinTech ecosystem atlas shown in Figure 1 that the distribution of FinTech entities includes digital lending/digital loans, digital capital raising/digital capital participation, digital payments, and cryptoasset exchanges.

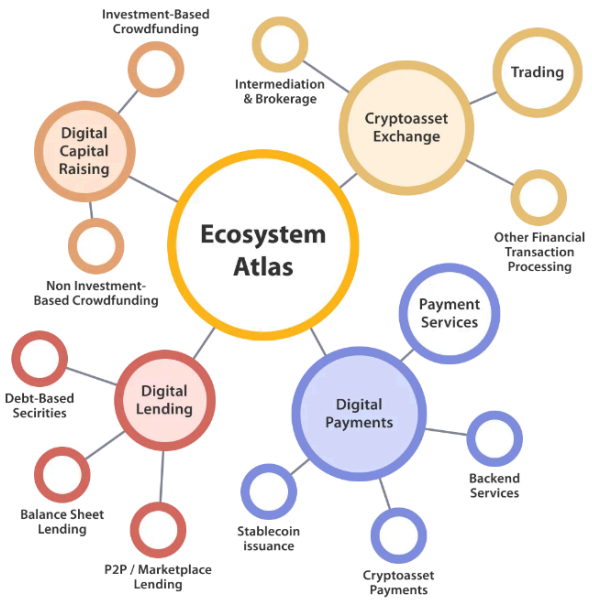

Fig 1. Cambridge FinTech Ecosystem Atlas

The spread of financial products using FinTech has an impact on greater control of the financial market and an increase in independent financial start-ups. [1]. The emergence of FinTech in financial institutions is able to improve financial services to be more efficient, minimize costs, increase customer satisfaction, and improve financial integration. [12], [13]. In addition, Bank Indonesia stated that with the existence of FinTech, it can provide benefits to

the country, namely encouraging the transmission of economic policies, increasing the speed of money circulation which improves the people's economy and encouraging the National Strategy for Inclusive Finance. However, on the other hand, there is debate and ambiguity regarding the impact of FinTech on financial stability. [14], [15], [16], [17]. The massive movement of technology used in financial products is considered vulnerable to the risk of cybercrime, excessive market volatility, and excessive risk-taking by digital loan providers which then disrupts financial stability. [18], [19]

ASEAN countries are countries that use FinTech products massively, although the trend has declined from 2013 to 2020, according to data from the Cambridge Centre for Alternative Finance, which has grouped FinTech products into two categories, namely digital lending and digital capital raising. Based on the data shown in Figure 2, several countries in ASEAN rank high as users of FinTech products globally. On the other hand, ASEAN countries are committed to ensuring that the National Strategy for Financial Inclusion is implemented. Therefore, with the emergence of ambiguity and debate regarding the impact of FinTech on financial stability, this topic needs to be analysed further to test how FinTech impacts the financial stability of countries in ASEAN.

