



How Do Government Expenditures by Function Affect Economic Growth? Evidence from Indonesia

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 10.24269/ekulibrium.v21i1.2026.pp127-149

ARTICLE INFO

Article history

Received:
01-07-2025

Revised:
12-08-2025

Accepted:
08-09-2025

Keywords

Government Expenditures
Economic Growth
Functional Classification
Fiscal Policy
Indonesia

ABSTRACT

This study addresses a key gap in the empirical literature on fiscal policy and economic growth: while numerous studies assess the impact of total government spending, few examine the differential effects of expenditures by function under the COFOG framework, particularly in emerging economies such as Indonesia. Understanding these functional impacts is essential for aligning budget priorities with long-term development goals, especially amid fiscal volatility and shifting political agendas. Using annual realized expenditure data by function from the Ministry of Finance for 2005–2023, this study employs a multiple regression model grounded in the Keynesian Growth Model and Endogenous Growth Model to evaluate the impact of functional spending on long-term economic growth. The analysis spans four presidential terms (Susilo Bambang Yudhoyono 2004–2014; Joko Widodo 2014–2024) and encompasses major domestic and global economic shocks during the period. Findings shows that Economic Affairs and General Public Services have consistently received the largest shares of Indonesia’s budget from 2005–2023, while Health accounts for a relatively small portion. Compared to OECD countries, which prioritize Social Protection, Indonesia’s spending pattern emphasizes Economic Affairs and Education, with allocations fluctuating significantly from year to year. Regression results show that only Health expenditure has a positive and statistically significant effect on economic growth, aligning with the role of human capital in long-term productivity. In contrast, Social Protection shows a negative significant effect, while major categories such as Economic Affairs, Public Order and Safety, and Education have no significant impact. These findings underscore that the quality, efficiency, and strategic orientation of spending, rather than its size, are critical for aligning fiscal policy with sustainable growth objectives.

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1. Introduction

Government expenditure plays a central role in Indonesia's economic development strategy. As a country with a large public sector and a limited tax base, Indonesia relies on fiscal policy to stimulate growth, reduce poverty, and fund national development priorities. In 2024, government expenditure contributes for 6.61% of Indonesia 2024 Gross Domestic Bruto (BPS, 2025). Furthermore, the Indonesia annual State Budget (APBN) accounts for a significant share of the economy and serves as the main instrument for delivering infrastructure, education, health, and social protection. Since late 2024, Indonesia has entered a new administrative period under President Prabowo Subianto, following ten years under President Joko Widodo. The Joko Widodo administration was known for its two-phase development focus: infrastructure during the first term (2014–2019), and human capital and infrastructure sustainability in the second term (2019–2024). Before that, the presidency of Susilo Bambang Yudhoyono (2004–2014) emphasized economic, social and political stability as the foundation for growth.

However, concerns about the effectiveness and consistency of government expenditure allocation persist. Despite these large-scale spending commitments across different administrations, important questions remain: to what extent has government expenditure, especially under the last two presidencies, actually contributed to Indonesia's long-term economic growth? These concerns have become even more relevant in the post-pandemic period, as the country faces pressure to maintain fiscal sustainability while supporting economic recovery. Although sectors like education receive large mandatory allocations (20% of State Budget), Indonesia's overall growth performance remains modest. This situation raises doubts about the effectiveness and productivity of its public spending. Therefore, it is necessary to understand how government expenditure in different functional areas affects economic growth—not only to improve budget quality, but also to align fiscal policy with national development goals.

From a theoretical perspective, the relationship between government expenditure and economic growth has long been debated. The Keynesian Growth Model emphasizes that public expenditures stimulate aggregate demand and generate multiplier effects, especially in times of economic slack. In contrast, the Endogenous Growth Model argues that long-term growth depends on internal drivers such as human capital, infrastructure, and technological innovation, areas often supported by strategic government spending. Given these frameworks, analyzing not just the size but also the functional composition of government spending becomes essential. While most empirical studies in Indonesia classify spending by economic categories, such as personnel, capital, goods and services, relatively few examine how expenditures by function, such as education, health, or economic affairs, contribute to long-term growth. This study addresses that gap by assessing the extent to which functional government expenditures affect Indonesia's economic growth over the 2005–2023 period.

This study seeks to assess the extent to which government expenditures by function contribute to long-term economic growth in Indonesia. From a Keynesian Growth Model's assertion, government spending increases aggregate demand, which in turn

stimulates output, employment, and investment in the short run. Functional expenditures such as those in economic affairs or infrastructure are expected to have a direct multiplier effect by boosting production capacity and supporting supply chains. Meanwhile, the Endogenous Growth Model emphasizes long-term mechanisms in which public spending can raise the economy's productive potential. For instance, investment in education contributes to human capital development, which enhances innovation and labor productivity over time. Likewise, spending on health improves workforce quality, while infrastructure enhances connectivity and reduces transaction costs, factors that are essential for sustained growth. By increasing aggregate demand, government spending stimulates production and investment. Furthermore, productive government expenditures, such as infrastructure investments, enhance economic capacity and efficiency, fostering long-term growth (Barnes, Cournède, & Pascal, 2023; Barro, 1996; Easterly & Rebelo, 1994; Jeong, Lee, & Kang, 2020). Given the significant role of government expenditures in Indonesia's fiscal policy, understanding their government spending functional impact on economic growth is essential for policy evaluation and optimization.

Based on these theoretical considerations, this study investigates whether functional categories of government expenditure contribute differently to long-term economic growth in Indonesia. Using time-series data from 2005 to 2023, the analysis tests whether spending in sectors such as education, health, infrastructure, and economic affairs produce significant growth effects. This approach also allows the study to examine whether the allocation of public funds reflects theoretical expectations and policy priorities.

Some studies investigating the influence of Indonesia government expenditure to growth have been conducted (Abdillah, 2023; Herdiyati & Ismail, 2022; Maulid, Bawono, & Sudiby, 2021; Najmuddin, 2022; Pulungan, 2024; Sari, 2023; Suriadi, Sriningsih, & Fatimah, 2023). However, number of studies applying the COFOG approach in classifying government expenditures by function is limited. For instance, Maulid et al. (2021) have studied the impact of Indonesia government expenditure towards its economic growth, however the government spending components used are personnel, material, capital expenditures, interest payments, subsidies, and social expenditures. While (Maulid et al., 2021) examined government expenditures based on expenditure components, this study focuses on government expenditures based on 11 functional classifications which has been internationally recognized. Additionally, this study employs a longer observational period (2005 to 2023) compare to Maulid et al. (2021) which cover 2005 to 2019 data. Thereby this study enriching previous research findings with different data and approach.

