The Effect of Macroeconomic Indicators on Profitability and Firm Value

Made Reina Candradewi[1*], Henny Rahyuda[2]

[1,2]Udayana University, Denpasar - Indonesia

A B S T R A K

Tujuan dari penelitian ini adalah untuk mengetahui pengaruh inflasi, produk domestik bruto, dan profitabilitas terhadap penilaian perusahaan di pasar modal Indonesia, dengan penekanan khusus pada perusahaan yang terdaftar pada indeks LQ45 di Bursa Efek Indonesia (BEI). Indeks LQ45 karena menawarkan pandangan yang terfokus dan komprehensif mengenai pasar saham Indonesia, sehingga memungkinkan mereka untuk menarik kesimpulan yang bermakna tentang dampak inflasi, PDB, profitabilitas, dan faktor-faktor lain terhadap penilaian dan kinerja perusahaan-perusahaan terpilih. Tujuan utama dari penelitian ini adalah untuk memberikan wawasan berharga kepada perusahaan mengenai pentingnya menjaga profitabilitas dan nilai perusahaan dengan tetap mempertimbangkan indikator makroekonomi. Metodologi penelitian yang digunakan dalam penyelidikan ini bersifat kuantitatif. Penelitian ini mencakup seluruh perusahaan yang terdaftar dalam Indeks LQ45 di BEI sebagai populasi yang ditentukan. Teknik pemilihan sampel yang digunakan adalah purposive sampling. Sampel yang dipilih adalah perusahaan-perusahaan yang konsisten mempertahankan listingnya pada Indeks LQ45 di BEI pada tahun 2016 hingga 2019 yang berjumlah 31 perusahaan. Hasil pemeriksaan kesesuaian dan penilaian ketahanan model yang digunakan dalam penelitian ini secara tegas menegaskan efektivitas model yang luar biasa dalam menyelaraskan dengan kumpulan data yang tersedia. Analisis hasil analisis regresi dan penilaian mediasi mengarah pada kesimpulan pasti bahwa variabel Produk Domestik Bruto memberikan pengaruh yang sangat positif dan signifikan secara statistik terhadap Nilai Perusahaan. Begitu pula dengan variabel Profitabilitas berpengaruh signifikan dan positif terhadap nilai perusahaan. Namun, penting untuk diketahui bahwa profitabilitas tidak berfungsi sebagai faktor mediasi dalam hubungan antara Inflasi dan Produk Domestik Bruto dalam konteks nilai perusahaan.

A B S T R A C T

The objective of this study encompasses an examination of the influence of inflation, gross domestic product, and profitability on the valuation of companies within the Indonesian stock market, with specific emphasis on corporations listed in the LQ45 index on the Indonesia Stock Exchange (IDX). The LQ45 index as it offers a focused and comprehensive view of the Indonesian stock market, allowing them to draw meaningful conclusions about the impact of inflation, GDP, profitability, and other factors on the valuation and performance of these selected companies. The primary aim of this research is to provide valuable insights to corporations regarding the significance of maintaining profitability and firm value while taking into consideration macroeconomic indicators. The research methodology employed in this investigation is of a quantitative nature. The study encompasses the entirety of companies listed within the LQ45 Index on the IDX as the designated population. The technique employed for sample selection is purposive sampling. The selected sample comprises companies that have consistently maintained their listing in the LQ45 Index on the IDX from 2016 to 2022, totaling 31 companies. The outcomes of the goodness-of-fit examination and the robustness assessment of the model utilized within this study unequivocally affirm the model's exceptional effectiveness in aligning with the available dataset. The analysis of the results of the regression analysis and the mediation assessments leads to the definitive conclusion that the Gross Domestic Product variable exerts a remarkably positive and statistically significant influence on Firm Value. Likewise, the Profitability variable significantly and positively impacts firm value. However, it is imperative to acknowledge that profitability does not function as a mediating factor in the relationship between Inflation and Gross Domestic Product in the context of firm value.

* Corresponding author.
  E-mail: reinacandradewi@unud.ac.id (Made Reina Candradewi)

171

1. Introduction

In light of the globalization and economic liberalization trends, intensified business competition is evident. Enterprises are compelled to thrive in both domestic and international arenas. To withstand the escalating national and international rivalries, companies must enhance their performance, primarily assessed through profitability levels (Brigham and Daves, 2018). Profitability serves as a metric denoting a firm's capacity to generate net income. Simultaneously, a company's prowess in maximizing its firm value stands as a pivotal objective, aligning with the overarching goal of augmenting shareholder wealth (Ross et al., 2018). One instrumental measure for evaluating a firm's worth is the Price to Book Value (PBV) ratio. The significance of profitability and corporate value remains paramount in this context. Notably, within the Indonesia Stock Exchange (BEI), the LQ45 index encompasses the top 45 businesses characterized by substantial market capitalization and liquidity. Nevertheless, these enterprises exhibit diverse spectrums of profitability and firm value.

External factors, notably macroeconomic indicators, wield substantial influence over a company's profitability and market value, as underscored by previous research (Sugiarto and Santosa, 2017; Agustina and Ardiansari, 2015; Lee, 2014; Rosyadi et al., 2014). In this investigation, we direct our attention to two pivotal macroeconomic metrics: inflation and Gross Domestic Product (GDP), both of which bear the potential to exert significant effects on firm value and profitability. Inflation, in its essence, denotes a persistent escalation in average price levels over a defined temporal horizon. This phenomenon, characterized by consistently rising prices, invariably impacts the cost structure of goods and services, thereby diminishing purchasing power. The consequence of such inflationary pressures is a concomitant reduction in profitability and firm value. Conversely, GDP serves as a barometer measuring the aggregate output of goods and services generated within a specific geographic region at a given point in time. An upswing in GDP signifies economic expansion, a manifestation of heightened societal purchasing capacity. This, in turn, provides fertile ground for increased business transactions, thereby bolstering both profitability and firm value.

