

THE DETERMINANTS ON DEBT POLICY AND THE RELATIONSHIP BETWEEN THE FACTORS ON DEVELOPMENT SUSTAINABILITY ISSUES IN AN EMERGING ECONOMY

Pariang Siagian 

Department Accounting, Faculty of Economics and Business, Universitas Bina Nusantara, Indonesia

Email: parsiagian@yahoo.com



Keywords:

First keyword: Gross Domestic Bruto

Second keyword: Debt to Ratio

Third keyword: Asset

JEL Classification: M2, M4, M41

Abstract

Research background: Indonesian government debt has become protruding into the political circle, making many parties, including academics, overwhelming the nation's future economy. This study examines the determinants of debt policy and their impact on development sustainability.

Purpose of the article: The result reveals that some independent variables have a considerable effect on dependent variables, namely tax ratio to debt ratio, deficit and tax ratio to economic growth, deficit to per capita income, tax ratio to inequality, tax ratio to HDI, and deficit and tax ratio to asset growth. Meanwhile, the others have no statistical effects on each dependent variable, like the deficit to debt ratio, debt ratio to economic growth, tax ratio and debt ratio to per capita income, deficit and debt ratio to inequality, deficit and debt ratio to HDI, and debt ratio to asset growth.

Methods: A multivariate regression model was constructed by using panel data regressions to evaluate the relationship between these factors and development sustainability for the period 2005–2022.

Findings & value added: The research results can be used to identify why some factors determine elements of sustainable development while others do not. The implication, the government prefers certain discretion in order to enhance debt policy and maintain sustainable economic development, for which the most prudent mitigation and solution at every step that can elevate and solve the problem of the barriers.

Corresponding Author:

parsiagian@yahoo.com



This is an open access article
under the [CC BY](https://creativecommons.org/licenses/by/4.0/) license.



1. INTRODUCTION

Many developing countries face challenges such as poverty and unemployment as a result of deficits, unsustainable debt, and inequality. These countries, including Indonesia, faced the burdensome responsibility of having to pay a large amount of debt. The burden of debt may boost costs projected to incur default. In addition, excessive external debt makes people more vulnerable. Debt is used to defray their expenditures, protect investments, and be essential for sustainability and a better future. Generally, this is happening for emerging economies in the developing world, such as Indonesia, where public debt has been cascading and elevating the likelihood of default. When a country defaults on its debt, it often triggers financial panic in domestic and international markets alike. The higher a country's debt ratio climbs, the higher its

risk of default. That's why borrowing must focus on national development programs to achieve many advantages.

In order to support its budget deficit, which is likely to lead to sustainable development, Indonesia continues to seek new sources of funding. Indonesia's government debt has grown substantially over the last decade; however, many parties are addressing criticism and delaying paying. The burden of debt is going to lead to default. In the late 1990s, Indonesia has experienced, where government debt quite a high increase, unscrupulous debt trigger of the prolonged 1998 monetary crisis, decline the currency regional and domestic. Although the government's debt is considered safe, but there are some weaknesses in debt management, which potentially rises inefficiency, corruption, and burdensomeness. (Satya, V.E., 2015). Indonesia receives external debt as an external source of finance to fill in the investment-saving gap and thus aids in the effort to achieve economic growth to improve social living by cultivating the nation's economy. The external debt consists of government, central bank and private sector external debt. An increase in debt can be driven by various factors, overrode by the deficit. From 2005 to 2013, the average growth state budget deficit was 1.82 to 2.59 percent of GDP. In 2018 and 2019, the lowest point of 1.82 to 2.20 percent is less than three percent according to the State Finance Law. (Nurmilah, A. 2021).

For 2005-2013, the average growth state budget deficit was 14.55 percent. The issue is safety and capable of payment. According to statutory regulations, concerning to state finance, the government debt ratio is a maximum of 60 percent (Law No. 17/2003). The government should encourage coordination, apply prudential principles, and support development financing to promote sustainable national development by minimizing risks and development sustainability such as economic growth, per-capita income, inequality, human development index, and asset growth. The financial position will indicate that those sustainability indicators and debt policy will be supported by prudential management of state deficits and an appropriate tax ratio to achieve a sound composition of debts.

This study exploits the country data set on central government debt and searches for a systematic determinant of the debt ratio, development sustainability, and the relationship between the factors. In the context of the rising Indonesian government debt, the core contribution is to focus on the diagnosis of the nexus in the last decade (2014–2022) of debt policy which was driven by various factors, including budgetary deficits that occur when a government's expenditure surpasses revenues and the appropriate nation tax ratio as a guide to mark people's participation and the implication to sustain development that can be indicated by economic growth, per capita income, inequality (or Gini ratio), HDI, and accretion in state assets. The result highlights the importance of these results and contributes to a new literature establishing the casual link between the factors contributing to development sustainability, particularly for the government to make and mitigate the planning strategy in debt policy.

The paper proceeds as follows: Section II describes the theoretical review related to the article. Section III provides the data collected and the estimation method. Section IV discusses the findings. Finally, Section V presents the conclusions and implications.

2. LITERATURE REVIEW and HYPOTHESIS

2.1. Literature Review

Countries should be prepared to keep debt sustainable and ensure it does not endanger growth and stability (Susmanto, T., & Yenny Tjoe, 2008). In the context of a relatively low debt burden in rapidly developing countries, there is a steady trend of annual growth (Yakubova, S.

