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THE MULTIPLIER EFFECT OF PORTFOLIO INVESTMENT ON ECONOMIC GROWTH IN INDONESIA: A CASE FOR THE MANUFACTURING AND FINANCIAL SECTORS 2010–2020

Zhaditya Pradana Putra Mars dan FX Sugiyanto

Department of Economics and Development Studies, Faculty of Economics and Business, Universitas Diponegoro, Semarang, Indonesia

Corresponding Email: pradanaamars@students.undip.ac.id

ABSTRACT

This research aims to understand how the multiplier effect of portfolio investment affects economic growth in Indonesia. Using a panel Fixed Effects Model analysis with quarterly data ranging from 2010 to 2020, the findings suggest that the portfolio investment multiplier effect positively influences economic growth. However, its overall impact is lower than the estimation, and only the manufacturing sector has a meaningful impact on economic growth.

Keywords: Portfolio Investment, Capital Market, Economic Growth, and Keynesian.

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INTRODUCTION

Portfolio investment has reached an important level towards development amongst emerging economies as an alternative to direct investment. Commonly, amongst emerging economies, previous literature pointed out that constraints towards investment may severely hinder direct investment, such as financial constraints (Buch, 2014), political and economic policy, and law (Roberts, 2018). Developing countries need precious capital flow to promote their economic growth, another alternative means to acquire capital is through portfolio investment.

Capital inflow (in the form of portfolio investment) is an important factor that enhances economic growth in the host country (Tsaurai, 2017). In order to stimulate economic activities as well as growth, developing countries needed financial resources both in the short and long run. To enhance economic growth, those financial resources are needed to fuel economic activities such as business, investment, and government activities (Waliyu, 2020).

Both foreign direct and portfolio investment can be an engine for economic growth, which in turn, increases host countries' capacity to produce goods and services (Winona & Nuzula, 2016). Foreign portfolio investment plays a significant role in the domestic economy by increasing capital accumulation, in turn increasing productivity, improving technologies, improving the balance of payment, creating new businesses and jobs, as well as increasing tax revenue (Mugableh & Oudat, 2018). Furthermore, economic theory suggests that sound and efficient financial systems such as banks, equity, and bond markets that channel capital toward productive usage are beneficial for economic growth (Estrada, et al. 2010). Well-

organized financial markets mobilize savings and activate investment projects, which leads to increased economic activities in a country, where the market acts as a medium between savers and borrowers, in turn reallocating many small savings towards a large fruitful investment (Hussain, et al. 2013).

The role of portfolio investment in emerging economies influences the market which gives firms and industry extra funds to expand, hence creating stimulus for economic growth. Unlike direct investment, portfolio investment is an indirect way to provide expansion among domestic firms. Direct investment provides a long-term effect towards growth, due to direct investment provides machines, technology, and other physical capital that needs time to be productive. Portfolio investment, on the other hand, is commonly viewed as short-term, and volatile. Aizenman, et al. (2013) note that FDI and portfolio investment are fundamentally different from one another, since FDI is associated with ownership and control, portfolio is not, both being different from foreign debt that creates liabilities that must be repaid.

Previous studies suggested that the financial market, namely the stock market played an essential role in the real economy. Jin, et al. (2019) suggested that data from the stock market could lead or predict macroeconomic variables. In the case of industrialized markets, Camilleri, et al. (2019) found that stock markets can act as both leading and lagging indicators for macroeconomic variables. Meanwhile, other literature commonly studied macroeconomic impact towards portfolio investments (specifically the stocks market), and/or FDI/FPI's effect on economic growth, and most are using samples from industrialized countries. Studies on portfolio investment's impact on macroeconomic variables, namely, economic growth in emerging countries are scarce.

