

The Impact Of Domestic And Foreign Macroeconomics To Jkse Through Foreign Investor Ownership As Intervening Variable

Basis G. Andamari¹, Tri Widyastuti², Apollo Daito³

^{1, 2, 3}(Economics Doctoral Program, Post Graduate School, Pancasila University, Indonesia)

Abstract:

Background: Jakarta Composite Index (JKSE) is the stock index comprised of all stocks traded in the Indonesia Stock Exchange (IDX) that represents Indonesia overall stock market. The long-term trend of JKSE is impacted not only by domestic (Indonesia) but also foreign (international) macroeconomic mainly through foreign investors in IDX. However, the existing researches on JKSE have been done with focus to domestic macroeconomic only while foreign macroeconomics impacts have not been adequately studied. Therefore, this research analyzes the impact of both domestic and foreign macroeconomics to JKSE through foreign investor ownership in IDX as an intervening variable. Its objectives are to find the impacts of main macroeconomic indicators both domestic and foreign to JKSE that can be used as reference for parties concern to IDX particularly investors, listed companies, IDX management and Indonesian government.

Methods: The research method applied is quantitative study with causality analysis by using time series data in 1995 – 2019 period. The research data are mainly comprised of the secondary data of domestic and foreign macroeconomics as independent variable, foreign investor ownership in IDX as intervening variable and JKSE as dependent variable. The macroeconomic data consists of 3 main macroeconomic indicators (sub-variables) namely: gross domestic product (GDP) growth, exchange rate and interest rate for Indonesia as domestic and foreign countries having large economy size and/or large portfolio investment in IDX. Foreign investor ownership is used as intervening (intermediate) variable due to the impact of foreign macroeconomics to JKSE is mainly connected through foreign investors in IDX. The direct impact of macroeconomics to foreign investor ownership is analyzed using robust standard error (RSE) method, and then the impact of foreign investor ownership (due to indirect impact of macroeconomics) to JKSE is analyzed by using indirect least square (ILS) method.

Results: The research results show that investment in the IDX generates high returns but its risks is also high; the high portion of foreign investor ownership brings positive and negative impacts to IDX; and domestic and foreign macroeconomics have significant impact to JKSE through the ownership of foreign investors as intervening variable. The GDP growth of Indonesia has a positive impact to JKSE but foreign GDP growth has a negative impact. The Indonesian's Rupiah (IDR) exchange rate has a negative impact to JKSE in the contrary foreign currencies exchange rates have a positive impact. The interest rates both IDR and foreign currencies have a negative impact to JKSE.

Key words: GDP Growth, Exchange Rate, Interest Rate, Foreign Investor Ownership and JKSE

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I. Introduction

Stock market has a significant role in Indonesian economy due to its market capitalization is significant compared to its GDP or around 48 % of GDP (IDX market capitalization 2020 = 496 BUSD and Indonesia GDP 2020 = 1058 BUSD). Therefore, the continue growth and well function of IDX stock market are important for the parties concerned particularly investors, listed companies, IDX management and Indonesian government.

JKSE that contains all shares listed in IDX increased in average 17 % per year during the 1995-2019 research period or multiplied 14 times during that period. This shows that investing in Indonesia's stock market produces attractive return in the long term but its risk is also high due to high volatility particularly in short term. The high price volatility is driven not only by domestic investors on responding economic and non-economic events but also significantly contributed by entry-exit of foreign investors since their stock ownership portion in IDX is significant.

The high portion of foreign investor ownership in IDX (around 47.6 %) is mainly due to very liberal Indonesian government policy to attract foreign portfolio investment (FPI) where foreign investors are allowed to own 100 % of a listed company stock, and high growth of listed companies in IDX. Foreign investors have

positive influences to IDX by improving price earning ratio (PER) that makes raising capital cheaper, dynamizing IDX stock market and bringing good practices of stock market from advance market countries to Indonesia. However, they bring also negative impacts particularly increasing price volatilities due to foreign investors entry-exit. Thus, foreign investors behavior particularly how they respond domestic and foreign macroeconomics should be studied to mitigate and respond a massive capital outflow.