The urgency of this research lies in the lacuna within the existing literature concerning a comprehensive analysis encompassing the interconnected dynamics of macroeconomic indicators (Gross Domestic Product and inflation) and their impact on profitability and firm value within the Indonesian business landscape, specifically among companies listed in the LQ45 index of the Indonesia Stock Exchange (BEI). The problems or gaps in the research may not have been explicitly stated in the introduction, but the urgency can be derived from the following aspects, Lack of Comprehensive Studies, the current literature lacks a holistic investigation that simultaneously considers GDP, inflation, profitability, and firm value within the context of Indonesian companies, particularly those in the LQ45 index. This research aims to fill this void by conducting a detailed examination of these interrelated variables. Business Relevance, the escalating global competition and the need for companies to thrive in both domestic and international arenas make it imperative to understand how macroeconomic indicators influence profitability and firm value. This understanding is crucial for companies aiming to strategically enhance their performance in a competitive landscape. Insights gained from this research could offer valuable guidance to Indonesian enterprises. Understanding how external forces, such as GDP and inflation, affect profitability and firm value, can assist businesses in formulating strategies to navigate the dynamic global competition more effectively. For stakeholders and investors in Indonesian markets, a comprehensive understanding of how macroeconomic indicators influence company performance and value is crucial for making informed investment decisions. This research could provide valuable insights for investors seeking to assess the potential of companies within the LQ45 index. Therefore, the urgency of this research lies in addressing the lack of comprehensive studies in the field, providing practical insights for businesses, and offering valuable information for investors seeking to understand the dynamics of Indonesian companies in a globalized and competitive market environment.

The overarching aim of this study resides in a meticulous examination of how GDP and inflation, as two pivotal macroeconomic determinants, exert their influence on the realms of profitability and business value. It is imperative to highlight the exigent need for an in-depth exploration in this domain. The existing literature remains relatively sparse when it comes to comprehensive investigations encompassing all four variables, including GDP and inflation, which hold sway over the intertwined domains of profitability and business value. It is our fervent belief that the insights gleaned from this research endeavor will prove instrumental for Indonesian enterprises. By assimilating the implications of external forces, including macroeconomic data, it is envisaged that businesses within the region can strategically enhance their profitability and firm value, thus navigating the dynamic landscape of global competition more adeptly.

A company's valuation, denoted as "firm value," encompasses the market appraisal of the business as a continuing entity. It encompasses the premium above the liquidation valuation, which represents the

worth of the management team overseeing the enterprise (Sartono, 2015). Husnan and Pudjiastuti (2015) assert that firm value signifies the price a potential acquirer would be willing to tender for the company in the event of a transaction. These rationales elucidate that firm value mirrors an investor's perception of a specific company. The market price of a company's shares reflects the collective estimation of its worth by the public when it adequately compensates its stakeholders.

Per the conception of the firm, a company's primary objective is the enhancement of its worth or firm value (Salvatore, 2011). As a substantial connection exists between a lofty company value and shareholder triumph, the significance of firm value is profound (Brigham and Houston, 2011). Business proprietors ardently pursue an elevated firm value, as it signifies heightened shareholder prosperity. Furthermore, Brigham and Daves (2018) expound that employing the Price to Book Value (PBV) ratio stands as one approach for gauging a company's value. PBV serves as a metric indicating whether a publicly traded stock's price is relatively high or low compared to its book value. It furnishes insights into how the market appraises a company's stock in relation to its intrinsic worth. A higher ratio reflects the market's confidence in the company's future prospects.

Inflation is delineated as a broad and persistent escalation in prices (Sukirno, 2013). Alternatively, inflation can be characterized as a global monetary phenomenon that eludes avoidance, manifesting as a swift and sustained uptick in prices. In instances where a nation contends with elevated inflation rates, the costs of raw materials and operational outlays surge. This circumstance precipitates an upswing in the selling prices of corporate goods, consequently impinging upon the diminished purchasing potency within society. The decline in purchasing power subsequently ushers in a reduction in profitability and, correspondingly, a decrement in firm value.

Profitability, on the other hand, pertains to a company's capacity to generate earnings during a specified timeframe through the utilization of its competencies and resources encompassing sales, cash holdings, capital, workforce size, among other factors (Brigham and Daves, 2018). Profitability constitutes a metric gauging a firm's ability to yield profits relative to its revenues, assets, and return on equity. The objectives underpinning the evaluation of a company's profitability encompass: 1) Appraising the profit garnered by the firm within a designated period; 2) Contrasting the profit position vis-à-vis the present and preceding years; 3) Examining the progression of profits over time; and 4) Assessing the net after-tax profit in relation to the equity (Kasmir, 2016).

Inflation stands as a monetary phenomenon characterized by a swift, pervasive, and unceasing surge in product prices (Sukirno, 2013). In nations grappling with high inflation rates, this results in an escalation of raw material costs and operational expenditures for enterprises. The escalating expenses tied to raw materials and operations exert an impact on a company's profitability. As indicated by research by Sufian and Kamarudin (2012), inflation exerts a detrimental and substantial influence on profitability. Consequently, we posit the following hypothesis. Hypothesis 1: Inflation exerts a negative and significant effect on profitability.

Gross Domestic Product (GDP), on the other hand, signifies the total market value of all ultimate goods and services generated within a nation's economy during a specific temporal span (Mankiw, 2019). Succinctly stated, GDP serves as a metric for assessing a nation's economic growth rate. An upswing in a nation's economic growth augments the purchasing prowess of its populace. Elevated purchasing power tends to stimulate consumer expenditure on goods and services. This scenario, in turn, engenders an augmentation in corporate sales, consequently bolstering business profitability. As delineated by Ekasari and Baskara (2018) and Adiyadnya et al. (2016), GDP exerts a favorable and substantial sway on profitability. Hence, we propose the ensuing hypothesis. Hypothesis 2: GDP exerts a positive and substantial impact on profitability.

Inflation is a monetary phenomenon characterized by a rapid and continuous upsurge in product prices (Sukirno, 2013). Escalating inflation leads to heightened production expenditures, adversely impacting pricing and individuals' income levels. Excessive inflation erodes the purchasing potency of money, consequently reducing the actual returns that investors can derive from their investments (Kewal, 2012). This situation engenders a diminished inclination to invest in corporate stocks, thereby culminating in a diminishment of firm value. Additionally, the mounting inflation rates elevate raw material costs and operational outlays for enterprises, resulting in a contraction of firm profitability. Consequently, the firm's valuation experiences a decrease. As disclosed by Rosyadi et al. (2014), inflation exerts an adverse and substantial sway on company value. Thus, we formulate the ensuing hypothesis. Hypothesis 3: Inflation exerts a negative and significant influence on firm value.

Gross Domestic Product (GDP) serves as a gauge of a nation's production of goods and services. Furthermore, GDP serves as an indicator of a nation's level of economic expansion. An escalation in GDP signifies positive economic growth and signifies an augmentation in societal purchasing capability. The escalating purchasing power within society contributes to the amplification of firm profitability. As a

company's profitability ascends, investor interest in the acquisition of the company's shares intensifies, ultimately enhancing firm value (Tandelilin, 2010). Sartika et al. (2019) unveiled that GDP wields a beneficial and substantial impact on business value. Consequently, we put forth the subsequent hypothesis. Hypothesis 4: Gross Domestic Product exerts a positive and significant effect on firm value.