Recent literature on the effect of FPI towards economic growth mostly showed a positive effect, such as, Tsaurai (2007), Albulescu (2015), Winona & Nuzula (2016) Asamoah & Alagidede (2020), Atyandito & Firmansyah (2022), Asamoah, Alagidede & Adu (2021), Al-Karanseh, et al (2021), others note that portfolio investment hass ah minimal or nonexistent effect towards economic growth (Durham (2004) Duasa & Kasim (2009), Aizenman, et al. (2013)). As current literature such as Popov (2017) points out, in the developed world, portfolio investment is used as a source of funding, thus overtaking the traditional banking sectors, little or no research has been conducted in developing countries. As developing countries exhibit rapid financial development, the research by Popov (2017) could be mirrored, following the Keynesian growth theory. Through the Keynesian theory, capital from both foreign and domestic investment expenditures results in the addition of extra-economic activities, hence forming a lasting impact on economic growth. As investment expenditures from both direct or indirect/portfolio increases within a certain time, thus the addition of economic activity would increase in the future. The added activity in turn creates a multiplier effect that increases the value of the initial investment expenditures which ultimately increases economic growth.

This research aims to study whether or not portfolio investment affects economic growth and to view portfolio investments in different sectors' effect on economic growth, as well as to add and contribute to the existing literature by attempting to fill the gap, as well as expanding research regarding portfolio investment.

LITERATURE STUDY

Stock markets in emerging economies are constantly surging taking up more share in the world market, and while analysts have studied emerging stock markets, economists need to acquire more information to understand the linkages between stock markets and economic development (Demirgüç-Kunt & Levine, 1996).

Stock markets may affect economic activity through the creation of liquidity, as profitable investments require a long-term commitment to capital, deeming investors reluctant to commit their savings for long periods. Liquid equity markets make investments less risky and more attractive, due to equity markets allow savers to acquire and sell assets and equity quickly. Simultaneously, companies gain access to capital that is raised through issuing equities. As a result, liquid markets improve the allocation of capital and enhance prospects for long-term growth (Levine, 1996).

Singh:1993 (in Masoud, 2013) explained that there are three critical elements by which the stock market can enhance economic growth; 1) increasing savings and investment, 2) improving investment productivity, and 3) raising the profitability of existing capital stock.

Another important thing to note regarding the use of the stock market as a measure of portfolio investment and capital flow is that the stock market measures the market value of portfolio investments which accounts for the investment strength as the average of stock prices, as well as measurement for market capitalization. Hence the stock market can arguably be used to measure the net portfolio investment, as the stock market covers investment expenditures, the flow of capital, and the value of portfolio investment.

Theoretical Perspective

This section will discuss the theoretical basis on how portfolio investment could affect economic growth through the Keynesian viewpoint, specifically the aggregate demand and the multiplier effect of investment expenditures. As the economic growth is viewed from the addition of economic activities, thus portfolio investment will derive additional economic activities, assuming portfolio investments through public companies are used for business expansion.

The multiplier approach views investment expenditures as a perquisite of the addition of new economic activities which leads to output in the future. The demand-led growth viewed as output growth is determined by an increase in aggregate demand, where investment is directly linked with an increase in output, which depends on productive capacity (physical capital) that would in turn increase aggregate demand (Smith, 2011). Or the elasticity approach which viewed that investment is tied to firms receiving a boost of productivity and technology, thus boosting the economic growth (Carkovic & Levine, 2002).

Through the multiplier effect, portfolio investment affects economic growth in the form of derived demand as a reaction/effect or association, not as a causality for the creation of new demand/output, in other words, the multiplier effect acted as a push factor for economic growth. As opposed to the demand-led and/or the elasticity approach where investment expenditures create output directly, the multiplier approach views investment expenditures are a prerequisite for output creation.

Jahan, Mahmoud, & Papageorgiou (2014) noted that there are three principal tenets in the Keynesian viewpoint on how the economy works; 1) aggregate demand,

2) prices, especially wages, are slow to respond to shifts in changes in supply and demand, and 3) changes in aggregate demand have the greatest short-run effect on output and unemployment, not on prices. Keynes also argued that inadequate overall demand could lead to prolonged periods of high unemployment, in turn, high unemployment that reduces spending and hence lowers demand. The reduction of spending by consumers can result in a decrease in investment spending by businesses as a response to the reduction of demand for their goods or services.