Other studies in the Indonesian context have applied the functional classifications, but with a stronger focus on regional development. For instance, Pulungan (2024) investigates the impact of government expenditure by function on economic growth in underdeveloped, frontier, and outermost regions of Indonesia. While this study offers an interesting regional perspective, it does not capture the broader impact at the national

level. The second reason for using functional classifications is that it aligns with international best practices, allowing for greater comparability with similar studies in other countries. This classification system, known as the Classification of the Functions of Government (COFOG), has been endorsed by the United Nations and is globally implemented (Barnes et al., 2023; IMF, 2001; Jeong et al., 2020; UN, 2000). The classification of functions used in this study follows Indonesia's budgetary classification system, which divides expenditures into 11 functions: General Public Services; Defence; Public Order and Safety; Economic Affairs; Environmental Protection; Housing and Community Amenities; Health; Culture and Tourism; Religion; Education; and Social Protection.

In a broader context, studies on the functional compositions have been conducted. Jeong et al. (2020) have investigated government spending toward economic growth using functional compositions of COFOG in South Korea where education and economic affairs have shown consistent contribution on South Korea long term economic growth. In OECD context, Barnes et al. (2023) have also investigated, using COFOG approach, how OECD countries reallocate public spending during periods of crisis and recovery. Shifts in spending priorities, such as increased allocations for health and social protection, reflect responses to economic and social pressures. These reallocations, in turn, influence long-term growth potential by shaping the structural composition of government expenditure in OECD countries.

Finally, the limited research on the impact of government expenditure in each sector/function on Indonesia's economic growth has constrained the scope of evaluation available to the government and legislature when formulating the state budget allocation. Based on this premise, this study aims to analyze the effect of realized government expenditure and determine how it influences Indonesia's economic growth. Specifically, this research seeks to answer the question: "How does government spending in each function affect Indonesia's economic growth?"

2. Literature Review

Keynesian Growth Model

The Keynesian framework emphasizes the necessity of government intervention in the economy, challenging classical economic theories that advocate for market self-regulation. According to Keynes (1936) and also Parui (2024), government expenditures are a fundamental component of aggregate demand, expressed as $Aggregate\ Demand\ (AD) = Consumption\ (C) + Investment\ (I) + Government\ Spending\ (G) + Net\ Export\ (X - M)$. An increase in G raises AD , theoretically leading to economic expansion. Moreover, government expenditures generate a multiplier effect, wherein initial spending induces greater economic growth than the initial outlay.

Endogenous Growth Model

Unlike classical growth models, which emphasize external factors, the Endogenous Growth Model highlights internal drivers such as human capital, technological advancement, and infrastructure (Alam et al., 2025; Barro, 1990, 1996; Barro & Sala-i-Martin, 1992; Lucas Jr, 1988; Ponzetto & Troiano, 2025; Romer, 1986). It advocates for targeted government investments in these areas to sustain long-term economic growth.

Based on this model, economic growth is believed to originate from within the economic system itself (endogenous), rather than from external factors as in the Solow model. Romer (1986), who introduced this model, argued that the development of endogenous factors, namely the innovation and technology sectors, can enhance long-term economic growth. Furthermore, Lucas Jr (1988) added that an influential endogenous factor in growth is human capital. Therefore, the government needs to allocate funds for the development of education and the workforce. Thus, this model views the key to economic growth as an increase in increasing returns to scale on human capital. Furthermore, Barro (1990) also emphasized endogenous factors as determinants of economic growth. Barro (1990) stated that government spending affects long-term economic growth when it is allocated productively, such as in the education and infrastructure sectors.

However, if government spending is not carried out productively, its impact can become negative. When government spending is inefficient or excessive, exceeding the optimal level, it can create economic distortions and reduce growth (Afonso, Jalles, & Venâncio, 2021; Altunc & Aydın, 2013; Barro & Sala-i-Martin, 1992; Toyofuku, 2013). Therefore, the policy behind government spending is crucial.

Indonesia Government Expenditure Classification

Government expenditure classification in Indonesia is divided into three categories: Classification by Type of Spending, Classification by Organization, and Classification by Function. Classification by Type of Spending classifies the state budget based on spending categories within ministries/agencies, such as personnel expenditure, goods and services expenditure, capital expenditure, and social expenditure. Meanwhile, Classification by Organization categorizes the state budget based on the organizational structure of ministries/agencies such as spending for the Ministry of Defence, the Ministry of Finance, and the Ministry of Religious Affairs.

The classification of government expenditure by Function groups state budget expenditures based on government functions carried out by ministries/agencies. This functional classification refers to the Classification of the Functions of Government (COFOG), developed by the United Nations Development Programme (UNDP) and adopted in the Government Finance Statistics (GFS) manual 2001 by the International Monetary Fund (Barnes et al., 2023; IMF, 2001; Jeong et al., 2020). Thus, the classification of government expenditure by function serves as an analytical tool that provides insights into a country's expenditure trends according to function, sub-function, and program, allowing for cross-country comparisons with nations that follow COFOG classifications.

In COFOG, government functions are divided into ten categories: General Public Services; Defence; Public Order and Safety; Economic Affairs; Environmental Protection; Housing and Community Amenities; Health; Recreation, Culture, and Religion; Education; and Social Protection. This classification has been adopted into Indonesia's budgeting system, as stipulated in the State Finance Law and further detailed in sub-functions as per Indonesia Minister of Finance Regulation (PMK) No. 108 of 2018.

In Indonesia, the functional classification of expenditure is divided into 11 functions by separating the Recreation, Culture, and Religion function into two distinct categories: Culture and Tourism, and Religion. Consequently, Indonesia's 11 government expenditure functions are: General Public Services; Defence; Public Order and Safety; Economic Affairs; Environmental Protection; Housing and Community Amenities; Health; Culture and Tourism; Religion; Education; and Social Protection. These 11 functions are further divided into sub-functions, programs, and activities. The description of these functions are summarized in Table 1.

