



Digging Into Economic Dynamics In South Sulawesi: Wagner's Law To Keynes' Hypothesis

Indraswati Tri Abdi Reviane¹, Abdul Hamid Paddu², Nur Dwiana Sari Saudi³,
Fitriwati Djam'an⁴, Mirzalina Zaenal⁵

^{1,2,3,4,5} Hasanuddin University, Makassar, Indonesia
indraswati@fe.unhas.ac.id

Abstract. The relationship between government expenditure and economic growth has been a subject of ongoing debate in economics, particularly in the context of regional development in Indonesia. This study aims to analyze the causal relationship between government spending and regional economic growth in South Sulawesi, Indonesia, taking into account two main views namely, Wagner's Law and Keynes Hypothesis. Wagner's Law states that increased government spending is a consequence of economic growth, while the Keynes Hypothesis argues that government spending can stimulate economic activity. The study employs panel data regression with Fixed Effect Model (FEM) and Granger causality test using annual data from 24 regencies/cities in South Sulawesi from 2010 to 2022. The FEM results indicate a significant positive relationship between government expenditure and economic growth. Moreover, the Granger causality test reveals bidirectional causality between government spending and economic growth. Thus, government spending in public policy should be done carefully, considering certain types of spending to achieve optimal economic growth. The findings suggest a complex, interdependent relationship between government expenditure and economic growth in South Sulawesi, highlighting the need for balanced and strategic fiscal policies.

Keywords: Government Spending, Economic Growth, Keynes Hypothesis, Wagner Theory.

1 Introduction

The relationship between government expenditure and economic growth has been a central topic in economic research and policy discussions for decades. Two prominent theories, Wagner's Law and the Keynesian Hypothesis, offer contrasting views on this relationship. Wagner's Law posits that economic growth leads to an increase in government expenditure, while the Keynesian Hypothesis argues that government expenditure stimulates economic growth.

Based on empirical evidence, it is known that the size and role of government tend to increase along with the growth of economic activity, such as Per Capita Income Growth. This occurs in both developed and developing countries.

In the context of Indonesia's decentralized governance system, understanding this relationship at the regional level is crucial for effective policy-making. South

Sulawesi, as one of Indonesia's key economic regions, provides an interesting case study for examining this relationship. With its diverse economic landscape and varying levels of development across its regencies and cities, South Sulawesi offers a rich dataset for analysis.

Based on the description presented above, this study was conducted to investigate the causal relationship between government expenditure and economic growth in South Sulawesi. By employing panel data regression with Fixed Effect Model (FEM) and Granger causality test, we seek to determine whether Wagner's Law or the Keynesian Hypothesis (or both) holds in this regional context. The findings of this study will contribute to the ongoing debate on fiscal policy effectiveness and provide valuable insights for regional development strategies in Indonesia.

2 Literature Review

The relationship between government expenditure and economic growth has been extensively studied in economic literature, with two main theoretical perspectives dominating the discourse: Wagner's Law and the Keynesian Hypothesis.

Wagner's Law, proposed by Adolph Wagner in the late 19th century, suggests that as an economy develops, there is an inherent tendency for government activities to expand, leading to an increase in government expenditure (Wagner, 1883). This law posits that economic growth is the primary driver of government expenditure growth. Several studies have found evidence supporting Wagner's Law in various contexts. For instance, Lamartina and Zaghini found strong support for Wagner's Law in a panel study of 23 OECD countries over the period 1970-2006 [11].

Wagner's law states that economic growth leads to government spending. Wagner put forward his view on the development of increasing government spending relative to GNP. This view is based on empirical observations made by Adolf Wagner on European countries, the United States, and Japan in the 19th century. Wagner's law states that in an economy, government spending will increase along with increasing per capita income, especially because the government must regulate the relationships that arise in society, law, education, recreation, culture, and so on. In other words, economic growth is the main determinant of the increase in the relative growth of public sector spending [18]. Wagner shows that his theory is based on the organic theory of government as an individual who is free to act, regardless of other members of society.

Higher economic growth in a region will have an impact on increasing government spending in that region. This happens because there is a push to improve the welfare of the people living in that region.

Wagner sees government spending as an endogenous variable in economic development, while Keynes views government spending as an exogenous variable in economic development (Olomola, 2004). So the causal relationship according to Keynes is that government spending causes economic development.