As the Keynesian theory asserts that aggregate demand is the most important driving force in the economy, increases in demand come from one or all of the aggregate expenditure (AE) components which are: consumption (C), investment (I), government spending(G), and net exports (nX, both goods and services (X-M) and current (CA) and Capital (KA) inflows). The component of aggregate demand is ultimately formed by household, private, and government spending, both domestic and foreign. The aggregate expenditure thus is expressed in Equation 1 below.

$$Y = AE = C\left(C_{private} + C_{government}\right) + I\left(I_{Domestic} + I_{Foreign}\right) + nX(X - M + CA + KA) \quad (1)$$

Consumption or consumer spending represents the total demand from individuals or households within the domestic economy, consumer demand is commonly determined by their level of income. Investment in the aggregate demand represents capital expenditure or spending of capital, the level of investment is commonly determined by the level of interest rates. Government spending represents the demand as a product from government programs and projects such as infrastructure or public goods. Government spending through those programs or projects gives a spillover or a trickle-down to the level of consumption due to an increase in income to the individuals that participate in those programs. Net exports represent the sum of the demand for foreign goods (imports) and foreign demand for domestic goods (exports).

From the perspective of aggregate demand, the investment function is further broken down as:

$$I = I_{Direct} + I_{Portfolio} = I_{Domestic}(DDI + DPI) + I_{Foreign}(FDI + FPI) \quad (2)$$

As the national income views every domestic (private and government) as well as foreign parties' economic activities within a specific region, the investment function thus covers both direct (DDI and FDI) or indirect/portfolio investment from domestic (DPI) and foreign (FPI) alike.

As portfolio Investment is commonly measured using equity or asset prices, asset prices may influence consumption through wealth channels and investments through the Tobin Q effect, thus increasing the firm's ability to operate (Bjørnland & Leitemo, 2009). This means asset prices influence aggregate demand. As firms' ability to produce increases, their output contributes to more production, and more income for their employees, and in turn, increases consumption.

Portfolio Investment and Economic Growth

Widely in existing literature, portfolio investments looked at foreign investors that buy into a country's stocks, bonds, and other certificates through the asset market. In a wider sense, portfolio investments encompass every non-direct investment that is

invested in, that is available to the general public to invest. As portfolio investment is widely regarded as a foreign investment that is measured within a country's balance of payment, most studies regarding portfolio investments ultimately use foreign capital flows to measure investment. this study views investment in the Keynesian growth theory measures investment as the aggregate investment in the domestic economy, thus the role of domestic investment must also be included.

Investment elasticity views productive capital in the form of machinery, technology, and other forms of productive assets that in turn boost productivity and ultimately aggregate demand and subsequently economic growth, as Carkovic & Levine (2002) explained. The investment multiplier, on the other hand, views that investment expenditures help create extra economic activity which in turn boosts output and subsequently aggregate demand and economic growth. Thus, the investment multiplier views that changes in investment through spending and activities influence economic growth, while the elasticity views that, changes in investment through productive capital and productivity influence economic growth.

The investment multiplier theory, founded by Keynes, states that an increase in investment in both private, (private consumption spending) and public (government expenditures) will result in a proportional increase in GDP by more than the amount invested. Consumption from households will determine the rate at which how much their income is spent on consumption, and how much their income is saved, the propensity to consume and save then makes the investment multiplier. As Keynes' theory of income determination states, a change in autonomous expenditure caused by a shift in any expenditure function will change the national income, and as the change in income is greater than the change in expenditure, following that concept, these expenditures are connected with investment expenditures.