Table 1. Scope of Government Expenditure of Indonesia Classification of the Functions of Government (COFOG)

	Function	Scope of Expenditure (sub-Function)
1	General Public Services	Governance, executive and legislative institutions, fiscal policy, foreign aid, public debt, regional development, and research & development (R&D) in public administration.
2	Defense	National defense, military support, foreign military aid, and defense-related research & development (R&D).
3	Public Order and Safety	Police, disaster management, judiciary, correctional institutions, legal and security policies, and research & development (R&D) in law enforcement.
4	Economic Affairs	Trade, business, cooperatives and SMEs development, agriculture, fisheries, forestry, irrigation, labour, fuel and energy, mining, transportation, logistics, digital economy, telecommunications, innovation and technology, and research & development (R&D) in economic affairs.
5	Environmental Protection	Waste and water management, pollution control, conservation, land use planning, and environmental research & development (R&D).
6	Housing and Community Amenities	Housing development, public utilities, drinking water supply, urban infrastructure, community services, and research & development (R&D) in housing and urban planning.
7	Health	Medical and pharmaceutical services, public health, disease prevention, family planning, and health-related research & development (R&D).
8	Culture and Tourism	Tourism promotion, cultural development, broadcasting, publishing, and research & development (R&D) in arts, culture, and media.
9	Religion	Religious services, facilities, interfaith harmony, and research & development (R&D) in religious studies.
10	Education	Early childhood, primary, secondary, vocational, and higher education; educational infrastructure, and research & development (R&D) in education.
11	Social Protection	Welfare programs, elderly and disability services, housing aid, subsidies, social counselling, and research & development (R&D) in social welfare.

Source: Adopted from Ministry of Finance of Indonesia (2018)

Empirical Evidence on Government Expenditure and Economic Growth

Within the framework of endogenous growth theory and the role-of-the-state perspective in economic development, the relationship between government expenditure by function (as classified by COFOG) and economic growth has remained a dynamic topic of empirical inquiry. However, cross-country evidence on this matter remains inconclusive, split between findings that are supportive and those that are cautionary or even critical. Key influencing factors include expenditure efficiency, institutional quality, and country-specific fiscal contexts. The following section classifies the findings into pro and contra positions regarding the growth impact of functional government spending.

a. Supportive Findings (Pro-Growth Position)

These studies below show some evident of positive impact of government expenditure towards economic growth.

1) Developed Countries

Studies in developed countries generally find that efficient and well-targeted budget allocations to human capital and innovation have a positive impact on long-term growth. In OECD countries, Barnes et al. (2023) conducted a longitudinal descriptive study using COFOG level 1 data from all OECD member countries for the period 2000–2021. The results show that a shift in budget priorities toward productive sectors such as health, infrastructure, and R&D, particularly during economic recovery phases, supports growth, provided that fiscal governance remains sound. Furthermore, in South Korea context, Jeong et al. (2020) used annual COFOG level 1 and level 2 data for South Korea from 1970–2016 with sectoral regression analysis based on an error correction model. The study found that spending on education, health, and economic affairs has a significant positive effect on growth, with the caveat that spending efficiency must be maintained.

2) Indonesia

Several recent studies in Indonesia also show positive findings between government expenditure and growth. Suriadi et al. (2023) analyzed provincial panel data for 2005–2020 using fixed-effect and random-effect models, with data sourced from Statistics Indonesia and the Ministry of Finance. The results indicate that spending on education, health, economic affairs, housing, and public services has a significant positive relationship with regional economic growth. Sujianto and Azmi (2020) analyzed the relationship between government expenditure and Indonesia's economic growth during the 2010–2019 period using the Ordinary Least Squares (OLS) method with time-series data from Statistics Indonesia. The results indicate that government spending has a positive and significant effect on Gross Domestic Product (GDP) growth. This finding reinforces the Keynesian perspective that public expenditure can serve as an effective instrument to stimulate aggregate demand and accelerate growth, particularly when directed toward productive sectors. Furthermore, Najmuddin (2022) employed input–output analysis and panel regression for the period 2010–2020 in North Maluku Province. The study found a positive effect from spending on economic affairs, education, and health on growth, although certain types of economic infrastructure were negatively correlated.

Herdiyati and Ismail (2022) applied an Autoregressive Distributed Lag (ARDL) model using national data for 2000–2019 and found that economic affairs and social protection functions were not significant for inclusive growth, whereas education and health had positive long-term effects. Sari (2023) analyzed regency/municipality panel data for 2015–2022 using fixed-effect and spatial regression models, finding that health expenditure significantly contributed to reducing stunting and improving welfare, which in turn supported economic growth.

b. Cautionary or Contradictory Findings

Although, some studies show of positive relationship of government expenditure and economic growth, some other studies found contradictory findings.

1) Cross-Country Studies

Several multi-country studies indicate that government expenditure does not always yield positive growth effects, particularly in developing countries with weaker institutional frameworks. Butkiewicz and Yanikkaya (2011), using cross-country regression with World Development Indicators and Worldwide Governance Indicators, found that large government spending could suppress growth if not accompanied by institutional quality improvements. Yang (2020) analyzed panel data from developing countries (2001–2016) using a fixed-effects model, finding that health expenditure may constrain short-term growth if not followed by improvements in human capital quality, highlighting the importance of linking public spending to development outcomes. Wahab (2011), employing a dynamic panel model with data from 97 countries (1960–2004), concluded that while public investment can support growth, excessive spending beyond optimal levels may have detrimental effects on the economy.

2) Indonesia

Some Indonesian studies also present mixed or cautionary evidence. Herdiyati and Ismail (2022), using an ARDL model, found that economic affairs and social protection functions were not significant for inclusive growth, suggesting potential inefficiency or lagged effects. Similarly, Najmuddin (2022) found that certain types of economic infrastructure in North Maluku were negatively correlated with growth, possibly reflecting resource allocation to less productive projects or those misaligned with local needs. Furthermore, Abdillah (2023) examined the effect of government expenditure on economic growth in Indonesia using provincial panel data for the 2015–2021 period, analyzed through the Fixed Effect Model (FEM). The study finds an inverted U-shaped relationship, in which increases in government spending initially promote growth but, beyond a certain optimal level, exert a negative impact on GDP. This finding is consistent with the Armey curve hypothesis, which emphasizes the importance of maintaining public expenditure within an efficient and productive range.

c. Synthesis and Research Gap

The reviewed literature reveals several patterns. First, in both developed and developing countries, targeted and efficient government expenditure on human capital,

particularly health and education, tends to show consistent positive long-term effects on growth. This aligns with endogenous growth theory, which emphasizes the role of human capital accumulation in sustaining productivity.

Second, the evidence for the economic affairs function is more mixed: while some studies (Jeong et al., 2020; Suriadi et al., 2023) report positive effects when efficiency is maintained, others (Herdiyati & Ismail, 2022) find insignificant results, suggesting potential inefficiencies or long-time lags before benefits materialize. Third, social protection spending shows the greatest divergence, positive in certain contexts for welfare improvement (Sari, 2023), but often insignificant or negative for growth in the short term, especially in developing countries with reactive or poorly targeted programs.

