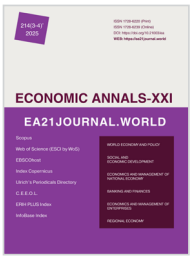

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Why fiscal spending and banking credit fail to drive local growth? Evidence from West Kalimantan Province of Indonesia

Abstract. This study analyzes the influence of government spending, investment, and bank credit expansion on the Gross Regional Domestic Product (GRDP) in districts/cities of West Kalimantan Province of Indonesia during the 2015–2023 period using the Vector Autoregressive (VAR) approach. This research aims to fill the literature gap regarding the determinants of economic growth at the regional level in Indonesia. The results of the stationarity test showed that all the variables were stationary at the first difference, but the cointegration test did not find a long-term relationship between the variables. The VAR model estimates show that GRDP is significantly influenced by its own historical value, while investment, government spending, and banking credit do not show a significant influence in the short term on economic growth. Impulse response and variance decomposition analyses show that GRDP has a highly autoregressive nature, with external contributions from credit, investment, and government spending relatively small but gradually increasing over time. These findings show that in the short term, government credit and spending have not been the main drivers of regional economic growth. In addition, results show the need for improvement in effectiveness of fiscal allocation & credit expansion policies. This research provides valuable insights into the limitations as well as the potential for increasing the effectiveness of fiscal and monetary policies at the regional level.

Keywords: VAR; GRDP; Credit; Investment; Government Spending
JEL Classifications: E24; E41; E64; I18; J28; J31
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1. Introduction

Gross Regional Domestic Product (GRDP) is the main indicator used to measure the economic growth rate of a region. GRDP reflects the total value of goods and services produced by a region in a given period and is an important reference in the formulation of regional economic policies (Sharif et al., 2024; Stryabkova et al., 2021). Some of the factors that affect GRDP include government spending, investment, and bank credit expansion. Therefore, understanding the contribution of these three factors to economic growth at the district/city level in West Kalimantan Province is very important. According to data from the Central Statistics Agency (BPS) of West Kalimantan, GRDP on a constant price basis shows a stable growth trend, from IDR 112.35 trillion in 2015 to IDR 154.98 trillion in 2023. However, in 2020, there was a decline due to the COVID-19 pandemic, which also affected the global economy, mainly due to trade restrictions and activity restriction policies during the pandemic (Gagnon et al., 2023; Roswinna et al., 2023). In addition, there is a quite striking variation in GRDP in districts/cities, where Pontianak City recorded the highest value, while several other districts still have low GRDP values.

One of the factors influencing this difference is foreign and domestic investment, which plays an important role in economic development, especially in developing economies. Shabbir et al. (2020) show that the composition of economic sectors is an important factor in determining how investment contributes to growth. Investment in productive sectors will increase economic development (Emako et al., 2022).

This research is structured as follows: Part 2 reviews the literature on the impact of government investment, credit, and spending on economic growth. Section 3 describes the data and methodology used. Section 4 describes the results and findings. Finally, Part 5 concludes with a discussion. The purpose of this study is to analyze the influence of regional spending, investment, and bank credit expansion on GRDP. To achieve this goal, data from West Kalimantan for 2015-2023 will be used.

2. Method

Regional expenditure data is data on the realization of regional expenditure in districts/cities in West Kalimantan. Regional expenditure realization data is obtained from the posture of the APBD and is composed of employee expenditure, goods and services expenditure, capital expenditure, and other expenditures.

The VAR model is one of the most widely used multivariate time series analysis models, especially in economic studies to capture the dynamic relationships between variables (Sosvilla-Rivero et al., 2025). In particular, in this study, the VAR model was used to analyze the influence of government spending, investment, and bank credit expansion on GRDP at the district/city level in West Kalimantan. Using VAR techniques, this study aims to explore the short-term and long-term dynamics between these variables and provide deeper insights into the relationships between economic factors at the regional level. This enhancement provides a more technical explanation of the methodology used, as well as linking the findings in the literature with the methods adopted in this study, to support the argument with relevant references from indexed sources. The VAR model is:

$$PDRB_t = \alpha_1 + \sum_{i=1}^{3}(\beta_{1i} PDRB_{t-i} + \gamma_{1i} INVESTASI_{t-i} + \delta_{1i} KREDIT_{t-i} + \phi_{1i} BELANJA\_DAERAH_{t-i}) + \varepsilon_{1t}, \quad (1)$$

where:
α_1: Intercept for the PDRB equation;
β_{1i}: Coefficients for the past values of PDRB itself;
γ_{1i}: Coefficients for past INVESTASI values in the PDRB equation;
δ_{1i}: Coefficients for past KREDIT values;
ϕ_{1i}: Coefficients for past BELANJA_DAERAH values;
ε_{1t}: Random error (shock) in the PDRB equation at time t;
i = 1,2,3: Refers to lag 1, 2, and 3.

3. Result

Table 1 shows the results of the Stationarity Test using the ADF (Augmented Dickey-Fuller) method to test the presence of root units in the variables used in the VAR analysis. The test results showed that the variables of GRDP, Credit, Regional Expenditure, and Investment were not stationary at the level of zero, but were stationary at the first difference, which showed that all the first integrated in Table 1.

Table 1:
Stationary Test

Unit Root Test		
Variable	Level (ADF-Fisher Prob)	First Difference (ADF-Fisher Prob)
PDRB	0.9747	0.0080
Credit	0.0427	0.0002
Regional Spending	0.0000	0.0000
Investment	0.0310	0.0000

Source: Authors' own findings

In particular, the GRDP variable is not stationary at the level, but becomes stationary at the first difference, with a p-value of 0.0080. The Credit and Investment variables also showed similar results, with p-values of 0.0002 and 0.0000, respectively, at the first difference, indicating that all variables were first integrated. This serves as the basis for continuing cointegration analysis to test the long-term relationship between these variables.

Based on the results of the optimal lag test (Table 2), lag 3 is recommended by several criteria, namely the Likelihood Ratio (LR), Final Prediction Error (FPE), and Akaike Information Criterion (AIC) criteria. These criteria indicate the best lag options for Vector Autoregression testing using 3 lags.

Table 2:
Optimal Lag Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-350.1602	NA	0.053981	8.432385	8.548138	8.478917
1	21.13617	698.3907	1.14e-05	-0.027052	0.551714*	0.205607*
2	34.27943	23.47010	1.23e-05	0.040966	1.082745	0.459752
3	66.43458	54.35752*	8.42e-06*	-0.343680*	1.161111	0.261233

Source: Authors' own findings

As presented in Table 3, in the cointegration test using the trace method, no cointegration relationship between variables was found. This indicates that there is no long-term association or influence between the variables analyzed, so changes in one variable will not significantly affect the other variables in the long run.

Table 3:
Trace Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.265808	32.02013	47.85613	0.6111
At most 1	0.100978	10.39117	29.79707	0.9740
At most 2	0.038686	2.939864	15.49471	0.9696
At most 3	0.002541	0.178068	3.841466	0.6730

Source: Authors' own findings

As presented in Table 4, in the cointegration test using the maximum eigenvalue method, no cointegration relationship between variables was found. This indicates that there is no long-term association or influence between the variables analyzed, so changes in one variable will not significantly affect the other variables in the long run.

Table 4:
Maximum Eigenvalue Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.265808	21.62896	27.58434	0.2400
At most 1	0.100978	7.451308	21.13162	0.9340
At most 2	0.038686	2.761795	14.26460	0.9613
At most 3	0.002541	0.178068	3.841466	0.6730

Source: Authors' own findings

Table 5 shows the estimated results of VAR for models with 3 lags. The results showed that GRDP had a significant impact from the first lag (p-value < 0.05), but other variables, such as Credit, Investment, Regional Expenditure, did not show a significant effect on GRDP in short term. This indicates GRDP is strongly influenced by its past values, which indicates existence of strong autoregressive process.