2021). A positive reaction coefficient on average provides strong evidence for a debt policy. When a country borrows for financial institutions, the associated of default risks are important to meet the payment of principal and interest to the creditors at the installment schedule, leading to sustainable future debt policies that have an impact on the nation remarks or can influence development sustainability. Occasionally, multilateral debt, both - public and private are not a blessing but rather a burden for Indonesia (Azam, M. et al., 2013). The amount of debt is utilized to finance effective public investment and promote economic growth in the long - term (Thi Puong Thao, P., 2018). It requires a substantially higher primary surplus to reduce the public debt (Makin, A.J., 2005). For debt sustainability and maintaining a reasonable public debt to GDP ratio is crucial for sustainable investment growth (Penzin , D.J. et al. 2022). The impact of public debt on economic growth has been the subject of several theoretical and empirical analyses, but the conclusions are different. (Khanfir, W. (2019). Funding might increase community money volatility, allowing the economy to move correctly (Rafi Bakri et al., 2022)

In general, the conceptual of the modern theory of budget deficits has a complex description. The problems in middle-income countries are related to the participation of government and other public institutions in the formulation of strategy to overcome deficits (Olivia, A.S. et al., 2018). Public debt is also a global economic platform mechanism for resource use as a resource scarcity rather than economic insolvency (Yakubova, S. 2021). As it doesn't provide sufficient domestic savings or deposits to fund economic development, the government strives to seek out foreign sources to cover the large number of shortages (Kusumasari, 2020). In an open economy, making multilateral loans empirically contributes to a rise in economic growth in the long run (Suryandaru, R.A., 2023). No one disputes the fact that with full employment, the resources are used for government expenditures (Tobin, J. 2013). A related issue is public debt, which is a growing concern in rich countries. It has become a large relative to make deficit, and it is growing (Ugur, M. 2014). The burden of external debt and its payments has been a remarkable cause of insufficient funds for public investments and growth (Epaphra, M., & Mesiet, W. 2021).

Some countries have introduced fundamental and comprehensive reforms of their entire tax systems (Alm, J. 2019). The role of taxation is very important to finance development, including in emerging markets such as Indonesia. The way personal income tax ratios are attributed to capital is criticized (Landefeld, J.S. et al., 2008). The tax database is the broadest and most consistent in developed countries, raising the reported top marginal rate (OECD, 2014). The standard theory of optimal taxation posits that a tax system should be chosen to maximize a social welfare function subject to a set of constraints (Mankiw, N.G. et al., 2009). The government must formulate policies to increase production, investment, and consumption, which in turn will increase tax revenue and ratios (Handoko, R. 2019). Tax regulations influence align with tax compliance; with high tax compliance, the increase in tax ratio can be more optimal (Hadipryanto, J. et al., 2023).

The impact of public debt on economic growth has been a major issue in the economic debate (Khanfir, W. 2019). It should be raised if a large public debt contributes to economic growth or, on the contrary. This is closely related to gross domestic product growth; with income elasticity generally greater over relatively long periods of time, it is useful to look at economic growth theory (Bernat Jr., G.A. 2001). Taken together for the monitoring and assessment of changes in incomes and living standards (Nolan, B. et al., 2016). The measure of the size of the overall economy is based on the income growth approach, which is conceptually equal as well (Landefeld, J.S. et al., 2008). Real GDP growth is generally used as the core indicator in judging the position of the economy of a country. It was intended to be a measure of the output of goods and services produced for final consumption. (Oulton, N. 2012). In long-run the equilibrium value is equal to the annual nominal growth (Feldstein, M. 2017). It is implicitly, and often even explicitly, identified with social status – witness the common substituting phrase standard of people's lives.

Expectations of per capita growth have a large influence on decisions made by private and public economics (Bergh, J.C.J.M.Vet al 2007) . It is extremely encouraged to increase income nation-per capita for the long run and growth rates are roughly (Shafia, M.A., & Abdollahzadeh, 2014). Growth in income per capita deflated using the GDP deflator is the most widely-cited aggregate measure of income growth from the national accounts (Buchholz, T.G. 2014). Whereas long-term per capita income is extremely encouraged, the nation-per capita income is far more so. When external debt reaches higher levels, annual growth declines, and growth rates are roughly cut in half (Shafia, M.A., & Abdollahzadeh, 2014). However, economic growth decreases below the public income per capita threshold.

Countries with high inequality tend to have higher debt amounts compared to countries with lower (Ono T. & Ryo Araawatory, 2008). In less developed countries pursuing export-oriented production, income does not become more evenly distributed at later stages of development (Prechel, H., 2020). The causality relationship also showed the existence of a unidirectional relation within indicators to income inequality (Obiero,W.L., & Topuz,S.G., 2022). Accelerating the pace of urbanization is the key issue to improving income disparity (Chen, J. et al., 2010). Higher inequality is associated with a higher level of income redeployment. This ratio is certainly due to its simplicity and ease of interpretation (Giorgi, G.M., 2017). The evolution of the distribution of income and the possible emergence of poverty and education are locally financed, as is income distribution in a community (Durlauf, S.N., 1996). The impact of burdensome external debt is found to be stronger in reducing income inequality. The evolution of the distribution of income and the possible emergence of poverty in an economy are determined by the empirical income distribution in a community (Durlauf, S.N., 2016).