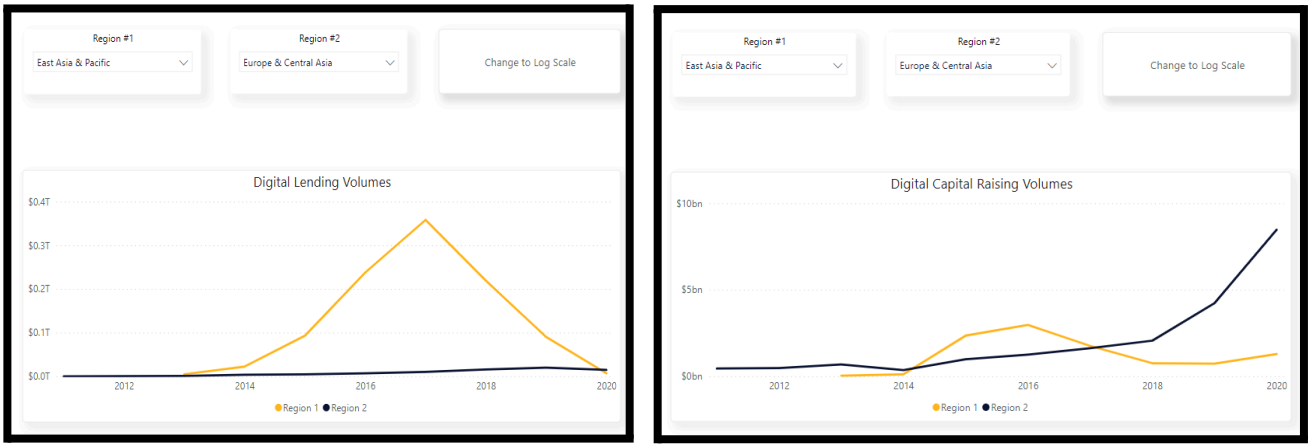

Fig 2. *Digital Lending* dan *Digital Capital of Country* in ASEAN and Europe

The study of the impact of FinTech on the financial stability of countries in ASEAN is a topic that is still little discussed so that this study will provide innovation to complete the literature review related to the role of FinTech. In addition, financial stability cannot be separated from macroeconomic conditions so that this study will involve the variable of per capita income as a proxy for the level of welfare of a country's population and the inflation variable as a proxy for the movement of prices of goods and services consumed by the community. [20]. Furthermore, to enrich the literature review, this study specifically discusses the implementation of risk mitigation policies for the use of FinTech to ensure the financial stability of countries in ASEAN in order to support the National Strategy for Financial Inclusion.

2 Literature Review

2.1 Theory

Previous theories and studies on the impact of FinTech on financial stability in a country are used as a reference by the author in conducting research summarized in the state of the art of this research. In addition, it is also to show the differences and updates in each previous theory and study so that a research gap arises that will be filled in this research.

Financial innovation is not a new thing in the financial sector discussed in several literature studies. [11] in his study distinguishes the evolution of FinTech into three main eras starting from 1866 until now. The first era of FinTech evolution was in 1866-1967 which was marked by the analog financial industry and referred to as FinTech 1.0. The second era of evolution was in 1967-1987 which was marked by the change from the analog financial industry to digital finance and referred to as FinTech 2.0. The third era of evolution was in 1987-2008 which was marked by the dominance of the traditional financial services industry in providing financial service products and referred to as FinTech 3.0. After 2008 until now, the FinTech era has continued to develop which is marked by the emergence of digital-based financial products and referred to as FinTech 4.0.

With the emergence of FinTech which supports the availability of digital-based financial products, debate and ambiguity have emerged regarding the impact of FinTech on financial stability. [14], [15], [16], [17]. [12], [13] stated that the financial sector is able to improve financial services to be more efficient, minimize costs, increase customer satisfaction, and increase financial integration with the presence of FinTech. In addition, Bank Indonesia stated that with the presence of FinTech, it can provide benefits to the country, namely encouraging the transmission of economic policies, increasing the speed of money circulation which improves the community's economy and encouraging the National Strategy for Inclusive Finance. However, on the other hand, the massive movement of technology used in financial products is considered vulnerable to the risk of cybercrime, excessive market volatility, and excessive risk taking by digital loan providers which then disrupts financial stability [18], [19].

The National Strategy for Inclusive Finance is a strategic framework that has been discussed by countries in ASEAN and is a reference for creating inclusive access to financial services. Access to inclusive financial services is defined as equal opportunities for all levels of society in terms of obtaining financial services such as savings, credit, insurance and ensuring that the economy can manage shock [21]. Therefore, in order to encourage the National Strategy for Inclusive Finance, ASEAN countries need to ensure that financial stability is achieved and identify factors that influence financial stability in ASEAN countries. The main factor analyzed in this study is FinTech. In addition, other factors include GDP per capita and inflation. The determination of these two variables is because the condition of financial stability is also influenced by macroeconomic conditions [22].

Based on the background and literature studies, it shows that there is ambiguity regarding the impact of financial technology on financial stability. The use of each variable from the development of theory simultaneously and the renewal of the research period will affect the research results and provide answers to hypotheses, especially in ASEAN countries. Therefore, this study will analyze the impact of financial technology, GDP per capita and

inflation on financial stability in order to support the National Strategy for Financial Inclusion in ASEAN countries for the period 2016-2020.

2.2 Previous Study

The research from [19] about The Dark Side of the Moon? Fintech and Financial Stability analyzes the impact of fintech on 198 countries in the period 2012-2020. The results show that the impact of fintech on financial stability depends on the type of financial instrument where digital loans have a negative effect on financial stability while digital capital participation has a positive effect on financial stability.

The research from [23] about FinTech in Europe: Promises and Threats analyze the impact of payment and lending activities using FinTech, the regulations that apply to banking in Europe. The results of the study show that technological advances make transactions faster and cheaper. In addition, at the same time, the acceleration of the digitalization of financial services during Covid-19 represents an opportunity for banks and FinTech companies to survive in the digital era.