On the other hand, The Keynesian hypothesis is different from Wagner's Law. The Keynesian Hypothesis, derived from the work of John Maynard Keynes, argues that government expenditure can be used as a policy instrument to stimulate economic growth (Keynes, 1936). This view suggests that increased government spending can

boost aggregate demand, leading to higher economic output. Empirical support for the Keynesian Hypothesis has been found in numerous studies. For example, Alexiou demonstrated that government spending had a positive impact on economic growth in South Eastern Europe [3].

In a situation where the economy is in a recession, the government can use spending to stimulate aggregate demand. Increased government spending leads to increased economic growth through expansionary fiscal policy. When government spending increases, production also increases, and this leads to an increase in aggregate demand, which ultimately results in an increase in gross domestic product (GDP).

Therefore, if government spending increases, with other assumptions remaining the same, output also increases [17]. In this case, increased government spending can create a multiplier effect, which can increase employment and output. According to Keynesian theory, government spending is considered an exogenous variable that affects GDP growth. This means that the government can intervene to stimulate economic growth through government spending [8].

Theoretically, Keynesian theory generally argued that government intervention can smooth out fluctuations in economic growth. The government influences the economy by promoting social welfare through the implementation of appropriate economic, political, social, and legal programs [10]. Therefore, public spending can be used as an exogenous fiscal policy instrument to generate more growth through various aggregate demand effects, especially during recessions [5]. The multiplier effect of government spending usually has two aspects [4].

The first part shows that an increase in the size of the government will be offset by an increase in tax revenue if the multiplier effect is equal to one, which ultimately tends to maintain fiscal balance. The second part occurs when tax cuts offset the expansion of government spending. In this situation, the value of the multiplier effect will be greater than one.

Therefore, if the size of the government is optimal, aggregate demand will grow, which tends to increase a country's output. According to Keynes, government spending is a policy instrument to increase GDP, and the causality runs from government spending to GDP [4]. Keynesian economists believe that the role of government is to smooth out business cycle fluctuations [10].

Regarding Keynes' hypothesis, there are several economists who argue that high government spending is problematic in terms of providing funds to meet spending needs, whether by increasing taxes, increasing debt, or printing money. Each of these alternatives has potential problems. Imposing taxes can distort the economy, increasing debt can crowd out private investment, and printing too much money can cause inflation, so that in the end it will be difficult to create a multiplier effect as Keynes said.

Although there have been many empirical studies on the relationship between government spending and economic growth. These studies use a variety of specifications, sample periods, and data from various countries. However, these results have not provided a definite answer regarding the causality between the two variables.

In addition, the results of testing between Wagner's Law and Keynesian Hypothesis are also diverse and contradictory. A study conducted by A. Islam (2001) found that

his research supported Wagner's Law rather than Keynesian Hypothesis. However, research conducted by John Loizides and George Vamvoukas (2005) showed different results in countries such as the UK, Ireland, and Greece, where some supported Wagner's Law and some were more in line with Keynesian Hypothesis. In other words, some empirical results support Wagner's view rather than Keynesian hypothesis, while other results support Keynesian view.

In the context of developing countries, the relationship between government expenditure and economic growth becomes even more complex. Devarajan et al. found that the composition of government expenditure matters significantly in determining its impact on economic growth in developing countries [7]. They suggested that shifting resources from current to capital expenditures may not necessarily lead to faster growth if the initial share of current expenditure is too low.

In Indonesia, several studies have examined this relationship at both national and regional levels. Ramayandi (2003) found evidence supporting Wagner's Law in Indonesia during the period 1969-1999. However, Abdullah et al. found a bidirectional causality between government expenditure and economic growth in Indonesia, suggesting that both Wagner's Law and the Keynesian Hypothesis may be applicable [lamarti1].

At the regional level in Indonesia, studies have yielded mixed results. Paulus and Yudhistira found support for Wagner's Law in most provinces of Indonesia, but the strength of the relationship varied across regions [15]. Conversely, Suwandi and Warokka (2013) found evidence supporting the Keynesian Hypothesis in North Sumatra.

The case of South Sulawesi presents an interesting opportunity to examine these theories in a regional context. As one of the fastest-growing provinces in Indonesia, South Sulawesi has experienced significant changes in both government expenditure and economic growth over the past decade. However, the causal relationship between these variables in South Sulawesi has not been extensively studied.

This study aims to fill this gap by employing panel data analysis to test both Wagner's Law and the Keynesian Hypothesis in South Sulawesi. By using data from 24 regencies/cities over a 13-year period, we can capture both cross-sectional and time-series variations, providing a more comprehensive understanding of the relationship between government expenditure and economic growth in this region.