These contradictions may stem from differences in institutional quality, fiscal governance, sectoral composition of spending, and methodological approaches. Against this backdrop, the current study addresses a specific gap: there is a scarcity of national-level empirical research for Indonesia using the COFOG classification over a long observation period, capturing multiple presidential administrations and major economic cycles. Existing Indonesian studies often rely on provincial or sector-specific data, lack functional COFOG disaggregation, or cover shorter periods. By applying a COFOG-based analysis for 2005–2023 at the national level, this research contributes to clarifying the functional composition of spending most closely associated with economic growth, offering insights into fiscal prioritization that are directly relevant for policy formulation.

3. Research Method

This study employs a quantitative approach using multiple regression analysis to examine the impact of government expenditure realization by function, investment, trade and inflation on economic growth. The model specification stage employs the Ordinary Least Squares (OLS) method to estimate the regression coefficients that link the dependent variable to the independent variables. Before interpreting results, several key assumptions of multiple regression must be checked:

- a. Multicollinearity. It occurs when independent variables are strongly correlated with each other. This can be assessed using the Variance Inflation Factor (VIF), where values above 10 indicate a potential problem.
- b. Residual assumptions include independence, constant variance (homoscedasticity), and normal distribution. Residual independence means there is no correlation over time, violations are known as autocorrelation and can be tested with the Durbin–Watson statistic. Homoscedasticity means the variance of residuals is consistent across all values of the independent variables; the Glejser test can be used to check this. If the F-test in the Glejser procedure is not significant, the variance is considered constant. Normality of residuals can be examined using the Kolmogorov–Smirnov test.

Furthermore, assessing model fit is conducted. The first step is the overall F-test, which evaluates whether all independent variables jointly influence the dependent variable. If the test is not significant, the analysis stops. If significant, the model's explanatory power is assessed using the R-squared value, showing the proportion of variation in the dependent variable explained by the model. Higher R-squared values

suggest better fit. The t-test is then used to identify which independent variables have a significant individual effect.

Finally, the results are interpreted. Regression coefficients show both the direction and size of the effect of each independent variable on the dependent variable. A positive coefficient indicates that the variables move in the same direction, while a negative coefficient means they move in opposite directions. The size of the coefficient reflects the expected change in the dependent variable for a one-unit change in the independent variable.

The data used in this study are secondary data. The realization of government expenditures by function was obtained from publications of the Directorate General of Budget, Ministry of Finance of the Republic of Indonesia. Meanwhile, data for the independent variables were obtained from publications of Indonesia Statistics Bureau. The dataset comprises semi-annual economic growth rates and government expenditure realizations from 2005 to 2023. The expenditure categories follow Indonesia's budgetary classification, encompassing 11 functions: general public services, defense, public order and safety, economic affairs, environmental protection, housing and community amenities, health, culture and tourism, religion, education, and social protection. In addition to expenditure variables, this study also examines the effects of investment, trade, and inflation on Indonesia's economic growth. Investment is proxied by gross fixed capital formation, while trade is proxied by the difference between exports and imports.

Ordinary Least Squares (OLS) regression is employed, with growth in GDP as the dependent variable and government spending by function, investment, trade and inflation as independent variables.

The multiple linear regression model for this study is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_{13} X_{13} + \varepsilon \dots\dots\dots(1)$$

where Y represents the dependent variable, which is Indonesia Economic Growth, observed semi-annually from 2005 to 2023. Meanwhile, X_1, X_2, \dots, X_{13} are independent variables.

4. Results and Discussion

Descriptive Analysis

From 2005 to 2023, on average, Indonesia's government expenditures were primarily allocated to the economic affairs function and followed by general public services. Annually, central government spending on economic affairs reached approximately 132 trillion Rupiah, followed by general public services at 117 trillion Rupiah.

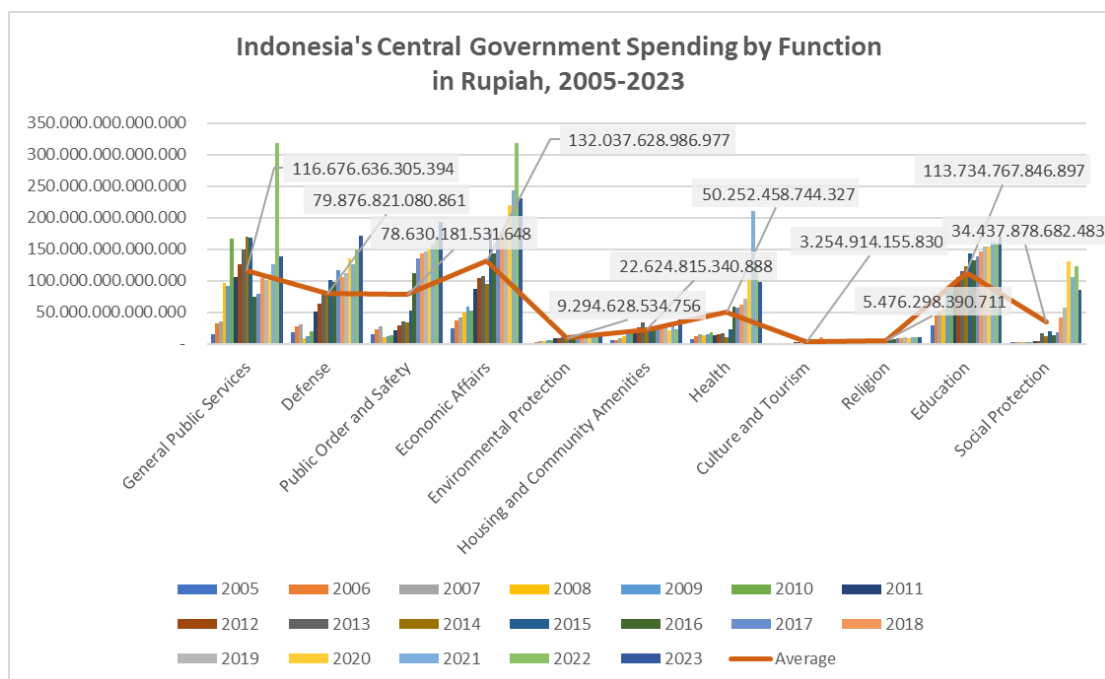


Figure 1. Indonesia's Central Government Spending by Function

Source: processed by the authors with data from Ministry of Finance of Indonesia (2024)

Although education spending is mandated by law to constitute 20% of the state budget, it was not the highest expenditure function. Instead, education ranked third, following economic affairs and general public services, with an average annual expenditure of approximately 114 trillion Rupiah. Meanwhile, the function with the lowest expenditure was Religion affairs function, which averaged only around 5 trillion Rupiah per year during this period.

