

# Moderating Role of Financial Technology towards the Effects of Financial Performance, Good Corporate Governance and Macroeconomics on Stock Returns of Indonesia 4 Category Banks

*by Melinda Malau*

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**COMMUNICATION  
ECONOMICS  
ORGANIZATION**

9-11 December 2022 - Indonesia

5<sup>th</sup>

# PROCEEDINGS BOOK

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## EDITORS

Assoc. Prof. Dr. Muhammad Ali Tarar

Enock Siankwilimba, PhD. Cand.

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**International CEO**

(Communication, Economics, Organization)

**Social Sciences Congress**

**PROCEEDINGS**

**E-BOOK**

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**CEOSSC 2022 - Indonesia**

**Editors:**

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# International CEO

(Communication, Economics, Organization)

## Social Sciences Congress

### Presentation

We are delighted to introduce Sekolah Tinggi Manajemen IPMI (IPMI - International Business School), Mohanlal Sukhadia University, Samarkand Branch of Tashkent University of Economics, International Vision University, Alfred Nobel University, International Gorazde University, Nişantaşı University, University of Prizren, Cyprus West University, Insec, NCM Publishing, CEO Tekmer, Universitas B<sup>1</sup> yangkara, Knowledge Laboratory, Universitas Ghara Karya and Ostim Technical University served as the vehicle of dissemination for a showpiece of articles at the **International CEO (Communication, Economics, Organization) Social Sciences Congress (CEO SSC 2022, Indonesia, Jakarta)** that was held online on Dec 9-11, 2022. CEO Congress aims to provide a platform for discussing the issues, challenges, opportunities and findings of **Communication, Economics, Organization and Social Science** research. The organizing committee with feedback from the division chairs and the members of the **scientific committee** foresaw an opportunity and research gap in the conference theme, that pitches for pressing issues in the business world.

Presentations are in Turkish & English & Indonesian. With the participation and contributions of academics from **34 countries**: *Argentina, Azerbaijan, Belarus, Bosnia and Herzegovina, Indonesia, Ethiopia, Philippines, Ghana, South Korea, Georgia, India, Iraq, United Kingdom, Spain, Italy, Japan, Cameroon, Canada, Kyrgyzstan, Kosovo, North Cyprus, Cuba, Malaysia, Uzbekistan, Pakistan, Poland, Portugal, Romania, Tanzania, Turkey, Ukraine, USA, New Zealand.* It is a great privilege for us to present the Abstract Book of **CEO SSC 2022** to the authors and delegates of the conference.

Several manuscripts from prestigious institutions could not be accepted due to the reviewing outcomes and our capacity constraints. Participation from **155 different institutions or universities**. The 3 days long conference gathered close to **445 national and international attendees** to enliven a constellation of contributions. **199** papers of the **273** papers approved to present at the congress are outside of Turkey. **73% of the papers presented at the congress are from outside Türkiye.** **5** awards were issued to distinguished papers, and a total of **273 oral presentations.**

On the day of completion of this journey, we are delighted with a **high level of satisfaction and aspiration.** It is important to offer our sincere thanks and gratitude to a range of organizations and individuals, without whom this year's conference would not take place. This conference would have not materialized without the efforts of the contributing **authors for sharing the fruit of their research and the reviewers for scrutinizing,** despite their busy schedules. We also thank **our members and colleagues who accepted the duty to participate in the Scientific Committee** and for their valuable help in the screening, selecting, and recommending best contributions.

All presentations made during the congress were published on the social media accounts of the CEO Congress.



# **Uluslararası CEO (İletişim, Ekonomi, Organizasyon) Sosyal Bilimler Kongresi**

## **Sunuş**

9-11 Aralık 2022 tarihlerinde "5. Uluslararası CEO İletişim, Ekonomi ve Organizasyon Sosyal Bilimler Kongresi" IPMI Uluslararası İşletme Okulu ev sahipliğinde Endonezya'nın başkenti Cakarta'da, Mohanlal Sukhadia University, Samarkand Branch of Tashkent University of Economics, International Vision University, Alfred Nobel University, International Gorazde University, Nişantaşı Üniversitesi, University of Prizren, Cyprus West University, Insec, NCM Publishing, CEO Tekmer, Universitas Bhayangkara, Knowledge Laboratory, Universitas Ghara Karya ve Ostim Teknik Üniversitesi iş birliği ile **online ve fiziki katılımlar** ile gerçekleşmiştir.

Kongremizde *ABD, Arjantin, Azerbaycan, Belarus, Bosna Hersek, Endonezya, Etiyopya, Filipinler, Gana, Güney Kore, Gürcistan, Hindistan, Irak, İngiltere, İspanya, İtalya, Japonya, Kamerun, Kanada, Kırgızistan, Kosova, Kuzey Kıbrıs, Küba, Malezya, Özbekistan, Pakistan, Polonya, Portekiz, Romanya, Tanzanya, Türkiye, Ukrayna, Yeni Zelanda, Zambiya* gibi **34 ülkeden ve 155 kurum/üniversiteden 445 akademisyen** tarafından hazırlanan **273 bildiri** sunulmuştur.

Kongremize **343** bildiri özeti gönderilmiş, editör ve hakem süreçlerinden sonra bunlardan 303 tanesi sözlü sunuma kabul edilmiş, ancak **50 oturumda 273 bildirinin sunumu** gerçekleşmiştir. Sunulan bildiriler, **978-605-73822-7-6** ISBN'li bu e kitapta yayımlanmaktadır.

Kongrede sunulan 273 bildirinin 199'u yurt dışındandır. Yayımlanan **bildirilerin %73'ü Türkiye dışındandır.**

Onaylı ve yayımlanan **273 bildiriden ikisi Türkiye'den ve üçü yurt dışından olmak üzere beşine en iyi bildiri ödülü** duyurulmuştur.

**Önceki Uluslararası CEO Kongre'lerde olduğu gibi 5. Uluslararası CEO Kongre'de de hem bildiri özet kitabında hem de tam metin kitabında yabancı oranı %50'den fazladır.** Okumakta olduğunuz tam metin kitabında **yayımlanan tam metinlerin ise %73'ü Türkiye dışındandır** (127 yabancı, 48 Türkiye'den).