Inflation, as previously elucidated, is believed to exert an adverse influence on firm value. Inflation triggers a generalized escalation in the prices of goods, diminishing society's purchasing capacity and investors' income, consequently engendering a decline in stock acquisitions and corporate value (Kewal, 2012; Rosyadi et al., 2014). Concurrently, it is observed that profitability suffers in the wake of inflation. Elevated inflation rates incite an upswing in overall prices, encompassing raw materials and operating expenses borne by businesses, leading to a contraction in firm profitability (Sufian and Kamarudin, 2012).

Conversely, profitability is discerned as a positive enhancer of business value. When a firm manages to augment its profitability, it emits a favorable signal to investors, signifying robust performance and promising future prospects. This augments the demand for the firm's shares, consequently influencing the growth of the firm's value (Sugiarto and Santosa, 2017). Drawing from the findings of several empirical studies, it is conceivable to propose that profitability serves a mediating role in this investigation. Inflation may exert an impact on profitability, and, in turn, profitability can exert an impact on business value. Thus, a conceptual framework can be devised wherein profitability acts as an intermediary between inflation and firm value. Hypothesis 6: Profitability has the potential to mediate the relationship between inflation and firm value.

Gross Domestic Product (GDP) stands as a barometer of economic growth. An upsurge in a nation's GDP signifies robust economic expansion, thereby fostering an augmentation in the purchasing potency of society. This elevation in purchasing power serves as an incentive for investors to engage in the acquisition of business stocks, consequently culminating in an upswing in firm value (Sartika, 2019). Moreover, it is posited that GDP exerts an influence on company profitability. The expansion of the economy, as quantified by GDP growth, bolsters societal buying capacity, ultimately leading to augmented sales and profitability for enterprises (Adiyadnya et al., 2016). Additionally, empirical research has established an association between profitability and business value (Sugiarto and Santosa, 2017).

Drawing upon the findings of various empirical inquiries, it is plausible to postulate that profitability also fulfills a mediating role within this study. GDP may exert an impact on profitability, and, reciprocally, profitability can wield an influence on company value. Consequently, a conceptual framework may be constructed wherein profitability acts as an intermediary connecting GDP to business value. Hypothesis 7: Profitability has the potential to mediate the relationship between Gross Domestic Product and Firm value.

2. Methods

A causal research design was deployed in this investigation to discern the causal relationship between various variables. The principal objective of this study is to investigate the influence of inflation and GDP on both profitability and business value. The study's temporal scope encompasses the years spanning from 2016 to 2019, with a specific concentration on assessing firm value within enterprises listed on the Indonesia Stock Exchange (BEI) and belonging to the LQ45 index.
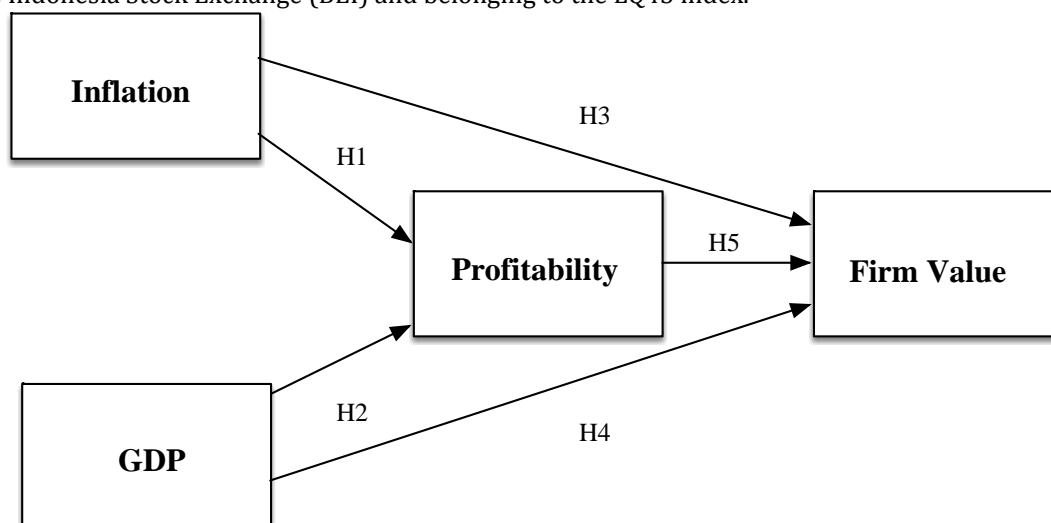

Figure 1. Research Design

Made Reina Candradewi. / The Effect of Macroeconomic Indicators on…

The research was conducted within the geographical confines of Indonesia, with a specific focus on enterprises enlisted in the LQ45 index of the Indonesia Stock Exchange (IDX) during the time span spanning from 2016 to 2019. This location was chosen due to the presence of the Indonesia Stock Exchange as the singular stock exchange in the nation, encompassing all publicly traded corporations in Indonesia. The entirety of the data gathered for this research comprises quantitative data, characterized by numerical values. This data is categorized as secondary data, signifying information collected by distinct entities for diverse original purposes (Saunders, 2016).

The research rests upon secondary data, encompassing metrics such as profitability and firm value, sourced from the annual financial reports of each company. These reports are accessible through the Indonesian Stock Exchange website. Furthermore, data pertaining to inflation and GDP is extracted from the website of the Central Statistics Agency (BPS). The fundamental objective of this study lies in the determination of the influence exerted by inflation and GDP on both profitability and firm value within the domain of enterprises enlisted on the LQ45 index of the Indonesia Stock Exchange (IDX).

Hence, the entire population under scrutiny for this research encompasses all companies featured on the IDX index. Employing a purposive sampling strategy, the research selectively elected manufacturing enterprises that consistently maintained a presence on the IDX's LQ45 index from 2016 to 2019, totaling 31 companies that conform to the specified selection criteria.

The subsequent section defines each variable utilized in this study:
1. Inflation (INF) is calculated by averaging the inflation rates for each year from Bank Indonesia publications from 2016 to 2019.
2. Gross Domestic Product (GDP) as defined in this research pertains to the expansion of Indonesia's overall economic output during the period spanning 2016 to 2019, computed through the provided formula. The resulting value is represented as a percentage, and the data is of ratio scale. $\text{GDP} = \frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}} \times 100\%$
3. Profitability (ROA) is a statistic used in this study to indicate a company's ability to generate net earnings. Return on assets (ROA), the preferred profitability ratio, is determined by dividing net income by total assets of the organization. The data is given as a percentage and comes under the ratio scale.