Numerous researches on impacts of macroeconomic to JKSE have been done with focus to domestic macroeconomic only while foreign macroeconomic has not been included yet or at least they are not taken into account adequately. This makes the research findings are not sufficient as a reference to analyze the impact of macroeconomics to JKSE since the foreign macroeconomics have also significant impact to JKSE. Therefore, this research analyzes the impacts of macroeconomics both domestic and foreign countries to JKSE with integrated approach to get more comprehensive result.

The macroeconomic data studied in this research is the macroeconomic indicators applied by World Bank to review countries economy, and then selected 3 main indicators having significant impact to stock market based on previous research findings, i.e.: GDP growth, exchange rate and interest rate both domestic and foreign countries. The foreign investor ownership is used as an intervening variable due to the connection between foreign macroeconomic and JKSE is mainly through foreign investor role.

This research is limited to economic variables that affect stock investment in IDX stock market in the long term, namely: Indonesia and foreign macroeconomics as independent variable, foreign investor ownership as intervening variable and JKSE as dependent variable. The non-economic variables, such as: psychological, political, social and environmental which have significant effects in the short term are not examined in this research.

The current research aims to find the impact of macroeconomics both Indonesia and foreign countries to JKSE in the long term based on rigorous macroeconomic and market data in 1995-2019 period. The results can be used as a reference for stock investors to optimize their portfolio as a function of macroeconomy indicator changes. They can be used also as a reference for IDX management to mitigate JKSE volatility driven by macroeconomy events, and for Indonesian government to make macroeconomy policy that supports stock market.

II. Methods

The research was carried out by using an integrated framework comprised of domestic (Indonesia) and foreign (international) macroeconomics as independent variable, foreign investor ownership in Indonesia stock exchange (IDX) as intervening variable and Jakarta composite index (JKSE) as dependent variable. The impacts of domestic and international macroeconomic indicators to foreign investor ownership are analyzed by a direct regression, and then the impacts of foreign investor ownership to JKSE are assessed by applying indirect regression to know the indirect impacts of domestic and international macroeconomics to JKSE. The structural break analysis is also performed due to long period of research and an adjustment (dummy) variable is applied in a period when a structural break is found. The equations of the research framework explained above are:

$$\begin{aligned}
 Y_{1t.dom} &= \alpha_1 + \beta_1 Y_{1t-1.dom} + \beta_2 X_{1t.dom} + \beta_3 X_{2t.dom} + \beta_4 X_{3t.dom} + \beta_5 Dummy_{1t.dom} + \beta_6 Dummy_{2t.dom} + e_{1t} \\
 Y_{1t.int} &= \alpha_2 + \beta_7 Y_{1t-1.int} + \beta_8 X_{1t.int} + \beta_9 X_{2t.int} + \beta_{10} X_{3t.int} + \beta_{11} Dummy_{1t.int} + \beta_{12} Dummy_{2t.int} + e_{2t} \\
 Y_{2t.dom} &= \alpha_3 + \beta_{13} Y_{1t.dom} + e_{3t} \\
 Y_{2t.int} &= \alpha_4 + \beta_{14} Y_{1t.int} + e_{4t}
 \end{aligned}$$

where:

- Y_{1t} = Foreign Investor Ownership period t (in percentage)
- Y_{2t} = Jakarta Composite Index (JKSE) period t (in index)
- dom = Domestic (Indonesia)
- int = International (foreign)
- α = Constant
- β = Regression (path) coefficient
- X_{1t} = GDP growth period t (in percentage)
- X_{2t} = Exchange rate period t (in index)
- X_{3t} = Interest rate period t (in percentage)
- $Dummy_1$ = Dummy variable structural break 1
- $Dummy_2$ = Dummy variable structural break 2
- e_t = Error period t.

The research was performed in IDX stock exchange for data related to foreign investors, JKSE index and stock exchange. The secondary data of macroeconomic indicators comprised of GDP growth, exchange rates and interest rates for domestic and foreign countries were taken from CIEC Macroeconomic Database

Hongkong. These indicators are taken from World Bank macroeconomic indicators used to evaluate countries economy, and 3 indicators having most significant impact to stock market based on previous research findings are selected. Inflation rate is not included in the analysis due to it is usually incorporated in interest rate in the long term.