Kongre esnasında gerçekleşen tüm sunumlar kongrenin sosyal medya hesaplarında yayımlanmıştır. Tekrar yararlanmak istendiği durumlarda CEO Congress sosyal medya hesaplarından izlenebilir.

Kongrenin bilim insanlarına, kamu ve özel sektör ile STK'ların yönetiminin etkinliğine katkı bulunmasını temenni eder, bildirileriyle katkıda bulunan akademisyenler ile düzenleme kurulu, danışma kurulu, bilim ve hakem kurulundaki meslektaşlarımıza ziyadesiyle teşekkür ederiz.

## <sup>1</sup> A Special Thanks To...

Below is a list of individuals who have supported **CEO Congress 2022 Indonesia** by donating some of their time. It is these people who make our work possible and have been a great help. We would like to say a special THANK YOU for all those listed below.

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2. **Authors:** Asst. Prof. Dr. Berna Turak KAPLAN, Assoc. Prof. Dr. Mehmet KAPLAN  
**Title:** CEO Nasıl Başladı? İletişim, Ekonomi, Organizasyon Odaklı İlk Kongrenin Anatomisi

#### Outside Türkiye

- 1 **Authors:** Melitta ARUAN, Roy SEMBEL, Melinda MALAU  
**Title:** Moderating Role of Financial Technology towards the Effects of Financial Performance, GCG and Macroeconomic on Stock Returns of Indonesia Category 4 Banks
- 2 **Authors:** Maria Zia, Dr. Muhammad Zia-ur-Rehman, Syed Muhammad Wafa ur Rahman  
**Title:** Emotional Exhaustion (EE) and its impact on Turnover Intention: The role of Organizational Commitment
- 3 **Authors:** Mr. Bagawan Kagurnita Krisatio SOENARJONO, Prof. Ir. M. Aman WIRAKARTAKUSUMAH, PhD., Ms. Liza Agustina Maureen NELLOH  
**Title:** The Antecedents of Subscriber Intention of Indonesian Young Generations Upon Spotify



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Prof. Dr. **Hernán E. Gil FORLEO**, University of Buenos Aires, **Argentina**

**Carles Agustí I Hernández**, International Governance Consultant & SDG Manager, (**Barcelona**)  
**Spain**

Dr. **Dewi Puspaningtyas Faeni**, MBA, MHT, Vice Dean Faculty of Economics and Business,  
**Indonesia**

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Assoc. Prof. Dr. **Mehmet Naci EFE**, Head of International University of Goražde, **Bosnia & Herzegovina**

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### Guest Speeches

Asst. Prof. Dr. **Ir. Amelia Naim Indrajaya**, MBA – Head of CSMSR, IPMI International Business School, Jakarta, **Indonesia**

Assoc. Prof. **Murteza HASANOĞLU**, Azerbaijan State Administration Academy, **Azerbaijan**

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Dr. **Bahrullah Safi**, Vice President International Acacia University, **Arizona, USA**

**Moderator of the Session:** Dr. **Souvik Dasgupta**, Presidency University, Kolkata – **India**

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## Moderating Role of Financial Technology towards the Effects of Financial Performance, Good Corporate Governance and Macroeconomics on Stock Returns of Indonesia 4 Category Banks

**Melitta ARUAN**

Student at MBA Program at Sekolah Tinggi Manajemen IPMI

[melitta.aroean@ipmi.ac.id](mailto:melitta.aroean@ipmi.ac.id)

Orcid: 0000-0001-8049-7966

2

**Roy SEMBEL**

Professor and Senior Lecturer at Sekolah Tinggi Manajemen IPMI

[roy.sembel@ipmi.ac.id](mailto:roy.sembel@ipmi.ac.id)

Orcid: 0000-0003-3582-5857

**Melinda MALAU**

Associate Professor and Senior Lecturer at Universitas Kristen Indonesia

[melinda.malau@uki.ac.id](mailto:melinda.malau@uki.ac.id)

Orcid: 0000-0002-6576-3063

### ABSTRACT

2

This study used analyzes and evaluates the impact of macroeconomics and financial performance on stock returns of Indonesian 4 category Banks from 2012 – 2021 with Financial Technology as a moderating variable. Macroeconomic is assessed using GDP growth, interest rate, exchange rate, and market return. Financial Performance is measured by using RGEC methods (Risk Profile, Good Corporate Governance, Earnings and Capital). The Risk Profile variables consist of Non-Performing Loans (NPL) and Loan to Deposit Ratio (LDR) while Good Corporate Governance (GCG) use Composite Rating GCG, Earnings using ratios of Return on Assets (ROA), Net Interest Margin (NIM) and Capital using Capital Adequacy Ratio (CAR). This study used descriptive quantitative and the Regression Data Panel Analysis to answer the research questions. The data sources used in this study are secondary data. Eviews are used to analyze the data in this study. This study concluded that GDP growth, exchange rate, market return and NPL are significantly affected stock returns. This study also found that Financial Technology moderated the impact of NPL on-stock returns. The other independent variables had no effect, and Financial Technology did not have moderating effect to other independent variables. The results of this study help researchers and practitioners understand the internal and external factors that affect banking industry in the financial technology era. Investors who want to invest in the banking sector are encouraged to analyze and closely monitor the GDP Growth, exchange rate, market return and NPL because they have a positive effect on the return of their investment.

**Keywords:** Stock Returns, Macroeconomic, GCG, RGEC, Financial Technology.

## INTRODUCTION

### 1. BACKGROUND

The country's economy is inseparable from the stock markets. The stock market has become one of the indicators to determine the health of a country's (Aji Setiawan, 2020). There are numerous elements that influence the company's stock performance that come from both internal and external factor.

Macroeconomic issues can also influence stock performance, both positively and negatively. Macroeconomic considerations might have an impact on capital market investment activities (Bertuah & Sakti, 2019). In this study, macroeconomic factors have an impact on stock investment activities, which are used to calculate GDP growth, interest rate, exchange rate and market return. The number of consumer products, excluding capital items, is used to calculate GDP. Because of the increasing quantity of consumer goods, the economy has grown and the size of a company's sales turnover has increased.