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

4. Firm value (PBV) demonstrates a company's capacity to generate value in relation to the invested capital. The assessment of firm value is determined through PBV (price-to-book value), a market ratio assessing the correlation between stock market performance and book value. This particular variable is evaluated using the subsequent calculations, presenting data on a ratio scale. $\text{PBV} = \frac{\text{Share Price Per Share}}{\text{Book Value Per Share}}$

The initial phase of data analysis in this research involves the application of descriptive statistics, a method employed to elucidate and elucidate the characteristics of the amassed data (Sugiyono, 2017). In this particular study, descriptive statistics encompass the computation of measures such as the mean, standard deviation, and the percentage representation of the sampled data for variables characterized by ratio data properties, including inflation, GDP, profitability, and firm value.

Subsequent data analysis in this investigation transitions to inferential analysis. Inferential analysis is harnessed to evaluate the hypotheses formulated in this study. The inferential analytical approach employed herein involves conducting multiple linear regression analyses using the SPSS software. Within the empirical model of this study, multiple linear regression analysis serves as a suitable tool for scrutinizing the impact of independent variables on the dependent variable. Given that the model incorporates two independent variables and two dependent variables, the multiple linear regression model is deemed the most fitting for exploring the empirical model. Moreover, path analysis is adopted as an analytical tool within this study. Path analysis aids in ascertaining whether the independent variables directly or indirectly influence the dependent variable. Regression analysis is applied to assess the effect of each independent variable on its corresponding dependent variable. In this research, the multiple linear regression equation for the empirical model is presented as follows:

Model:

ROA $= a_1 + b_{11}\text{INF} + b_{12}\text{GDP} + \varepsilon_1$

PBV $= a_2 + b_{21}\text{INF} + b_{22}\text{GDP} + b_{23}\text{ROA} + \varepsilon_2$

Model equation 1 serves the purpose of elucidating the impact of inflation (INF) and gross domestic product (GDP) on profitability (ROA). Meanwhile, model equation 2 is harnessed to expound upon the influence of inflation (INF), gross domestic product (GDP), and profitability (ROA) on firm value (PBV). Path analysis is employed in this study to assess mediation effects, and it can be interpreted as follows:

- If the independent variable X is found to be statistically significant for the intermediate variable Y1, and the hypothesis is accepted, and Y1 is statistically significant for the dependent variable Y2, and the hypothesis is accepted, then Y1 is considered a partial mediation variable.
- If the independent variable X is statistically significant for the intermediate variable Y1, and the hypothesis is accepted, and Y1 is statistically significant for the dependent variable Y2, but X is not statistically significant for Y2, then Y1 is regarded as a complete mediation variable.
- If the independent variable X is not statistically significant for the intermediate variable Y1, but Y1 is statistically significant for the dependent variable Y2, and the hypothesis is accepted, then Y1 is not considered a mediation variable.

These criteria are instrumental in understanding the mediating role that intermediate variables, such as profitability (ROA), may play in the relationship between inflation (INF) and gross domestic product (GDP) on one hand, and firm value (PBV) on the other.

3. Results and discussion

The aim of descriptive statistics analysis is to provide a concise summary or overview of the study's variables, including inflation (INF), GDP, profitability (ROA), and firm value (RISK). This summary includes key measures such as the mean, maximum value, minimum value, and standard deviation for each variable. You can find a comprehensive presentation of the descriptive statistics in Table 1.

Table 1. Research Variable Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
INF	124	2,72	3,61	3,12	0,32
GDP	124	6,70	9,58	8,26	1,18
ROA	124	-0,70	46,66	9,26	9,71
PBV	124	0,59	82,44	5,01	10,48

Source: processed secondary data

Table 1 provides an overview of the data used in this study, comprising a total of 124 data points drawn from a sample of 31 organizations spanning the years 2016 to 2019. For the Firm value (PBV) variable, the lowest recorded value is 0.59, attributed to PP (Persero) Tbk in 2019, while the highest value is 82.44, associated with Unilever Indonesia Tbk in 2017. The data also reveals that the average PBV value stands at 5.01, with a standard deviation of 10.48. Due to the substantial standard deviation for this variable, inferential analysis is conducted using natural logarithms.

Regarding Profitability (ROA), the lowest value is -0.70 percent, attributed to Vale Indonesia Tbk in 2017, while the highest value is 46.60 percent, credited to Unilever Indonesia Tbk in 2018. The average ROA variable is 9.26 percent, accompanied by a standard deviation of 9.71 percent. Owing to the considerable standard deviation for this variable, a natural logarithm is applied for inferential analysis. The Inflation (INF) variable exhibits a minimum value of 2.72 percent in 2019 and a maximum value of 3.61 percent in 2017. According to the statistics, the average INF variable is 3.12 percent, with a standard deviation of 0.32.

The Gross Domestic Product (GDP) variable exhibits a minimum value of 6.70 percent, representing GDP growth in 2019. Conversely, the highest figure is 9.58 percent, corresponding to GDP growth in 2017. The statistical analysis also indicates that the average GDP value is 8.26 percent, accompanied by a standard deviation of 1.18.

The assessment of the empirical model's robustness and appropriateness is conducted through a two-step process involving the testing of both Model Equation 1 and Model Equation 2. In the first stage, the focus lies on evaluating the impact of the variables INF and GDP on ROA. Subsequently, in the second stage, the examination centers on appraising the influence of the variables INF, GDP, and ROA on PBV. Furthermore, the testing of the research model will also elucidate the role of the variable ROA as a mediating variable. ROA operates as a mediator between the variables INF, GDP, and PBV, offering insights into the complex relationships within the study framework.

Made Reina Candradewi. / The Effect of Macroeconomic Indicators on…

The empirical model in this research is presented through two regression equation models and is assessed using multiple regression analysis. To ensure the goodness of fit for the model, certain conditions must be met, including the normality of errors (residuals) and compliance with the assumptions of classical regression analysis. Consequently, a robust regression model necessitates that both the dependent variable and independent variables exhibit a normal or near-normal distribution and adhere to classical assumptions. These assumptions encompass the absence of multicollinearity, homoscedasticity (lack of heteroscedasticity), and autocorrelation (Ghozali, 2011).

Model Equation 1 in this research takes the form of: ROA = a1 + b11INF + b12GDP + ε1. This equation incorporates one dependent variable, Profitability (ROA), and two independent variables, Inflation (INF) and Gross Domestic Product (GDP). It serves as the foundation for assessing the impact of Inflation and GDP on Profitability.

