Recalibrating Fiscal Policy Impact on Contemporary Indonesian Economy: A Computable General Equilibrium Analysis

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Abstract

Indonesia's evolving post-pandemic landscape necessitates a methodological recalibration to accurately assess contemporary fiscal impacts. This study develops a novel static CGE model for Indonesia by re-calibrating the analytical framework using updated 2022 Social Accounting Matrix (SAM) data, which features a structural format distinct from previous datasets. Such recalibration is essential to align the model with modern institutional architectures and ensure empirical precision. While earlier Indonesian CGE models primarily relied on the 2008 SAM, which lacks granularity by omitting Non-Profit Institutions Serving Households (NPISH/NGOs) as a distinct entity. This study addresses those deficiencies. The simulation results uncover a "policy paradox": although fiscal expansion stimulates aggregate GDP, it induces a 'Sectoral-Enclave Growth' pattern. This phenomenon is characterized by economic gains being sequestered within public-dominated sectors while the private sector undergoes a relative contraction, thereby hindering meaningful spill-over effects. These findings emphasize that a fundamental recalibrating of Indonesia's fiscal strategy is required, shifting toward private-sector integration to mitigate enclave-based growth and foster a more inclusive economic trajectory.

Keywords: Computable General Equilibrium (CGE), Sectoral-Enclave Growth, Fiscal Expansion, NGO, Household Income, Indonesia, SAM.
JEL- Classification*:* C68, H50, D31, O15

1. Introduction

Computable General Equilibrium (CGE) models are extensively used to analyze the impacts of various policies, including fiscal policies, on an economy. These models provide a comprehensive framework to assess the economy-wide effects of policy interventions by capturing the interconnections across all markets and economic agents within an economy (Dixon & Rimmer, 2014; Masood & Mathur, 2025; Nasirov & O'Ryan, 2025).

CGE models are widely used to evaluate the impacts of fiscal policies (Lemelin & Savard, 2022). These models incorporate explicit behaviors of economic agents and their interactions as customers and competitors within the economy (Dixon & Rimmer, 2014). CGE models utilize standard economic data sources such as input-output tables and national accounts, but can also integrate specialist data for more detailed analysis (Dixon & Rimmer, 2014; Jia & Lin, 2022).

CGE models are powerful tools for analyzing the impacts of fiscal policies, providing detailed insights into the economic consequences. Despite their complexity and data requirements, their ability to capture comprehensive economic interactions makes them indispensable for policy analysis and decision-making (Laffargue, 2011; Lemelin & Savard, 2022; Resosudarmo et al., 2021).

Existing studies have extensively utilized CGE frameworks to evaluate Indonesian fiscal and structural policies. For instance, Resosudarmo et al. (2021) employed CGE analysis to assess the long-term economic implications of capital relocation and infrastructure development. Similarly, research by Abdurohman et al. (2020) although fiscal stimulus policies through institutional transfers have a positive impact on aggregate demand and poverty alleviation, they may result in uneven spatial distribution effects on interregional output in the short term.

In the context of renewable energy, Hasudungan & Sabaruddin (2018) demonstrate that current feed-in tariff (FIT) schemes in Indonesia have a negligible impact on both macroeconomic indicators and greenhouse gas emission reductions. Their CGE analysis suggests that these policies remain ineffective primarily due to the low share of renewable energy sources in the national electricity mix, indicating that existing regulations are insufficient to drive a significant transition toward clean energy production.

However, most prior Indonesian CGE literature relies on the 2008 SAM, which operates under an older classification system. A significant limitation in these earlier models is the lack of institutional granularity, particularly in distinguishing Non-Governmental Organizations (NGOs) as a separate entity from the household or government sectors. Furthermore, the structural shifts following the global pandemic have rendered older datasets less reflective of current economic realities.

This study addresses these analytical deficiencies by constructing a novel static Computable General Equilibrium (CGE) model for Indonesia, calibrated with the 2022 Social Accounting Matrix (SAM). By utilizing this updated data, the model accounts for the contemporary structural shifts of the post-pandemic era and incorporates a more granular institutional classification, specifically classifying Non-Profit Institutions Serving Households (NPISH/NGOs) as a distinct economic agent. The primary objective of this research is to simulate the impacts of expansionary fiscal shocks, specifically a calibrated increase in government consumption, to evaluate how such interventions propagate through the modernized Indonesian economy and influence the distribution of output across diverse institutional and sectoral boundaries.

The significance of this research lies in its capacity to reveal a "policy paradox" inherent in current fiscal strategies. While the simulation of increased government consumption yields an immediate expansion in aggregate GDP, the model uncovers a localized 'Sectoral-Enclave Growth' pattern, where the benefits of fiscal stimulus remain sequestered within public-dominated sectors while the private sector faces relative contraction. This suggests that without deliberate policy mechanisms to facilitate private-sector integration, government-led expansion may fail to catalyze the broader economic spill-overs necessary for a balanced recovery. Consequently, this study provides a critical empirical foundation for recalibrating Indonesia’s fiscal framework toward a more diversified and inclusive structural trajectory.