Financial performance as the sources of internal factor might influence the movement in stock returns. The Company's stock will be in high demand as a result of its strong financial performance. This is happened since financial performance is one of the elements that investors consider when purchasing stock. Because there is more investor interest in the stocks, the stock price will rise as a result of the increased demand (Fauziah, N., and Sembel, 2020). Financial performance will be used as a Banking Health Performance Indicator in this study. The Banking Health Indicator include Financial Ratios and Matrices such as Net Performing Loan, Loan to Deposit, Good Corporate Governance, Return on Asset, Net Interest Margin, and Capital Adequacy Ratio.

One of the interesting industry areas to study is banking. This is due to banks play a crucial part in maintaining Indonesia's economic growth. A bank is a financial entity that focuses on finance, lending, and customer service. In summary, a bank is a financial entity that functions in the financial sector that accepts deposits from the public (i.e., from consumer, government, and commercial) and gives loans to those needed (Mishkin, 2020).

Based on POJK No.12/POJK.03/2021 bank are divided into 4 Kelompok Bank berdasarkan Modal Inti (KMBI) categories. Banks with core capital of less than IDR 6 trillion, between IDR 6 and IDR 14 trillion, between IDR 14 trillion and IDR 70 trillion, and above IDR 70 trillion are eligible for KMBI 1, 2, 3 and 4 respectively. OJK has switched the banking grouping rules from BUKU to KBMI effective by end of 2021. Previously, according to POJK No.6/POJK.03/2016, commercial banks were split into four BUKU categories based on their core capital : BUKU 1 with total core capital less than IDR 1 Trillion; BUKU 2 with total core capital between IDR 1 Trillion - IDR 5 Trillion; BUKU 3 with total core capital between IDR 5 Trillion - IDR 30 Trillion; and BUKU 4 with total core capital which above IDR 30 trillion. As this research took the Bank category as of July 2021, hence this research still uses the BUKU category with scope wholeIndonesia 4 Category Banks.

#### 1.1 Research Problem and Research Question

There have been limited studies on the specific impact of banking health assessment using the RGEC Method as financial performance indicator with the moderating variable of Financial Technology. This study develops several research questions which are as follows:



- 5  
1. How does GDP growth affect stock returns?
2. How does interest rate affect stock returns?
3. How does exchange rate affect stock returns?
4. How does the market return affect stock returns?
5. How does NPL affect stock returns?
6. How does LDR affect stock returns?
7. How does ROA affect stock returns?
8. How does NIM affect stock returns?
9. How does CAR affect stock returns?
10. How does GCG affect stock returns?
11. How does Financial Technology moderate the effect of NPL on stock returns?
12. How does Financial Technology moderate the effect of LDR on stock returns?
13. How does Financial Technology moderate the effect of ROA on stock returns?
14. How does Financial Technology moderate the effect of NIM on stock returns?
15. How does Financial Technology moderate the effect of CAR on stock returns?

## 1.2 Scope and Limitation of The Study

The study focuses on Indonesia 4 Category Banks during 2012 until 2021 (Annual basis). As of July 2021, there are ten (10) Commercial Banks includes as 4 Category Banks in Indonesia: Bank Rakyat Indonesia, Bank Mandiri, Bank Central Asia, Bank Negara Indonesia, Bank Panin, Bank Danamon, Bank CIMB Niaga, Bank Permata, Bank BTPN and Bank OCBC NISP. All of data and information used in this study are secondary data which is obtained from public information.

## 2. LITERATURE REVIEW

### 2.1 Literature Review from Each Variable

#### 2.1.1 Macroeconomics

Because these macroeconomic variables are outside a company's management's control, they might have a good or negative impact on a company's performance (Dioha et al., 2018). The growth rate of the GDP, interest rate, exchange rate and market return were employed as macroeconomic variable in this study.

#### 2.1.2 Gross Domestic Product (GDP) Growth

5  
GDP is the total value of goods and services generated by a country's economy minus the total value of goods and services consumed in production. Personal consumption expenditures, gross domestic investment, net exports of goods and services, and government consumption expenditures and gross investment are all included in GDP (Dynan, Karen and Sheinner, 2018). GDP is the most frequent macroeconomic indicator used to track a country's economic health. GDP refers to the total value of all final goods and services produced in a certain economy during a specific time period (Krugman, P. R., and Wells, 2017). The GDP growth rate is the percentage change in GDP from year to year.

The GDP growth rate can be used to determine how quickly a country's economy is increasing over time. Businesses, jobs, and personal income will all increase as the GDP growth rate rises.

#### 2.1.3 Interest Rate

The policy interest rate that the monetary authority (i.e., Central Bank Indonesia or BI) controls to influence the evolution of the main monetary variables in the economy (e.g., consumer price, credit expansion, among others) within a region is referred to as interest rates in

macroeconomics (nation or zone). All banks operating within the regulatory zone will afterwards provide financial products to their customers depending on the interest rate of the policy. The policy interest rates vary between nations. The rise in interest rates increased bank risk, which will have an impact on the performance of the banking industry (Geng et al., 2016). This research supports the findings of (Aydemir & Ovenc, 2016), who discovered that monetary policy had a considerable impact on bank capital and profitability.

#### 5 1.4 Exchange Rate

The value of one country's currency in relation to another was also considered to be reflected in the exchange rate (Malau, 2018; Sullivan and Sheffrin, 2017). Investors were advised to invest cautiously when exchange rates became volatile since the exchange rate can effects stock price concurrently with interest rate and inflation or partially (on its own) (Ginting, and Topowijono, 2016; Yunita & Robiyanto, 2018). The development of the banking industry was significantly impacted by exchange rate uncertainty in both the short and long terms (Hajilee, M., & Chen, 2019). The accumulation of bad loans was a result of the declining exchange rate's effects on bank performance (Owoeye, T., and Ogunmakin, 2013). Additionally, while the exchange rate remained stable, the frequency of banking crises dropped (Gaies et al., 2019).