Testing for Normality of Residuals

The normality test serves the purpose of gauging the degree of conformity between the distribution of sample data and a standard normal distribution pattern (Hair et al., 2014). In the context of regression models, both the t-test and F-test statistics assume that the residuals (errors) adhere to a normal distribution (Gujarati, 2011). For this study, the Kolmogorov-Smirnov (K-S) technique is employed to carry out the normality test. The results, as presented in Table 2, display an asymp. Sig (2-tailed) value of 0.200 ($p>0.05$). This outcome suggests that the data follows a normal distribution, thereby permitting the continuation of further regression analysis with confidence.

Testing for Classical Assumptions

The assessment of classical assumptions, including the examination of multicollinearity, heteroscedasticity, and autocorrelation, is integral to the validation process for ordinary least squares (OLS) linear regression analysis. These evaluations are conducted to ensure that the prerequisites for OLS regression analysis are met. Table 2 displays the outcomes of the tests conducted to assess these classical assumptions, specifically, multicollinearity, heteroscedasticity, and autocorrelation. The results of these tests are critical for determining the validity and reliability of the regression models utilized in the study.

Table 2. Results of Normality Test Model Equation 1

		Unstandardized Residual
N		124
Normal Parameters[a,b]	Mean	.000
	Std. Deviation	1.154
Most Extreme Differences	Absolute	.059
	Positive	.033
	Negative	-.059
Kolmogorov-Smirnov Z		.059
Asymp. Sig. (2-tailed)		.200

source: data processed by SPSS 21

Table 3. Results of Testing the Classical Assumption Model Equation 1

Independent Variables	Multicollinearity (VIF)	Heteroscedasticity	Autocorrelation (DW-test)
Inflation (INF)	5,151	t= 0,806; sig= 0422	1,836
Gross domestic product (GDP)	5,151	t= -1,183; sig= 0,239	1,836

source: data processed by SPSS 21

Testing for Model Adequacy

We examine R-square values and the importance of F to determine the model's suitability (goodness of fit). R-square indicates how well the independent variables influence the dependent variable, whereas F significant indicates the amount of confidence in the model's fit.

Table 4. R-Square Calculation Results and Significance F Equation 1

Independent Variables	Beta Coefficient	t-count	sig-t
Inflation (INF)	-0,027	-0,133	0,670
Gross domestic product (GDP)	0,148	1,725	0,470

R-square = 0,261	Information:
Adj.R-square = 0,125	*significant level 10%
F-count = 5.953	**significant level 5%
Significance = 0,038**	***significant level 1%

source: data processed by SPSS

The R-square (R^2) value is 0.261, and the F value is 5.953, with a significance level of 0.038, based on the SPSS data analysis. These statistics provide insights into the goodness of fit of the regression model. With an R-square of 0.261, it indicates that the independent variables, Inflation (INF) and Gross Domestic Product (GDP), account for 26.1 percent of the variation in Profitability (ROA). In other words, approximately 26.1 percent of the variability in ROA can be explained by changes in INF and GDP, while the remaining 73.9 percent is attributed to unexplained factors or other variables not included in the model. The F value of 5.953 is significant at a level of 0.038, which suggests that the regression model as a whole is statistically significant. This indicates that the model is appropriate for explaining the relationship between INF, GDP, and ROA, at a significance level of less than 5%. Table 4 contains additional information on the computed R-square and the significance of the F-test, further supporting the adequacy of the regression model.

Testing for Model Adequacy for Equation 2

The equation for Model 2 in this study is: PBV = a1 + b11INF + b12GDP + b13ROA + ε2. This equation consists of 1 dependent variable, which is Firm value (PBV), and 3 independent variables, which are Inflation (INF), Gross Domestic Product (GDP), and Profitability (ROA).

Testing for Normality of Residuals

The purpose of the normality test is to assess how closely the distribution of sample data aligns with a normal distribution (Hair et al., 2014). In the context of regression models, both the t-test and F-test assume that the residuals, which represent the errors, adhere to a normal distribution pattern (Gujarati, 2011). In this study, the normality of the data was assessed using the Kolmogorov-Smirnov (K-S) method. The results, as presented in Table 5, indicate an asymp. Sig (2-tailed) value of 0.200 (p>0.05). This outcome suggests that the data conforms to a normal distribution pattern, which means it is suitable for further regression analysis.

Table 5. Results of Normality Test Model Equation 2

		Unstandardized Residual
N		124
Normal Parameters[a,b]	Mean	.000
	Std. Deviation	.717
Most Extreme Differences	Absolute	.069
	Positive	.068
	Negative	-.041
Kolmogorov-Smirnov Z		.069
Asymp. Sig. (2-tailed)		.200

source: data processed by SPSS 21

Testing Classical Assumptions

The evaluation of classical assumptions, including the examination of multicollinearity, heteroskedasticity, and autocorrelation, is a crucial step to confirm that the prerequisites for linear regression analysis, particularly the Ordinary Least Squares (OLS) approach, are met. Table 6 presents the outcomes of the tests conducted to assess these classical assumptions, ensuring the validity and reliability

Made Reina Candradewi. / The Effect of Macroeconomic Indicators on…

of the linear regression model used in the study. These tests are essential to validate the robustness of the regression model and the accuracy of its results.

Table 6. Results of Testing the Classical Assumption Model Equation 2

Independent Variables	Multicollinearity (VIF)	Heteroscedasticity	Autocorrelation (DW-test)
Inflation (INF)	5,151	t= -0,500 ; sig= 0,618	1,950
Gross domestic product (GDP)	5,173	t= -0,372 ; sig= 0719	1,950
Profitability (ROA)	1,016	t= 1,760 ; sig= 0,081	1,950

source: data processed by SPSS 21

a. Multicollinearity Testing
The Variance Inflation Factor (VIF) assesses multicollinearity. VIF values below 10 indicate no issue (Ghozali, 2011). In Table 6, VIF values for all independent variables are below 10, confirming no multicollinearity.

b. Heteroskedasticity Testing
Heteroskedasticity is checked using the Glejser test. In Table 6, all independent variables don't significantly influence residuals (sig > 0.05), indicating no heteroskedasticity.

c. Autocorrelation Testing
Durbin-Watson test examines autocorrelation. In Table 6, a Durbin-Watson value of 1.950 confirms no autocorrelation.