The research from [24] about Friend or Foe: The Divergent Effects of FinTech on Financial Stability analyze the influence of FinTech on financial stability in 84 countries. The results show that shocks from FinTech innovations do not affect the decline in financial stability if market characteristics are ignored. In addition, the decline in FinTech increases the possibility of a decline in the performance of financial institutions in developing countries and the influence of FinTech on the decline in the performance of financial institutions is through the profitability channel.

The research from [18] about Financial Innovation: The Bright and Dark Sides identify the relationship between financial innovation and the growth and decline of banking performance and economic growth. The results of the study show that financial innovation is related to growth and also to the decline of banking performance, especially during times of crisis. In addition, this impact is greater in countries with larger securities markets and tighter policy frameworks. However, in general, this study found that there is a positive impact of financial innovation on economic growth.

The research from [25] Does FinTech Innovations Improve Bank Efficiency? Evidence from China's Banking Industry examines whether the development of FinTech has an impact on cost efficiency in banking in China. The results of the study indicate that FinTech innovation can improve cost efficiency in banking in China. In addition, the presence of FinTech provides significant benefits to financial service innovation that is in accordance with market conditions.

2.3 Research Hypothesis

Based on the background, formulation of the problem and research objectives, the hypotheses in this study are:

a. It is expected that FinTech, which is proxied by the volume of digital lending transactions and digital capital raising, has a significant effect on the financial stability of countries in ASEAN.

b. It is expected that GDP per capita has a significant effect on the financial stability of countries in ASEAN.

c. It is expected that inflation has a significant effect on the financial stability of countries in ASEAN

3. Research Method

3.1 Data

This study uses panel data involving 8 countries in ASEAN for the period 2016-2020. To show financial stability, the dependent variable is the processed banking z-score. Independent variables include the volume of financial transactions using FinTech which are divided into two categories, namely the volume of digital loan transactions, the volume of digital capital participation transactions [19], in addition, financial stability is also influenced by macroeconomic conditions so that the GDP per capita and inflation variables are used. The data in this study comes from the Worldbank and IMF, Cambridge Center for Alternative Finance in the form of annual data.

The method used in this study is panel data regression analysis. Before conducting panel data regression, a test is first carried out to determine the appropriate model to use between the common effect model, fixed effect model and random effect model through the Chow Test and Hausman Test. The research estimation model uses FinTech (digital loans and digital capital) and simultaneously [19]. So the purpose of the study is to analyze the influence of FinTech, GDP per capita and inflation on the financial stability of countries in ASEAN. The estimation model in the study is as follows:

$$Zscore_{it} = \beta_0 + \beta_1 DL_{it} + \beta_2 DC_{it} + \beta_3 GDPcap_{it} + \beta_4 Inflation_{it} + e_t \quad (1)$$

Explanation :

z-score	: Proxy variable of financial stability
DL	: Digital loans of each country in ASEAN
DC	: Digital capital of each country in ASEAN
GDPcap	: GDP per capita of each country in ASEAN
Inflation	: Inflation level of each country in ASEAN

Before processing regression analysis for panel data, there are several stages that need to be carried out, including:

3.2 Selection of Panel Data Regression Estimation Techniques

To determine which technique should be chosen for panel data regression, three tests are carried out, namely the F statistical test, the Lagrange Multiplier (LM) test and the Hausman test.

F-Statistic Test

The F statistical test is a test of the difference between two regressions as the Chow test which is used to determine whether the panel data regression technique with fixed effects is better

than the panel data regression model without dummy variables (common effects) by looking at the sum of squared residuals (RSS). The F statistical test is as follows:

$$F\frac{SSR_R - SSR_{U/q}}{SSR_U/(n-k)} \quad (2)$$

The null hypothesis is that the intercepts are equal. The calculated F statistic value will follow the F statistical distribution with degrees of freedom (df) of q for the numerator and n – k for the denominator. q is the number of restrictions or limitations in the model without dummy variables. n is the number of observations and k is the number of parameters in the fixed effects.