#### 2.1.5 Market Return

The return that investors get from the stock market over time is referred as stock market returns. The market returns are neither guaranteed nor fixed. They are susceptible to market risks. The level of unsystematic risk is inversely proportional to stock market returns. As a result, investors' capacity to predict any unspoken dangers can counteract systematic behavior in the price chain of future occurrences (Al-Eitan & Yamin, 2017). A study found a link between the efficiency of the banking system and stock market returns (Sharma, 2018).

#### 2.1.6 Financial Performance

A bank is a financial institution that attracts the public, primarily through credit or lending, payment traffic services, and money circulation. The state of a company's financial success can be reflected in financial ratio results (Malau & Murwaningsih, 2018). Financial ratios are useful measures of a company's financial health and success. Ratio analysis is the process of calculating and interpreting financial figures by logically connecting them in order to determine the strengths and weaknesses that underpin an organization performance. We calculate ratio because it allows us to make a more useful comparison. To comment on the quality of a ratio, must compare to a standard or benchmark (Fabozzi, 2003).

Central bank issued a new regulation on the assessment of the level of performance based on the approach of RBBR that includes all the four factors of measurement, i.e., Risk Profile, Good Corporate Governance, Earnings and Capital, in short, RGEC. RGEC a bank performance assessment method based on central bank regulation no. 13/1/PBI/2011 with regard to a general assessment of bank performance. We use RGEC method in this study. The Risk Profile variables are calculated use Non-Performing Loans Ratio and Loan to Deposit Ratio while Good Corporate Governance is calculated use GCG Composite Rating, Earnings using ratios of Return on Assets, Net Interest Margin and Capital using Capital Adequacy Ratio.

#### 2.1.7 Non- Performing Loan (NPL)

NPL is a ratio that measures a bank's capacity to deal with the risk of borrowers defaulting on their loans. A high NPL will raise costs, which could lead to bank bankruptcy reduced efficiency (Karim, Zaini Abd, M., Karim, M. Z. A., Chan, S.-G., and Hassan, 2010). Moreover,

NPL are bank earning assets that are dubious in their collectability. The NPL serves as an early measure of credit risk; the lower the NPL, the lower the bank's credit risk. When granting credit, banks must consider the debtor's ability to repay their debts. The bank is required to supervise the use of credit as well as the debtor's ability and compliance in completing its commitments after the credit is provided.

### 2.1.8 Loan To Deposit Ratio (LDR)

Liquidity is one metric for assessing a bank's health. The adequacy of liquidity ratio management as well as the strength of banks in sustaining acceptable liquidity levels are both measured by liquidity measurement (Goenawan, 2013). The bank's operational activities rely heavily on liquidity (Sukma, A., Marlina, M., and Kusmana, 2021).

### 2.1.9 Good Corporate Governance (GCG)

Corporate governance is a set of mechanisms that direct and manage a company's operations so that they meet the expectations of its stakeholders (Pratiwi, 2016). Transparency, Accountability, Responsibility, Independence, and fairness should all be incorporated into GCG implementation in the banking business. Bank Indonesia issued Bank Indonesia Regulation No. 15/15/DPNP on 29 April 2013 addressing the implementation of good corporate governance for commercial banks in order to ensure the compliance of five essential principles

### 2.1.10 Return On Assets (ROA)

ROA is calculated by dividing net income by total assets. ROA is a metric that is frequently used to assess bank performance. ROA is a profitability ratio that is used to assess a company's efficiency in generating profits from its total assets (Chandra et al., 2021; Malau, 2020).

### 2.1.11 Capital Adequacy Ratio (CAR)

Capital is one of the most important sources of funding for a bank, but it also influences management decisions with the goal of obtaining a certain amount of profit in one group while allowing dangers in other groups. CAR is a ratio that shows the bank's ability to maintain adequate capital and the ability of bank management to recognize, assess, and monitor existing risks that can affect the amount of capital, CAR is an important component in assessing the capital of the banking sector (Haryanto, 2016).

### 2.1.12 Financial Technology (Fintech)

According to the NDRC (National Digital Research Centre) research institute Fintech is a word for financial services innovation whereby technology plays a vital role. The term Fintech refers to financial solutions that are enabled by technology (Arner et al., 2015). Fintech is a term for a technology that provides a financial solution. Fintech is a new business innovation that uses fast-growing technology to provide financial product services. Based on previous research, there are two period to correlates the financial technology implementation. Companies in the banking industry before the existence of financial technology companies before 2016 and after the existence of financial technology companies in 2016 (Puspawangi, D., Hendratno, H., and Aminah, 2020). This is in accordance with the issuance of POJK No. 77/POJK.01/2016 concerning Information Technology-Based Lending and Borrowing Services, which is a pioneer of technology-based banking regulations issued by regulators in Indonesia in connection with the emergence of financial technology companies in Indonesia that year.

## 2.2 Previous Research



There are growing research and study toward the fundamental factors contribute to the stock return. This includes among others research on macroeconomic. There is also various research to study the relationship of finance performance of a company toward its stock return, covering some ratios. Notwithstanding, there is still a lot of different results from the previous study which resulted in research gap to be studied particularly for banking sectors. There is also limited study on using RGEC method as financial indicator and Financial Technology as Moderating Variables in banking sector.

### 2.3 Hypothesis Development

We develop hypotheses to provide clarification of the problem statement/research questions :

H1: GDP Growth Positively Affects Stock Return

H2: Interest Rate Negatively Affects Stock Return

H3: Exchange Rate Negatively Affects Stock Return

H4: Stock Returns Positively Affects Stock Return

H5: NPL Negatively Affects Stock Return

H6: LDR Affects Stock Return

H7: ROA Positively Affects Stock Return

H8: NIM Positively Affects Stock Return

H9: CAR Positively Affects Stock Return

H10: GCG Positively Affects Stock Return

H11: Financial Technology Moderate the Effect of NPL on Stock Return

H12: Financial Technology Moderate the Effect of LDR on Stock Return

H13: Financial Technology Moderate the Effect of ROA on Stock Return

H14: Financial Technology Moderate the Effect of NIM on Stock Return

H15: Financial Technology Moderate the Effect of CAR on Stock Return

### 2.4 Research Framework

Figure 2.1 shows the research framework. For the independent variables, we used the macroeconomics variables that consist of GDP growth rate (X1), Interest Rate (X2), Exchange Rate (X3) and Market Return (X4). While for Financial Performance we use RGEC method that consist of NPL (X5), LDR (X6); ROA (X7); NIM (X8), CAR (X9), GCG (X10). For the dependent variable, this study used stock returns. Meanwhile, Financial Technology is used as the and moderating variable (D).

