 p-ISSN 2827-8585
e-ISSN 2827-8062

International Journal of Multidisciplinary Research and Literature
IJOMRAL
Vol. 2, No. 5, September 2023 pp. 481-600
Journal Page is available at http://ijomral.esc-id.org/index.php/home

CAUSAL RELATIONSHIP BETWEEN INVESTMENT AND GROSS REGIONAL DOMESTIC PRODUCT IN THE SUMATRA REGION WITH PANEL VECTOR AUTOREGRESSION MODELS (PVAR)

Andre Riswanto[1]
[1]Universitas Pembangunan Nasional "VETERAN" Yogyakarta, Indonesia
Email: *andreriswanto14@gmail.com*

Abstract

Gross Regional Domestic Product (GRDP) records the total value of goods and services produced by a provincial/ district/ city economy for one year Ever. This research aims to analyze and determine the causality relationship and direction between Domestic Investment (DI), Foreign Investment (FI), and Gross Regional Domestic Product (GRDP) in Sumatra Region. The research approach of this study is quantitative.

The data sources used in this study are the secondary sources obtained from the Indonesian Central Agency (BPS). Data analysis using panel vector autoregression method (PVAR). The results showed no two-way causality relationship and one-way between Domestic Investment (DI) and Foreign Direct Investment (FDI). A one-way causality relationship exists between Domestic Investment (DI) and Gross Regional Domestic Product (GRDP) in Sumatra Region. There is no causality relationship between two-way and one-way causality between Foreign Investment (FI) and Gross Regional Domestic Product (GRDP) in Sumatra Region.

Keywords: Domestic Investment (DI), Foreign Direct Investment (FDI) and Gross Regional Domestic Product (GRDP).

INTRODUCTION

Economic growth is a form of increasing national income realized through increasing economic production. A country can be said to have experienced an increase in economic growth if the real GNP in the country has increased (Murni, 2016). Economic growth in the Sumatra Region fluctuates every year. The highest level of GRDP occurred in 2019, with the highest GRDP in North Sumatra Province of 539,514 billion rupiahs, while the lowest GRDP was in Bengkulu Province of 46,345 billion rupiah. In general, GRDP in the Sumatra Region continues to experience a significant increase from 2016 to 2019. This indicates that the factors of available natural resources, workforce quality, capital goods, and technology have been appropriately managed to increase economic growth. In Sumatra Region. However, from 2019 to 2020, ADHK's GRDP tends to experience a significant decline. This indicated an influence of the Covid-19 pandemic in 2020, so the economy in the Sumatra Region experienced a slowdown.

Economic growth is influenced by various factors, one of which is investment. Sadono Sukirno said that investment activities enable a community to continuously increase economic activity and employment opportunities and increase national income and prosperity (Sukirno, 2016). The development of Domestic

Investment in the Sumatra Region has fluctuated over the past five years but tends to increase from 2016 to 2020. The highest realization of DI occurred in 2020, with the most significant DI contributor in Riau Province amounting to 34.118 billion rupiahs, while the province with the lowest DI contribution was the Bangka Belitung Islands, amounting to 1,864 billion rupiahs. Furthermore, the development of foreign investment in the Sumatra region over the past five years has fluctuated from 2016 to 2020. The highest realization of FDI occurred in 2020, with the most significant FDI contributor being Riau Islands Province amounting to 1,649 million US$, while the province with the lowest FDI contributor was Jambi for 27 Million US$. The increase in the realization of DI and FDI investments indicates that economic development in this region has attracted investors to invest both within and abroad. This is possible because the Sumatra Region has natural resources that have the potential to be developed to create higher economic growth so that investors are willing to invest in the provinces in the Sumatra Region. Several studies have been conducted on the causal relationship between investment and Gross Regional Domestic Product (GRDP) at the provincial and district or city levels. However, the results of these studies still need to be more consistent. This underlies researchers to conduct further research, so this study will be reviewed in the hope that the results will strengthen existing theories.