Lagrange Multiplier Test

The Langrange Multiplier test developed by Bruesch Pagan is used to determine whether the Random Effect model is better than the common effect model. The LM test is based on the residual value of the OLS method. The LM statistical value is calculated based on the following formula:

$$LM = \frac{nT}{2(T-1)}\left(\frac{\sum_{i=1}^{n}\left(\sum_{t=1}^{T} \grave{e}it\right)^2}{\sum_{i=1}^{n}\left(\sum_{t=1}^{T} \grave{e}_{it}^2\right)} - 1\right)^2$$

$$= \frac{nT}{2(T-1)}\left(\frac{\sum_{i=1}^{n}(T\tilde{e}it)^2}{\sum_{i=1}^{n}\left(\sum_{t=1}^{T} \grave{e}_{it}^2\right)} - 1\right)^2 \quad (3)$$

Where n = number of individuals; F = number of time periods; è = is the residual of the OLS method. The LM test is based on the chi-squares distribution with a degree of freedom equal to the number of independent variables. If the LM statistic value is greater than the critical value of the chi-squares statistic, then the null hypothesis is rejected. This means that the right estimate for the panel data regression model is the random effect method rather than the common effect method.

Hausman Test

The Hausman test is used to see which method is better between fixed effect or random effect. This test is done by looking at the chi-squares distribution with the degree of freedom method as many as k where k is the number of independent variables. If the null hypothesis is rejected, namely when the Hausman statistical value is greater than its critical value, then the correct model is the fixed effect model, while conversely, if it fails to reject the null hypothesis, namely when the Hausman statistical value is smaller than its critical value, then the correct model is the random effect model.

3.3 Classis Assumption Test

Normality Test

The estimation results of the OLS method that show valid relationships between variables can be used if the residuals from the estimation results are normally distributed. Histograms and Jarque-Bera (J-B) tests can be used to detect whether the residuals are normally distributed or not.

Multicollinearity Test
Multicollinearity is the existence of a relationship between independent variables of a regression model. The linear relationship of independent variables in multiple regression can be perfect linear and imperfect linear. The presence of multicollinearity still produces a BLUE estimate but causes the model to have a large variance. The rate of increase in variance and covariance can be known through the variance inflation factor (VIF) value from the regression estimation results.

Heterokedasticity Test
The assumption of the OLS method is that the disturbance variable has a mean of zero, its variance is constant, and the disturbance variable is not connected from one observation to another, resulting in a BLUE OLS. In heteroscedasticity, there is no constant variance in the regression model, causing the estimator to have no minimum variance and only producing the Linear Unbiased Estimator (LUE). The Breusch-Pagan method and the White method are methods that can be used to detect heteroscedasticity**.**

Autocorrelation Test
In the OLS method, it is assumed that one disturbance variable has no relationship to other disturbance variables. In the OLS method, autocorrelation reflects the correlation between disturbance variables. This causes the OLS estimator to only produce the Linear Unbiased Estimator (LUE). The Durbin-Watson method and the Breusch-Godfrey method are methods that can be used to detect autocorrelation**.**

3.4 Hypothesis Test

T-Test
In hypothesis testing, the t-test can be used to determine the significance of the influence of each independent variable on the dependent variable, ceteris paribus. The way to draw conclusions from the t-test is by comparing the calculated t-value and the t-table.

F-Test
In hypothesis testing, the F-test can be used to test the overall significance which is also used as a model significance test. Analysis of variance (ANOVA) can be used to perform the F-test.

Determination Coefficient (R^2)
The determination coefficient (R^2) aims to determine how well the regression line fits the data or measures the percentage of total variation in Y that can be explained by the regression line using R^2. The R^2 value is 0 to 1. If the R^2 value approaches 1, the regression line is better at explaining the actual situation. Conversely, if the R^2 value approaches 0, the regression line is said to be less able to explain the actual situation.

4. Result and Discussion

4.1 Result

4.1.1 Normality

Based on the results of the normality test, the Jarque-Bera value was 6.7512 > 1 and the probability value was 0.03419 < 0.05, thus accepting Ho, which means that the residual data is normally distributed and the estimation model can be continued.