HDI is a measure of human development that captures the sustainability dimension of human development and needs to incorporate components such as education, health, and income that reflects the level of positive and life quality (Fahrurrozi, M. et al., 2023). The general motivation among the HDI creators was the willingness to provide an alternative index to the GDP and income measures (Bagolin, I.P., & Comim, F.V., 2008). It was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of human capital quality, not economic growth alone (Handalani, 2018). To cover achievements in three basic dimensions-longevity, education, and living standard-that was conceived (Yusuf,A.A., & Sumner,A., 2015). The quality of human resources has driven an increase in per capita income which uses HDI as a non-economic factor that affects HDI.

National asset funds have become extremely important thanks to their current financial size and are expected to ensure capital accumulation, create sources, and contribute to sustainable development (Akyol, M., & ÇİÇEN, Y.B., 2017). Many governments are eager to find the best way to manage their assets, including Indonesia (Finance Ministry of R.I., 2017). The natural asset resources, along with its economy and trade openness, have increased nation value. (Burns, D.E., & Reis, S.M., 1991). Investments including foreign financial assets owned by the state, can also be considered national assets. Indonesia's economic performance has been shaped by government policy; the country's development of natural asset resources and trade openness have increased. (Elias, S., & Clare Noone, 2011). Investment funds, including foreign financial assets owned by the state, can also be considered national assets (Suryadarma, D. et al., 2011).

This study addresses assessing how certain specific factors affect debt policy and the implications for development sustainability. Government performance is a component that is heavily taken to sustain; hence, it is quite necessary to conduct a study and look for a relationship between these aspects.

2.2. Hypothesis

- H1:** Budgetary deficit influences debt ratio
- H2:** Tax ratio influences debt ratio
- H3:** Budgetary deficit influences economic growth
- H4:** Tax ratio influences on economic growth
- H5:** Debt ratio influences on economic growth
- H6:** Budgetary deficit influences per capita income
- H7:** Tax ratio influences per capita income
- H8:** Debt ratio deficit influences per capita income
- H9:** Budgetary deficit influences inequity
- H10:** Tax ratio influences inequity
- H11:** Debt ratio influences inequity
- H12:** Budgetary deficit influences human development index
- H13:** Tax ratio influences human development index
- H14:** Debt ratio influences human development index
- H15:** Budgetary deficit influences asset growth
- H16:** Tax ratio influences asset growth
- H17:** Debt ratio influences asset growth

3. METHODS

The purpose of this study is to examine the empirical relationship between some mechanism (Abjuj Sagar, 1998). This study employs a quantitative approach to examine these relationships for a period of 2004–2022, relying on data series observations that only provide insights on a number of pieces of information. Secondary data was obtained from some related websites, like the Central Bureau of Statistics, the Central Bank of Indonesia, the Finance Department, and the International Monetary Fund. These tests, among others, examine the determinants of debt policy and the ties between the factors of budgetary deficit and tax ratio for development sustainability, i.e., economic growth, per capita income, inequality, human development index, and asset growth for the 2005–2022 years.

3.1. Research variables

This research covers some variables, namely, budgetary deficit, tax ratio, debt ratio, economic growth, inequality, human development index, and national asset growth. The descriptions of the research variables are shown in Table 1.

Table 1: Description of research variables

Variables	Descriptions	Measurement units
Budgetary deficit	The fiscal deficit is defined as the difference between total government expenditure and the government's revenue	Nominal
Tax ratio	A tax-to-GDP ratio is a gauge of a nation's tax revenue relative to the size of its economy as measured by GDP	Ratio
Debt ratio	The debt-to-GDP ratio is the metric comparing a country's public debt to its GDP	Ratio
Economic growth	Economic growth is an increase in the production of economic goods and services in one period of time compared with a previous period.	Percent
Per capita income	<u>Per capita</u> income is a measure of the amount of money earned per person in a nation. The Human Development Index is a summary measure of average achievement in key dimensions of human development.	Percent

Human Development Index	The Gini ratio is an index for the degree of inequality in the distribution of income or wealth. National asset is the Nation's core rail assets, including national reservations, security, training and others	Index
Inequality (Gini ratio)		Ratio
Growth of National Asset		Percent

3.2. Data Source

Data, whether factual or statistical, is the result of researchers documenting their discoveries (Hsing & Hsieh, 2012). The authors compiled the facts, or data, for this research by obtaining and analyzing annual data from several resources, such as budget deficits, tax ratios to debt policy, and the implications for economic growth, per capita income, inequality, the human development index, and state asset growth. There is a total of 108 data points to be assessed in the 2005–2022 years.

3.3. Specification of Vector of Autoregressive (VAR) Models

The model specifications for the hypothesis stated earlier are based on endogenous lag models. As mentioned, a test of causality using VAR. For long-run causality, hypotheses are tested based on the probability values of Error Correction Term estimates, a system is made, and the equations are estimated using Ordinary Least Squares (OLS) individually to ascertain the p-values of the coefficients (see table 4). The general formula is shown below:

$$Y_i = \alpha + \beta_1.X_1 + \beta_2.X_2 + \beta_3.X_3 + \beta_4.X_5 + \dots \beta_i.X_i + \varepsilon$$

where Y_i defines the endogenous factor, X identifies exogenous factors, α is constant, β is coefficient of X variable, and ε is idiosyncratic error term, respectively. The dependent variable refers to related to research variables, and X variables are extracted from the sustainable development. The original data have been updated using information from several website institution related.