In research conducted by Amalia Fitri (2013); Astari (2014); Ullah et al. (2014); Bakari (2017); Thao and Hua (2018), the results of this study state that DI, FDI and Economic Growth have a two-way causality relationship between these three variables. Furthermore, the same research findings from Amin's research (2014); Eshpulotovich and Abdusattarovich (2020), with research results showing a significant positive two-way causality relationship between GRDP and investment. Meanwhile, empirical findings that are different from research conducted by Lean and Tan (2011) show that FDI has a positive effect on economic growth, while DI, in the long run, hurts economic development; these results are reinforced by the research of Sabono and Kusreni (2013); Jamaliah (2018), revealed that there is no causal relationship between investment and GRDP, only a unidirectional relationship where GRDP has a significant effect on investment. Investment has no considerable impact on GRDP.

LITERATURE REVIEW

Economic growth

1. Classical Economic Growth

   According to classical economists, four factors affect economic growth: population, total stock of capital goods, land area and natural resources, and the level of technology used. Even though they realize that economic growth depends on many factors, classical economists especially pay attention to the effect of population growth on economic growth (Sukirno, 2016).

2. Neo-Keynesian Theory

The model included in the neo-Keynesian theory is the model from Harrod-Domar, which tries to expand Keynesian theory regarding the balance of economic growth in a long-term perspective by looking at the effect of investment, both on aggregate demand and on expanding production capacity or aggregate supply, which will ultimately increase economic growth (Tambunan, 2011).

3. Neo Classical Economic Growth Theory

   According to the Solow-Swan Theory, economic growth depends on the availability of factors of production (population, labour, and capital accumulation) and technological progress. This theoretical view is based on the assumption that underlies classical economics, namely that the economy is at the level of full employment and the level of full utilization of the factors of production. This means the economy will continue to grow, depending on population growth, capital accumulation, and technological progress (Arsyad, 2016).

4. New Growth Theory

   According to Romer, this theory assumes that economic growth is more determined by the production system, not from outside the system. Technological progress is endogenous. Growth is part of the decisions of economic actors to invest in knowledge. The role of capital is more significant than just a share of income if the capital that grows is not only physical capital but involves human capital (Todaro, 2011).

Investment

Investment can be interpreted as spending or spending by investors or companies to buy capital goods and production equipment to increase the ability to produce goods and services available in the economy from domestic investment and foreign investment. Investment Theory consists of Neo-Classical Investment Theory. This theory is based on the thinking of classical economists regarding the determination of the balance of production factors by companies. To maximize profits, each company will use an aspect of production to reach a level where the marginal production value is equal to the cost spent to obtain one unit of the factor of production. If the law is applied to capital, the conditions that will maximize capital gains are: the selling price of the marginal product of money is equal to the cost of obtaining one unit of capital. (Sukirno, 2016).

METHOD

This research is quantitative, using secondary data in the form of panel data. Sources of data in this study were obtained from the Indonesian Central Bureau of Statistics (BPS) in the form of Domestic Investment (DI), Foreign Investment (FDI) and Gross Regional Domestic Product (GRDP). The analysis

used in this study is Panel Vector Auto Regression (PVAR). VAR analysis is a handy analytical tool for understanding the interrelationships between economic variables and establishing a structured economic model. There are four things to be obtained from forming a system of equations, which basically can be provided by the VAR method: data description, forecasting, structural inference, and policy analysis (Ajija et al., 2011). The following is the econometric model of the PVAR in this study.

$$Y_{it} = \beta_0 + \beta_1 Y_{it-1} + \beta_2 Y_{it-2} + \ldots + \beta_p Y_{it-p} + \varepsilon_{it}$$

RESULTS AND DISCUSSION

Data Stationarity Test (Unit Root)

Data that is not stationary will cause spurious regression. As a result, the estimates produced will need to be more accurate. To get a reasonable estimate, the data used must be stationary so that the step taken in data processing is to perform a unit root test. The method used is Augmented Dickey-Fuller (ADF) and Philips-Perron.