Another interesting aspect to consider is the central government spending on the health function. Health ranked as the sixth-highest expenditure function, just below Public Order and Safety. A significant surge in health expenditures occurred during the COVID-19 period (2020–2022), with spending reaching 105.07 trillion Rupiah in 2020, 211.37 trillion Rupiah in 2021, and 124.27 trillion Rupiah in 2022. If the assumption that health spending surged due to COVID-19 is excluded from the average calculation, the government's health sector expenditure would only be around 32 trillion Rupiah annually.

To provide a more comprehensive overview of the proportion of Indonesia's government spending allocation by function, Figure 2 presents a comparison of government expenditure distribution in OECD countries, South Korea, and Indonesia.

OECD countries and South Korea tend to have a more stable proportion of expenditure allocations per function from year to year. This is evident from the relatively small fluctuations in the percentage of expenditures per function over time in OECD countries and South Korea. In contrast, Indonesia exhibits significant annual fluctuations in the percentage of government spending by function. This indicates that OECD countries and South Korea tend to have more stable medium- and long-term government

expenditure priorities, as reflected in the relatively consistent proportion of government spending allocation per function each year. Meanwhile, Indonesia's government spending priorities tend to be more dynamic and fluctuate annually in the medium and long term.

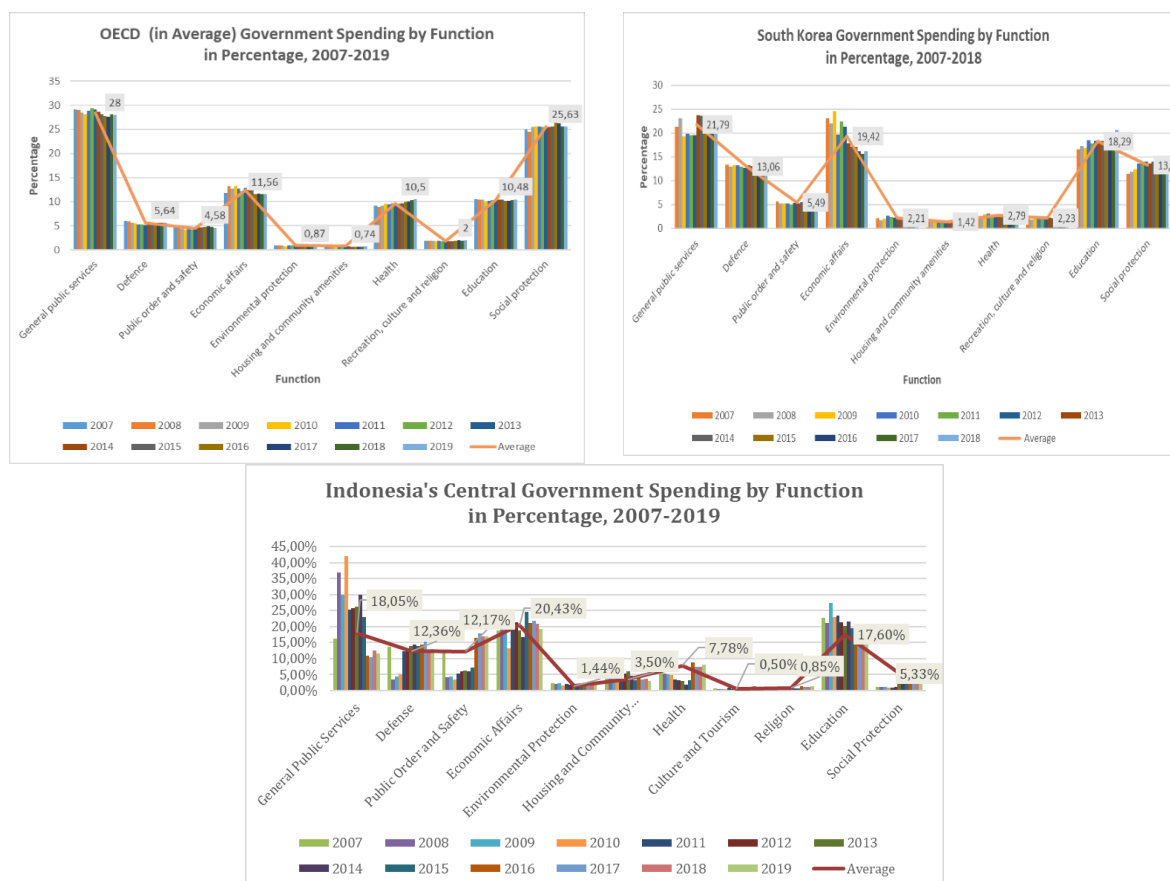


Figure 2. Comparison of Government Spending by Function

Source: Processed by the authors with data from (OECD, 2024) and Ministry of Finance of Indonesia (2024)

Furthermore, the three graphs above indicate that the largest portion of government expenditure in OECD Countries and South Korea is allocated to General Public Services, accounting for 28% in the average OECD country and 21.79% in South Korea. Meanwhile in Indonesia, General Public Services is allocated as the second largest portion after Economic Affair. This is understandable as most countries have obligations related to personnel expenses, debt payments, and related public services that require significant allocations in General Public Services.

However, OECD countries prioritize government spending more on Social Protection (25.63%), followed by Economic Affairs (11.56%). In contrast, South Korea's priorities are relatively similar to those of Indonesia, with a stronger focus on Economic Affairs (South Korea 19.42%; Indonesia 20.43%) and Education (South Korea 18.29%; Indonesia 17.60%).

Moreover, by processing the data descriptively, it is proven that Indonesia government tends to spend more in the second semester. Several studies have indicated that government spending by ministries and agencies tends to accumulate toward the end of the fiscal year. This pattern is also evident in this study, as the realization in the second semester significantly exceeded that of the first in all functions. On average, Indonesia's government expenditures are concentrated in the second semester, accounting for 68.61% of the total annual expenditure.

Table 2. Statistics of Variables

No	Variables	Average Semester I	Average Semester II
1	Economic Growth	4,974%	4,965%
2	General Public Services	36,28%	63,71%
3	Defense	33,71%	66,29%
4	Public Order and Safety	33,36%	66,64%
5	Economic Affairs	28,54%	71,46%
6	Environmental Protection	28,63%	71,37%
7	Housing and Community Amenities	27,03%	72,97%
8	Health	32,69%	67,31%
9	Culture and Tourism	26,46%	73,54%
10	Religion	33,60%	66,40%
11	Education	31,52%	68,48%
12	Social Protection	33,45%	66,55%

Source: processed by the authors with data from Ministry of Finance of Indonesia (2024)

Multiple Linear Regression Analysis

The government expenditure variable refers to spending carried out by ministries and agencies. This expenditure represents the aggregate spending across the various functions implemented by these institutions. In this study, government expenditure is disaggregated by functional categories. Since expenditure realization data by function may exhibit linear correlations between variables, there is a potential risk of violating a key assumption of multiple linear regression analysis—namely, multicollinearity. Therefore, the correlation among functional expenditure variables is examined prior to the regression analysis.