2. Theoretical Foundation

2.1. Computable General Equilibrium

Computable General Equilibrium (CGE) models are powerful analytical tools used to evaluate the economy-wide impacts of policies and shocks. They capture the interconnections across all markets and economic agents within an economy and its linkages with the rest of the world (Masood & Mathur, 2025; Nasirov & O’Ryan, 2025). CGE models are rooted in the theory of general equilibrium, which posits that firms and households interact in markets (Bröcker, 2015).

CGE models are frequently employed to analyze the effects of environmental policies, such as carbon taxes and the double dividend hypothesis, which suggests that environmental taxes can improve both environmental and economic conditions (Freire-González, 2018; Jia & Lin, 2022). These models rely on extensive data, including input-output tables and social accounting matrix (SAM) to simulate the economy accurately (Bröcker, 2021; Dixon & Rimmer, 2014). CGE models can be tailored to specific policy questions and regional contexts, making them versatile tools for economic analysis (Bröcker, 2021; Partridge & Rickman, 2010).

CGE models provide a theoretically consistent mathematical representation of an economic system, capturing the linkages among various sectors (Banerjee et al., 2019; Banerjee & Alavalapati, 2014). They integrate the real economy with financial systems, allowing for the analysis of fiscal policies and their effects on economic growth and distribution (Kim et al., 2017).

CGE models operationalize Walrasian theory by incorporating empirical data and computational techniques to analyze real-world scenarios (Ezaki, 2006; Fukiharu & Imamura, 2009; Jensen & Lehmijoki, 2011). They address the complexity of multiple sectors and regions, which is a challenge in purely theoretical models (Ezaki, 2006; Jensen & Lehmijoki, 2011).

The fundamental strength of the CGE framework lies in its ability to capture "second-order" effects that partial equilibrium models overlook. By maintaining a system of non-linear equations where all markets clear through price adjustments, CGE models can trace how a specific shock, such as an increase in government consumption, reallocates labor and capital across the economy. This allows for a rigorous assessment of whether fiscal expansion facilitates broad-based growth or triggers resource competition that crowds out private sector activity.

Furthermore, the predictive power of a CGE model is strictly contingent upon the calibration of the Social Accounting Matrix (SAM). SAM provides the essential empirical foundation, ensuring the model accurately captures the income transfers and expenditure patterns across all economic agents. Utilizing the 2022 SAM aligns the analysis with Indonesia’s contemporary institutional architecture and recent structural shifts. This data integration establishes a theoretically consistent platform for evaluating the sustainability and distributive impacts of current fiscal expansion.

2.2. Social Accounting Matrix (SAM)

A Social Accounting Matrix (SAM) is a comprehensive and flexible analytical tool used to represent the economic transactions within an economy. It captures the circular flow of income and the interdependencies between different economic agents, sectors, and institutions (Biasi, 2017; Trinh & Toan, 2020).

SAM records the flows between all actors in an economic system, highlighting the circular nature of economic processes (Biasi, 2017; Trinh & Toan, 2020). It allows for detailed disaggregation of economic activities, making it possible to identify specific interdependencies that traditional accounts might miss. SAM is built upon economic data from national accounts, providing a bridge between empirical data and theoretical models (Gedik, 2011).

SAM is extensively used for policy analysis, economic planning, and evaluating the impact of different policy options. It helps policymakers understand the potential consequences of various policies (Ahmed et al., 2018; Connolly et al., 2024; Gedik, 2011; Socci et al., 2025). SAM serves as a foundation for constructing Computable General Equilibrium (CGE) models, which are used for experimental simulations and economic policy analysis (Connolly et al.,

2024; Santos, 2013; Trinh & Toan, 2020). SAM helps identify key sectors within an economy and analyze their interdependencies. This is useful for understanding the productive structure and the role of different sectors in the economy (Blancas, 2021).

SAM is a powerful tool for economic analysis, providing detailed insights into the interrelationships within an economy. Its applications range from policy evaluation to income distribution analysis, making it invaluable for researchers, policymakers, and economists. However, the complexity and data requirements pose significant challenges that need to be addressed for effective use.

In the Indonesian context, the transition to the 2022 SAM represents a significant methodological advancement by capturing the most recent structural shifts and refined institutional classifications. By explicitly disaggregating entities such as Non-Governmental Organizations (NGOs) from traditional household or government accounts, this updated matrix provides the empirical precision necessary to trace how fiscal shocks propagate through modern economic channels. Consequently, the 2022 SAM serves as a robust calibration benchmark, ensuring that the subsequent CGE simulations accurately reflect the contemporary linkages and distributive mechanisms of the national economy.