The significant effect of each independent variable on the dependent variable individually was determined the probability rate less than 5%, with degrees of freedom: $(n - k - 1)$, where n is number of observations, and k : number of independent variables.

The hypothesis tests was carried out by using the following formula:

$$t - \text{count} = \beta_n / S\beta_n$$

Where: t : The following function t with degrees of freedom (df)

β_n : Coefficient of regression of each variable

$S\beta_n$: Standard error of each variable.

3.4. Objective of This Study

The main objectives of the study are:

1. To examine the relationship between state budgetary deficit and tax ratio to debt policy (assessed by debt ratio) and their implication on development sustainability (measured by economic growth, per capita income, inequality, human development index, and asset growth).
2. To develop a model to predict the relationship between the factors and their impact on development sustainability.

Table 2: Research's data

Years	Total	Deficit/ Surplus	Debt Ratio	Tax Ratio	Economic Growth	Income Per-capita	Gini Ratio	HDI	Total Asset
2005	1342.05	-249.43	47.03	12.05	5.69	1273.5	0.355	69.57	1173.13
2006	1330.06	-291.41	39.06	12.03	5.05	1601.3	0.350	79.01	1219.96
2007	1430.06	-498.43	35.02	12.04	6.35	1871.1	0.376	70.59	1600.21
2008	1693.09	-945.03	33.00	13.03	6.01	2178.2	0.368	71.17	2071.02
2009	1681.71	-412.13	28.03	11.01	4.63	2272.04	0.372	71.76	2122.09
2010	1796.08	-488.45	24.05	11.03	6.22	2942.7	0.382	66.53	2423.69
2011	1947.37	-843.99	25.03	11.08	6.17	3469.8	0.388	67.09	3023.44
2012	2156.89	-153.3	27.41	11.09	6.03	3551.6	0.413	67.07	3432.98
2013	2898.38	-211.67	29.13	14.03	5.66	34732	0.406	68.31	3567.06
2014	2898.38	-226.69	32.95	13.07	5.01	3531.6	0.402	68,9	3910.92
2015	3493.53	-298.46	36.09	11.06	4.88	3369.8	0.394	65,55	6163.32
2016	3889.94	-308.34	34.03	10.08	5.03	3601.9	0.391	70,18	5456.88
2017	4407.05	-340.97	34.71	10.07	5.07	3878.3	0.384	70,81	5947.83
2018	4917.47	-325.93	36.02	11.05	5.17	3932.6	0.380	71,39	6325.28
2019	5.340,22	-348.65	36.15	9.76	5.02	4192.7	0.385	71,92	10.467,53
2020	6.625,47	-947.69	39.39	08.33	-2.07	3911.07	0.385	71,94	11.098,67
2021	7.538,32	-775.06	40.07	10.11	3,70	4350.07	0.398	72.29	11.454,67
2022	8.920,56	-460.42	38.65	10.04	5,30	4783.09	0.317	72.91	12.325,45

4. RESULTS

4.1. Descriptive statistic of data set

The descriptive statistics of the variables used in the econometric analysis is indicated in Table 3.

Table 3. Descriptive statistics for data used

	N	Minimum	Maximum	Mean	Std. Deviation
Total Asset	18	851.88	12,325.45	4,875.6484	3,774.70957
Total Debt	18	1,330.06	8,920.56	3,442.5989	2,295.08614
Product Domestic Bruto	18	2303.00	19558.50	9783.5263	5301.93059
Global Economic Growth	18	-3.07	6.02	2.9284	2.05078
INA Economic Growth	18	-2.07	6.35	4.9684	1.82355
Income per-capita	18	1160.60	4783.90	3123.5247	1078.71460
Debt Ratio	18	24.50	56.50	35.5226	7.65059
Human Development Index	18	65.55	79.10	70.3800	2.94532
Poverty	18	25.14	39.30	30.2237	4.31276
Tax Ratio	18	8.33	14.30	11.5789	1.42498
Gini Ratio	18	.35	.41	.3787	.02733
Valid N (listwise)	18				

Table 3 shows some descriptive statistics for the variables used in the regression models presented and illustrates the matching among variables. Some of the variables are calculated as the differences across the research 18 periods (N), and in these cases, the means will be in the range of the minimum and maximum value. Consider, for example, the highest tax ratio of 14.30 in 2013 and the minimum of 8.33 achieved in 2020. Likewise, the minimum Gini ratio of 0.350 was obtained in 2006 and the maximum value of 0.413 in 2014. A long-term descriptive statistic found that the economic growth of Indonesia is greater than global economic growth, caused by average growth, was established throughout the research conducted.