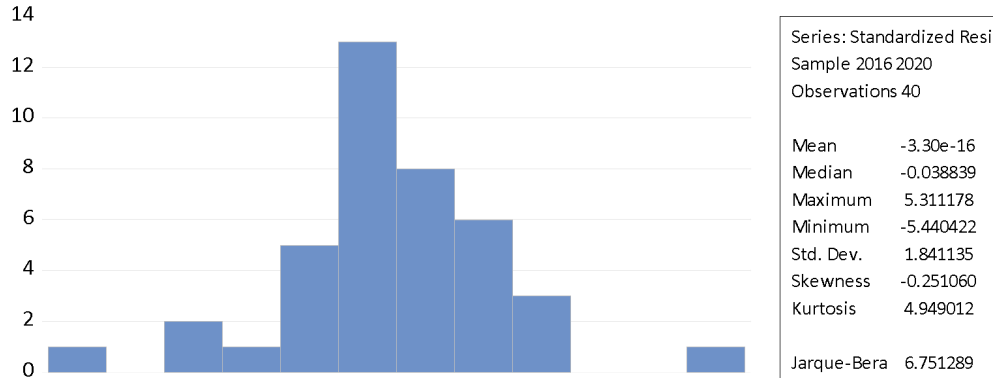

Fig 3. Normality test

4.1.2 Classic Assumption Test

Multicollinearity

Based on the results of the multicollinearity test, the VIF value for all independent variables was less than ten, so it was concluded that there was no perfect multicollinearity and the estimation model could be used.

Table 1. Multicollinearity Test Result

Independent Variable	R^2		VIF	Decision
LnDL	0,318690	=1/(1- 0,318690)	1.467760	There is no perfect multicollinearity
LnDC	0,782413	=1/(1- 0,782413)	4,595862	There is no perfect multicollinearity
LnGDP	0,730405	=1/(1- 0,730405)	3,709267	There is no perfect multicollinearity
Inflation	0,511782	=1/(1- 0,511782)	2,048265	There is no perfect multicollinearity

Source : Data processed

Heterokedasticity

Based on the results of the heteroscedasticity test, the calculated chi-square value is 6.28 < chi square table 9.48, thus rejecting Ho and accepting Ha. This means that there is no heteroscedasticity problem in the estimation model.

Table 2. Heterokedasticity Test Result

Dependent Variable	Chi Square statistic	Chi Square Table	Decision
1	6,28	9.48	There is no heterokedasticity problem

Source : Data processed

Autocorellation

Based on the results of the autocorrelation test, the calculated chi-square value is 0.80 < chi square table 5.99, thus rejecting Ho and accepting Ha. This means that there is no autocorrelation problem in the estimation model.

Table 3. Autocorrelation Test Result

Dependent Variable	Chi Square statistic	Chi Square Table	Decision
1	0,80	5,99	There is no autocorellation problem

Source : Data processed

4.1.3 Selection of Panel Data Regression Techniques

Chow Test

Based on the results of the chow test, the probability value is 0.0000 < alpha 10.05. This means that Hol is rejected and Ha is accepted so that the fixed effect model is the most appropriate method used in this study. The results of the chow test are shown in Table 4.

Table 4. Chow Test Result

Effect Test	Statistic	d.f.	Prob
Cross-section F	48.623312	(7,28)	0,0000
Cross-section Chi-Square	103.074595	7	0,0000

Source : Data processed

Hausman Test

Based on the results of the Hausman test, the probability value is 0.0241 < alpha 0.05. This means that Ho is rejected and Ha is accepted so that the fixed effect model is the most appropriate method to use in line research. The results of the Hausman test are shown in Table 5.

Table 5. Hausman Test Result

Effect Test	Chi-Sq Statistic	Chi-Sq d.f.	Prob
Cross-section random	19.309027	3	0.0007

Source : Data processed

4.1.4 Result of Random Effect Model Regression

Independent Variable	Coefficient	t-statistic	t-table	Probability	Decision
LnPD	-0,801699	-2,818972	-1,6896	0,0087	H_o ditolak

LnMD	0,152367	0,332538	1,6896	0,7420	H_o diterima
LnGDP	20,43478	3,542304	1,6896	0,0014	H_o ditolak
Inflasi	-0,544629	-1,596000	-1,6896	0,1217	H_o diterima

Source : Data processed

Z_SCORE = -145.472456397 - 0.801698593388*LnDL + 0.152366728286*LnDC + 20.4347816721*LnGDP - 0.544629081314*Inflation

F statistic = 53,59560

R-squared = 0,954660

Based on the results of the random effect model regression method, it is known that if all independent variables are zero, the z-score value as a proxy for financial stability is -145.472. The independent variables that have a statistically significant effect on the financial stability of several ASEAN countries are digital loans and GDP, while the digital capital and inflation variables do not affect the financial stability of several countries in ASEAN. The f-statistic value is 53.59560> 0, which means that the independent variables together have a significant effect on financial stability in several ASEAN countries. In addition, the R-squared value is 0.955660, which means that the independent variables are able to explain the dependent variable by 95% while the other 5% is influenced by other factors not included in the research model.