Model Suitability Testing
Model fit is assessed using R-square and F value. R-square is 0.403, and F value is 27.006 (sig. 0.000), indicating the independent variables explain 38.8% of Firm value (PBV). The regression model aligns with empirical evidence and fits well (sig. 0.000). Refer to Table 7 for R-square and F value calculations.

Table 7. R-Square Calculation Results and Significance F Equation 2

Independent Variables	Beta Coefficient	t-count	sig-t
Inflation (INF)	-0,229	-1.429	0,156
Gross domestic product (GDP)	0,272	-1,698	0,092
Profitability (ROA)	0,633	8,902	0,000
R-square = 0,403	Information:		
Adj.R-square = 0,388	*significant level 10%		
F-count = 27,006	**significant level 5%		
Significance = 0,000**	***significant level 1%		

source: data processed by SPSS

Multiple Regression Testing
Regression Equation 1
Equation 1 involves Inflation (INF) and Gross Domestic Product (GDP) as independent variables and Profitability (ROA) as the dependent variable. The equation is as follows:
$ROA = a_1 + b_{11}INF + b_{12}GDP + \varepsilon_1$.
Multiple regression testing using the SPSS program provides a summary of the results in Table 8.
Referring to Table 8, the regression equation is ROA = -0.027INF + 0.148GDP. The coefficient for Inflation (INF) is -0.027 (positive), implying a negative impact on profitability (ROA). The coefficient for Gross Domestic Product (GDP) is 0.148 (positive), indicating a positive influence on profitability (ROA). However, statistically, neither of these variables significantly affects profitability.

The R-square value is 0.261, and the F-value calculated is 5.953 with a significance level of 0.038. At a 5% significance level, this implies that the model's independent variables can explain for 12.5 percent of the variability. Other external variables such as firm features, financial performance, culture, and so on account for the remaining 77.5 percent of the variability.

In summary, the regression analysis indicates that approximately 12.5% of the variability in profitability (ROA) can be attributed to inflation and Gross Domestic Product (GDP), while the remaining 87.5% is influenced by external factors not included in the model. This suggests that while inflation and GDP have a statistically significant impact on profitability, a significant portion of profitability variation is explained by other factors not considered in the model.

Table 8. Summary of Regression Testing Results of the Empirical Model Equation 1

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0,788	1,100		0,716	0,475
INF	-0,099	0,741	-0,027	-0,133	0,894
GDP	0,147	0,201	0,148	0,725	0,470

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.558a	.261	.125	1,16398

a. Predictors: (Constant), INF, GDP

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	31,583	2	15,791	5,953	.038
1	Residual	134,936	121	3,052		
	Total	166,519	123			

a. Dependent Variable: ROA
b. Predictors: (Constant), GDP, INF

Source: SPSS 21 Output Data

Regression Testing Equation 2

Regression Equation 2 includes the independent variables Inflation (INF), GDP, and Profitability (ROA), as well as the dependent variable Firm value (PBV). The equation is written as follows:

$$PBV = a1 + b11INF + b12GDP + b13ROA + \varepsilon2.$$

Multiple regression is used for regression testing, and the SPSS 21 application is used. Table 9 contains a summary of the regression testing findings for model equation 2.

Table 9. Summary of Regression Testing Results of the Empirical Model Equation 2

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0,249	,688		-0,361	0,718
INF	-0,661	,462	-0,229	-1,429	0,156
GDP	0,215	,127	0,272	1,698	0,092
ROA	0,505	,057	0,633	8,902	0,000

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

Made Reina Candradewi. / The Effect of Macroeconomic Indicators on…

	1	.635ᵃ	.403	.388	0,726

a. Predictors: (Constant), ROA, INF, GDP

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	42,762	2	14,254	27,006	0,000
1	Residual	63,338	120	0,528		
	Total	106,101	123			

a. Dependent Variable: PBV

b. Predictors: (Constant), ROA, INF, GDP

Source: SPSS 21 Output Data

According to Table 9, the regression equation is as follows: PBV = -0.229INF + 0.272GDP + 0.633ROA. Here are the interpretations of the coefficient values:
1. Inflation (INF) has a coefficient value of -0.229 (negative), indicating that inflation has a negative influence on firm value (PBV).
2. Gross Domestic Product (GDP) has a coefficient value of 0.272 (positive), demonstrating that GDP has a positive influence on firm value (PBV).
3. Profitability (ROA) has a coefficient value of 0.633 (positive), suggesting that profitability has a positive influence on firm value (PBV).

The significance levels of these variables are as follows:
- At a 10% significance level, Gross Domestic Product (GDP) has a considerable positive influence on firm value.
- At a 1% significance level, profitability (ROA) has a considerable positive influence on firm value.

The estimated R-square value is 0.403, and the F-value is 27.006, with a significance value of 0.000. This means that, collectively, the independent variables in the model can explain approximately 38.8% of the variability in firm value (PBV). The remaining 61.2% of the variability is attributed to other external factors not included in the model, such as firm characteristics, cultural influences, and more.

In conclusion, firm value is influenced by inflation (INF), Gross Domestic Product (GDP), and profitability (ROA) to the extent of 38.8%, while the remaining 61.2% of the variation is driven by external factors beyond the scope of the model.

Mediation Testing

The path coefficients are calculated based on the structural equation, which is the hypothesized regression equation. In this empirical research model, there are two regression equations.

The empirical model in this research consists of two hypothesized regression equations, as follows:
Equation 1: ROA = b11INF + b12GDP + ε1.
Equation 2: PBV = b11INF + b12GDP + b13ROA + ε2.

Equation 1 consists of two independent variables, namely INF and GDP, and one dependent variable, namely ROA. The regression analysis results for Equation 1 are:
ROA = -0.027INF + 0.148GDP.

Based on the results of the regression analysis, it can be concluded that inflation (INF) has a negative impact on profitability (ROA), while Gross Domestic Product (GDP) has a positive influence on profitability. These findings suggest that as inflation increases, it tends to reduce profitability, possibly due to rising costs and decreased purchasing power. Conversely, an increase in GDP, reflecting economic growth, is associated with higher profitability, possibly because of increased consumer spending and market opportunities.

Equation 2 has three independent variables, INF, GDP, and ROA, and one dependent variable, Firm value (PBV). The following are the regression analysis findings for Equation 2:
PBV = -0.229INF + 0.272GDP + 0.633ROA.