2.3. Fiscal Expansion

Fiscal expansion, typically involving increased government spending or reduced taxation, aims to stimulate economic growth. Government consumption, a significant component of fiscal policy, includes expenditures on goods and services such as education, defense, and infrastructure. The relationship between fiscal expansion and government consumption is complex and varies based on several factors, including the level of government debt, the structure of the economy, and the specific components of government spending.

In high-debt countries, fiscal expansion can lead to a reduction in private consumption due to crowding out effects. Conversely, in low-debt countries, private consumption remains largely unaffected by changes in government debt (Berben & Brosens, 2007). Typically, countries with a debt-to-GDP ratio above 60% to 90% are considered high-debt countries. Some classifications may set the threshold even higher, depending on the context. In some cases, government consumption can complement private consumption, particularly in areas like education and housing, leading to higher fiscal multipliers (Jalles & Karras, 2022).

Fiscal expansion can boost economic growth by increasing aggregate demand, particularly when government spending is directed towards productive investments like infrastructure (Day & Yang, 2011; Goemans, 2023; Yanushevsky & Yanushevsky, 2014). However, excessive government consumption can negatively impact GDP growth, especially if it leads to higher future taxes or if the government share becomes too large (de Wet et al., 2005; Konstantinou & Tagkalakis, 2011; Kraipornsak, 2010).

The effectiveness of fiscal expansion through government consumption depends on various factors, including the level of government debt, the specific areas of spending, and the overall economic context. While fiscal expansion can stimulate economic growth and private consumption under certain conditions, it can also lead to crowding out effects and reduced economic stability if not carefully managed.

Within a general equilibrium framework, the impact of increased government consumption extends beyond a simple additive boost to aggregate demand, acting instead as a catalyst for resource reallocation that shifts relative prices across all markets. In the Indonesian economy, the efficacy of such fiscal expansion is critically dependent on the ability of public expenditure to generate robust inter-sectoral linkages without inducing significant crowding-

out effects on private investment. Consequently, this study evaluates how these fiscal shocks propagate through the current economic structure to determine whether government-led expansion fosters integrated national growth or inadvertently reinforces isolated, enclave-based production patterns.

3. Methodology and Model

This study employs a static Computable General Equilibrium (CGE) model to represent the Indonesian economy as a fully integrated system. Unlike partial-equilibrium analysis, the CGE framework captures systemic feedback effects by linking households, firms, the government, NGOs, and the rest of the world through circular flows of income and goods (Burfisher, 2021; Lofgren et al., 2002). This methodology is essential for identifying sectoral-enclave growth, as it reveals how resource reallocation toward the bureaucracy can erode income in other sectors (Lofgren et al., 2002; Pyatt, 1988).

The model extends the standard framework by uniquely integrating NGOs as an autonomous institutional agent and disaggregating households into five quintiles. By treating all domestic institutions as independent agents within the 2022 Social Accounting Matrix (SAM), the model allows phenomena such as state-dominance to emerge objectively from simulation results rather than through a-priori structural assumptions (Sardoni, 2024).

The model is operationalized via GAMS and formulated as a Mixed Complementarity Problem (MCP) using the PATH solver (Ferris & Munson, 2000). Calibration is based on the 2022 Indonesian SAM, featuring 17 production sectors. By maintaining consistent behavioral parameters across simulations, any observed divergence between macroeconomic indicators and household welfare is attributed solely to the structural characteristics of the Indonesian economy (Lofgren et al., 2002).

Detailed equations are provided in the Appendix section.

4. Indonesia 2022 Economy Indicators

4.1. Macroeconomy Indicators

The empirical analysis in this study is grounded in a highly disaggregated 2022 Social Accounting Matrix (SAM) for Indonesia, constructed specifically to incorporate a distinct NGO institutional account while maintaining full consistency with official national accounts. The Indonesian economy in 2022 exhibited robust post-pandemic recovery, with real GDP growth reaching 5.3 percent and nominal GDP surpassing 19,588 trillion rupiah. Despite global headwinds, the economy maintained a strong current account surplus, driven primarily by high commodity export prices and resilient domestic demand.

Table 1 below presents the key macroeconomic aggregates for Indonesia in 2022, expressed in current trillion rupiah, as reflected in the calibrated 2022 SAM and reconciled with the latest national accounts data from Statistics Indonesia (BPS) and the Balance of Payments. These aggregates serve as the benchmark equilibrium for all subsequent policy simulations and provide the macroeconomic context in which the proposed reforms to strengthen NGO independence are evaluated.