Table 5:
VAR

Variable	Coefficient	t-statistic	Significant
LNPDRB(-1)	0.920690	8.98810	Significant
LNPDRB(-2)	-0.047248	-0.36913	Insignificant
LNPDRB(-3)	0.124860	1.33628	Insignificant
LNKREDIT(-1)	0.124860	-0.34102	Insignificant
LN credit(-2)	0.001846	0.17915	Insignificant
LNKREDIT(-3)	0.000499	0.06463	Insignificant
LNINVEST(-1)	0.001178	0.84453	Insignificant
LNINVEST(-2)	0.007936	5.09260	Significant
LNINVEST(-3)	-0.006453	-4.21727	Significant
LNBELANJA(-1)	-0.013671	-1.28970	Insignificant
LNBELANJA(-2)	0.008213	0.74180	Insignificant
LNBELANJA(-3)	0.000922	0.08965	Insignificant

Source: Authors' own findings

GRDP is significantly influenced by the value of the previous year; all three lags of the GRDP variable show statistical significance ($t > 2$), which indicates that GRDP has a strong autoregressive process. The GRDP in West Kalimantan is mainly explained by its values in the past, confirming the existence of dependence on regional growth. In a decentralized economy, historical growth trajectories, structural rigidity, and dependence on resources are often greater than short-term fiscal or financial interventions. These results are in line with structural inertia (Afonasova & Ryzhkova, 2017), where past economic structures limit outcomes in the present.

Credit Has No Significant Impact on GRDP. The credit variable does not show statistical significance ($t < 1.5$), which means that the credit provided does not directly drive GRDP growth in the short term. Across the lag, credit has a positive, but not significant, effect. These results show that credit has not been able to play an effective role in increasing GRDP in the short term. The credits used in this analysis include loans provided by commercial banks and BPRs, which are classified based on economic sectors as well as project locations in West Kalimantan Province. These findings are different from research conducted in Nigeria by Ayowole & Kalmaz (2020), who used the ARDL method and found a relationship between credit and economic growth. On the other hand, in the results of the tests conducted in this study, no long-term relationship was found, as seen in the cointegration test.

The results show that the effect of investment on the Gross Regional Domestic Product (GRDP) varies depending on the time lag. In the first lag, investment does not show a significant influence on GRDP. However, in the second lag, investment has a significant and positive influence, indicating that investment begins to have an impact on economic growth after one period.

No lag in government spending shows statistical significance, indicating that fiscal spending may not have a direct impact on GRDP in the short term. In the second and third lags, regional spending showed a positive effect on GRDP, but the effect was not significant. Meanwhile, in the first lag, regional spending actually has a negative influence that is also not significant on GRDP. These findings show that fiscal policy, particularly through government spending, has not had an instant effect in driving economic growth in the regions analyzed.

The impulse response function (IRF) analysis (Table 6) showed how the LNPDRB responded to shocks from itself, LNKREDIT (credit rate), LNINVESTASI (investment), and LNBELANJA (government spending) over ten periods. The results indicate that LNPDRB is highly autoregressive, which means that its past values have a large influence on future values. The one-unit shock to the LNPDRB itself initially had a large impact (0.021113 in period 1), but this effect gradually decreased and stabilized at 0.0150 in period 10. This suggests that LNPDRB has a strong short-term persistence, but its influence weakens over time.

When analyzing the effects of LNinvestasi on LNPDRB, the response was small but tended to be positive. The impact began to be seen at 0.002 in period 2, then fluctuated slightly before stabilizing at 0.005 in period 10. This shows that investment has a small but positive impact on economic productivity. This is due to investment inefficiency or inaccuracy.