3 Methodology

This study employs a quantitative approach using panel data regression and Granger causality test to examine the relationship between government expenditure and economic growth in South Sulawesi.

The dataset comprises annual observations from 24 regencies/cities in South Sulawesi over the period 2010-2022. The variables used are:

1. Government Expenditure (GE): Total annual government expenditure for each regency/city, obtained from the Regional Financial Information System (SIKD).

2. Economic Growth (EG): Annual growth rate of Gross Regional Domestic Product (GRDP) for each regency/city, obtained from the Central Bureau of Statistics (BPS) of South Sulawesi.

We specify two models to test Wagner's Law and the Keynesian Hypothesis, in which both variables are transformed into natural logarithms to address potential non-linearity and to interpret coefficients as elasticities.

Wagner's Law:

$$\ln \ln \dot{G}_i = \alpha_0 + \alpha_1 \ln \ln EG_i + \mu_i + \varepsilon_i \quad (1)$$

Keynesian Hypothesis:

$$\ln \ln EG_i = \beta_0 + \beta_1 \ln \ln \dot{G}_i + v_i + \epsilon_i \quad (2)$$

Where:

i = regency/city (1, 2, ..., 24)
 t = year (2010, 2011, ..., 2022)
 μ_i and v_i = unobserved regency/city-specific effects
 ε_{it} and ϵ_{it} = error terms

In the estimation method, firstly, the study conducts panel unit root tests (LLC, IPS, ADF-Fisher) to ensure the stationarity of the variables.

Moreover, since the study conducts panel data analysis, then there are 3 (three) analysis models that can be used, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM).

● Common Effect Model (CEM)

The Common Effect Model is a simple model for estimating panel data model parameters by only combining time series and cross-section data without considering any differences between time and individuals (entities). The approach used is the Ordinary Least Square (OLS) method as its estimation technique. The Common Effect Model ignores differences in individual and time dimensions or in other words, data between individuals is the same in various time periods. Thus, mathematically, the panel data estimation with the Common Effect Model is as follows:

$$Y_{it} = \alpha + \beta_1 X_{it} + \varepsilon_{it} \quad (3)$$

● Fixed Effect Model (FEM)

The FEM model assumes that differences between individuals can be accommodated from differences in their intercepts. So in the FEM model, every unknown parameter that will be estimated can use a dummy technique. This estimation model is also commonly called the Least Square Dummy Variable (LSDV) technique. Thus,

mathematically, panel data estimation with the Fixed Effect Model approach is as follows:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + \varepsilon_{it} \quad (4)$$

● Random Effect Model (REM)

The REM model estimates panel data on disturbance variables that may be interrelated across time and individuals. The specific effects on each individual are treated as part of the error component that is random and uncorrelated with the observed explanatory variables. This model is also known as the Error Component Model (ECM) or Generalized Least Squares (GLS). The REM model equation is as follows:

$$Y_{it} = \alpha + \beta_1 X_{it} + \varepsilon_{it} \quad (5)$$

To confirm the appropriateness of the model, the study employs some test to control for unobserved heterogeneity across regencies/cities, such as The Chow Test and The Hausman test.

Finally, The Granger Causality Test is used to evaluate whether there is a causal relationship between one variable and another. This test aims to determine whether the presence of variable X can provide significant information in predicting variable Y. The results of the causality test are indicated by the probability value, which if the value is smaller than the specified significance level (usually 5 percent), then it can be concluded that the variable affects other variables.

This involves estimating the following VAR models:

$$\ln \ln \dot{c}_i = \alpha_0 + \sum_{j=1}^p \alpha_j \ln \ln \dot{c}_{i,t-j} + \sum_{j=1}^p \beta_j \ln \ln EG_{i,t-j} + \mu_i + \varepsilon_{\dot{c}_i} \quad (6)$$

$$\ln \ln EG_{\dot{c}_i} = \gamma_0 + \sum_{j=1}^p \gamma_j \ln \ln EG_{i,t-j} + \sum_{j=1}^p \delta_j \ln \ln \dot{c}_{i,t-j} + \nu_i + \epsilon_{\dot{c}_i} \quad (7)$$

Where:

p is the optimal lag length determined by information criteria (AIC, BIC).

The null hypotheses are:

H0: $\beta_j = 0$ for all j (EG does not Granger-cause GE)

H0: $\delta_j = 0$ for all j (GE does not Granger-cause EG).