4.2. Regression and Hypothesis Test

Table 4: Regression and hypothesis examine results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Conclusion
		B	Std. Error	Beta			
DR	(Constant)	0,454	0,117		3,864		
	Deficit (H1)	0,080	0,026	0,075	0,301	0,768	Not significant
	Tax ratio (H2)	-0,970	1,005	-0,242	-2,964	0,035	Significant
EG	(Constant)	-0,018	0,033				
	Deficit (H3)	-0,014	0,005	-0,431	-2,680	0,018	Significant
	TR (H4)	0,738	0,209	0,582	3,527	0,003	Significant
	DR (H5)	-0,044	0,052	-0,139	-0,841	0,451	Not significant
PEI	(Constant)	0,562	0,218		4,289		
	Deficit (H6)	-0,034	0,005	-0,431	-2,680	0,018	Significant
	TR (H7)	0,218	0,632	-0,367	0,676	0,103	Not significant
	DR (H8)	0,092	0,425	0,286	0,562	0,291	Not significant
GR	(Constant)	0,424	0,065		0,386		
	Deficit (H9)	0,004	0,011	0,085	0,352	0,730	Not significant
	TR (H10)	0,126	0,208	0,077	0,308	0,003	Significant
	DR (H11)	-0,167	0,102	-0,410	-1,645	0,122	Not significant
HDI	(Constant)	0,208	0,385		0,267		
	(Deficit H12)	-0,075	0,083	-0,087	0,893	0,365	Not significant
	TR (H13)	0,521	0,341	0,519	3,289	0,010	Significant
	DR (H14)	0,106	0,029	0,389	0,287	0,286	Not significant
	(Constant)	0,100	0,496		0,285		
AG	Deficit (H15)	0,028	0,077	0,098	0,370	0,017	Significant
	TR (H16)	-0,334	3,098	-0,029	-0,108	0,006	Significant
	DR (H17)	0,300	0,772	0,106	0,389	0,703	Not significant

4.3. Regression Analysis

This work aims to comply with new evidence as well as disentangle the specific influence of different kinds of economic instruments on state debt policy and show the impact of these exogenous factors on development sustainability in emerging countries like Indonesia. In doing

so, information has been collected for the period 2005–2022. The following baseline models are estimated:

- a. $DR = 0.454 + 0.080Def - 0.970TR$
- b. $EG = -0.018 - 0.014Def + 0.738TR - 0.044DR$
- c. $PEI = 0.562 - 0.034Def + 0.218TR + 0.092DR$
- d. $GR = 0.424 + 0.004Def + 0.126TR - 0.167DR$
- e. $HDI = 0.208 - 0.075Def + 0.521TR + 0.106DR$
- f. $AG = 0.100 + 0.028Def - 0.334TR + 0.300DR$

In Table 4, all the variables for all models became stationary. The order of stationarity may influence the causality test to be carried out, i.e., whether to use an unrestricted vector autoregressive model or a restricted VAR model. If the variables are of order 1 in each equation, it means that there may be cointegration in the long run, and the VAR model is appropriate to test for causality. If the variables are not in order and cannot cointegrate in the long run, an unrestricted VAR model is appropriate to test for causality. From the equation, the coefficient is 0.454. The debt ratio remains at 0.454 if the other variables are zero, conforming to the constant value of research model 1 of 0.454%. The coefficient value of economic growth is -0.018. Hence, if the other factors remain constant, 1% change in EC will result in a 0.018% decrease in EG. The constant value for the research model equation Gini ratio is 0.424. It is predicted that the other variables will remain constant, and as a consequence, every 1% change in this variable will increase GR by 0.424%. For the other variables, it can be conducted for the same reason. In addition, the coefficient value indicates the direction of influence of the endogenous factor; if negative, the direction could be reversed.

5. DISCUSSION

This study was examined that the deficit has no a statistical effect on debt ratio caused the probability value is 0.768 greater than 0.05. The deficits and debt ratios are expected to prevail in several years and are presumably little affected but not considerable. There are many conceivable factors that jointly determine the debt ratio variable, and it is unlikely that this will affect the burden of debt. Moreover, budgetary deficits in several years could not be projected into the future of the long-run debt ratio position. It is not appropriate to the tax ratio that has a significant effect on DR; the probability significant value is 0.035, less than 0.05. The tax ratio policy provides different answers depending on issues such as whether deficits reflect government expenditure and shifts in the timing of taxes, and on the planning horizon of tax income that hold the assurance of government debt ratio, the tax ratio of Indonesia is still within a suitable limit and is statistically and budgetary significant on debt burdensome. However, the amount of tax income is pledged to the gross domestic product, so the tax ratio is estimated to raise long-term income to decrease the debt ratio. The tendency for a decrease in the tax ratio will raise the debt ratio, and vice versa.

In the second round of tests of each variable, deficit, tax ratio, and debt ratio on economic growth, the results proved deficit and tax ratio have a significant effect on economic growth; the probability values of 0.018 and 0.003 are less than the determining standard of 0.05, while the debt ratio with a probability value of 0.451 is not a considerable one. For the research periods, Indonesia's economic growth is still manageable; it stood at a staggering more than 5% for several years, respectively. To encourage economic growth, Indonesia, as a developed country, can easily borrow funds to help finance deficits. In addition, approximate economic growth could be determined by other factors. Such measuring of economic growth has the prospect of uncovering any causal correlation between budgetary deficits and tax income; hence, there is a significant

relationship between the two variables. However, debt policy has no considerable effect on economic growth; the alteration of the debt ratio is not directly related to the economic circle.

The determinations on per capita income, examining deficit has a probability value of 0.018, respectively. It is different from the tax ratio of 0.103, and debt ratio at 0.214, which are more than probability 0.05. The results reported show that debt ratio does not effect on per capita income. Similarly to tax ratio, although it is estimate that for the long run, that tendency could be raised. The estimate is not precise enough to prove the considerable relationship between the deficit and per capita income. This study also addresses assessing how certain tax ratios affect per capita income. This ratio is a component that is heavily taken into account in terms of national income; hence, it is quite necessary to measure the effect as formulated in the previous hypothesis. Taxes contribute to tax activity; hence, they clearly increase earning taxable income and influence the average individual income. Indonesia's state tax ratio is still small compared to neighboring countries. The state tax policies might have a measurable effect on per capita income performance because any state income tax is added to national development. Additionally, there is no impact of the debt ratio on per capita income as the elements of establishing the debt ratio and per capita income are not related.