Based on the findings of the regression analysis, it is possible to conclude that inflation (INF) has a negative impact on firm value (PBV). Meanwhile, GDP and profitability (ROA) have a favorable impact on firm value (PBV).
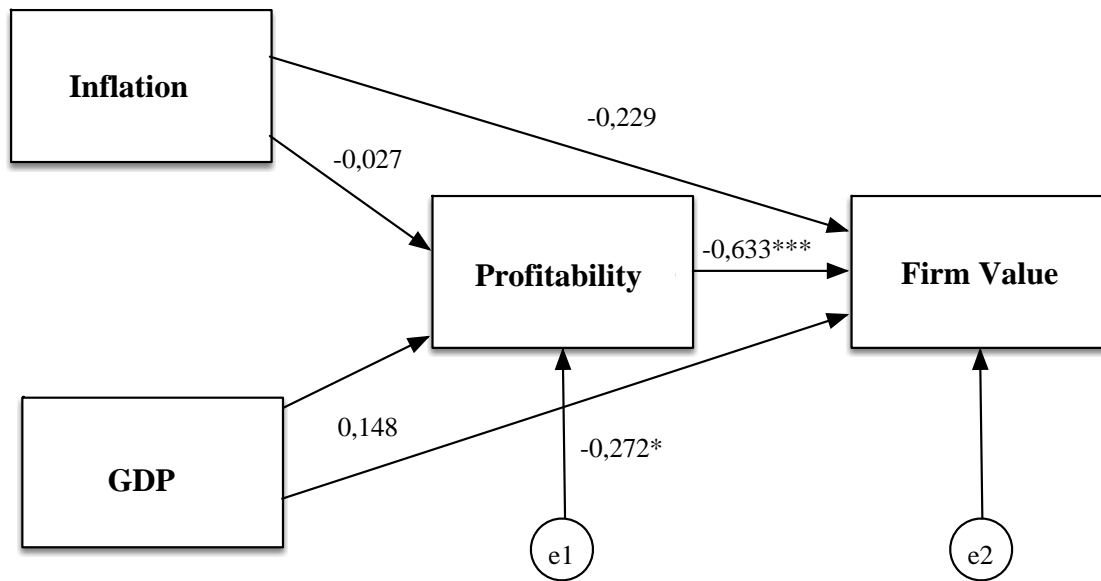
*10% significance level
**5% significance level
***1% significance level
source: results of data processing with SPSS 21

Figure 2. Empirical Model Path Analysis

The route analysis results provided in Figure 2 can be interpreted as indicated in Table 10 below.

Table 10. Interpretation of Empirical Model Path Analysis

Variable	Information	Profitability (ROA)	Firm value (PBV)
Inflation (INF)	Has no significant effect on ROA and PBV	No effect	No effect
Gross domestic product (GDP)	Has no significant effect on ROA Significant effect on PBV	No effect	Direct effect
Profitability (ROA)	Significant effect on PBV	-	Direct effect

Source: Summary of data processing results

Inflation, measured by INF, does not seem to exert a substantial impact on a pair of financial metrics: the Return on Assets (ROA) and the Price to Book Value (PBV). This suggests that changes in inflation rates do not significantly impact a company's profitability (as a percentage of its assets) or the market price-to-book value ratio. One possible reason for this is that companies have effective inflation risk management strategies. They may hedge against inflation risks or anticipate inflation fluctuations in their investment decision-making, thus minimizing its impact on profitability and valuation. Additionally, companies may pass on cost increases resulting from inflation to consumers in the form of higher prices, thereby minimizing the impact of inflation on profitability. Inflation stands as a monetary phenomenon characterized by a swift, pervasive, and unceasing surge in product prices (Sukirno, 2013). In nations grappling with high inflation rates, this results in an escalation of raw material costs and operational expenditures for enterprises. The escalating expenses tied to raw materials and operations exert an impact on a company's profitability. As indicated by research by Sufian and Kamarudin (2012), inflation exerts a detrimental and substantial influence on profitability. Inflation is a monetary phenomenon characterized by a rapid and continuous upsurge in product prices (Sukirno, 2013). Escalating inflation leads to heightened production expenditures, adversely impacting pricing and individuals' income levels. Excessive inflation erodes the purchasing potency of money, consequently reducing the actual returns that investors can derive from their investments (Kewal, 2012). This situation engenders a diminished inclination to invest in corporate stocks,

thereby culminating in a diminishment of firm value. Additionally, the mounting inflation rates elevate raw material costs and operational outlays for enterprises, resulting in a contraction of firm profitability. Consequently, the firm's valuation experiences a decrease. As disclosed by Rosyadi et al. (2014), inflation exerts an adverse and substantial sway on company value. Inflation, as previously elucidated, is believed to exert an adverse influence on firm value. Inflation triggers a generalized escalation in the prices of goods, diminishing society's purchasing capacity and investors' income, consequently engendering a decline in stock acquisitions and corporate value (Kewal, 2012; Rosyadi et al., 2014)

The Gross Domestic Product (GDP), which gauges the comprehensive scale of a nation's economic activity, does not markedly influence ROA. This implies that fluctuations in GDP do not notably affect a company's profitability relative to its asset base. However, the research found that GDP does have a significant influence on PBV, indicating that changes in GDP can affect the ratio between a company's market price and its book value. GDP measures the total economic output of a country. Changes in GDP may not significantly affect ROA because a company's profitability may be more influenced by internal factors, such as operational efficiency, rather than external factors like GDP. However, GDP may have a significant impact on PBV because investors may view GDP as an indicator of overall economic health, which can influence their perception of firm value reflected in PBV. Gross Domestic Product (GDP), on the other hand, signifies the total market value of all ultimate goods and services generated within a nation's economy during a specific temporal span (Mankiw, 2019). Succinctly stated, GDP serves as a metric for assessing a nation's economic growth rate. An upswing in a nation's economic growth augments the purchasing prowess of its populace. Elevated purchasing power tends to stimulate consumer expenditure on goods and services. This scenario, in turn, engenders an augmentation in corporate sales, consequently bolstering business profitability. As delineated by Ekasari and Baskara (2018) and Adiyadnya et al. (2016), GDP exerts a favorable and substantial sway on profitability. Gross Domestic Product (GDP) serves as a gauge of a nation's production of goods and services. Furthermore, GDP serves as an indicator of a nation's level of economic expansion. An escalation in GDP signifies positive economic growth and signifies an augmentation in societal purchasing capability. The escalating purchasing power within society contributes to the amplification of firm profitability. As a company's profitability ascends, investor interest in the acquisition of the company's shares intensifies, ultimately enhancing firm value (Tandelilin, 2010). Sartika et al. (2019) unveiled that GDP wields a beneficial and substantial impact on business value.