Table 3. Correlation of Government Expenditure Realization Variables by Function

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	1										
(2)	0,52761	1									
(3)	0,27868	0,91045	1								
(4)	0,58942	0,94092	0,84644	1							
(5)	0,68937	0,8432	0,75801	0,89809	1						
(6)	0,76081	0,75729	0,59395	0,81406	0,91246	1					
(7)	0,23803	0,6987	0,78429	0,73252	0,58701	0,41326	1				
(8)	0,35062	0,68432	0,71742	0,7381	0,78083	0,71186	0,45238	1			
(9)	0,34832	0,92101	0,96957	0,8462	0,7999	0,63387	0,74904	0,72552	1		
(10)	0,74019	0,89251	0,77679	0,92216	0,95954	0,90299	0,62016	0,73678	0,82827	1	
(11)	0,27429	0,72904	0,80662	0,69102	0,57434	0,34743	0,83969	0,35798	0,75305	0,58958	1

Government expenditure is classified into twelve functions: general public services (1), defense (2), public order and safety (3), economic affairs (4), environmental protection (5), housing and public facilities (6), health (7), tourism and culture (8),

religion (9), education (10), social protection (11), and not available in reference (12). For the “not available in reference” category, correlation values are not calculated due to incomplete data. The correlation among functional expenditure variables is presented in Table 3.

Table 3 shows that the linear correlations among the government expenditure realization variables by function are very high, indicating a potential risk of multicollinearity. Therefore, the expenditure function variables will be selected based on the strength of their linear relationship with the economic growth variable. The results of the correlation between each expenditure function variable and the economic growth variable are presented in Table 4.

Table 4. Linear Correlation between the Economic Growth Variable and Expenditure Variables

Function	Correlation Score	p-value	Result
General Public Services	-0,08106	0,629	Not Significant
Defense	-0,38431	0,017	Significant
Public Order and Safety	-0,43175	0,007	Significant
Economic Affairs	-0,39887	0,013	Significant
Environmental Protection	-0,27978	0,089	Not Significant
Housing and Community Amenities	-0,09926	0,553	Not Significant
Health	-0,44876	0,005	Significant
Culture and Tourism	-0,09505	0,570	Not Significant
Religion	-0,40733	0,011	Significant
Education	-0,31213	0,056	Not Significant
Social Protection	-0,69995	0,000	Significant

Table 4 shows that the correlations between government expenditure realization variables by function and the economic growth variable are negative. To select the variables to be included in the model, only those with significant correlations were chosen, namely expenditure on Defense, Public Order and Safety, Economic Affairs, Health, Religion, and Social Protection.

This study analyzes whether the realization of government spending by function, investment, trade and inflation have an impact on economic growth. The first step in this analysis is to determine the estimator values by estimating the regression parameters using the following formula.

$$\hat{\beta} = (X^T X)^{-1} (X^T Y) \dots \dots \dots (2)$$

This study conducts an F-Test procedure by formulating the hypotheses “government expenditure realization, investment, trade and inflation does not affect economic growth” (H_0) and “government expenditure realization, investment, trade and inflation simultaneously affects economic growth” (H_1). The significance level (α) used in this study is 5%. The results of the F-Test can be seen in Table 5.

Table 5. F Test Result

Source	DF	SS	MS	F	P
Regression	8	73,480	9,185	6,94	0,000
Residual Error	29	38,406	1,324		
Total	37	111,886			

Table 5 shows that the obtained p-value is 0.000, which is less than 5%. Based on this result, the F-Test is significant, indicating that the realization of government expenditure, investment, trade, and inflation simultaneously impacts economic growth, and the analysis can proceed to the next stage. Before moving to the prediction stage, assumption testing is conducted. However, the regression results reveal multicollinearity in the Religious Affairs expenditure variable, with a VIF value of 34.6, and in the Defense function, with a VIF value of 23.4. Therefore, these two variables are removed from the model, and the results are obtained as follows:

Table 6. F Test Result After Removing Variables

Source	DF	SS	MS	F	P
Regression	7	72,848	10,407	8,00	0,000
Residual Error	30	39,038	1,301		
Total	37	111,886			

The assumptions that must be met in multiple linear regression analysis include:

a. Multicollinearity Test in Independent Variables

The Variance Inflation Factor (VIF) is used to test for multicollinearity. If the VIF value exceeds 10, multicollinearity is present. Table 7 shows that there are no VIF values greater than 10, indicating that multicollinearity is not present.

Table 7. VIF Value

No	Variable	VIF
1	Public Order and Safety	8,3
2	Economic Affairs	3,9
3	Health	5,1
4	Social Protection	4,8
5	Investment	6,5
6	Trade	2,1
7	Inflation	1,8

b. Independent Residuals

The test to detect the presence of autocorrelation was conducted using the Run Test, with the null hypothesis stating that the residuals are randomly distributed, and the alternative hypothesis stating that the residuals are not randomly distributed.

- 1) Runs above and below $K = -1.51962E-15$
- 2) The observed number of runs = 11
- 3) The expected number of runs = 19.5263
- 4) 22 observations above K ; 16 below
- 5) P-value = 0.004

The Run Test results show that the p-value is less than the 5% significance level, leading to the rejection of the null hypothesis. Therefore, it is concluded that autocorrelation is present. The step taken to address this assumption violation is to perform differencing.

c. Homogeneous Residual Variance

One of the tests to detect whether the residual variance is homogeneous is the Glejser Test. This test is conducted by regressing the absolute residuals on the independent variables. If the F-Test is significant, the test concludes that the residual variance is not homogeneous, commonly referred to as heteroscedasticity. The results of the Glejser Test can be seen in Table 8.

Table 8. Glejser Test Results

Source	DF	SS	MS	F	P
Regression	7	4,4856	0,6408	2,27	0,056
Residual Error	31	8,4792	0,2826		
Total	37	12,9648			

Based on the results of the Glejser Test in Table 8, the F-Test result is not significant, indicating that the residual variance is homogeneous, meaning no heteroscedasticity is present.

d. Normally Distributed Residuals

The final assumption is that the residuals are normally distributed. The test used to detect whether the residuals are normally distributed is the Kolmogorov–Smirnov Test. The hypotheses used are: the residuals are normally distributed (H_0) versus the residuals are not normally distributed (H_1). The test results can be seen in Figure 3.