The research data is comprised of the end quarter data for domestic and foreign macroeconomic indicators (i.e.: PDB growth, exchange rate and interest rate); foreign investor ownership; and JKSE index for the period from January 1995 to December 2019. The foreign macroeconomics are the sample of foreign countries having large economy size and/or big stock investment in IDX, namely: United States, Japan, European Union (Germany and France), United Kingdom and Singapore. Therefore, the number of data directly calculated in this research is around 1380.

Statistical analysis is performed using STATA application. Firstly, the data is reviewed using classical assumption test particularly normality, heteroscedasticity, multicollinearity and autocorrelation as the basis to select the appropriate regression method before a regression analysis is conducted. Then, regression method chosen is ordinary least square (OLS) if all the criteria of the classical assumption test are met but if the criteria are not fulfilled particularly heteroskedasticity, a robust standard error (RSE) regression method is carried out to get more accurate result. The regression analysis for intervening variable applies indirect least squares (ILS) method to assess the impact of foreign investor ownership to JKSE that is indirectly driven by domestic and international macroeconomics. Furthermore, the structural break test is also carried out to find out changes in the model particularly during economy crisis within 1995-2019 research period.

F-test is used to ascertain the simultaneous (aggregate) impact of macroeconomics as independent variables to foreign investor ownership as intervening variable and foreign investor ownership as intervening variable to JKSE as dependent variable. Student's t test is also used to check the partial impact of macroeconomic indicators (i.e.: GDP growth, exchange rate and interest rate) to intervening variable. The level $P < 0.05$ are considered as the cutoff value or significant

III. Result

The macroeconomic indicators analyzed in this research are comprised of GDP growth, exchange rate and interest rate for domestic (Indonesia) and foreign (international) countries having large economy size and/or big investment in IDX as the sample, namely: USA, Japan, Germany, France, UK and Singapore for the period January 1995 to December 2019. The statistical descriptions containing mean, standard deviation, minimum and maximum are shown in table 1.

Table 1: Domestic and Foreign Macroeconomics Period 1995-2019

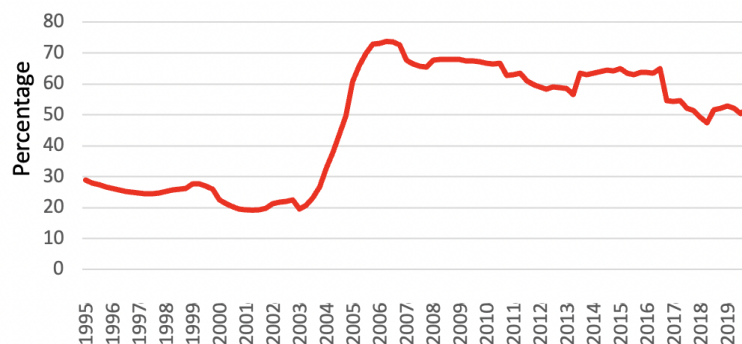
Country	Mean	Std. Dev.	Min	Max
Domestic: Indonesia				
GDP growth	3.8	4.49	-8.75	5.99
Exchange rate	108.95	16.94	45.4	141.17
Interest rate	8.8	11.98	4.25	68.76
Foreign:				
USA				
GDP growth	0.6	0.58	-4.79	3.95
Exchange rate	104.41	11.91	84.52	128.73
Interest rate	2.5	2.34	0.04	7.06
Japan				
GDP growth	0.2	0.97	-7.15	6.19
Exchange rate	97.44	17.71	67.89	149.24
Interest rate	0.3	0.23	0.1	1.75
Germany				
GDP growth	0.3	0.83	-7.68	4.51
Exchange rate	97.88	5.76	88.9	117.04
Interest rate	1.8	1.46	0	4.75
UK				
GDP growth	0.5	0.57	-5.32	5.08
Exchange rate	91.71	10.08	76.24	106.81
Interest rate	3.1	2.52	0.25	7.5
France				
GDP growth	0.3	0.45	-3.55	6.14
Exchange rate	96.82	4.29	89.23	105.69
Interest rate	2.03	1.60	0	5
Singapore				
GDP growth	1.2	1.81	-5.66	7.98
Exchange rate	100.56	5.37	91.13	112.2
Interest rate	1.3	0.94	0.17	4.5