4 Results

In conducting this research, it is important to determine the scope or limitations of the research. The purpose of the scope in this research is to ensure that the subject and object of the research remain focused on the objectives to be achieved. The scope of

this research includes an analysis of the causality of local government spending and regional economic growth in South Sulawesi.

This study uses a sample in the form of combined time series data and cross-section data, with a total research period of 13 years from each of the 24 districts/cities in South Sulawesi Province.

4.1 Descriptive Analysis

Descriptive statistics that provide an overview or description of the data used as research samples for each variable can be seen in the following table.

Table 1. Descriptive Statistics of Variables

Variable	Observation	Mean	Std. Dev	Minimal	Maximal
Economic Growth	312	6.172147	2.864935	-10.87	15.45
Government Expenditure	312	2805102	1.346399	26.81793	33.32468

Source: Stata Data Processing, 2024

Overall, table 1 has provided a detailed picture of the distribution and variation of each variable in the sample of 312 observations. The standard deviation provides information about how far the data is spread from the mean, while the range between the minimum and maximum values itself provides an idea of how much variation occurs in the sample.

The standard deviation of economic growth of 2.86 indicates that there is significant variation in the rate of economic growth in various districts/cities in South Sulawesi province. This means that not all regions experience the same economic growth, where there are some regions that grow faster or slower than the average economic growth of regions in South Sulawesi province.

Moreover, with an average regional economic growth in South Sulawesi province of 6.17, regions with economic growth below 3.31% or above 9.03% can be considered outliers.

Overall, this shows that there are significant differences in the rate of economic growth between districts/cities in South Sulawesi province which must be taken into account in economic planning and policy making.

Moreover, the stationarity test is carried out to determine whether the observed time series data is stationary with the observed values fluctuating around the mean value. Table 2 shows the results of panel unit root tests (LLC, IPS, ADF-Fisher) indicate that both ln (GE) and ln (EG) are stationary at levels, allowing us to proceed with the panel regression and Granger causality tests without the need for cointegration analysis. The stationarity test is carried out to determine whether the observed time series data is stationary with the observed values fluctuating around the mean value.

Table 2. Panel Unit Root Test

Variable	t-test	p-value	conclusion
----------	--------	---------	------------

Economic Growth (EG)	-2,0212	0,0018	Stationary
Government Expenditure (GE)	-3,1312	0,0000	Stationary

Source: Stata Data Processing, 2024

The table shows that both variables, namely Economic Growth and Government Expenditure, have been proven to be stationary. This means that the data from both variables do not have significant trends or irregular fluctuations, and can be used in further analysis without the need for additional transformation.

4.2 Fixed Effect Model (FEM)

The Chow test is used to select the best model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). The assumption of this test is that if the probability is greater than 0.05, then the selected model is the Common Effect Model (CEM) and the Hausman test is not required. However, if the probability is less than 0.05, then the selected model is the Fixed Effect Model (FEM) and the Hausman test must be performed.

Table 3. The Chow Test

Effect Test	Statistic	Prob > F
Cross-section F	2,28	0,0009

Source: Stata Data Processing, 2024

With the F statistic value of 2.28 obtained from the Chow test and P-value of 0.0009, it shows that there is a significant difference between fixed effects and random effects in the panel data model tested. In other words, the fixed effect model is more appropriate to use than the random effect model. This will provide more accurate and relevant estimates to analyze the relationship between variables.

Table 4 The Hausman Test

<i>Test Summary</i>	<i>Chi-Sq. Stat</i>	Prob > Chi-squared
Cross-section Random	17,27	0,0006

Source: Stata Data Processing, 2024

With a Chi-squared statistical value of 17.27 calculated in the Hausman test and a P-value of 0.0006, it once again shows that the fixed effects model is more appropriate than the random effects model.

4.3 Fixed Effect Model (FEM)

Since the fixed effect model was the most appropriate model obtained for use in this study, the FEM results show a significant positive relationship between government expenditure and economic growth in both models.

Table 5. Estimation Results of the effect of Government Spending on Economic Growth (Keynesian Hypothesis Model)

Variable	Regression Coefficient	Standard Error	Prob>t
Government Expenditure	0.412	0.067	0.000
Constant	1.872	0.256	0.000
R-squared = 0.5759			
F_Statistik = 61.43			
Prob>F = 0.000			
Signifikansi pada 5%, N=312			

Source: Stata Data Processing, 2024

In the Keynesian Hypothesis Model, the regression coefficient for government spending with a very small P-value (below 0.05) shows that government spending has a positive and significant influence on economic growth, where every one percent increase in government spending has a significant effect in increasing economic growth by 0.412 percent, assuming other variables remain constant.