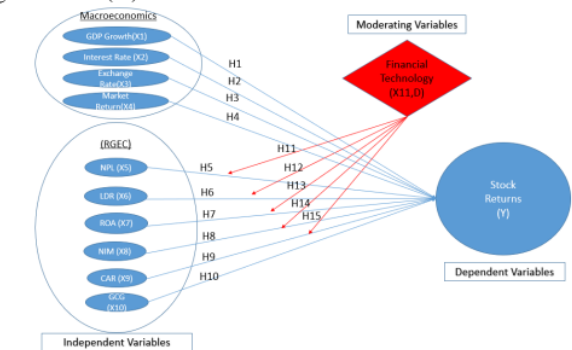


Figure 2.1 Research Framework

### 3. RESEARCH METHOD

#### 3.1 Data Collection

All of the data in this study are secondary data, annually which gather from various sources. The IDX Composite and the Companies' stock time series data including the financial ratios data were collected from Indonesia Stock Exchange – IDX and the banking's annual report. The macroeconomic variable data were collected from the website of BPS - Statistics Indonesia.

#### 3.2 Research Population and Samples

The population of this study is the Indonesia 4 Category Banks. Based on this requirement, the study selected the whole population of 4 Categories Bank which as of July 2021 that comprises of ten Commercial Banks as follows Bank Rakyat Indonesia, Bank Mandiri, Bank Central Asia, Bank Negara Indonesia, Bank Panin, Bank Danamon, Bank CIMB Niaga, Bank Permata, Bank BTPN and Bank OCBC NISP.

#### 3.3 Econometric Model and Variables

The econometric panel data model employed in the current study to determine any relation between the depe Data Panel Regression is a combination of cross section data and time series, where the same unit cross section is measured at different times.

$$Y_{it} = \alpha + \beta_1 X_{1t-1} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5it-1} + \beta_6 X_{6it-1} + \beta_7 X_{7it-1} + \beta_8 X_{8it-1} + \beta_9 X_{9it-1} + \beta_{10} X_{10it} + \beta_8 X_{2t-1} * Dt + \beta_9 X_{3t-1} * Dt + \beta_{10} X_{4t-1} * Dt + \beta_{11} X_{5it-1} * Dt + \beta_{12} X_{6it-1} * Dt + \varepsilon_{it}$$

where:

$Y_{it}$  = Stock Returns of the company  $i$  at period  $t$

$X_{1t}$  = GDP growth rate at the period of  $t$

$X_{2t}$  = Changes in Interest rate at the period of  $t$

$X_{3t}$  = Changes in the currency exchange rate of IDR versus USD at the period of  $t$

$X_{4t}$  = The return of IDX/JKSE at the period of  $t$

$X_{5it}$  = Non-Performing Loan (NPL) of the company  $i$  at period  $t$

$X_{6it}$  = Loan To Deposit (LDR) of the company  $i$  at period  $t$

$X_{7it}$  = Return on Asset (ROA) of company  $i$  at period  $t$

$X_{8it}$  = Net Interest Margin (NIM) of the company  $i$  at period  $t$

$X_{9it}$  = Capital Adequacy Ratio (CAR) of the company  $i$  at period  $t$

$X_{10it}$  = Good Corporate Governance (GCG) of the company  $i$  at period  $t$

$Dt$  = Financial Technology at period

$\alpha$  = the intercept of the regression model

$\beta$ . = the slope coefficient

$\varepsilon_{it}$  = the error component of the observed cross-sectional units and period

#### Dependent Variable

The dependent variable used in this study is the stock returns, calculated annually:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \times 100\%$$

#### Independent Variable

The independent variables in this study are:

**Gross Domestic Product (GDP) Growth Rate**

$$GDP\ Growth_t = \frac{GDP_t - GDP_{t-1}}{GDP_{t-1}} \times 100\%$$

**Interest Rate (IR)**

$$Interest = I_{Real} = I_{Nominal}$$

**Exchange Rate (ER)**

$$\Delta ER_t = \frac{ER_t - ER_{t-1}}{ER_{t-1}}$$

**Market Return (MR)**

$$MR_t = \frac{JKSE_t - JKSE_{t-1}}{JKSE_{t-1}}$$

**Non-Performing Loan (NPL)**

$$NPL = \frac{Non - Performing\ Loan}{Total\ Credits} \times 100\%$$

**Loan To Deposit Ratio (LDR)**

$$LDR = \frac{Total\ Debt}{Third\ Party\ Funds} \times 100\%$$

**Good Corporate Governance (GCG)**

Rank	Category	Criteria
1	Very Good	< 1.50%
2	Good	1.50% ≥ and < 2.5%
3	Acceptable	2.5% ≥ and < 3.5%
4	Poor	3.5% ≥ and < 4.5%
5	Very Poor	4.5% ≥ and < 5%

**Return On Asset (ROA)**

$$ROA = \frac{Net\ Income}{Total\ Assets} \times 100\%$$

**Net Interest Margin (NIM)**

$$Net\ Interest\ Margin = \frac{Interest\ Returns - Interest\ Expense}{Risk\ Weighted\ Assets} \times 100\%$$

**Capital Adequacy Ratio (CAR)**

$$CAR = \frac{Core\ Capital\ (Tier\ 1) + Supplementary\ Capital\ (Tier\ 2)}{Risk\ Weighted\ Assets} \times 100\%$$

**Moderating Variable**

The Financial Technology (D<sub>i</sub>) in this study is treated as moderating variable. This is in accordance with the issuance of POJK No. 77/POJK.01/2016 concerning Information

Technology-Based Lending and Borrowing Services, which is a pioneer of technology-based banking regulations issued by regulators in Indonesia.