Portfolio investment's multiplier effect (k) towards economic growth is measured with investments made in the stock market, as those investments capture capital flows that move money for the purpose of investment. That money then flows to the listed firms that use investments from the market to fund business expansions. As business expansions increase, so does its demand, hence investments from the stocks or capital market that account for investors from both the household or individuals as well as the private sector that creates continuous investment expenditures would then increase the aggregate expenditure. This process is expressed in Equation 3 below.

$$PI_{foreign} + PI_{domestic} \rightarrow Equity \rightarrow Assets \rightarrow \Delta k_t \quad (3)$$

Aggregating that process (equation 4), through the national income function, the overall portfolio investment that added equity, then turned into productive assets in the future will create a multiplier effect, increasing the initial value of portfolio investment through the creation of extra-economic activities. Ultimately, this process falls into the investment function, thus changes of expenditure in portfolio investments would in turn change the investment expenditure, and ultimately aggregate expenditure, hence affecting the economic growth.

$$\Delta Y = \Delta AE = C + I(k(\Delta I)) + nX \quad (4)$$

$$\Delta I = \Delta Y_t \rightarrow \Delta I = \Delta PI \rightarrow Equity \rightarrow Asset_t \rightarrow \Delta K_t \rightarrow k(\Delta I)_{t+n} \rightarrow \Delta I_{t+n} \rightarrow \Delta Y_{t+n} \quad (5)$$

Finally, equation 5 shows the overall theoretical perspective of this study. The change from equity towards assets then creates a multiplier effect (Δk), as equity gained from the stock market is spent on productive means. This process is repeated through each listed company, where investors are incentivized to invest as listed companies can further raise productivity and increase the profitability of their stock in the long run. Aggregating this process, in the long run, portfolio investments that created a multiplier effect k(ΔI), that increases the investment expenditure will have an impact on economic growth, as long as the capital is used productively.

RESEARCH METHODOLOGY

To capture the theoretical framework in the previous chapter, the variables of interest, or main variables are economic growth and portfolio investment. Economic growth is the dependent variable, while portfolio investment is the independent variable. Economic growth is measured with real gross domestic product (GDP) and portfolio investments with investment in the sectoral value of the Indonesian stocks market (SecVal). To further view the dynamics of portfolio investment and real economic growth, this study will view investments in the capital markets by sector.

Data of those variables of interest are categorized into two cross-section units over time (panel): financial and manufacturing sectors for both real GDP and sectoral index, with a quarterly frequency spanning from the first quarter of 2010 until the last quarter of 2020. The research model will use the fixed effect method (within transformation) as an approach, as well as the mandatory panel data-specific Gauss-Markov classical assumption tests. The basis for the fixed model is:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_n X_{nit} + \alpha_i + \mu_{it} \quad (6)$$

Replacing Y with the dependent and X with the independent, then transforming the base model into a within transformation, thus the working model is expressed as:

$$GDP_{it} = \beta_0 + \beta_1 SecVal_{it} + \gamma_i + \theta_t + u_i + v_{it} \quad (7)$$

Where γ_i are the individual sectors (cross-section fixed effects), and θ_t is the year (time effect). Furthermore, another model is required to purely show the individual cross-section (sector-specific) effects, which the working model is transformed into a within-model dummy variable expressed as:

$$GDP_{it} = \beta_0 + \beta_1 SecVal_{it} + \beta_2 \gamma_2 + \theta_t + u_i + v_{it} \quad (8)$$

Regarding the Gauss-Markov Classical assumption tests, Farah (2021) noted that the panel data's classical assumption test estimation violates; 1) multicollinearity, 2) heteroscedasticity, and 3) autocorrelation, then the general approach is to obtain robust standard errors and test statistics known as clustering (clustered robust standard error).

Finally, the hypothesis testing will use the coefficients, probabilities, or significance of the t-statistics for individual variables, the probability of f-statistics for whether or not the main and control variables simultaneously could explain changes in the dependent variable, and the R-squared value to determine whether the independent variable simultaneously is significant or not towards the dependent

variable, the adjusted R-squared to see if variables in the model have a strong correlation.

RESULTS AND DISCUSSION

This section covers the results and discussions of this study. Beginning with the classical assumption tests' results, the implication of said tests will explain the implications to the working model, then followed by the model's results and finally, the discussion of the estimation.

Classical Assumption Tests

Caveats and requirements for fully interpreting the estimation results of the working model are left at the mercy of the Classical Assumptions. Table 1 shows the VIF multicollinearity test, table 2 shows the homoscedasticity test, and table 3 shows the autocorrelation test.