For the next round, the probability result was examined for a deficit of 0.730 and a debt ratio of 0.122. These revealed that there is no considerable effect on the inequality, however, the tax rate variable has a significant effect with a probability value of 0.003. Despite the clear theoretical argument that state deficits should have an impact on national inequality, however, there is no considerable relationship in this study. Many arguments can be given for the issue, but one argument often given by opponents is that it has no adverse influence on state inequality; indeed, a state deficit means cultivating budgets to raise the standad of living of citizens. When debt ratios raise the burden, it might not be effective to overcome the inequality. The increasing debt ratio with respect to indirect costs promoted the progressivity of the increase in debt, which contributed to the reduction of inequality. Yet, the effectiveness of the use of debt cannot promote equality in Indonesia; it is still limited by several factors, such as economic growth, per capita income, and low average tax revenue. Furthermore, the tax ratio has a significant influence. The tendency is to be followed by inequality and tax income should increase to overcome inequality and contribute to the people living. Thus, the impact, not only statistically but economically, on the people living is not significant as well.

The next examination, the probability values were 0.365 and 0.628. These concluded that the deficit and debt ratios have no significant effect on HDI; they are opposite to the tax ratio at 0.010, which reveals a considerable influence. In this case, the change in the marginal state deficit is not significant, showing that the higher the deficit, the higher the marginal HDI for the research periods. The state deficit has not contributed to the current account, with causality running from the budgetary deficit to HDI, aligning with that proposed. Because that is for the long run and enhances HDI, the long-run effect of budget deficits should be taken. The next section is tax ratio has an effect, implying convergence that started with an upper ratio in several years. so they have a lower impact, whereas those that start with a relatively lower ratio grow slower. The stability of the independent variable for the periods, HDI, has a positive sign, indicating that even though the tax ratio is greater. That ratio seems to be the most potent tool for effective reduction of poverty and HDI in Indonesia. Despite government spending on education and health, whereas government spending on budget deficits and economic and community services is responsible.

The last empirical round found that all variables deficit, tax ratio, and debt ratio have probability values of 0.011, 0.005, and 0.230, which indicate that there is a considerable relationship between those factors. As mentioned, the state budgetary deficit is the conventional deficit minus investment outlays and capital revenues. It attempts to identify and accumulate

government and public investment and savings. For the years 2005–2022, it was concluded that the average of deficit growth tends to be followed by asset growth as well. The inclusion in the deficit indicator, therefore, does permit the direct effect of current government debt policies. For this purpose, the conventional deficit measure has been widely used, particularly in debt-protruding countries to increase assets value. When economic growth is increasing, the nominal value of assets is also increasing; a large economic development represents the real arising of state asset growth and will be automatically rolled over, thus composing a new asset. Economic performance can be guaranteed because the sustainable level of state assets is not independent of a country's advances and achievements. Economic development and income tax relevant for measuring the impact of asset maturation, sometimes carried out by nongovernmental agencies to expand and encompass the participation of nongovernment entities in the public sector, are needed. The increase in debt ratio would not promote the progressivity of the increase in asset growth or contribute to the reduction. But is not effectiveness of the use of debt ratio to promote the state asset of Indonesia. It is still related to another factors, such as economic growth, tax revenue, and national income.

6. CONCLUSION AND LIMITATION

Empirical investigations have different findings in their attempt to examine the effect of each exogenous factor on debt policy and the relationship to development sustainability. Some independent variables have a statistical effect on the independent variables, such as the tax ratio to debt ratio, the deficit and tax ratio to economic growth, the deficit and tax ratio to per capita income, the deficit and debt ratio to inequality, the tax ratio to HDI, and the deficit and tax ratio to asset growth. The issue concerning the relationship was explored, and identification might be determined by that tendency for the research periods. While the others have no statistical effects on each dependent variable, like deficit to debt ratio, debt ratio to economic growth, deficit to per capita income, deficit and debt ratio to inequality, deficit and debt ratio to HDI, and debt ratio to asset growth, accumulating that as a sufficient criterion, it cannot impact debt policy and sustainability development as a whole, which may not be considered comparable. The implications of this study can be used to identify why some factors determine debt policy and sustainability. The government prefers certain discretion in order to enhance debt policy and maintain economic growth, for which the most prudent mitigation and solution at every step can elevate and solve the problem of the barriers. Then, it can mitigate whether policies are needed to boost and maintain development progress with stabilizing and feasible debt. There has been a reasonable consensus about the importance of debt policy in the economy, which has received much attention in emerging countries like Indonesia. As a reminder, this study has several limitations. Firstly, it can only offer correlation evidence and cannot identify or equip a precise causal mechanism related to the finite variables and indicators used. This restriction is intrinsic and extrinsic to debt policy as well as development sustainability. Further studies are needed to understand the nexus between factors and their interrelationships. Despite these limitations, this study opens a new and previously under-explored link, which suggests that better works as an economic and social policy.