4.2 Discussion

Based on the regression results, it shows that digital loans have a significant negative effect on the financial stability of countries in ASEAN. The regression model shows that a one percent increase in digital loans will reduce the z-score value of financial stability by 0.801699. The negative impact during the research period shows that increasingly massive access to digital loans can disrupt the financial stability of countries in ASEAN. Digital loan platforms are currently very easy to access using applications on mobile phones and provide loose space regarding user requirements. Digital loan users in ASEAN countries are productive age residents who choose digital loans because the requirements are not complex, fast disbursement of funds and ease of access [26].

Non-complex requirements including low minimum income limits that borrowers must have allow users with low income levels to apply for loans, thus impacting the possibility of default. One of the digital lending platforms that allows users with low incomes to apply for loans is the e-commerce Shopee. In addition, the minimal application of borrower credit assessment principles allows borrowers to apply for loans on more than one digital lending platform, resulting in an increase in the debt ratio compared to the borrower's income or ability to pay, resulting in default.

The regression results show that the GDP variable has a positive and significant effect on the financial stability of countries in ASEAN. The regression model shows that a one percent increase in digital capital will increase the z-score value of financial stability by 20.434. The significant positive effect of GDP during the study period shows that the more stable the

macroeconomic conditions, the more it will increase financial stability. The increase in GDP formed from consumption activities, investment, government spending and net exports shows that there is a positive movement in the activities of economic actors in the aggregate. The increase in aggregate consumption shows that household purchasing power is moving positively in making demands which are then responded to by companies by increasing aggregate investment to increase aggregate output. Furthermore, an increase in aggregate output will increase the company's ability to pay workers' wages and taxes to the government. In this case, households and companies are not only active in the goods and services market but also active in the money market which then has a positive effect on financial stability because massive economic activity allows for a low risk of default from creditors who are active in the money market.

The variables of digital capital participation and inflation have a probability value > 0.05, which indicates that digital capital participation and inflation do not affect the financial stability of countries in ASEAN. On the other hand, based on financial data, it shows that the net performing loan ratio as a measure of default is still below the maximum threshold, which is less than five percent. So that the ease of access to digital loans does not interfere with the financial stability of countries in ASEAN and also reflects that the financial system of countries in ASEAN is strong. However, countries in ASEAN need to ensure that the ease of access to digital loans is followed by appropriate rules and risk mitigation in order to support the national strategy of inclusive finance in countries in ASEAN.

5. Conclusion

The purpose of this study is to analyze the development of financial technology proxied by the variables of digital loans and digital capital participation on the financial stability of countries in ASEAN. In addition to the development of financial technology, this study also uses macroeconomic variables, namely GDP and inflation to analyze their effects on the financial stability of countries in ASEAN. The results of the study indicate that the digital loan variable has a negative and significant effect on the financial stability of countries in ASEAN, while the digital capital participation variable does not have a significant effect on the financial stability of countries in ASEAN. GDP as a macroeconomic indicator has a positive and significant effect on the financial stability of countries in ASEAN, while inflation does not affect the financial stability of countries in ASEAN.

References

[1] Y. Li, R. Spigt, and L. Swinkels, “The impact of FinTech start-ups on incumbent retail banks’ share prices,” *Financial Innovation*, vol. 3, no. 1, Dec. 2017, doi: 10.1186/s40854-017-0076-7.

[2] FSB, “BigTech in finance: Market developments and potential financial stability implications,” 2019. [Online]. Available: www.fsb.org/emailalert

[3] S. Claessens, J. Frost, G. Turner, and F. Zhu, “Fintech credit markets around the world: size, drivers and policy issues,” 2018.

[4] A. V. Thakor, “Fintech and banking: What do we know?,” *Journal of Financial Intermediation*, vol. 41, Jan. 2020, doi: 10.1016/j.jfi.2019.100833.

[5] S. Luo, Y. Sun, F. Yang, and G. Zhou, “Does fintech innovation promote enterprise transformation? Evidence from China,” *Technol Soc*, vol. 68, Feb. 2022, doi: 10.1016/j.techsoc.2021.101821.