Domestic and foreign macroeconomic characteristic showed by the statistical figures of macroeconomic indicator are:

- GDP growth: The average Indonesia GDP growth as an emerging market = 3.8 % per year is higher compared with advance market countries invest in IDX (i.e.: USA= 0.6 %, Japan= 0.2 %, Germany= 0.3 %, France= 0.3%, UK= 0.5 % and Singapore= 1.2 %). This indicates stock investment in Indonesia is attractive since a company growth in a country is usually in line with its GDP growth.
- Exchange rate: The average Indonesia Rupiah (IDR) exchange rate index= 108.95 is considered strong compared with advance market countries invest in IDX (i.e.: USA= 104.41, 97.44, Germany= 97.88, France= 96.82, UK= 91.71 and Singapore= 100.56). However, IDR is not stable over time that is shown from high standard deviation= 16.94 and extreme minimum= 45.4 and maximum= 141.17.
- Interest rate: The average IDR interest rate= 8.8 % per year is much higher compared with foreign countries invest in IDX (i.e.: USA= 2.5 %, Japan= 0.3 %, Germany= 1.8 %, France= 2.03 %, UK= 3.1 % and Singapore= 1.3 %). The higher IDR interest rate is due to capital in Indonesia as emerging market is scarcer compared with advance market countries.

Good Indonesia's macroeconomic particularly GDP growth and very liberal Indonesian government policy (foreign investors are allowed to own 100 % stocks of a listed company) have attracted foreign investor to invest in IDX stock exchange. The average foreign investor ownership in IDX was 47.6 % in 1995 – 2019 period where the smallest value was occurred in the 2001= 19.3 % while the largest was in 2006= 73.4%. The foreign investor ownership showed an increasing trend in the 1995 – 2006 period from 28.8% to 73.4 % in line with Indonesia GDP growth and then decreased in the 2006 – 2019 period from 73.4 % to 51.9 % due to domestic investor increased significantly in that period as shown in figure 1.

Figure 1: Foreign Investor Ownership



The Jakarta Composite Index (JKSE) containing all listed companies in IDX shows an increasing trend on average of 16.9% per year in the 1995-2019 period or increased 14 times in this period. This shows that investing in stocks in IDX generates a high return but the risk is also high due to high fluctuations of JKSE as shown in figure 2. JKSE experienced crashes during 1995-2019 period particularly 1998 Asian Financial Crisis (felt by -37 %), 2008 World Financial Crisis (-51%), 2013 FED tapering (- 17%) and 2015 China stock market crash (-21 %).

Figure 2: Jakarta Composite Index (JKSE)



Structural breaks analysis was performed due to the research involved long period of time series data and experienced several economic crises. The structural breaks were found in 1998 Asian Financial Crisis and 2008 World Financial Crisis as shown in table 2. Therefore, dummy or adjustment was applied in 1998 and 2008 to obtain more accurate model.

Table 2: Structural Break Test Result

	Domestic	Foreign
Break date	Yes 1998, 2008	Yes 1998, 2008
Chi-square	2721.5	1914.5

The impact of domestic and foreign macroeconomics as independent variables to foreign investor ownership as intervening (intermediate) variable was analyzed by using robust standard error (RSE) regression to get more accurate model due to some data didn't fulfill Breusch-Pagan heteroskedastic test. The domestic is Indonesia's macroeconomic indicators while foreign is the average of the same macroeconomic indicators for advance market countries selected as the sample in this research (i.e.: USA, Japan, Germany, France, UK and Singapore) with the results shown in table 3.