Table 1 Augmented Dickey-Fuller (ADF) Test and Philips-Perron Test

Variable	Level *P-Value*		Diferensiasi *P-Value*		Information	
	ADF Test	Phillips Perron Test	ADF Test	Phillips Perron Test	ADF Test	Phillips Perron Test
DI	0.8031	0.8242	0.0003	0.0002	Stationary in Order I	Stationary in Order I
FDI	0.0238	0.0057	0.0000	0.0000	Stationary in Order 0 and I	Stationary in Order I
GDRP	0.5873	0.0275	0.0272	0.0279	Stationary in Order I	Stationary in Order I

Source: Statistical output of processed secondary data, 2023

The table shows that DI, FDI and GRDP data are data containing unit roots at order 0 (level) or non-stationary at order 0 (level). This can be seen at the 0th order (level); the p-value of each variable is more significant than α = 5%; this means accepting the H0 hypothesis, namely that there is a unit root in the data or the data is not stationary. Consequently, the data needs to be differentiated in order to be stationary. After differentiation shows that all differentiation variables are order I (first difference), it can be seen that the p-value for each variable is more minor than α = 5%, meaning that it rejects the H0 hypothesis, namely there is no unit root in the data or the data is stationary.

Lag Optimum

Determination of the optimum lag in this study is based on selecting the lowest value using the Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) or Hannan Quinn (HQ) criteria.

Table 2 Lag Optimum

Lag	LR	FPE	AIC	SIC	HQ
0	NA	1.30e+23	61.73600	61.87612	61.78082

1	213.1853*	6.54e+19*	54.13656*	54.69704*	54.31586*
2	9.366904	8.11e+19	54.32931	55.31014	54.64308

Source: Statistical output of processed secondary data, 2023

From the table, it can be seen that Lag 1 has a minor Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) and Hannan-Quinn Information (HQ) values. This means that the optimal influence of variables on other variables occurs within the time horizon of 1 period. This indicates that lag 1 will be used to process the Vector Error Correction Model (VECM) parameter estimation.

Cointegration Test

Cointegration testing will use Pedroni's Residual-based Cointegration Test.

Table 3 Pedroni's Residual-based Cointegration

Panel Cointegration Statistical (Within-Dimension)				
Test Statistic	***Statistic***	**Prob.**	***Statistic***	**Prob.**
Panel v-Statistic	-0.430277	0.6665	-1.185790	0.8821
Panel rho-Statistic	1.011911	0.8442	0.394526	0.6534
Panel PP-Statistic	0.400715	0.6557	-1.555147	0.0600
Panel ADF-Statistic	0.894513	0.8145	-0.789492	0.2149

Source: Statistical output of processed secondary data, 2023

The data processing results show that the probability value for each statistical significance is more significant than 0.05. The cointegration test results with the Pedroni Residual Cointegration Test showed no cointegration relationship between the DI, FDI and GRDP variables. This is shown from the estimation results using the PP-Statistics Panel test, which is insignificant, with a probability value of 0.6557 > 0.05. The estimation results of Panel v-Statistics and Panel rho-Statistics are also negligible, with probability values of 0.6665 > 0.05 and 0.8442 > 0.05. So from these results, it can be concluded that there is no cointegration between the variables analyzed.

Granger Causality Test

The test level used in this Granger causality test is at the 0.05 (5%) confidence level and the length of the lag up to lag 2 is in accordance with the optimum lag test performed.

Table 4 Granger Causality

No	**Null Hipotesis**	**Prob.**
1	DI does not Granger Cause FDI	0.1878
	FDI does not Granger Cause DI	0.1196
2	DI does not Granger Cause GRDP	0.0222
	GRDP does not Granger Cause DI	0.0557
3	FDI does not Granger Cause GDRP	0.2561

	GRDP does not Granger Cause FDI	0.9545

Source: Statistical output of processed secondary data, 2023

Granger causality test results show that:

1. **Causal Relationship between Domestic Investment (DI) and Foreign Investment (FDI).**

   The relationship between Domestic Investment (DI) and Foreign Investment (FDI) does not have a two-way or one-way causality relationship because the probability values are respectively 0.1878 and 0.1196 greater than α of 5%. H0 is accepted and H1 is rejected, so there is no mutually influencing relationship between the two. So it can be concluded that there is no two-way causality relationship between DI and FDI.