The market price-to-book value ratio (PBV) is significantly impacted by profitability, as evaluated through the return on assets (ROA). Consequently, a company's PBV tends to increase with a higher level of profitability represented by a higher percentage of ROA. ROA serves as a quantitative measure of a company's capacity to generate profits from its assets. An entity demonstrating greater efficiency, denoted by a higher ROA, is more attractive to potential investors. Such investors may be inclined to offer a premium for the company's shares, thereby elevating the PBV. Moreover, enterprises exhibiting superior profitability have the potential to expand or make substantial investments in assets, which in turn augments the company's book value and enhances PBV. Profitability is discerned as a positive enhancer of business value. When a firm manages to augment its profitability, it emits a favorable signal to investors, signifying robust performance and promising future prospects. This augments the demand for the firm's shares, consequently influencing the growth of the firm's value (Sugiarto and Santosa, 2017). This elevation in purchasing power serves as an incentive for investors to engage in the acquisition of business stocks, consequently culminating in an upswing in firm value (Sartika, 2019). Moreover, it is posited that GDP exerts an influence on company profitability. The expansion of the economy, as quantified by GDP growth, bolsters societal buying capacity, ultimately leading to augmented sales and profitability for enterprises (Adiyadnya et al., 2016). Additionally, empirical research has established an association between profitability and business value (Sugiarto and Santosa, 2017).

4. Conclusions and suggestions

The objective of this study is to investigate the impact of inflation and GDP on profitability and firm value within the context of companies listed on the Indonesian Stock Exchange's (BEI) LQ45 index during the period from 2016 to 2019. The study's sample encompasses 31 enterprises. The outcomes of assessments regarding the suitability of the regression model reveal that it is appropriate and well-suited to the dataset. The results from both the regression analysis and mediation tests indicate a significant and positive relationship between Gross Domestic Product and Firm value, as well as between Profitability and Firm value. However, it is important to note that Profitability does not serve as a mediating factor in the association between inflation, GDP, and firm value.

Reference

Adiyadnya, I.N.S., Artini, L.G.S., dan Rahyuda, H. 2016. Pengaruh Beberapa Variabel Ekonomi Makro terhadap Profitabilitas dan *Return* Saham pada Industri Perbankan di BEI. *E-Jurnal Ekonomi dan Bisnis Universitas Udayana*, Vol.5(8), pp.2337-3067.

Agustina, C. dan Ardiansari, A. 2015. Pengaruh Faktor Ekonomi Makro dan Kinerja Keuangan terhadap Nilai Perusahaan. *Management Analysis Journal,* Vol.4(1), pp.10-21.

Brigham, E., and Daves, Philip. 2018. *Intermediate Financial Management*. 13th Edition. South-Western:Cengage.

Brigham, E.F. dan Houston, J.F. 2011. *Dasar-dasar Manajemen Keuangan*, Edisi 11, Penerjemah Ali Akbar Yulianto, Salemba Empat, Jakarta.

Creswell, J.W. 2014. *Research Design, Qualitative, Quantitativem and Mixed Methods Approaches.* USA: Sage Publications, Inc.

Ekasari, N. P., dan Baskara, I. G. K. 2018. Nilai Tukar, Nilai Ekspor, Dan Pertumbuhan Ekonomi Terhadap Profitabilitas Eksportir Food and Beverage di BEI. *E-Jurnal Manajemen Universitas Udayana*, 7(8), pp.4181.

Husnan, Suad dan Enny Pudjiastuti, 2015, Dasar-Dasar Manajemen Keuangan, Edisi Ketujuh. Yogyakarta: UPP STIM YKPN.

Karakus, R. dan Bozkurt, B. 2017. The Effect of Financial Ratios and Macroeconomic Factors on Firm Value: An Empirical Analysis in Borsa Istanbul. *RSEP International Conferences on Social Issues and Economic Studies.* ISBN: 978-605-307-685-8

Kasmir. 2016. Analisis Laporan Keuangan. Jakarta: Raja Grafindo Persada.

Kewal, S. S. 2012. Pengaruh Inflasi, Suku Bunga, Kurs, Dan Pertumbuhan PDB Terhadap IHSG. *Jurnal Economia*. 8 (1).

Lee. C.Y. 2015. The Effects of Firm Specific Factors and Macroeconomics on Profitability of Property-Liability Insurance Industry in Taiwan. *Asian Economic and Financial Review*, Vol. 4(5), pp.681 – 691.

Mankiw, N.G. 2019. *Macroeconomics.* Tenth Edition. New York: Macmillan International.

Ross, S.A., Randolph,W. Westerfield, Bradford D. Jordan, Joseph L. dan Ruth T., (2018), *Pengantar Keuangan Perusahaan: Fundamentals of Corporate Finance*, Edisi Global Asia, Buku 1, Jakarta Selatan: Salemba Empat.

Rosyadi, N.F., Kertahadi dan Nuzula, N.F. 2014. The Influence of Inflation, Interest and Gross Domestic Product on Firm Value. *Jurnal Administrasi Bisnis (JAB),* Vol.13(1), pp.1-19

Sartika, U.D., Siddik, S. dan Choiriyah. 2019. Pengaruh Inflasi, Suku Bunga, Nilai Tukar dan Produk Domestik Bruto terhadap Nilai Perusahaan. *Jurnal Ilmu Manajemen,* Vol. 9(2), pp.75-89.

Sartono, A. 2015. *Manajemen Keuangan Teori dan Aplikasi*. Edisi Keempat. Yogyakarta: BPFE.

Salvatore, D. 2011. Managerial Economics. Seventh Edition. Singapore: Thomson Learning.

Saunders, M., Lewis, F., Thornhil, A. 2016. *Research Methods for Business Students,* Italy: Pearson Education

Sukirno, Sadono. 2013. *Makro Ekonomi, Teori Pengantar*. Jakarta : PT Raja Grafindo

Sugiyono. 2017. *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung : Alfabeta, CV.

Sufian, F. and Kamarudin, F. 2012. Bank Specific and Macroeconomic Determinants of Profitability of Bangladesh's Commercial Banks. *Bangladesh Development Studies,* Vol 35(4), pp.1-29.

Sugiarto, M. dan Santosa, P.W. 2017. Pengaruh Indikator Makro Ekonomi, Kinerja Keuangan dan Tata Kelola Terhadap Nilai Perusahaan pada Sektor Properti di Bursa Efek Indonesia. *Journal of Economics and Business Aseanomics (JEBA),* Vol. 2(2), pp.288-312

Tandelilin, E. 2010. *Portofolio dan Investasi Teori dan Aplikasi.* First Edition. Yogyakarta: Kanisius.

www.bi.go.id

www.bps.go.id