Table 1: Indonesia 2022 Macroeconomy Indicators

Indicators	Value (trillion, rupiah)
GDP	19588.09
GNP	19201.18
GNI	19201.18
Disposable Income	19179.89
Gross Savings	19337.14
Gross Capital Formation	7441.40

Trade Balance	6998.62
Net Borrowing	693.73
Net Capital Transfer	-449.80
Net Pension Right Adjustments	-7.02

4.2. Shares of Output by Activity

Table 2 reports the contribution of each of the 17 sectors to aggregate gross output in the benchmark year 2022. The Indonesian economy exhibits a diversified production structure in which manufacturing remains the dominant sector, accounting for 25.04 percent of total output. Construction (13.82 percent) and mining and quarrying (10.72 percent) rank second and third, respectively, the latter continuing to benefit from favourable global commodity prices during the post-pandemic recovery period. Distribution-related activities wholesale and retail trade combined with transportation and warehousing collectively represent over 16 percent of gross output, underscoring the critical role of domestic and international logistics networks. The primary sector (agriculture, forestry, and fisheries) contributes 8.10 percent, consistent with the gradual but ongoing structural transformation of the Indonesian economy.

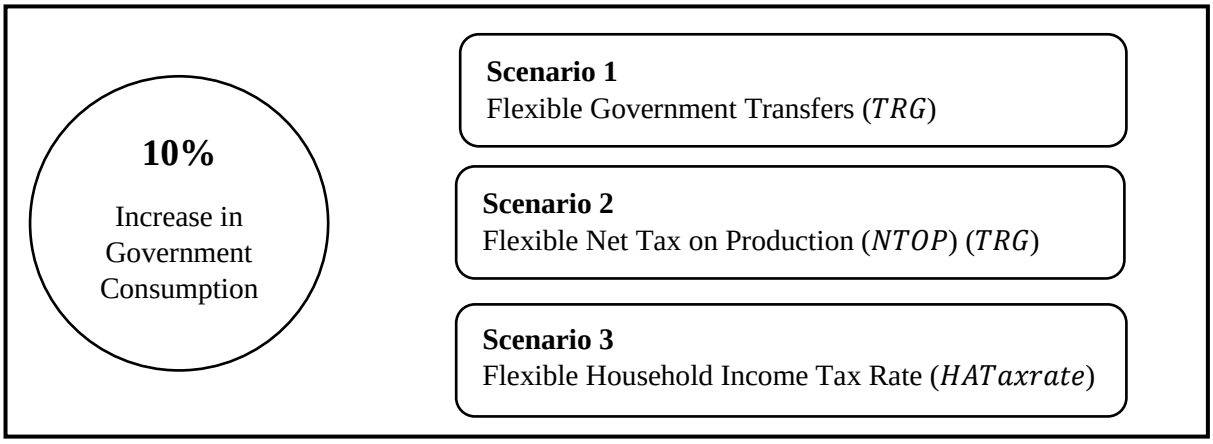
Table 2: Shares of Output by Activity

No	Sectors	Shares (%)
1	Agriculture, Forestry, and Fisheries	8.10
2	Mining and Quarrying	10.72
3	Manufacturing	25.04
4	Electricity and Gas	3.45
5	Water Supply; Waste Management, Sewerage, and Recycling	0.07
6	Construction	13.82
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycle	10.37
8	Transportation and Warehousing	6.20
9	Accommodation and Food Services	2.89
10	Information and Communication	3.72
11	Financial and Insurance	3.10
12	Real Estate	1.89
13	Corporate Services	1.70
14	Public Administration, Defense, and Compulsory Social Security	3.47
15	Education	2.26
16	Health Services and Social Activities	1.51
17	Others	1.70

5. The Model Simulations and Scenarios

To evaluate the economy-wide impacts of fiscal expansion, this study performs a simulation centered on a 10% increase in government consumption. This shock is designed to observe how an exogenous rise in state expenditure propagates through the Indonesian economic structure. To ensure a comprehensive analysis, the simulation is executed across three distinct fiscal closure scenarios, each representing a different mechanism for maintaining macroeconomic equilibrium:

Figure 1: Simulation & Scenarios



- **Scenario 1: Flexible Government Transfers**
  In this scenario, the fiscal balance is maintained by allowing government transfers to other institutions to adjust endogenously. This approach examines the impact of increased spending when the government compensates by reallocating its transfer payments.
- **Scenario 2: Flexible Net Tax on Production**
  This scenario assumes that the net tax rate on production is flexible. It explores the economic consequences when the government adjusts production-related taxes to balance the fiscal demands of increased consumption.
- **Scenario 3: Flexible Household Income Tax Rate**
  This scenario endogenizes the direct tax rate on household income. It evaluates the distributive and structural effects when the fiscal expansion is essentially financed or offset by adjustments in the household tax burden.

5.1. Impact of Scenarios on National Income Account

The simulation results, as detailed in Table 3, reveal sharply divergent macroeconomic outcomes across the three fiscal closure rules. These findings underscore the critical importance of the financing mechanism in determining whether state-led expansion results in genuine growth or a fiscal illusion that masks structural contractions.