2. **Causal Relationship between Domestic Investment (DI) and Gross Regional Domestic Product (GRDP)**

   Domestic Investment (DI) and Gross Regional Domestic Product (GRDP) is a one-way causality relationship. DI affects GRDP because the probability value of DI is 0.0222, smaller than α of 5% and GRDP of 0.0557. That is, H0 is rejected, and H2 is accepted. Thus, it can be concluded that there is a one-way causality relationship between the DI and GRDP variables.

3. **Causality Relationship between Foreign Investment (FDI) and Gross Regional Domestic Product (GRDP)**

   The relationship between Foreign Direct Investment (FDI) and Gross Regional Domestic Product (GRDP) has no two-way or one-way causality relationship because the probability values are respectively 0.256 and 0.9545 greater than α of 5%. That is, H0 is accepted and H3 is rejected, so there is no mutually influencing relationship between the two. So it can be concluded that there is no two-way causality relationship between FDI and GRDP.

Impulse Response Function

The VAR model can also be used to see the impact of changes from a variable in the system to other variables in the system dynamically.

Table 5 Impulse Response Function FDI and GRDP to DI

Period	***Response of* DI**		
	DI	**FDI**	**GRDP**
1	3970.816	-1262.322	-917.1052
2	2441.278	76.29634	-4826.373
3	6765.746	-1437.260	-6227.960
4	9011.973	-1569.021	-11401.85
5	16142.39	-3505.969	-17548.94
6	25155.92	-5379.084	-29101.30
7	41595.73	-9310.459	-46641.37

8	66878.98	-15000.88	-75893.21
9	108798.5	-24683.63	-122648.3
10	175977.6	-39999.74	-198815.1

Source: Statistical output of processed secondary data, 2023

From the beginning to the end of the shock period, FDI negatively responded to DI. However, in the second period, FDI responded positively to DI with a standard deviation value of 76.29634. A negative response means that during a specific period when FDI has decreased, it will increase DI; otherwise, when the answer is positive, it means that during a particular period when FDI has increased, DI has also increased. GRDP negatively responded to DI from the beginning to the end of the period. This means there is a decrease in the GRDP variable, causing DI to increase. This is evidenced in the second to tenth period of the shock; GRDP has decreased while DI has grown with its standard deviation values from -4826.373 to -198815.1 and from 2441.278 to 2441.278 respectively.

Table 6 Impulse Response Function DI and GRDP to FDI

Period	***Response of* FDI**		
	DI	**FDI**	**GRDP**
1	0.000000	235.4499	-167.6588
2	120.6316	155.1477	-182.8304
3	195.4525	135.1834	-325.8374
4	396.3407	69.71447	-507.8453
5	661.7037	1.066629	-839.7772
6	1133.812	-123.5354	-1348.971
7	1866.290	-301.7715	-2192.182
8	3074.371	-593.3537	-3542.130
9	5013.262	-1048.854	-5737.642
10	8164.165	-1783.764	-9284.505

Source: Statistical output of processed secondary data, 2023

DI did not respond to FDI at the beginning of the period because the standard deviation value was zero. DI responds to FDI starting in the second period, with a standard deviation of 120.6316. Then DI experienced an increase in the sixth to tenth period, namely 1133,812 to 8164,165. The rise in DI was responded negatively by FDI, as seen from the decrease in the standard deviation of FDI in the sixth to tenth period, namely -123.5354 to -1783.764. This means that the increase in the DI variable will cause the FDI to decrease. GRDP negatively responded to FDI from the beginning to the end of the period. FDI reacted positively to the decline in GRDP seen from the standard deviation of FDI in the first to fifth period, namely 235.4499 to 1.066629. This means that the decrease in the GRDP variable causes FDI also to decrease.