Table 1. VIF Multicollinearity Test

SecVal	factor(Sector)
1.683792	1.683792

As the main model only has a dependent with a single independent, the VIF test, for the sake of fulfilling the classical assumptions, is done using the LSDV model, as the VIF test requires a minimum of 2 independent variables to test for multicollinearity. The VIF test shows that the variable of interest (SecVal) together with the cross-section factor (factor(sector)) with a value of 1.68, above 1, following Daoud (2017), the regressors or independents are moderately correlated. This level and strength of multicollinearity are still within acceptable limits.

Table 2. Homoscedasticity

Studentized Breusch-Pagan test	
BP = 4.4406	p-value = 0.03509

The null hypothesis of the Breusch-Pagan test according to Torres-Reyna (2010) is homoscedastic, and this study' model's test with a p-value of 0.03 (significant) fails to reject the null hypothesis. Thus, the model uses robust standard error to control the homoscedasticity present.

Table 3. Autocorrelation/Serial Correlation

Durbin-Watson test for serial correlation in panel models	
DW = 0.31061	p-value < 2.2e-16

Using the panel Durbin-Watson test, this model produces a DW value of 0.31 which is far from the optimal DW value of 2, with a significant p-value, showing that this model suffers from positive autocorrelation. This makes the R squared and the F statistics highly inflated, hence the interpretation that the reality, this model does not really account for 41% of changes in the real GDP.

Results

The results of this study's main model are shown in Table 4, while the effects of portfolio investments through the sectors are shown in Table 5. For the sake of simplicity, this thesis' main model did suffer from heteroscedasticity and autocorrelation, hence, the robust standard error is used so that the coefficient in Table 4 could be trusted, and the positive autocorrelation means that interpreting the statistical decisions should be made carefully.

Table 4. Estimation of Result of Portfolio Investment in the Manufacturing and Financial Sectors to the real GDP (Adjusted with Robust Standard Error)

Variable	Coefficient	t-Statistic	Prob.
SecVal	105.069***	3.0781	0.002804 **
R-Squared	0.41228		
Adj. R-Squared	0.39846		
F-statistic	59.6278***		

note: * is significant for 10%, ** is significant for 5%, and *** is significant for 1%. Coefficient is in billion IDR, Dependent variable is real GDP

With a coefficient of 105.069 positive and significant, it can be interpreted as an increase in 1 point of measurement (1.00 index point) would increase real GDP by 105.06 million IDR the R squared of 0.41 shows that simultaneously, the model accounts for 41% of variations of change in the real GDP the rest 39% is accounted for factors outside the model, while the F statistic of 59.62 significant at for alpha of 1% showed that this model is effective in explaining the variance of changes towards the dependent variable (real GDP). However, due to the presence of auto/serial correlation, the R squared, and F statistic in reality is inflated, hence, the true percentage and significance/effectiveness of the independent (SecVal) are much lower than what the estimation result shows.

Table 5. Estimation Result of Portfolio Investment in the Manufacturing and Financial Sectors to the real GDP accounting for Cross-Section Factor Dummy (Fixed Effect Dummy)

Variable	Coefficient	t-Statistic	Prob.
SecVal	105.07 ***	7.722	0.000 ***
factor(Sector)Financial	4,613.081	0.385	0.701
factor(Sector)Manufacturing	349,926.300***	19.601	0.000 ***
R-Squared	0.990		
Adj. R-Squared	0.989		
F-statistic	2,764.408***		

note: * is significant for 10%, ** is significant for 5%, and *** is significant for 1%. The coefficient is in billion IDR, Dependent variable is the real GDP

This model will be used only as a comparison to the main model (table 4), thereby, the only interest in this estimation result is that of the cross-section factor's coefficient and significance, while negating the R-squared and F statistic altogether. The coefficients in the fixed effect using least squared dummy variables are used to measure the multiplier effect from the manufacturing and financial sectors towards the real economy, with the financial sector's impact being positive but not significant

while the manufacturing sector is positive and significant with a coefficient of 349,926.300, which means that an increase in 1 index point of would result in an increase (or change) of real GDP by 349.926,3 million IDR. Whereas a 1 index point increase in the financial sector although insignificant would increase the real GDP by 4.613,08 million IDR.