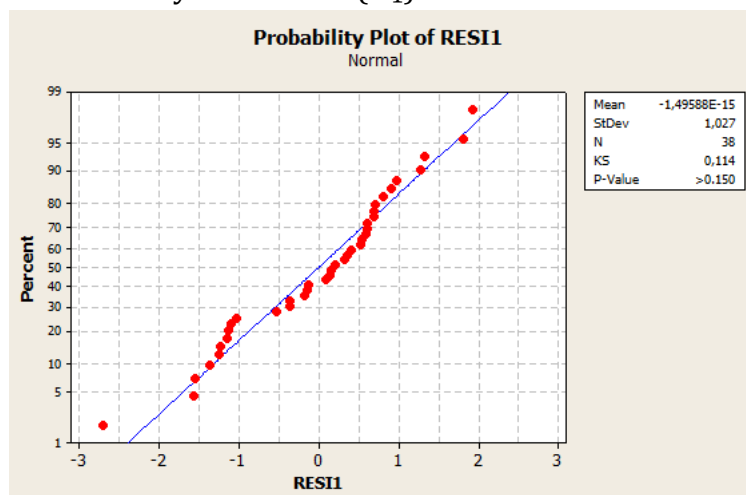


Figure 3. Kolmogorov–Smirnov Test Results

Figure 3 shows that the obtained p-value is greater than 0.15, indicating that the residuals are normally distributed.

Based on the results of the assumption tests, it can be concluded that the assumptions regarding multicollinearity, heteroscedasticity, and normally distributed residuals have been met. However, the autocorrelation assumption has not been satisfied.

Therefore, further analysis is necessary to address this violation. The first step to resolve the autocorrelation issue is by applying differencing, followed by rechecking the assumptions. The same procedure is applied to examine the influence of the independent variables on the dependent variable.

The independence assumption after differencing was tested using the Run Test, and the following results were obtained:

- 1) Runs above and below $K = -1.68702E-16$
- 2) The observed number of runs = 19
- 3) The expected number of runs = 19.3784
- 4) 20 observations above K ; 17 below
- 5) p -value = 0.899

These results indicate that, in the post-differencing data analysis, autocorrelation is not present. Since all assumptions have been satisfied, the analysis can proceed to the model goodness-of-fit test and interpretation stage.

The model goodness-of-fit test was conducted by examining the results of the Simultaneous Test (F-Test), R-Square, and Individual Test (t-Test). The F-Test results show that the variables Public Order and Safety, Economic Affairs, Health, Social Protection, investment, trade, and inflation simultaneously have a significant effect on economic growth. The obtained R-Square value is 62.7%, meaning that these variables explain 62.7% of the variation in economic growth, while the remaining 37.3% is explained by other variables outside the scope of this study. To determine which independent variables, have a significant effect, a t-Test was conducted, and the results are presented in Table 9.

Table 9. Individual Test Results

No	Variable	Coefficient	P-value	Conclusion
1	Public Order and Safety Expenditure	-0.00000895	0.568	The Public Order and Safety Expenditure variable individually does not affect the economic growth variable.
2	Economic Affairs Expenditure	-0.00000686	0.404	The Economic Affairs Expenditure variable individually does not affect the economic growth variable.
3	Health Expenditure	0.00002385	0.031	The Health Expenditure variable individually affects the economic growth variable.
4	Social Protection Expenditure	-0.00008367	0.000	The Social Protection Expenditure variable individually affects the economic growth variable.
5	Investment	0.00000655	0.069	The investment variable individually does not affect the economic growth variable at the 5% significance level. However, at the 10% significance level, this variable has an effect.
6	Trade	-0.00000355	0.251	The trade variable individually does not affect the economic growth variable.
7	Inflation	0.05519	0.339	The inflation variable individually does not affect the economic growth variable.

The model obtained in this study is as follows:

$$Y = 0,3871 - 0,00000895 \text{Public Order and Safety} - 0,00000686 \text{Economic Affair} + 0,00002385 \text{Health} - 0,00008367 \text{Social Protection} + 0,00000655 \text{Investment} - 0,00000355 \text{Trade} + 0,05519 \text{Inflation}$$

To assess the goodness of fit of the model, one of the measures that can be used is the coefficient of determination, commonly known as R². Figure 7 shows that the obtained coefficient of determination is 62,7%, meaning that government spending based on function, investment, trade dan inflation can explain 62,7% of the variance in economic growth. Meanwhile, the remaining 37,3% is explained by other variables outside the scope of this study.

Multiple Linear Regression Analysis Findings Discussion

Based on the results presented in Table 9 and the model, this study finds that the relationship between government expenditure by function and Indonesia's economic growth over the period 2005–2023 is neither uniform in direction nor in significance.

1. Public Order and Safety Expenditure

The coefficient for public order and safety is negative (-0.00000895) and statistically insignificant ($p = 0.568$). This implies that fluctuations in spending for law enforcement, policing, and public safety functions have not had a measurable direct impact on economic growth during the observed period. Given the nature of such expenditure—primarily maintaining security rather than directly stimulating economic activity—its effect on GDP may be indirect and more long-term, such as through investor confidence, rather than immediate growth acceleration.

2. Economic Affairs Expenditure

The economic affairs function also exhibits a negative and insignificant coefficient (-0.00000686; $p = 0.404$). This result is noteworthy because, descriptively, the economic affairs function has consistently been among Indonesia's largest budget allocations over the last two decades. The lack of a significant positive impact may suggest inefficiencies, misalignment between budget allocation and growth-oriented programs, or a time lag in realizing economic benefits. In comparison, OECD countries allocate less to this category but emphasize efficiency and long-term competitiveness.

3. Health Expenditure

Health spending is the only government expenditure function in this model that has a positive and statistically significant effect on economic growth (0.00002385; $p = 0.031$). This finding aligns with human capital theory, where improved health outcomes enhance labor productivity, reduce absenteeism, and contribute to sustainable growth. The result is particularly relevant in the Indonesian context, where healthcare reforms such as the National Health Insurance (JKN) were rolled out in 2014 and have gradually expanded coverage.

4. Social Protection Expenditure

Surprisingly, social protection expenditure has a negative and significant coefficient (-0.00008367; $p = 0.000$). This is counterintuitive, as social protection is generally expected to support economic stability and welfare. One possible explanation is that in Indonesia, much of the social protection budget is reactive, targeting post-disaster relief or unconditional cash transfers, which may not generate productive multiplier effects. Alternatively, higher spending might reflect periods of economic stress, leading to a negative correlation with growth.

5. Investment

Investment, proxied by domestic gross fixed capital formation, is not significant at the 5% level ($p = 0.069$) but becomes significant at the 10% threshold, with a positive coefficient (0.00000655). This supports the traditional growth model perspective that capital accumulation fosters GDP growth. However, the marginal effect is small, possibly due to bottlenecks in infrastructure implementation, regulatory hurdles, and regional disparities.