Table 7 Impulse Response Function DI and FDI to GRDP

Period	***Response of* GRDP**		
	DI	**FDI**	**GRDP**

1	0.000000	0.000000	7031.580
2	-3822.551	2157.607	11086.30
3	-8613.462	4584.383	17229.34
4	-17323.34	8145.539	26158.80
5	-30392.23	12517.38	41006.96
6	-51907.02	18894.54	64594.54
7	-86074.29	28032.93	102993.8
8	-141469.4	42032.62	164920.2
9	-230701.7	63665.42	265297.7
10	-375123.6	97883.29	427706.7

Source: Statistical output of processed secondary data, 2023

DI does not respond to GRDP at the beginning of the period because the standard deviation value is zero. Furthermore, in the second to tenth period, DI decreased and negatively responded to GRDP with a standard deviation of -3822.551 to -375123.6. The decline in DI was answered positively by GRDP, seen from the increase in the standard deviation of GRDP at the beginning to the end of the period, namely, 7031,580 to 427706.7. A negative response means that during a specific period when DI has decreased, it will increase GRDP; conversely, when the answer given is positive, it means that during a particular period when GRDP has increased, then DI has also increased. FDI in the first period does not respond to GRDP because the standard deviation value is zero. Then FDI experienced an increase in the second period to the end of the period and positively responded to GRDP with a standard deviation of 2157.607 to 97883.29. The increase in FDI was entirely answered by GRDP, seen from the rise in the standard deviation of GRDP from the beginning to the end of the period, namely, 7031,580 to 427706.7. This means that the increase in the GRDP variable causes FDI also to increase.

Variance Decomposition Test

The variance decomposition test is used to show how much the variance is before and after the shocks from other variables to see the relative effect of a variable on other variables in a study that will be examined.

Table 8 Variance Decomposition FDI and GRDP to DI

Period	***Variance Decomposition of* DI**			
	S.E.	**DI**	**FDI**	**GRDP**
1	4266.370	86.62482	8.754341	4.620843
2	6889.227	45.77866	3.369638	50.85170
3	11579.72	50.34122	2.733236	46.92554
4	18648.58	42.76342	1.761748	55.47483
5	30472.99	44.07639	1.983478	53.94013
6	49368.45	42.75794	1.942899	55.29917
7	80184.47	43.11841	2.084716	54.79688
8	129950.6	42.90313	2.126257	54.97061
9	210656.5	43.00107	2.182131	54.81680

10	341279.5	42.97210	2.205106	54.82280

Source: Statistical output of processed secondary data, 2023

The test results show that the DI variance is influenced by the DI itself in the first period by 86 per cent. Whereas in the second period, the variant predicted value of DI was 45.77 per cent, and the rest was attributed to other variables, namely FDI 3.37 per cent and GRDP 50.85 per cent. The most significant variance is GRDP, with a value of 54.82 per cent in the 10th period, and FDI has a minor variance to DI in the 4th period at 1.76 per cent.

Table 9 Variance Decomposition DI and GRDP to FDI

Period	***Variance Decomposition of* FDI**			
	S.E.	**DI**	**FDI**	**GRDP**
1	289.0435	0.000000	66.35453	33.64547
2	394.4564	9.352428	51.09870	39.54888
3	564.1295	16.57658	30.72567	52.69775
4	859.1246	28.42989	13.90636	57.66375
5	1371.559	34.43017	5.456342	60.11348
6	2236.445	38.65136	2.357290	58.99135
7	3658.067	40.47586	1.561642	57.96250
8	5977.622	41.60985	1.570132	56.82002
9	9740.913	42.15697	1.750673	56.09235
10	15840.54	42.50486	1.930054	55.56509

Source: Statistical output of processed secondary data, 2023

From the test results of the variance decomposition of FDI, it can be seen that the variance of FDI was influenced by FDI itself in the first period by 66.35 per cent, and GRDP affected FDI by 33.64 per cent. In the second period, the variation in the predicted value of FDI was 51.09 per cent, and the rest was contributed by other variables, namely DI by 9.35 per cent and GRDP by 39.54 per cent. The most significant variance is GRDP of 55.56 per cent in the 10th period, and DI has the minor variable to FDI of 0.00 per cent in the first period.