Discussions

After all the steps to produce the model estimation and its subsequent diagnosis, the coefficient of this model is interpreted as a multiplier, thus the coefficient means that an increase in investment expenditures made to the stock market (specifically, to public companies in both the manufacturing and the financial sectors) that amounts to increasing 1 index points would create a multiplier effect that totals 105.7 million IDR. Through the multiplier mechanism, investment expenditures increase the index point by 1 point however the amount would be received by the corresponding public companies of respective sectors, which would then assume funds gained through stocks are used to add up their production.

Those funds listed as equity then through the process turn into assets, aggregating for every public company in their respective sectors, thus creating a multiplier effect. For example, a manufacturing company that receives an increase of equity that is worth 1 index point (respective of its market capitalization and other market factors), would in turn convert its equity into assets in order to increase or broaden its production, as manufacturing companies needed manpower, machinery and technologies to increase their volume of production, funds that are worth 1 index points that is absorbed by a manufacturing company are then used to purchase such factors of production.

On the other hand, investments in the financial sector have a different mechanism for turning equity into assets. As public financial companies (such as banks both state-owned or private) broaden their production, so to speak, through an increase in lending or financial intermediary, equity received is turned into assets which flows again into companies of other sectors in the form of (productive) debt or financial intermediary services. Empirically, this could explain the lower coefficient and significance compared to the manufacturing sector.

Thus, the difference between the impact and significance of the financial and the manufacturing sectors is to be expected. While the stock market may move the economy indirectly, investments made from the market to the financial sectors which in itself already have an indirect impact on the economy are significantly smaller than that of investments made to the manufacturing sector, which has a direct impact on the economy.

Investment in the significant sectors could mean that the significant sectors could have a larger, hence more significant multiplier towards the real economy. Thus, in the long run, investments in companies in such sectors create new demand from the extra investments, thus making said companies more profitable which attracts investors, then due to their added activities creating a multiplier effect which in turn, boosts the economy.

CONCLUSION

Literature regarding portfolio investment, namely the capital markets and its implication towards the overall economy is quite scarce, especially in developing countries, and utilizing the multiplier approach. Using Indonesia as an example, this study aims to understand the effects of portfolio investments in the manufacturing and financial sectors on Indonesia's real economy, as Indonesia is experiencing rapid financial development.

Through the multiplier effect, portfolio investment is hypothesized to be able to affect economic growth. As portfolio investments are seen as a popular alternative for direct investment in Indonesia, funds channeled from portfolio investment to public companies in the future will be turned into productive assets where the process creates a multiplier effect, hence in the long run will affect the economic growth.

Using fixed effect model panel data analysis as an approach, this study aims to understand through the multiplier effect, can portfolio investment affect economic growth, as well as the dynamics of portfolio investment through the financial and manufacturing sectors in their contribution towards economic growth.

The findings of this study suggested that: 1) portfolio investments do influence economic growth through the multiplier effect, even if its effect is relatively small. 2) through the cross-section factor (individual sector), only the manufacturing industry shows a significant effect on the real economy, meaning that the multiplier effect of portfolio investment through the manufacturing sector has a meaningful impact on the real economy, hence the economic growth.

Concluding Remarks

With data limitations in place, such as up-to-date data sector indexes and their classification in the capital market such as the new IDX-IC classification which began and replaced existing classification making the entire previous JASICA classification unusable as the methodology and composition changes, as well as a lack of cross-sectional data that is publicized or available that can be used as a proxy or control, this study may give roughly explanation on portfolio investment and serve as a prelude for future similar topics, as well as giving insight on multiplier effect, however small or seemingly insignificant it may be.

However, during the period of this study, both variables still have a limited time frame, hence making a comparison with other developing countries un-feasible as both the JASICA and IDX-IC has 9 and 11 sectors respectively while for example Thailand's SET with 8 sectors, Malaysia's Bursa Malaysia with 15 sectors, or the Argentine stocks market with 20 sectors. As well as a lack of other variables that can serve as a control or addition.

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