Table 3: Impact of Scenarios on National Income Account

Variable	Scenario 1			Scenario 2			Scenario 3		
	Base	Shocked	% Change	Base	Shocked	% Change	Base	Shocked	% Change
	(Trillion Rupiah)								
GDP at factor costs	3201.39	3106.10	-2.98	19983.27	19180.60	-4.02	18565.76	18617.08	0.28
GDP gap	3880.33	3947.05	1.72	0.21	0.25	16.87	0.27	0.27	-0.36
GDP at market prices from income side	10306.85	9730.89	-5.59	25422.70	25144.97	-1.09	24875.73	24919.98	0.18
GDP at market prices from expenditure side	1259.31	1275.43	1.28	20994.12	20172.05	-3.92	19546.05	19595.75	0.25
Total private consumption	34.92	34.48	-1.27	10846.61	10454.36	-3.62	10346.48	10246.70	-0.96
Total investment	5153.37	5158.59	0.10	6920.03	6966.80	0.68	6998.59	6998.64	0.00
Total real government consumption	3935.02	3900.48	-0.88	1521.28	1662.50	9.28	1505.00	1655.51	10.00
Total NGO consumption	2369.67	2350.09	-0.83	229.00	229.00	0.00	229.00	229.00	0.00
Total export	1156.17	1112.60	-3.77	4894.93	4840.86	-1.10	4816.37	4811.46	-0.10
Total import	1402.64	1392.72	-0.71	4155.25	4128.64	-0.64	4120.40	4116.55	-0.09
Net export	1171.65	1159.79	-1.01	739.68	712.22	-3.71	695.98	694.90	-0.15
Net indirect tax	724.21	709.28	-2.06	1010.84	991.44	-1.92	980.29	978.68	-0.16
Total payment to all workers (WAGEBILL)	615.22	628.48	2.16	7387.90	7145.74	-3.28	6899.54	6950.63	0.74
Total payment to capital (CAPBILL)	1296.68	1403.65	8.25	12595.37	12034.86	-4.45	11666.22	11666.44	0.00
Government Saving (SG)	835.14	848.09	1.55	19983.27	19180.60	-4.02	18565.76	18617.08	0.28

The simulation results in Table 3 reveal a stark policy paradox. While the government expenditure expansion is intended to stimulate the economy, it predominantly triggers a contraction in real economic activity under the first two regimes. In Scenario 1 (Flexible Expenditure) and Scenario 2 (Activity-tax), GDP at factor costs declines by 2.98% and 4.02% respectively, reflecting severe resource misallocation. Although Scenario 3 (Household-tax) yields a marginal. GDP growth of 0.28%, this gain fails to reach the domestic population, as Total Private Consumption falls across all scenarios—reaching its deepest contraction of -3.62% in Scenario 2.

This empirical evidence confirms the Sectoral-Enclave Growth hypothesis. The "internal loop" of the bureaucracy is evidenced by the divergence between state consumption and private welfare. Furthermore, the sharp decline in net exports (up to -3.71% in Scenario 2) suggests that state-led expansion crowds out competitive private industries, effectively isolating economic gains within the public apparatus while eroding the broader foundations of household prosperity.

5.2. Impact of Scenarios on Gross Output and Value Added

Having established the divergent aggregate effects across fiscal closures in the previous section, this subsection delves into the sectoral transmission mechanisms of the policy shock. Table 4.2 presents the percentage changes in the quantity and price of gross domestic output ($\boldsymbol{QA_j}$ and $\boldsymbol{PQA_j}$, respectively) for each of the 17 production sectors under the three scenarios. Notably, the sectoral reallocation patterns are identical across all scenarios because the underlying policy shock—a 10 percent increase in government demand—and the model's structural parameters remain constant. This uniformity allows us to isolate how state-dominance in resource allocation dictates the winners and losers in the economy, regardless of the financing rule.

Table 4: Impact of Scenarios on Activity Gross Domestic Output

Activity	**Scenario 1**		**Scenario 2**		**Scenario 3**	
	Quantity of Gross Domestic Output (QA_j)	Price of Gross Domestic Output (PQA_j)	Quantity of Gross Domestic Output (QA_j)	Price of Gross Domestic Output (PQA_j)	Quantity of Gross Domestic Output (QA_j)	Price of Gross Domestic Output (PQA_j)
	% Change	% Change	% Change	% Change	% Change	% Change
AGRI_A	-2.98	-1.54	-2.98	-1.54	-2.98	-1.54
MINE_A	1.72	-1.87	1.72	-1.87	1.72	-1.87
MANU_A	-5.59	2.73	-5.59	2.73	-5.59	2.73
UTILITY_A	1.28	-8.10	1.28	-8.10	1.28	-8.10
WASTE_A	-1.27	-1.48	-1.27	-1.48	-1.27	-1.48
CONSTRUCT_A	0.10	0.69	0.10	0.69	0.10	0.69
WRTVR_A	-0.88	-1.53	-0.88	-1.53	-0.88	-1.53
TRWR_A	-0.83	-0.52	-0.83	-0.52	-0.83	-0.52
AFSA_A	-3.77	1.40	-3.77	1.40	-3.77	1.40
INFCOM_A	-0.71	-1.34	-0.71	-1.34	-0.71	-1.34
FININS_A	-1.01	-1.99	-1.01	-1.99	-1.01	-1.99
REES_A	-2.06	-0.77	-2.06	-0.77	-2.06	-0.77
CORPSERV_A	2.16	-0.86	2.16	-0.86	2.16	-0.86
PADCASS_A	8.25	-0.58	8.25	-0.58	8.25	-0.58
EDUC_A	1.55	-0.60	1.55	-0.60	1.55	-0.60
HSSA_A	1.38	-0.66	1.38	-0.66	1.38	-0.66
OTHERS_A	-1.75	-0.88	-1.75	-0.88	-1.75	-0.88
AVERAGE	**-0.26**	**-1.05**	**-0.26**	**-1.05**	**-0.26**	**-1.05**