Table 6. Estimation Results of the effect of Economic Growth on Government Spending (Wagner's Law Model)

Variable	Regression Coefficient	Standard Error	Prob>t
Economic Growth	0.763	0.089	0.000
Constant	2.145	0.312	0.000
R-squared = 0.684			
F_Statistik = 73.21			
Prob>F = 0.000			
Signifikansi pada 5%, N=312			

Source: Stata Data Processing, 2024

While, in the Wagner's Law model, the regression coefficient for economic growth with a very small P-value (below 0.05) shows that economic growth has a positive and significant influence on government spending, where a 1% increase in economic growth is associated with a 0.763% increase in government expenditure, assuming other variables remain constant.

Granger Causality Test Results:

1. H_0 : Economic Growth does not Granger-cause Government Expenditure
F-statistic: 7.89 (p-value: 0.002)
2. H_0 : Government Expenditure does not Granger-cause Economic Growth
F-statistic: 6.23 (p-value: 0.008)

The Granger causality test results reject both null hypotheses at the 1% significance level, indicating bidirectional causality between government expenditure and economic growth.

5 Discussions

The FEM results provide support for both Wagner's Law and the Keynesian Hypothesis in South Sulawesi. The positive and significant coefficients in both models suggest that there is a strong relationship between government expenditure and economic growth, regardless of the direction of causality assumed.

The elasticity of government expenditure with respect to economic growth (0.763) is higher than the elasticity of economic growth with respect to government expenditure (0.412). This suggests that the effect of economic growth on government expenditure (Wagner's Law) is stronger than the effect of government expenditure on economic growth (Keynesian Hypothesis) in South Sulawesi.

The Granger causality test results reveal a bidirectional causal relationship between government expenditure and economic growth. This finding suggests that both Wagner's Law and the Keynesian Hypothesis are applicable in the context of South Sulawesi. The bidirectional causality implies a complex, interdependent relationship between government spending and economic growth in the region.

These results have important policy implications for South Sulawesi:

1. The strong support for Wagner's Law suggests that as the economy of South Sulawesi grows, there will be an increasing demand for public services and infrastructure, necessitating higher government expenditure. Policymakers should anticipate this trend and plan for sustainable financing of increased public spending.
2. The evidence supporting the Keynesian Hypothesis indicates that government expenditure can be an effective tool for stimulating economic growth in South Sulawesi. However, the lower elasticity (compared to Wagner's Law) suggests that the growth effects of government spending may be moderate.
3. The bidirectional causality highlights the need for a balanced approach to fiscal policy. While government spending can stimulate growth, policymakers must also ensure that economic growth translates into improved public services and infrastructure to meet the growing demands of the population.
4. The heterogeneity across regencies/cities (captured by the fixed effects) suggests that one-size-fits-all policies may not be appropriate. Local governments should tailor their fiscal policies to the specific needs and characteristics of their regions.

6 Conclusion and Recommendations

This study investigated the causal relationship between government expenditure and economic growth in South Sulawesi, Indonesia, using panel data from 24 regencies/cities over the period 2010-2022. By employing a Fixed Effect Model and Granger causality test, we tested the applicability of both Wagner's Law and the Keynesian Hypothesis in this regional context.

Our findings provide evidence supporting both theories, revealing a bidirectional causal relationship between government expenditure and economic growth in South Sulawesi. The elasticity estimates suggest that the effect of economic growth on government expenditure (Wagner's Law) is stronger than the reverse effect (Keynesian Hypothesis).

These results highlight the complex and interdependent nature of the relationship between government spending and economic growth in South Sulawesi. They underscore the importance of a balanced and strategic approach to fiscal policy, taking into account both the stimulative effects of government expenditure and the increasing demands for public services that accompany economic growth.

Future research could extend this analysis by examining the composition of government expenditure and its differential impacts on various sectors of the economy. Additionally, investigating the potential non-linear relationships and threshold effects could provide further insights into the optimal level of government spending for promoting economic growth in South Sulawesi and similar regions.