0, t = 2012 - 2016

$D_t \{$

1, t = 2017 - 2021

#### 4. RESULT AND DISCUSSION

**Table 4.1:** Descriptive Statistical Results

	SR	GDPG	IR	EXR	MR	NPL	LDR	ROA	NIM	CAR	GCG	FIN TECH
Mean	0.107	0.043	-0.035	0.049	0.044	0.023	0.894	0.062	0.024	0.204	1.680	0.600
Median	0.033	0.050	-0.086	0.018	0.054	0.023	0.882	0.056	0.023	0.197	2.000	1.000
Maximum	1.387	0.060	0.412	0.260	0.199	0.088	1.630	0.130	0.052	0.357	3.000	1.000
Minimum	-0.492	-0.021	-0.367	-0.040	-0.146	0.004	0.620	0.031	-0.049	0.136	1.000	0.000
Std. Dev.	0.348	0.022	0.226	0.083	0.111	0.012	0.126	0.022	0.013	0.041	0.490	0.492
Skewness	1.212	-2.367	0.700	1.493	-0.277	1.663	2.344	1.294	-1.409	1.050	-0.511	-0.408
Kurtosis	4.781	7.148	2.656	4.599	1.794	10.658	14.783	4.194	10.385	4.961	1.910	1.167
Jarque-Bera	37.686	165.062	8.652	47.805	7.340	290.429	670.043	33.863	260.370	34.399	9.294	16.782
Probability	0.000	0.000	0.013	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.010	0.000
Sum	10.75	4.34	-3.53	4.94	4.44	2.31	89.38	2.40	6.20	20.42	168.00	60.00
Sum Sq. Dev.	12.006	0.049	5.054	0.676	1.216	0.014	1.575	0.047	0.018	0.166	23.760	24.000
Observations	100	100	100	100	100	100	100	100	100	100	100	100
Dependent Variable												
SR	Stock Returns											
Independent Variable												
GDPG	Gross Domestic Product (GDP) Growth											
IR	Interest Rate											
EXR	Return in Currency Exchange Rate of IDR versus USD											
MR	Market Return or JKSE'S Return											
NPL	Non-Performing Loan											
LDR	Loan to Deposit Ratio											
NIM	Net Interest Margin											
ROA	Return on Asset											
CAR	Capital Adequacy Ratio											
GCG	Good Corporate Governance											
Moderating Variable												
FINTECH	Financial Technology											

Source: Processed data, Author, 2022

#### 4.1 Dependent Variable Test

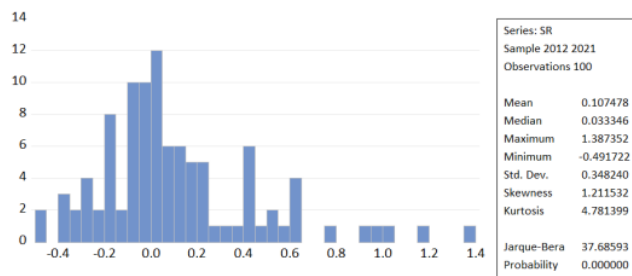
##### 4.1.1 Normality Test

Decision-making considerations in the normality test are based on the probability figures from the Jarque-Bera test with the following conditions:

- If the probability value  $p \geq 0,05$ , then the assumption of normality is fulfilled.

- (ii) If probability  $p < 0,05$ , then the assumption of normality is not fulfilled.

Based on Figure 4.1, the probability value of the Jarque-Bera statistic for of Stock Return of Indonesia BUKU 4 Category Banks is 37.686. The probability value  $p$  is 0.000, lower than the significance level 0,005, suggesting that the stock return of Stock Return of Indonesia BUKU 4 Category Banks do not normally distributed.



**Figure 4.1** Jarque-Bera statistic of Stock Return of Indonesia BUKU 4 Category Banks

#### 4.2 Panel Data Regression Analysis

The result from Chow test suggested that Common Effect Model (CEM) to be used in this calculation, which can be seen from Table 4.2 below:

**Table 4.2:** Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.533845	(9,74)	0.1520
Cross-section Chi-square	16.249642	9	0.0618

Ho: Models follow common effect models (CEM)

H1: Model follows fixed effect model (FEM)

Alpha: 0.05

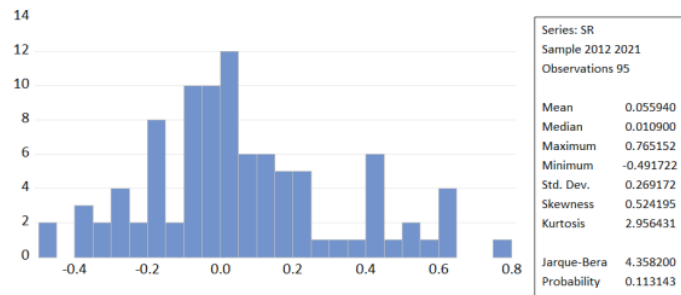
Provision: Reject Ho if both the F test values  $< 0.05$ .

**Source:** Processed data, Author, 2022

Given that the sample companies only 10 (ten), the panel data model selection cannot be made using the Lagrange Multiplier Test. Therefore, we use Common Effect Model.

##### 4.2.1 Normality Test

To investigate the normality testing of data, we apply a test with Jarque-Bera (J-B) through Eviews 11. The result is that the probability value (p-value) is greater than the significance level of 5%, concluded that data is normally distributed. We, therefore, removed 5 outliers' (Bank Negara Indonesia 2013, Bank Negara Indonesia 2017, Bank Danamon, 2017, Bank Permata, 2019 and Bank Permata 2020) with result as below.



**Figure 4.2** Jarque-Bera Normality test after outlier removal

The JB value is 4.358, while the Probability value of 0.113 is greater than the significant level of 0.1 which concluded that the data has a normal distribution.

#### 4.2.2 Multicollinearity Test

From table Multicollinearity test result, all VIF value are below 10, we concluded that there is no multicollinearity of the independent variable used in the model.