REFERENCES

- Akyol, M., & ÇİÇEN, Y. B. (2017). The role of institutional factors when determining investment strategies of sovereign wealth funds in stock market. *Turkish Economic Review*, 4(3), 334–342. <https://www.researchgate.net/publication/322012078>

- Alm, J. (2019). Can Indonesia Reform Its Tax System? Problems and Options Can Indonesia Reform Its Tax System? Problems and Options. Tulane Economics Working Paper Series, 1906(October), 1–45. www.tulane.edu
- Tobin, J. (2023). The Burden Of The Public Debt: A Review Article. *The Journal of Finance* <https://doi.org/10.1111/j.1540-6261.1965.tb02936.x>
- Ono, T. & Ryo Araawatory (2020). Age Gap in Voter Turnout and Size of Government Debt. *International Tax and Public Finance* 27(2). DOI:10.1007/s10797-019-09563-8.
- Nurmilah, A. (2021). Finance Ministry of Indonesia. Understanding of State Debt. www.djkn.kemenkeu.go.id
- Makin, A.J. (2005). Public Debt Sustainability and Its Macroeconomic Implication in ASEAN - 4. Griffith University. <https://research-repository.griffith.edu.au/handle/10072/4625>
- Susmanto, T., & Yenny Tjoe (2018). Indonesia's government debt ahead of 2019 presidential election: a real economic concern? <https://theconversation.com/indonesias-government-debt-ahead-of-2019-presidential-election-a-real-economic-concern-97708>
- Azam, M., Emirullah, C., Prabhakar, A. C., & Qayyum Khan, A. (2013). The role of external debt in economic growth of Indonesia - A blessing or burden? *World Applied Sciences Journal*, 25(8), 1150–1157. <https://doi.org/10.5829/idosi.wasj.2013.25.08.11760>
- Bagolin, I. P., & Comim, F. V. (2008). Human Development Index (HDI) and its family of indexes: an evolving critical review. *Revista de Economia*, 34(2), 7–28. <http://ojs.c3sl.ufpr.br/ojs-2.2.4/index.php/economia/article/view/12293/8511>
- Bergh, J.C.J. M. Van Den. (2007). Abolishing GDP. SSRN-id962343. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=962343
- Bernat Jr., G. A. (2001). Convergence in State Per Capita Personal Income, 1950-99. *Survey of Current Business*, 81(6), 36–48. <http://bea.gov/bea/ARTICLES/2001/06June/0601Cspi.pdf>
- Buchholz, T. G. (2014). The Price of Everything and the Value of Nothing - A review of "GDP: A Brief But Affectionate History," by Diane Coyle. *Finance & Development*. <http://search.ebscohost.com/login.aspx?direct=true&db=pbh&AN=96955324&site=ehost-live>
- Burns, D. E., & Reis, S. M. (1991). Developing a thinking skills component in the gifted education program. *Roeper Review*, 14(2), 72–79. <https://doi.org/10.1080/02783199109553391>
- Chen, J., Pu, M., Hou, W., & Feng, Q. (2010). January 2010 BWPI Working Paper 109. In *Public Finance*. <https://hummedia.manchester.ac.uk/institutes/gdi/publications/workingpapers/bwpi/bwpi-wp-10910.pdf>
- Durlauf, S. N. (1996). A Theory of Persistent Income Inequality. *Journal of Economic Growth*, 1(1), 75–93. <https://doi.org/10.1007/BF00163343>
- Epaphra, M., & Mesiet, W. (2021). The external debt burden and economic growth in Africa: a panel data analysis. *Theoretical and Applied Economics*, XXVIII(2), 175–206. <http://store.ectap.ro/articole/1546.pdf>
- Fahrurrozi, M., Mohzana, Haritani, H., Yunitasari, D., & Basri, H. (2023). Increasing the Regional Human Development Index and its Implications for Regional Economic Resilience. *Jurnal Ketahanan Nasional* 29. (1). 70–89. <https://doi.org/10.22146/jkn.83425>
- Feldstein, M. (2017). Underestimating the real growth of GDP, personal income, and productivity. *Journal of Economic Perspectives*, 31(2), 145–164. <https://doi.org/10.1257/jep.31.2.145>
- Giorgi, G. M. (2017). The Gini concentration index: a review of the inference literature *. December. <https://doi.org/10.1111/joes.12185>
- Hadipryanto, J., Sarah, S., Nuryanti, T., Yeni, Y., Ramadhony, R., & Adhikara, A. (2023). Analysis of Tax Amnesty Implementation in Tax Revenue in Asian Region Countries. *Riset*, 5(1), 014–028. <https://doi.org/10.37641/riset.v5i1.214>
- Handalani, R. T. (2018). Determinant of Human Development Index in Southeast Asia. *Jurnal Kebijakan Pembangunan Daerah*, 2(2), 118–137. <https://doi.org/10.37950/jkpd.v2i2.44>
- Handoko, R. (2019). Tax Revenue and Economic Activity: Seasonality, Cointegration and Causality Analysis. *Kajian Ekonomi Dan Keuangan*, 3(1), 1–17. <https://doi.org/10.31685/kek.v3i1.401>