[6] M. M. Alshater, I. Saba, I. Supriani, and M. R. Rabbani, “Fintech in islamic finance literature: A review,” Sep. 01, 2022, *Elsevier Ltd*. doi: 10.1016/j.heliyon.2022.e10385.
[7] V. D. Chiorazzo Corte dei Conti Vincenzo *et al.*, “Is the Traditional Banking Model a Survivor?”
[8] L. Denyes, “Basic Business Models for Banks Providing Digital Financial Services in Africa.” [Online]. Available: www.ifc.org/thoughtleadership
[9] Z. Temelkov, “DIFFERENCES BETWEEN TRADITIONAL BANK MODEL AND FINTECH BASED DIGITAL BANK AND NEOBANKS MODELS DIFFERENCES BETWEEN TRADITIONAL BANK MODEL AND FINTECH BASED DIGITAL BANK AND NEOBANKS MODELS DIFFERENCES BETWEEN TRADITIONAL BANK MODEL AND FINTECH BASED DIGITAL BANK AND NEOBANKS MODELS,” 2020.
[10] “FAQ POJK 12 - 03 - 2021”.
[11] D. Arner, J. Barberis, R. Buckley, U. Law, D. W. Arner, and R. P. Buckley, “THE EVOLUTION OF FINTECH: A NEW POST-CRISIS PARADIGM?”
[12] A. Kamal, M. S. Ali, and M. M. shah Khan, “Impact of Fintech on the Financial Stability of Banks: A Systematic Literature Review,” *Global Economics Review*, vol. VII, no. IV, pp. 33–40, Dec. 2022, doi: 10.31703/ger.2022(vii-iv).03.
[13] C. Karakas, C. Stamegna -Graphics, and C. Dietrich, “Financial technology (FinTech): Prospects and challenges for the EU,” 2017.
[14] L. Laeven and R. Levine, “Bank governance, regulation and risk taking,” *J financ econ*, vol. 93, no. 2, pp. 259–275, Aug. 2009, doi: 10.1016/j.jfineco.2008.09.003.
[15] B. J. Henderson and N. D. Pearson, “The dark side of financial innovation: A case study of the pricing of a retail financial product,” *J financ econ*, vol. 100, no. 2, pp. 227–247, May 2011, doi: 10.1016/j.jfineco.2010.12.006.
[16] N. Gennaioli *et al.*, “We are grateful to,” 2010. [Online]. Available: http://www.nber.org/papers/w16068
[17] M. R. Goetz, “Competition and bank stability,” *Journal of Financial Intermediation*, vol. 35, pp. 57–69, Jul. 2018, doi: 10.1016/j.jfi.2017.06.001.
[18] T. Beck, T. Chen, C. Lin, and F. M. Song, “Financial innovation: The bright and the dark sides,” *J Bank Financ*, vol. 72, pp. 28–51, Nov. 2016, doi: 10.1016/j.jbankfin.2016.06.012.
[19] S. Cevik, “The Dark Side of the Moon? Fintech and Financial Stability, WP/23/253, December 2023,” 2023.
[20] R. Syaputra, M. Roza Adry, and J. Ilmu Ekonomi Fakultas Ekonomi Universitas Negeri Padang Jl Hamka Air Tawar Padang, “PENGARUH VARIABEL MAKROEKONOMI TERHADAP STABILITAS SISTEM KEUANGAN DI INDONESIA (MELALUI PENDEKATAN MONETER).”
[21] Asean, “Guidance Notes on National Financial Inclusion Strategy in ASEAN Guidance Notes on National Financial Inclusion Strategy in.”
[22] S. Cevik, “The Dark Side of the Moon? Fintech and Financial Stability, WP/23/253, December 2023,” 2023.
[23] by Chikako Baba *et al.*, “Fintech in Europe: Promises and Threats, WP/20/241, November 2020,” 2020.
[24] D. W. H. Fung, W. Y. Lee, J. J. H. Yeh, and F. L. Yuen, “Friend or foe: The divergent effects of FinTech on financial stability,” *Emerging Markets Review*, vol. 45, Dec. 2020, doi: 10.1016/j.ememar.2020.100727.
[25] C. C. Lee, X. Li, C. H. Yu, and J. Zhao, “Does fintech innovation improve bank efficiency? Evidence from China’s banking industry,” *International Review of Economics and Finance*, vol. 74, pp. 468–483, Jul. 2021, doi: 10.1016/j.iref.2021.03.009.
[26] T. Ziegler *et al.*, “The ASEAN Access to Digital Finance Study.”