**Table 4.3:** Multicollinearity Test

Variable	Centered VIF
C	NA
GDPG	1.843837
IR	2.556210
EXR	3.295787
MR	1.359184
NPL	2.106707
LDR	1.473999
NIM	1.908194
ROA	2.949087
CAR	3.009440
GCG	1.420039
FINTECH	3.274112

**Source:** Processed data, Author, 2022

#### 4.2.3 Significant Test

We applied significant test, the partial regression coefficient test (t-test), the simultaneous significance test (F-test), determination coefficient test (R<sup>2</sup>-Test). The results as below:

**Table 4.4:** Model Estimation Result with Moderating Factor

Variable	Prediction	Coefficient	t-Statistic	P-Value (1-tailed)
GDPG	+	2.418	1.662	0.050**
IR	-	0.128	-0.195	0.423
EXR	-	-1.042	-2.010	0.024**
MR	+	1.237	5.075	0.000***
NPL	-	-5.294	-1.348	0.091*
LDR	+/-	0.373	0.739	0.231
ROA	+	5.438	1.269	0.104
NIM	+	-1.589	-0.773	0.221
CAR	+	-1.308	-0.700	0.243
GCG	+	-0.033	-0.584	0.280
FINTECH	+	0.067	0.102	0.459
NPLFINTECH	+	8.706	1.406	0.082*



LDRFINTECH	+	-0.351	-0.620	0.269
ROAFINTECH	+	0.404	0.065	0.474
NIMFINTECH	+	3.351	1.162	0.124
CARFINTECH	+	-0.529	-0.244	0.404
Normality Test		0.113143		
Durbin Watson Stat		2.140845		
Adjusted R-squared (%)		0.337194		
F-statistic		3.988829		
Prob (F-statistic)		0.000019		
*** Significant level 1%; ** Significant level 5%; * Significant level 10% Notes: This table describes descriptive statistics for individual research variables. The purpose of this table is to provide illustration the trend of data and its overall dispersion.				

Source: Processed data, Author, 2022

### 4.3 Result Analysis and Discussions

Based on this finding, we accept the first (H1), third (H3), and fourth hypothesis (H4). Investors consider the banking industry to be a market play, thus they concentrate on macroeconomic indicators like GDP growth, the exchange rate, and market return as a way to assess the stock return. This finding is consistent with studies by (Kalam, 2020) and (Aji Setiawan, 2020), both of which claimed that GDP contributes to the increase in stock market value. The analysis from (Haryanto, 2016)(Gunarto & Sembel, 2019) and (Aji Setiawan, 2020) is consistent with the positive association between exchange rate and stock return. The second hypothesis (H2) stated that the interest rate has a positive and insignificant impact on stock returns. This finding conflicts with research by (Gunarto & Sembel, 2019) and by (Aji Setiawan, 2020), which claimed that interest rates have a negative impact on stock returns. However, this study is somewhat in line with (Kalam, 2020), which found that interest rates have no impact on stock market returns.

The return of Indonesia Category 4 Banks listed on the Indonesia Stock Exchange from 2012 to 2021 significantly impacted by the variables of NPL and has a negative and significant effect on stock returns. When making investing decisions in bank stocks, investors have other factors to take into account besides profitability. Non-performing loans are unfinished loans that pose a danger of loss. NPL negatively affects Stock Performance this is aligned with previous study by (Brastama, R. F., and Yadnya, 2020).

There are no statistically significant financial performance indicators in the ratios of LDR, ROA, NIM, CAR, and GCG. Because the aforementioned variables have no bearing on stock returns, the findings of this study do not support the six (H6), seven (H7), eight (H8), nine (H9), and ten (H10) hypotheses. This study's findings do not concur with those of research conducted in the past by (Aldy & Irawati, 2020), (Anggraini et al., 2020), (Ayem, 2017), (Brastama, R. F., and Yadnya, 2020), and (Masril, 2018).

In this study, LDR is not affect the stock performance. This is aligned with previous study that said that LDR have no effects on bank share price listed at the IDX (Fordian, D., Darmajaya, 2017).

The ROA ratio is primarily a business-focused statistic that also helps businesses make more money. This study supports the findings of (Ayem, 2017) 's study, which showed that ROA had little bearing on predicted returns.

The NIM ratio is a key business metric that can help you make more money. Expected return does not describe profit growth. Investors and shareholders considered NIM when making

investment decisions, but they did not specify the expected return. NIM had no appreciable impact on projected return.

The average, minimum, and maximum CAR ratios are greater than what the central bank requires, according to descriptive research. The purpose of capital sufficiency is to shield bank operations from the effects of financial crises and bankruptcies. This study supports the findings of earlier studies by (Muhamad, 2015), (Petria, 2015), and (Dewi, 2011) that claimed CAR had little bearing on predicted return.

Corporate governance has little bearing on a company's stock price returns according to the study of (Tjondro & Wilopo, 2011).

This study discovered that financial technology moderated the impact of NPL on stock price, but it did not find that financial technology moderated the impact of LDR, ROA, NIM, or CAR. Therefore, we accept hypothesis eleven (11), but we reject hypothesis twelve (12), thirteen (13), fourteen (14) and fifteen (15). This study's findings do not entirely concur with those of earlier research by (Mar'atushsholihah & Karyani, 2021), (Puspawangi, D., Hendratno, H., and Aminah, 2020).

## CONCLUSION

The GDP Growth has a positive and significant effect the stock return. This was aligned with previous study that increase in GDP growth rate might also suggest a better potential for doing business or having larger sales in a country, which will motivate corporations to invest more to support their growth and enhance company (Thamrin & Sembel, 2020).

The Interest Rate has a positive and insignificant effect the stock returns. The lack of banking performance as an institution of intermediation that is less capable of maximizing its responsibilities in reaction to the rise in interest rates, both in deposit rates and lending rates proportionally, may be the reason of this policy's ineffectiveness. The potential of investing in the company in the form of shares would be affected by the lack of deposits from the community into the bank.

Exchange Rate has a negative and significant effect on stock returns which due to Investors are more interested in investing in the form of dollars than in securities due to the rising dollar exchange rate and the falling rupiah. It will prompt investors to sell their shares, resulting in a decline in stock returns.

Market Return has a positive and significant effect on stock returns. It is also possible to draw the conclusion that the study's findings are consistent with the CAPM theory. We must pay more attention to these factors before entering the market or before making regulations about it because of their major impact on stock returns.