6. Trade

The trade variable (export-import balance) has a negative, insignificant coefficient (-0.00000355; $p = 0.251$). This suggests that net trade surpluses or deficits over the period did not exert a strong direct influence on GDP growth. This may be attributed to Indonesia's export structure, which is still heavily reliant on commodities whose prices are volatile and determined by global markets.

7. Inflation

Inflation shows a positive but insignificant relationship with economic growth (0.05519; $p = 0.339$). This may reflect the fact that moderate inflation in Indonesia often coincides with periods of economic expansion, but excessive inflationary pressures can erode purchasing power and dampen growth.

From 2005 to 2023, covering two terms of President Susilo Bambang Yudhoyono and two terms of President Joko Widodo, Indonesia's fiscal policy exhibited high volatility in functional expenditure allocation. Large and persistent allocations to economic affairs and public order & safety have not translated into significant growth effects in the regression results. In contrast, health spending, which has been relatively smaller in share, shows a consistent and significant positive effect on economic growth.

This contrast raises questions about fiscal efficiency and prioritization. Indonesia's volatility in budget allocation contrasts with the more stable patterns seen in OECD countries and South Korea, where functional allocations are more predictable and aligned with long-term development priorities. The results here suggest that stable and targeted investment in human capital, particularly health, may yield more reliable growth dividends than fluctuating capital-intensive allocations in economic affairs.

From a Keynesian perspective, government expenditure is a critical lever for stimulating aggregate demand, which in turn drives production, employment, and overall GDP growth. Under this view, functions such as Economic Affairs and Public Order and Safety would be expected to have at least some positive short-term multiplier effects. However, the insignificant and negative coefficients for these categories suggest that in Indonesia's case, the Keynesian stimulus channel is being undermined, possibly, by inefficiencies, poor targeting, or the predominance of expenditures with delayed rather than immediate economic impacts. This suggests that its contribution to growth is likely indirect, through fostering political stability, investment security, and legal certainty, effects that are not easily captured in annual GDP growth models.

The Health function's positive and significant effect fits both the Keynesian view (through increased demand in the health sector) and endogenous growth theory, which emphasizes the role of human capital as a driver of long-term productivity and innovation. In the Indonesian context, major health policy interventions like National Health Insurance (JKN) appear to have contributed to these sustained gains.

In contrast, Social Protection function expenditure exhibits a statistically significant negative relationship with economic growth over the same period. This finding is counterintuitive from a Keynesian standpoint but may be explained by several factors.

First, the short-term multiplier effect of social protection spending is relatively limited, particularly since a substantial share of this expenditure, especially during the 2008–2009 global crisis and the COVID-19 pandemic, was aimed at cushioning household consumption rather than enhancing long-term productivity. Second, part of the spending may have been allocated to less productive or temporary measures, such as unconditional cash transfers without sufficient empowerment programs. Third, the benefits of social protection may materialize with a time lag, making them less visible in contemporaneous growth measures. This result underscores the need for a more careful design, targeting, and implementation of social protection programs to ensure that welfare improvements are aligned with sustainable growth objectives.

Overall, these findings highlight the relevance of applying the COFOG framework to analyze the impact of government expenditure on economic growth. By disaggregating spending by function, the study reveals that not all types of government expenditure yield positive growth effects. The implication is that budget quality, efficiency, and the strategic direction of allocation are just as important as the size of the budget itself, particularly for aligning fiscal policy with national development goals across different administrations.

5. Conclusion

This study offers several novel contributions. First, it provides a comprehensive overview of Indonesia's government expenditure by function, covering the majority of four presidential terms—two under Susilo Bambang Yudhoyono (2004–2014) and two under Joko Widodo (2014–2024). The analysis draws on expenditure data from 2005 to 2023 and situates it within relevant international contexts. General Public Services has consistently been one of the largest government expenditure categories in Indonesia, South Korea, and OECD countries. This is unsurprising, as the category generally covers civil servant salaries, allowances, and interest payments on public debt. However, over nearly two decades, Indonesia's spending has been heavily concentrated in Economic Affairs and General Public Services, in contrast to OECD countries where the primary focus is Social Protection. Unlike OECD nations, which prioritize welfare and social security due to their more mature economic conditions, Indonesia and South Korea place greater emphasis on Economic Affairs and Education. Furthermore, OECD countries and South Korea display a stable pattern of functional expenditure allocation, whereas Indonesia's allocations fluctuate markedly from year to year. Such volatility underscores the dynamic nature of Indonesia's fiscal priorities and warrants further research on its long-term implications for economic growth.

Second, although descriptive data (see Figure 2) show that Economic Affairs (20.43% on average) and Education (17.60% on average) received the largest shares of government expenditure during 2005–2023, the regression results reveal that neither category has a statistically significant impact on economic growth. In contrast, Health—with a relatively modest average share of only 7.78%—exhibits a significant positive effect on growth. This mismatch suggests that larger budget allocations do not

necessarily yield greater growth contributions, and that the quality and effectiveness of spending are critical determinants.

The regression results further indicate that Health expenditure is the only government spending function with a positive and statistically significant relationship with economic growth. This finding aligns with both Keynesian theory and endogenous growth theory, which highlights the role of human capital in driving long-term productivity and innovation.

In contrast, Social Protection expenditure shows a negative and significant relationship with economic growth. This counterintuitive result may be linked to the reactive nature of much of Indonesia's social protection budget, which is often allocated to post-disaster relief or unconditional cash transfers with limited productive multipliers, particularly during periods of economic stress such as the 2008–2009 global financial crisis and the COVID-19 pandemic. Furthermore, large shares of spending in Public Order and Safety and Economic Affairs, despite their budgetary dominance, also fail to show significant growth effects, possibly reflecting inefficiencies, weak targeting, or long time lags before economic benefits materialize.

These findings emphasize that the quality, efficiency, and strategic orientation of budget allocations, not merely their size, are critical for aligning fiscal policy with national development goals. The relatively stable and targeted functional allocations observed in OECD countries and South Korea appear more conducive to long-term growth than Indonesia's more volatile spending patterns. Strengthening allocations to sectors with strong and lasting productivity impacts, particularly health, alongside reforming underperforming expenditure categories through improved governance, sharper targeting, and integrated programming, will be essential for ensuring that government spending delivers sustainable economic growth.

Future research could employ sectoral growth models to capture the lagged effects of expenditure functions, particularly in *Economic Affairs* and *Social Protection*. Further studies may also utilize regional panel data to examine interregional disparities in spending efficiency. In addition, research comparing central and regional government expenditures could provide a more comprehensive understanding of fiscal policy effectiveness across different levels of government.

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