Table 6:
Impulse Response

Response of LNPDRB:				
Period	**LNPDRB**	**LNINVESTASI**	**LNKREDIT**	**LNBELANJA**
1	0.021113	0.000000	0.000000	0.000000
	(0.00163)	(0.00000)	(0.00000)	(0.00000)
2	0.019261	0.002087	-0.000275	-0.003000
	(0.00270)	(0.00231)	(0.00224)	(0.00234)
3	0.015340	0.015151	-0.000542	-0.002172
	(0.00360)	(0.00307)	(0.00297)	(0.00298)
4	0.014156	0.006786	-0.001107	-0.002963
	(0.00316)	(0.00316)	(0.00337)	(0.00321)
5	0.013588	0.004763	-0.000610	-0.001242
	(0.00279)	(0.00321)	(0.00354)	(0.00358)
6	0.015470	0.006398	-0.000422	-0.000345
	(0.00252)	(0.00301)	(0.00347)	(0.00371)
7	0.015754	0.004963	9.13E-05	-0.001637
	(0.00271)	(0.00305)	(0.00375)	(0.00405)
8	0.015204	0.006408	0.000224	-0.001022
	(0.00295)	(0.00303)	(0.00397)	(0.00436)
9	0.015167	0.006316	0.000213	-0.000849
	(0.00292)	(0.00308)	(0.00417)	(0.00463)
10	0.015018	0.005702	0.000367	-0.000998
	(0.00287)	(0.00313)	(0.00433)	(0.00489)

Source: Authors' own findings

Variance decomposition analysis (Table 7) showed that the LNPDRB was primarily influenced by the previous year's value, with internal shocks explaining 100% variation in the first period, then gradually declining to 83.56% in the 10th period. This indicates that LNPDRB is highly autoregressive, where past values have a great influence on future fluctuations. Among external factors, LNINVESTMENT initially had no effect, but its contribution increased gradually until it reached 15.41% in the 10th period, suggesting that capital injections and possible technology transfers had a delayed but increasing impact on economic activity. Meanwhile, LNCREDIT consistently accounts for between 0.009% to 0.11% of LNPDRB variations, indicating a very small and stable influence over time. LNBELANJA (government spending) initially had a very small impact, but its contribution decreased to 0.94% in the 10th period, which suggests that in the short to medium term, shocks or sudden changes in government capital expenditure do not have much effect on GRDP variability. This means that although capital expenditure is productive, its effect on regional economic growth in this model appears to be limited-perhaps because the effects are only felt in the long term or have not been optimal in implementation. Overall, although the LNPDRB is largely influenced by itself, credit access, investment, and government spending play a secondary but important role in determining its economic fluctuations.

Table 7:
Variance Decomposition

Variance Decomposition of LNPDRB:					
Period	**S.E.**	**LNPDRB**	**LNINVESTASI**	**LNKREDIT**	**LNBELANJA**
1	0.021113	100.0000	0.000000	0.000000	0.000000
2	0.028813	98.38168	0.524785	0.009119	1.084415
3	0.036056	80.92357	17.99265	0.028396	1.055380
4	0.039453	80.46555	17.98634	0.102464	1.445641
5	0.042021	81.38694	17.13997	0.111396	1.361692
6	0.045236	81.92407	16.79030	0.104809	1.180824
7	0.048185	82.89207	15.85908	0.092732	1.156112
8	0.050942	83.06927	15.77124	0.084904	1.074579
9	0.053533	83.24953	15.67376	0.078465	0.998246
10	0.055902	83.56212	15.41431	0.076269	0.947300

Source: Authors' own findings

4. Conclusion

Based on the results of the analysis, this study concludes that regional economic growth in West Kalimantan, as measured through GRDP, is significantly influenced by its own historical value. This reflects the highly autoregressive nature of GRDP, where past economic developments are the main determinants of current economic performance. Investment is the only variable that shows a short-term relationship to GRDP, where investment starts to have a positive effect on the

second lag, which means that investment needs time to contribute to economic growth. However, in a longer period of time, it has a negative influence, which means that the investment made is not efficient, so that there can be crowding-out, or there is no technology transfer, so that there is no spillover in the economy. Meanwhile, the variables of government spending and the expansion of bank credit do not show a significant influence on GRDP in the short term. Banking credit, although showing a positive response in the impulse response analysis, has not been able to encourage economic growth substantially because its allocation is still largely absorbed in the consumptive sector. Regional expenditure also does not show a significant influence on GRDP, indicating the need for improvement in the effectiveness and efficiency of public budget management. The absence of a cointegration relationship between the three independent variables on GRDP indicates that there was no strong long-term association during the observation period. One of the potential causes of this weak relationship is the major economic shock due to the COVID-19 pandemic in 2020. The data range covering the period before, during, and after the pandemic (2015-2023) is likely to create structural instability in relationships of observed economic variables.

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