Table 3: The Impact of Macroeconomics to Foreign Investor Ownership

Variable	Domestic	Foreign
Foreign Investor Ownership	1.024 (0.000)	0.993 (0.000)
GDP growth	0.097 (0.006)	-0.516 (<0.05)
Exchange rate	-0.525 (0.005)	0.189 (<0.05)
Interest rate	-0.092 (0.005)	-2.120 (< 0.05)
Dummy:		
1995-1998	2.187 (0.040)	1.627 (<0.05)
1998-2008	0.792 (0.228)	3.444 (<0.05)
Constant	4.555 (0.018)	-20.19 (<0.05)
R-squared	0.98	0.98

The impact of domestic macroeconomic to foreign investor ownership can be seen in table 3 with $F_{\text{statistic}} = 1.024$ and $F_{\text{probability}} = 0.000$ that means domestic macroeconomic has a significant positive impact to foreign investor ownership in aggregate. The partial impacts of domestic macroeconomic indicator calculated using student's t-test are:

- GDP growth: Indonesia GDP growth has positive impact to foreign investor ownership with $t_{\text{coefficient}} = 0.097$ due to higher GDP growth is associated with better company performances that will attract more foreign investors to invest in IDX. The impact of GDP growth is also statistically significant shown by $t_{\text{probability}} = 0.006 (< 0.05)$.
- Exchange rate: Indonesia Rupiah (IDR) exchange rate has negative impact to foreign investor ownership in IDX with $t_{\text{coefficient}} = -0.525$ due to stronger IDR rate makes Indonesia's stock price more expensive in foreign currencies. The impact of IDR exchange rate is also statistically significant shown by $t_{\text{probability}} = 0.005 (< 0.05)$.
- Interest rate: IDR interest rate has negative impact to foreign investor ownership in IDX with $t_{\text{coefficient}} = -0.092$ due to higher IDR interest rate makes investment in fixed income, such as: bond, time deposit and other fixed income instruments, become more attractive. The impact of IDR interest rate is also statistically significant shown by $t_{\text{probability}} = 0.005 (< 0.05)$.

Similarly, the impact of foreign macroeconomics to foreign investor ownership is shown by $F_{\text{statistic}} = 0.993$ and $F_{\text{probability}} = 0.000$ that means foreign macroeconomic has a significant positive impact to foreign investor ownership in aggregate. The partial impacts of foreign macroeconomic indicators calculated using student's t-test are:

- GDP growth: Foreign GDP growth has negative impact to foreign investor ownership in IDX with $t_{\text{coefficient}} = -0.516$ due to higher foreign GDP growth is associated with better foreign company performances that will encourage more foreign investors to move their investment to foreign countries. The impact of foreign GDP growth is also statistically significant shown by $t_{\text{probability}} < 0.05$.

- Exchange rate: Foreign currency exchange rate has positive impact to foreign investor ownership in IDX with $t_{\text{coefficient}} = 0.189$ due to stronger foreign currency rate makes Indonesia's stock price look cheaper. The impact of foreign currency exchange rate is also statistically significant shown by $t_{\text{probability}} < 0.05$.
- Interest rate: Foreign interest rate has negative impact to foreign investor ownership in IDX with $t_{\text{coefficient}} = -0.092$ due to higher interest rate makes investment in fixed income in foreign countries, such as: bond, time deposit and other fixed income instruments, become more attractive. The impact of foreign country interest rate is also statistically significant shown by $t_{\text{probability}} < 0.05$.

Futhermore, the impact of foreign investor ownership as intervening variable to Jakarta Composite Index (JKSE) as dependent variable is analyzed by using indirect least square (ILS) to connect domestic and foreign macroeconomic as indirect drivers with the result as shown in table 4.

Table 4: The impact of Foreign Investor Ownership to JKSE driven by Macroeconomics

Variable	Domestic	Foreign
Foreign Investor Ownership	66.57 (0.000)	66.10 (0.000)
Constant	-629.4 (0.176)	- (< 0.05)
R-squared	0.36	0.35

The foreign investor ownership as the respond of domestic macroeconomic has significant impact to JKSE with $t_{\text{coefficient}} = 66.57$ and $t_{\text{probability}} = 0.000$ (< 0.05) and the one as the respond of foreign macroeconomic has also significant impact to JKSE with $t_{\text{coefficient}} = 66.10$ and $t_{\text{probability}} = 0.000$ (< 0.05). This proves that both domestic and foreign macroeconomics have significant impact to JKSE through foreign investor ownership as intervening variable (intermediate).