Detailed sectoral analysis in Table 4 reinforces the Sectoral-Enclave Growth narrative. The expansion in government expenditure triggers a massive 8.25% increase in public administration output (PADCASS_A), effectively creating a growth "enclave" within the state sector. However, this bureaucratic expansion occurs at a significant structural cost; the manufacturing sector (MANU_A) and agriculture (AGRI_A) experience sharp contractions of -5.59% and -2.98%, respectively

This shift signifies a resource reallocation toward non-tradable state services, which fails to stimulate the broader private economy. The contraction in labor-intensive sectors such as agriculture and food services (AFSA_A, -3.77%) explains why fiscal expansion leads to a decline in household welfare despite marginal GDP gains in specific regimes. The internal loop of the 2022 SAM structure ensures that while the state apparatus grows, the productive foundations of the private sector—and consequently, household income—are systematically eroded.

5.3. Impact of Scenarios on Household Income

The simulation results presented in Table 5 unveil a critical paradox in Indonesia's fiscal transmission mechanism. Despite the initial injection of government demand, real household income across all quintiles (H1–H5) experiences a significant and uniform contraction. Under all three fiscal closure scenarios, income levels decline by a margin ranging from -3.53% to -3.77%. This universal reduction suggests that the structural rigidities inherent in the 2022 Social Accounting Matrix (SAM) prevent public expenditures from generating positive income multipliers for the domestic population.

Table 5: Impact of Scenarios on Household Income

Quintile	Scenario 1			Scenario 2			Scenario 3		
	BASE	SHOCKED	% Change	BASE	SHOCKED	% Change	BASE	SHOCKED	% Change
H1	1420,45	1366,94	-3,77	1420,45	1366,94	-3,77	1420,45	1366,94	-3,77
H2	3122,59	3004,77	-3,77	3122,59	3004,77	-3,77	3122,59	3004,77	-3,77
H3	5941,51	5720,59	-3,72	5941,51	5720,59	-3,72	5941,51	5720,59	-3,72
H4	8807,83	8487,84	-3,63	8807,83	8487,84	-3,63	8807,83	8487,84	-3,63
H5	18336,96	17689,78	-3,53	18336,96	17689,78	-3,53	18336,96	17689,78	-3,53

A closer examination reveals a regressive distributional impact, as the lowest income quintile (H1) sustains the most severe contraction at -3.77%, while the highest quintile (H5) experiences a relatively smaller, albeit significant, decline of -3.53%. This disparity indicates that the "sectoral-enclave growth" observed in the public administration sector (PADCASS) actively erodes the purchasing power of the most vulnerable segments of society. The uniformity of these results across all three scenarios—flexible expenditure, activity-tax, and household-tax—demonstrates that the negative welfare outcome is not merely a function of the financing mechanism, but a consequence of the "internal loop" where resources are absorbed by the bureaucracy at the expense of private household livelihoods.

The contraction in household income is the logical corollary to the resource movement effects identified in the previous sections. As labor and capital are reallocated toward capital-intensive state activities, the wage bill and capital returns in productive, labor-intensive sectors such as agriculture and manufacturing are suppressed. Consequently, the Indonesian economy, under the current state-centric regime, faces a "structural disconnect" where fiscal expansion functions as a vacuum, sequestering economic value within the state apparatus while simultaneously reducing the real disposable income of households across the entire socio-economic spectrum.

6. Conclusion

The simulation results provide a sobering assessment of contemporary fiscal expansion in Indonesia, revealing a profound "Policy Paradox" where state-led growth fails to translate into broader economic prosperity. This study demonstrates that a 10% increase in government consumption triggers a "Sectoral-Enclave Growth" pattern, characterized by a massive 8.25% expansion in the Public Administration sector while critical productive sectors, such as manufacturing and agriculture, suffer significant contractions. This structural imbalance suggests that Public Administration has evolved into a bureaucratic enclave that remains insulated from macroeconomic shocks, ensuring its sustained expansion in every scenario even as the productive private economy struggles to maintain equilibrium.