- Khanfir, W. (2019). Threshold Effect of Public Debt on Economic Growth: An Empirical Investigation for Selected North African Countries. *Economic Alternatives*, 25(3), 429–436. https://www.unwe.bg/uploads/Alternatives/8_Khanfir_EA_en_i3_2019.pdf
- Kusumasari, D. (2020). External debt of Indonesia: From debt-led growth to growth-led debt? *Jurnal Ekonomi Pembangunan*, 18(1), 21–30. <https://doi.org/10.29259/jep.v18i1.10801>
- Landefeld, J. S., Seskin, E. P., & Fraumeni, B. M. (2008). Taking the pulse of the economy: Measuring GDP. *Journal of Economic Perspectives*, 22(2), 193–216. <https://doi.org/10.1257/jep.22.2.193>
- Mankiw, N. G., Weinzierl, M., & Yagan, D. (2009). Optimal taxation in theory and practice. *Journal of Economic Perspectives*, 23(4), 147–174. <https://doi.org/10.1257/jep.23.4.147>
- Nolan, B., Roser, M., & Thewissen, S. (2016). GDP per capita versus Median Household Income: What gives rise to divergence over time? *LIS Working Paper Series*, 03(672), 43. <http://www.inet.ox.ac.uk/library/view/718>
- Obiero, W. L., & Topuz, S. G. (2022). Do public and internal debt cause income inequality? Evidence from Kenya. *Journal of Economics, Finance and Administrative Science*, 27(53), 124–138. <https://doi.org/10.1108/JEFAS-05-2021-0049>
- OECD. (2014). *FOCUS on Top Incomes and Taxation in OECD Countries: Was the crisis a game changer?* OECD Directorate for Employment, Labour and Social Affairs, May, 1–8. <http://www.oecd.org/social/OECD2014-FocusOnTopIncomes.pdf>
- Olivia, A. S., Azwardi, A., & Yulianita, A. (2018). Indonesia Budget Deficit. *Sriwijaya International Journal of Dynamic Economics and Business*, 2(2), 139–150. <https://media.neliti.com/media/publications/538819-indonesia-budget-deficit-99b70ea0.pdf>
- Oulton, N. (2012). Hooray for GDP! *Centre for Economic Performance Occasional Papers*, August(August), 1–31. https://www.cambridge.org/core/product/identifier/S095560360007865X/type/journal_article
- Penzin, D.J., Salisu, A., & Akanegbu, B.N. (2022). Note on Public Debt-Private Investment Nexus in Emerging Economics. *Buletin Ekonomi Moneter Dan Perbankan*, 25(2), 25–35. <https://doi.org/10.21098/bemp.v25i1.1988>
- Prechel, H. (2020). The Effects of Exports, Public Debt, and Development on Income Inequality. *March*. <https://doi.org/10.1111/j.1533-8525.1985.tb00225.x>
- _____. Law No. 17 (2003). President of the Republic of Indonesia. Law No. 17/2003. <http://JDIH.kemenkeu.go.id>17TAHUN2003UU.PDF>
- Rafi Bakri, M., Rama Adiwicaksana, Y., Utami, A., Koordinator, K., Perekonomian, B., & Keuangan, B. P. (2022). E-Jurnal Ekonomi Dan Bisnis Universitas Udayana Public Debt and Economic Growth in Indonesia. 11(07), 851–862. <https://ojs.unud.ac.id/index.phphttp://data APBhp/EEB/>
- _____. Finance Ministry (2017). State Budgetary Information 2017. <http://data - apbn.kemenkeu.go.id>dokumen PDF>
- Satya, V. E. (2015). Manajemen Utang Pemerintah Dan Permasalahannya. *Jurnal Ekonomi Dan Ekonomi Syariah*, 20(1), 59–74. doi.10.22212/kajian.20i1.570
- Shafia, M. A., & Abdollahzadeh, S. (2014). Integrating Fuzzy Kano and Fuzzy TOPSIS for Classification of Functional Requirements in National Standardization System. *Arabian Journal for Science and Engineering*, 39(8), 6555–6565. <https://doi.org/10.1007/s13369-014-1251-z>
- Elias S., & Clare Noone (2011). The Growth and Development of the Indonesian Economy. <https://www.rba.gov.au/publications/bulletin/2011/dec/pdf/bu-1211-4.pdf>
- Suryadarma, D., Prama Artha, R., Suryahadi, A., & Sumarto, S. (2011). A Reassessment of Inequality and its Role in Poverty Reduction in Indonesia. *SSRN Electronic Journal*, February. <https://doi.org/10.2139/ssrn.856764>
- Suryandaru, R. A. (2023). The Relationship Between Public Debt, Trade Openness, and Economic Growth in Indonesia: Symmetric and Asymmetric Analysis. *Thailand and the World Economy*, 41(1), 35–60. <https://so05.tci-thaijo.org/index.php/TER/article/view/263114/177304>

- Thi Phuong Thao, P. (2018). Impacts of public debt on economic growth in six ASEAN countries 1. The International Studies Association of Ritsumeikan University: Annual Review of International Studies, 17(August 1967), 63–88. https://www.ritsumei.ac.jp/ir/isaru/assets/file/raris/raris-17-04_PHAM_Thi_Phuong_Thao.pdf
- Ugur, M. (2014). Corruption's direct effects on per-capita income growth: A meta-analysis. *Journal of Economic Surveys*, 28(3), 472–490. <https://doi.org/10.1111/joes.12035>
- Yakubova, S. (2021). Impact Factor: International Scientific Journal Theoretical & Applied Science. March. <https://doi.org/10.15863/TAS>
- Yusuf, A. A., & Sumner, A. (2015). Growth, Poverty, and Inequality under Jokowi. 4918. <https://doi.org/10.1080/00074918.2015.1110685>.