Table 10 Variance Decomposition DI and FDI to GRDP

Period	**Variance Decomposition of GRDP**			
	S.E.	**DI**	**FDI**	**GRDP**
1	7031.580	0.000000	0.000000	100.0000
2	13842.55	7.625603	2.429475	89.94492
3	24159.36	15.21458	4.398314	80.38711
4	40427.78	23.79469	5.630283	70.57502
5	66304.96	29.85636	5.657116	64.48653
6	107796.8	34.48260	5.212586	60.30481
7	174420.5	37.52391	4.574098	57.90199
8	281782.8	39.58275	3.977626	56.43962
9	455039.5	40.88293	3.482830	55.63424
10	735046.2	41.71262	3.108077	55.17930

Source: Statistical output of processed secondary data, 2023

From the results of the variance decomposition of the GRDP test, it can be seen that the GRDP variance is affected by the GRDP itself in the first period by 100 per cent, and DI affects GRDP by 00,000 per cent. In the second period, the variation in the predicted value of GRDP was 89.94 per cent, and the rest was contributed by other variables, namely DI by 7.62 per cent and FDI by 2.42 per cent. The most significant variance is GRDP of 55.17 per cent in the 10th period, and FDI has the minor variable to GRDP of 2.42 per cent in the second period.

Panel Vector Auto Regression Models (PVAR)

The following results of the PVAR estimation can be seen in the table below.

Table 11 PVAR Test Results

	DI	**FDI**	**GRDP**
DI(-1)	0.614805	0.030380	-0.962661
	[2.94671]	[2.14920]	[-2.79950]
DI(-2)	0.715435	0.003226	-0.210162
	[2.02794]	[0.13496]	[-0.36145]
FDI(-1)	3.620212	0.821816	4.002628
	[1.18421]	[3.96794]	[0.79441]
FDI(-2)	-0.089322	0.062465	1.846457
	[-0.03791]	[0.39133]	[0.47550]
GRDP(-1)	-0.519879	-0.002444	1.546524
	[-2.01859]	[-0.14006]	[3.64341]
GRDP(-2)	0.541257	0.001644	-0.528105
	[2.02777]	[0.09094]	[-1.20044]
C	-92.63129	57.62624	863.8294
	[-0.06402]	[0.58783]	[0.36222]

Source: Statistical output of processed secondary data, 2023

The estimation results of the PVAR model show a short-term relationship between DI, FDI and GRDP. It can be explained as follows to see a more specific relationship between DI, FDI and GRDP in the Sumatra Region.

1. DI = 0.614805120894*DI(-1)+0.715434905998*DI(-2)+3.6202124228*FDI(-1)-0.0893 22201685*FDI(-2)-0.51987900614*GRDP(-1)+0.541256531607*GRDP(-2)-92.63 129367

Domestic Investment (DI) and Foreign Investment (FDI) are one-way positive relationships. DI in lag 1 has a positive effect with a coefficient of 0.030380 and is significant for FDI because the absolute value of the t-statistic [2.14920] is greater than the critical rule of thumb value of 1.96. Conversely, there is no significant relationship between FDI and DI because the absolute value of the t-statistic is smaller than the critical rule of thumb value of 1.96.

2. FDI = 0.0303795633217*DI(-1)+0.0032257004564*DI(-2)+0.821816188271*FDI(-1)+0.0624651751662*FDI(-2)–0.0024438807111*GRDP(-1)+0.00164448897537*GRDP(-2) + 57.6262426577

The relationship between Domestic Investment (DI) and Gross Regional Domestic Product (GRDP) has a two-way relationship that influences each other. DI in lag 1 has a negative effect with a coefficient of -0.962661 and is significant to GRDP because the absolute value of the -t statistic [-2.79950] is greater than the critical rule of thumb value of 1.96. Likewise, GRDP in lag 1 has a negative effect with a coefficient of -0.519879 and is significant for DI because the absolute value of the t-statistic [-2.01859] is greater than the critical rule of thumb value of 1.96. Moreover, in lag 2, GRDP has a positive effect with a coefficient of 0.541257 and is significant for DI because the absolute value of the t-statistic [2.02777] is greater than the critical rule of thumb value of 1.96.