The failure to generate meaningful spillovers into the real sector aligns with the findings of Mandon & Vegh (2021) who highlight that fiscal expansions driven primarily by consumption often fail to stimulate private sector growth in developing contexts. Furthermore, this lack of positive transmission reflects structural traps where an isolated public sector flourishes while private capital formation remains stagnant. The empirical evidence from this study is particularly striking regarding household welfare: regardless of the financing mechanism—whether through transfers, activity taxes, or income taxes—real household income across all quintiles experiences a significant contraction, with the most severe impact felt by the lowest income group.

The empirical evidence from this study suggests that Indonesia's current fiscal trajectory, while expanding the state apparatus, risks hollowizing the private sector and eroding household welfare. To mitigate these structural risks, the following policy interventions are recommended:

- **Strategic Diversification of Fiscal Stimulus**: The government should shift away from pure consumption-led expansion toward productive investments that facilitate private-sector integration. Fiscal policy must prioritize sectors with high inter-sectoral linkages to ensure that state spending catalyzes, rather than replaces, private capital formation.
- **Mitigation of Sectoral Enclave Growth:** Policymakers must address the "Internal Loop" where resources are sequestered within public administration. This requires a recalibration of state expenditure to support labor-intensive industries like manufacturing and agriculture, which suffered the most severe contractions in the simulations.
- **Protection of Household Purchasing Power:** Given that fiscal expansion under all scenarios led to a regressive contraction in household income, social safety nets must be strengthened during periods of fiscal stimulus. Specific attention should be directed toward the lowest income quintile (H1), which sustained the highest relative losses (-3.77%).
- **Incentivizing Private Sector Spill-overs:** To overcome the "structural traps" identified by Ardanaz et al. (2020) the government should implement tax incentives or credit facilities that encourage private sector participsation in state-led infrastructure projects, preventing the state from becoming an isolated economic enclave.

7. Acknowledgement

The author is supported by a PhD scholarship from Universitas Islam Internasional Indonesia (UIII). This research did not receive any specific project funding. The authors declare no potential conflicts of interest.

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Appendix

Set of Equation

No. of Eq.	Equation and Description	No. of Eq.	End Var.
	Gross Domestic Output Block		
1	Intermediate Input: $X_{i,j} = a_{X_{i,j}} QA_j, \quad i \in C, \quad j \in A$	34 x 17	$X_{i,j}$
2	Value Added: $VA_j = ava_j QA_j, \quad i \in C, \quad j \in A$	17	QA_j
3	Price of Gross Domestic Output: $(1 - ntopAArate.ntopArate_j) P_j^{QA} = P_j^{VA} ava_j QA_j + \sum_{i \in C} P_i^Z a_{X_{i,j}}, \quad j \in A$	17	P_j^{QA}
4	Relation between Activity Output and Commodity Supply: $Q_i = \sum_{j \in A} TRANSCO_{j,i} QA_j, \quad i \in C$	34	Q_i
5	Relation between Activity Price and Commodity Price: $P_j^{QA} = \sum_{j \in A} TRANSCO_{j,i} P_i^Q, \quad j \in A$	17	$Redundant$
6	Cobb-Douglass Production Function: $VA_j = sva_j LAB_j^{\delta_{LAB,j}} K_j^{\delta_{K,j}}, \quad \delta_{LAB,j} + \delta_{K,j} = 1, \quad j \in A$	17	VA_j
7	Capital Demand:	17	K_j