IV. Discussion

Indonesia's macroeconomic as an emerging market is characterized by high GDP growth and IDR interest rate but unstable IDR exchange rate. The high GDP growth is usually accompanied by high company growth that is positive for stock investment. Therefore, the foreign investor ownership in IDX particularly from advance markets is high (average 47.6 % of total market capitalization) to get higher return and diversify their portfolio. It is also supported by the liberal government policy on FPI where foreign investors are allowed to own 100 % stocks of a listed company. However, the unstable IDR exchange rate should be mitigated by using currency hedging instruments. The high IDR interest rate brings also opportunities to invest in government and company bonds that is beyond this research scope.

The high portion of foreign investor ownership in IDX gives positive impacts particularly increasing price earning ratio (PER) so Indonesia's companies can raise capital cheaper, dynamizing stock market and bringing good practices on stock market from advance market to Indonesia. However, it can create instability or more serious market crash when foreign investors massively exit from IDX. The market crash with massive foreign investor exit based on 1995-2019 research data were found in 1998 Asia Financial Crisis, 2008 World Financial Crisis, 2013 FED tapering and 2015 China stock market crash.

JKSE composite index increased significantly around 17 % per year or 14 times during 1995-2019 period which is mainly driven by high growth of listed companies in IDX. However, JKSE volatility is also high mainly due to low maturity of domestic investors and high inflow-outflow of foreign investors in certain period of time. Reducing JKSE volatility should be done by parties concerned particularly Indonesia's government, IDX management and listed companies to make stock investment in IDX less risky. Indonesia's government policy should be supportive to stock market, such as: sustainable GDP growth, stability IDR currency and providing IDR hedging instruments, and other market friendly policies. IDX management should improve IDX stock market governance, such as: law enforcement, transparency, accountability, responsiveness and efficiency to enforce investors confident; promote stock investment to potential domestic investors to mitigate the volatility driven by foreign investors inflow-outflow; promote ETFs that are usually less volatility compared with individual stocks, and make option instrument available that can be used to hedge stock investment. Listed companies should also contribute to mitigate JKSE volatility particularly by providing market stability fund that can be used to buy their stocks during market crash and sell them in bullish period, improve transparency to investors and launch investor loyalty program.

JKSE is impacted by both domestic and foreign macroeconomics mainly through foreign investors. Foreign investors have key role in connecting international macroeconomic to JKSE due to they are mostly institutional investors (e.g.: hedge funds, mutual funds, ETF funds, banks, insurance companies and other financial institutions) which generally have resources to incorporate both Indonesia and foreign macroeconomics in their investment decision. Domestic institutional investors apply the similar approach as foreign investors but they usually focus on domestic macroeconomic and less to international. Domestic retail

investors mostly consist of short-term investors with trading approach. Therefore, foreign investor ownership is used as intervening variable in this research.

The impacts of macroeconomic indicators (i.e.: GDP growth, exchange rate and interest rate) both domestic and foreign as explained in the result should be used as a reference for Indonesia's government to prioritize economic policy and investors to optimize their portfolio in IDX. Other macroeconomic indicators, such as: inflation rate, M2 money supply and other indicators should also be included in the future research.

V. Conclusion

1. Foreign investors have positive roles in increasing JKSE index, dynamizing IDX stock market and bringing good practices on stock market but they can also cause market instability or more serious market crash if they massively exit from IDX.
2. The average return of stock investment in IDX stock exchange is high (around 17 % per year) in the long term but its risk is also high indicated by high price volatilities. Therefore, the efforts to reduce price volatilities shall be done by concerned parties particularly investors, listed companies, IDX management and Indonesian government to make investing in IDX more attractive.
3. JKSE is significantly impacted not only by domestic (Indonesia) macroeconomic but also by foreign (international) macroeconomics particularly from advance countries having big stock investment in IDX. The foreign macroeconomics impact is mainly brought by foreign investors.
4. The impacts of domestic and foreign macroeconomics per indicator are:
 - GDP growth: Domestic GDP growth has a positive impact to JKSE in the contrary foreign GDP growth has a negative impact to JKSE.
 - Exchange rate: Domestic (IDR) exchange rate has a negative impact to JKSE but foreign currencies exchange rate has a positive impact to JKSE.
 - Interest rate: Both domestic and foreign interest rate have a negative impact to JKSE.

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