3. GRDP = -0.962661304567*DI(-1)-0.210161950667*DI(-2)+4.00262802969*FDI(-1)+1.846445705755*FDI(-2)+1.5465243108*GRDP(-1)–0.528105216602*GRDP(-2)+863.829359584

There is no significant relationship between FDI and GRDP and vice versa because the absolute value of the t-statistic is smaller than the critical rule of thumb value of 1.96. Likewise, with GRDP, there is no significant relationship between GRDP and FDI and vice versa because the absolute value of the t-statistic is smaller than the critical rule of thumb value of 1.96.

CONCLUSION

Based on the results of research conducted regarding the causal relationship between Investment and Gross Regional Domestic Product in the Sumatra Region, the following conclusions can be obtained:

1. There is no two-way or one-way causality relationship between Domestic Investment (DI) and Foreign Investment (FDI) in the Sumatra Region.
2. A one-way causality relationship exists between Domestic Investment (DI) and Gross Regional Domestic Product (GRDP) in the Sumatra Region.
3. There is no two-way or one-way causality relationship between Foreign Investment (FDI) and Gross Regional Domestic Product (GRDP) in the Sumatra Region.

REFERENCES

Ajija dkk. 2011. *Cara Cerdas Menguasai Eviews*. Jakarta: Salemba Empat

Arsyad, Lincoln. 2016. *Pengantar Perencanaan dan Pembangunan Ekonomi Daerah*. Yogyakarta: BPFE-Yogyakarta.

Murni, A. (2016). Ekonomika Makro Edisi Revisi. Bandung: PT. Refika Aditama.

Sukirno, Sadono. 2016. *Makroekonomi Teori Pengantar Edisi Ketiga*. Jakarta: Rajawali Pers.

Tambunan, Tulus T.H. 2011. *Perekonomian Indonesia : Kajian Teoritis dan Analisis Empiris*. Bogor : Ghalia Indonesia.

Todaro, M.P. dan Stephen C. Smith. 2011. *Pembangunan Ekonomi Dunia*. Jakarta: Erlanggga.

Amalia.F. 2013. Hubungan Kausalitas Investasi Dengan Pertumbuhan Ekonomi Indonesia, *Jurnal Ekonomi Pembangunan.*Vol. 2 No. 1

Amin. M. 2014. Hubungan Kausalitas Investasi, Ekspor, Dan Pertumbuhan Ekonomi Di Provinsi Maluku, *Jurnal EKSEKUTIF*.Vol 11 No. 1

Astari. C. 2014. Analisis Kausalitas Granger Antara Pdrb, Investasi Dan Belanja Modal Di Provinsi Jawa Tengah, *Economics Development Analysis Journal.* Vol 3 No. 2

Bakari. S. 2017. The Impact of Domestic Inveatment on Economic Growth: New Evidence from Malaysia. *Arsip RePEc Pribadi Munich* (MPRA). MPRA Paper No. 79436

Eshpulotovich, K.A., & Abdusattarovich, K.O. (2020). Foreign Direct Investment and Domestic Investment On the Economic Growth of the Uzbekistan-A VECM Analysis.

Jamaliah. 2018. Hubungan Kausalitas Pertumbuhan Ekonomi Dengan Investasi di Kota Pontianak Kajian Model Granger, *Jurnal Ekonomi, Bisnis dan Kewirausahaan*. Vol 3 No.1

Lean dan Tan. 2011. Linkages Between Foreign Direct Investment, Domestic Investment And Economic Growth In Malaysia, *Jurnal Kerja Sama Ekonomi dan Pembangunan.* Vol. 32 No. 4

Sabono dan Kusreni. 2013. Analisis Hubungan Kausalitas antara Investasi dan Produk Domestik Regional Bruto Provinsi Maluku Tahun 2002 – 2011. *Jurnal Ekonomi dan Bisni.* No. 2

Thao dan Hua. 2018. A VAR Analysis of the Connection between FDI and Economic Growth: A Case Study from Vietnam after 30 Years Reforms, *Jurnal Internasional Inovasi dan Pembangunan Ekonomi.* Vol 4 Edisi 4

Ullah dkk. 2014. Domestic Investment, Foreign Direct Investment, and Economic Growth Nexus: A Case of Pakistan, *Hindawi Publishing Corporation.* Vol 2014