References

1. H. Abdullah, M. S. Habibullah, and A. Z. Baharumshah, "The relationship between government expenditure and economic growth in ASEAN-5: A reexamination using the panel data approach," *Applied Econometrics and International Development*, vol. 9, no. 1, pp. 21–36, 2009.
2. D. Ahuja and D. Pandit, "Public expenditure and economic growth: Evidence from the developing countries," *FIIB Business Review*, vol. 9, no. 3, pp. 228–236, 2020.
3. C. Alexiou, "Government spending and economic growth: Econometric evidence from the South Eastern Europe (SEE)," *Journal of Economic and Social Research*, vol. 11, no. 1, pp. 1–16, 2009.
4. M. D. Alshammary, N. Khalid, Z. A. Karim, and R. Ahmad, "Government expenditures and economic growth in the MENA region: A dynamic heterogeneous panel estimation," *International Journal of Finance & Economics*, vol. 27, no. 3, pp. 3287–3299, 2022.
5. C. Aluthge, A. Jibir, and M. Abdu, "Impact of government expenditure on economic growth in Nigeria, 1970–2019," *CBN Journal of Applied Statistics*, vol. 12, no. 1, pp. 139–174, 2021.
6. C. Bazán, V. J. Álvarez-Quiroz, and Y. Morales Olivares, "Wagner's Law vs Keynesian Hypothesis: Dynamic Impacts," *Sustainability*, vol. 14, no. 16, p. 10431, 2022.
7. S. Devarajan, V. Swaroop, and H. F. Zou, "The composition of public expenditure and economic growth," *Journal of Monetary Economics*, vol. 37, no. 2, pp. 313–344, 1996.
8. H. Eldemerdash and K. I. S. Ahmed, "Wagner's law vs. Keynesian hypothesis: New evidence from Egypt," *International Journal of Arts and Commerce*, vol. 8, no. 3, pp. 1–18, 2019.
9. A. A. A. Ibrahim and M. S. Bashir, "Causality between government expenditure and economic growth in Sudan: Testing Wagner's Law and Keynesian Hypothesis," *Journal of Economic Cooperation & Development*, vol. 40, no. 4, 2019.
10. A. Jibir and C. Aluthge, "Modelling the determinants of government expenditure in Nigeria," *Cogent Economics & Finance*, vol. 7, no. 1, p. 1620154, 2019.
11. S. Lamartina and A. Zaghini, "Increasing public expenditure: Wagner's law in OECD countries," *German Economic Review*, vol. 12, no. 2, pp. 149–164, 2011.

12. H. Mohammadi and R. Ram, "Economic development and government spending: An exploration of Wagner's hypothesis during fifty years of growth in East Asia," *Economies*, vol. 3, no. 4, pp. 150–160, 2015.
13. S. A. Nusair and D. Olson, "Testing Wagner's law versus the Keynesian hypothesis for GCC countries," *ResearchGate*, Apr. 2017. [Online]. Available: https://www.researchgate.net/publication/321026227_Testing_Wagner's_Law_versus_the_Keynesian_Hypothesis_in_GCC_countries--April_2017
14. E. Pasaribu and S. Septriani, "Pengujian Wagner's Law Versus Keynesian Hypothesis: Pendekatan Regional Indonesia," *Convergence: The Journal of Economic Development*, vol. 2, no. 2, pp. 181–193, 2020.
15. M. Paulus and M. H. Yudhistira, "Wagner's Law in Indonesia: Evidence from a panel of provinces," *Applied Economics Letters*, vol. 25, no. 15, pp. 1090–1094, 2018.
16. Y. H. Permana and G. S. M. J. Wika, "Testing the existence of Wagner law and government expenditure volatility in Indonesia postreformation era," *Journal of Economics and Sustainable Development*, vol. 5, no. 10, pp. 130–139, 2014.
17. K. Poku, E. Opoku, and P. Agyeiwaa Ennin, "The influence of government expenditure on economic growth in Ghana: An ARDL approach," *Cogent Economics & Finance*, vol. 10, no. 1, p. 2160036, 2022.
18. N. Sharma, A. Srivastava, and S. Khanna, "Government Expenditure, Economic Growth and Human Development-International Review and Additional Insights," in *2022 IEEE Delhi Section Conference (DELCON)*, pp. 1–8, 2022.
19. T. Widodo and A. P. Astuti, "Fiscal policy responsiveness and economic growth: Evidence from local governments in Indonesia," *Journal of Public Finance and Public Choice*, vol. 28, no. 1, pp. 112–135, 2022.
20. T. Widodo and N. Setyowati, "Government expenditure and economic growth: Panel data evidence from Indonesian provinces," *Economic Journal of Emerging Markets*, vol. 15, no. 1, pp. 87–108, 2023.
21. N. Yuliana and N. Setyowati, "Public expenditure and economic growth nexus in Indonesian provinces: A panel data analysis," *Journal of Economic Development*, vol. 39, no. 2, pp. 210–228, 2023.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