NPL has a negative but significant effect on stock returns. Other than profitability there are some considerations from investor when seeing portfolios during investment decisions in bank stocks. The non-performing loans, unfinished loans that will become loss risk.

LDR has a positive and insignificant effect on stock returns. The banks can enhance their profits from the loan interest sector by channeling credit levels. Undoubtedly, the large income from these areas can boost banking profits. However, this is not become the consideration for investor when they are making investment decision.

ROA has a positive and insignificant effect on stock returns. In this study, ROA increase had no effect on the anticipated return. Investors and shareholders considered ROA while making investment decisions, but they did not specify the expected return.



NIM has a negative and insignificant effect on stock returns. Growth in the NIM ratio has no effect on the projected return in this study. Investors and shareholders considered NIM when making investment decisions, but they did not specify the expected return.

CAR has a negative and insignificant effect on stock returns. The CAR requirement had been utilized to shield bank corporations from pressure from the outside, such as a bank rush or a financial crisis. an investor and a shareholder CAR were examined as an investment decision, but estimated return was not stated.

GCG has a negative and insignificant effect on stock returns. One explanation could be that Indonesia's Category 4 Banks' implementation of GCG during the period of 2012 to 2021 is still in its early implementation. Further the self-assessment that performed by each of the commercial bank has not become one of the factors that investors frequently consider, while the investor more focus more on external or macroeconomic variables.

According to the regression panel data results, Financial Technology only mitigates the impact of NPL on the stock returns of Indonesia Category 4 Banks for the period 2012 - 2021. The fintech sector has generally grown rapidly and extensively in Indonesia. Particularly in Indonesia, the growth of fintech, particularly in the payment and financing subsectors, is highly significant. Fintech kinds and business models are, nevertheless, incredibly varied in Indonesia, covering everything from payments, financing (loan), investment, crowdfunding, to back-office. Thus, the potential clash between incumbent banks and emerging fintech startups is quite eminent. Looking on the, study shows stock return was unaffected significantly by the financial technology policy. One explanation could be that Indonesia's Category 4 Banks' implementation of financial technology during the period of 2012 to 2021 is still in its early stages and the market share of non-bank with financial technology banks are still limited. Due to that reason compared to the entire nation investors frequently focus more on external or macroeconomic variables.

Another factor could be that the policy is not being executed as effectively as it should be. The regulation was firstly launched in 2016 while we put into effect in 2016. We also believe the COVID-19 pandemic, which occurred in the latter two years of the study period, had an impact on the findings. To determine the cause of these events, more investigation is required.

### **Limitation of the Study**

This research has several limitations that can be used as a consideration for future study to obtain better results, as stated below:

3. The secondary data from the firm website was used to collect the variables for this investigation. The formula's components were not disclosed because they had already been calculated, therefore the researcher was unable to pinpoint the precise issue causing the variables to change (increased or decreased).
4. Because company dynamics might change day by day, the data used in this study are annual reports. As a result, the results of the analytical investigation and analysis may have missed some extreme values that only occasionally occur in shorter period.

### **Theoretical Implication**

1. The application of GCG has no influence on stock price returns in this research but the implementation of GCG must always be carried out continuously in the organization. The academicians could also investigate further the evidence and the limitation set in in this study.

2. The Financial Technology only moderate NPL on stock price returns. In this study result, Financial Technology do not influence other financial performance.

5. The results showed that fundamental variables affect stock prices; following the Efficient Market Hypothesis, stock prices will be responsive to fundamental information.

### Practical Implication

The increase or decrease in GDP growth, exchange rate, market return and NPL can indicate investors are buying or not buying company shares because they have a positive impact. According to this study, the banking industry's financial performance is less crucial in determining the stock returns Indonesia Category 4 Banks for the period 2012 – 2021.

### For Banks

The Banks can use this study as a factor in decision-making by examining the company's NPL. Managing the doubtful loans or the high-risk possibility to loss, reducing costs as much as possible, and maintaining the profit is very likely to be done. It is extremely likely that the risky loans or high-risk potential losses will be managed, with costs being cut as much as possible while retaining a profit. The increase in exchange rates is the factor for banks to watch out for because it is associated with the profitability of the bank.

### For Investors

Investors who want to invest in the banking sector are encouraged to focus more on GDP growth, exchange rate, market return and NPL; the increase or decrease of these variables have a significant positive effect on the return of shares.

### For Government and Authorities

In order to establish good climate investment in the stock market and maintain an efficient market, policymakers have to put consideration more on macroeconomic variables, especially GDP Growth, exchange rates and market return. Government has to monitor and give stimulus so that economic growth can be achieved as targeted. It is because GDP growth, plays a significant role in stock market performance.

### Managerial Implication

Based on this study the stock return of Indonesia Category 4 Banks listed on the Indonesia Stock Exchange 2012- 2021 is more influenced by the external factors, particularly the on GDP growth, exchange rate, market return and internal factor of NPL. Financial Technology moderates the effect of NPL on stock returns. Management, nevertheless, is remain encouraged to analyze, maintain, and improve the other Bank's financial performance that affect to company's stocks returns.. However, in order to maximize their stock return and capital market performance, management of the banking sector company is advised to research this phenomenon in addition to maintaining the company's strong performance.

### Recommendations for Further Research

1. Subsequent studies are advised to analyze over a more extended observation period This study's observation period runs from 2012 to 2021; financial technology was only introduced in 2016 and numerous financial technology facilities in the banking industry have only recently been constructed. It is advised that future studies evaluate over longer observation periods or use various observation periods to collect more research samples and results that are more

precise or perhaps different. The study period's expansion might also be helpful for addressing and/or reducing the impact of the Covid-19 epidemic on this research.

2. Further study is advised to examine the impact of other macroeconomic factors on stock returns, such as inflation rates.

3. The scope of banks needs to be enlarged by included more bank category based on latest regulation. It is recommended that more research be done to examine the larger banking sectors in order to come to different conclusions about how financial technology policy and underlying factors affect the return on stock. In this study that are listed on the Indonesia Category 4 Banks represent more than 50% of the banking sectors total asset Stock Exchange are all in the banking sector, however small and medium bank might have a different impact on the stock returns.

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