	$K_j = \frac{\delta_L^j P_{VA_j} VA_j}{PDIST_K^j . P_k} \quad , \qquad j \in A$		
8	Labour Demand: $L_j = \frac{\delta_L^j P_{VA_j} VA_j}{PDIST_L^j . P_L}, \qquad j \in A$	17	LAB_j
9	Value-Added Price: $P_j^{VA} . VA_j = PDIST_L^j . P_L . L^j + PDIST_K^j . P_K . K^j \ , \qquad j \in A$	17	P_j^{VA}
Government Behaviour Block			
10	Government Income: $IG = \sum_{j \in A} \left(ntopAArate . ntopArate_j . P_{QA_j} . QA_j \right) + IGK + \sum_{in \in INS} TR_{gov,in} \ , \quad gov \in in$	1	IG
11	Government Capital Income: $IGK = IGK_{Share} . \sum_j K^j$	1	IGK
12	Government Expenditure: $EG = \sum_{i \in C} P_i ZCG_i + \sum_{in \in INS} TR_{in,gov} \quad , \ i \in C \quad gov \in in$	1	EG
13a	Government Transfer to Households: $TR_{h,gov} = TRG_Share_{h,gov} . TRG_Bar . CPI, \qquad h \in in, \quad gov \in in$	5 x 1	$TR_{h,gov}$
13b	Government Transfer to Enterprises: $TR_{ent,gov} = TRG_Share_{ent,gov} . TRG_Bar , \qquad ent \in in, \quad gov \in in$	1 x 1	$TR_{ent,gov}$
13c	Government Transfer to Itself: $TR_{gov,gov} = TRG_Share_{gov,gov} . TRG_Bar , \qquad gov \in in$	1 x 1	$TR_{gov,gov}$
13d	Government Transfer to ROW: $TR_{r,gov} = TRG_Share_{r,gov} . TRG_Bar , \quad r \in in \quad gov \in in$	1 x 1	$TR_{r,gov}$
13e	Government Transfer to NGO: $TR_{ng,gov} = TRG_Share_{ng,gov} . TRG_Bar , \quad ng \in in \quad gov \in in$	1 x 1	$TR_{ng,gov}$
14	Government Saving: $SG = IG - EG$	1	SG
Household Behaviour Block			
15	Total Household Income: $IH_h = IHL_h + IHK_h + \sum_{in} TR_{h,in} \ , \qquad h \in in,$	5	IH_h
16	Household Labour Income: $IHL_h = IHL_Share_h . PL \left(\sum_j PDIST_L^j L^j + L_r \right) \ , \qquad h \in in$	5	IHL_h
17	Household Capital Income:	5	IHK_h

	$IHK_h = IHK_Share_h \,.\, PK \left(\sum_j PDIST_K^j \, K^j + K_r\right) , \quad h \in in$		
18	Household Disposable Income: $DIH_h = IH_h - TR_{g,h}$	5	DIH_h
19a	Household Transfer to Non-Government Institutions: $TR_{iwg,h} = TRH_Share_{iwg,h} \, DIH_h , \quad h \in iwg,$	4 x 5	$TR_{iwg,h}$
19b	Household Transfer (Tax) to Government: $TR_{g,h} = HAtaxrate \,.Htaxrate_h \,.\, IH_h , \quad h \in in, \quad g \in in$	5 x 1	$TR_{g,h}$
20	Actual Disposable Income: $ADIH_h = DIH_h - \sum_{iwg} TR_{iwg,h} \quad h \in iwg$	5	$ADIH_h$
21	Household Savings: $SH_h = SH_Ratio_h \; ADIH_h , \quad h \in in$	5	SH_h
22	Adjusted Saving Ratio: $SH_Ratio_h = SH_RIN_h \, (1 + SH_Dum_h \,.\, SH_Adj), \quad h \in in$	5	SH_Ratio_h
23	Household Expenditure: $EH_h = ADIH_h - SH_h , \quad h \in in$	5	EH_h
24	Final Goods Demand: $PZ_i \,.\, CH_{i,h} = CH_Share_{i,h} \; EH_h, \quad i \in C , \quad h \in in$	34 x 5	$CH_{i,h}$
Consumer Price Index			
25	Household Price Index: $PI_h = \prod_{i \in C} PZ_i^{CH_Share_{i,h}} , \quad i \in C$	5	PH_h
26	Consumer Price Index: $CPI = \sum_h w_h PI_h , \quad i \in C$	1	CPI
Enterprise Behaviour Block			
27	Total Enterprise Income: $IB = IBK + \sum_{in} TR_{ent,in} , \quad ent \in in$	1	IB
28	Enterprise Capital Income: $IBK = IBK_Share \,.\, P_k \left(\sum_j PDIST_K^j K^j + K_r\right), \quad r \in in$	1	IBK
29	Enterprise Disposable Income: $DIB = IB - TR_{g,ent} , \quad g \in in$	1	DIB_{en}
30a	Enterprise Transfer Payments to Non-Government Institution: $TR_{iwg,ent} = TRB_Share_{iwg,ent} \, DIB , \quad ent \in IWG$	1 x 8	$TR_{iwg,ent}$
30b	Enterprise Transfer Payments to Government: $TR_{gov,ent} = Btaxrate \,.\, IB , \quad g \in in$	1 x 1	$TR_{gov,ent}$
31	Actual Disposable Income of Enterprise: $ADIB = DIB - TR_{iwg,ent}, \quad ent \in iwg$	1	$ADIB$
32	Enterprise Savings:	1	SB

	$SB = ADIB, \quad ent \in in$		
NGO Behaviour Block			
33	NGO Total Income: $INGO = INGOK + \sum_{in} TR_{ngo,in}, \quad ngo \in in$	1	$INGO$
34	NGO Capital Income: $INGOK = INGO_Share . PK . \sum_{j} PDIST_K^{j} K^{j}, \quad ngo \in in$	1	$INGOK$
35	NGO Disposable Income: $DINGO = INGO - \sum_{in} TR_{gov,ngo}, \quad ngo \in in$	1	$DINGO$
36a	NGO Transfer Payments (tax) to Government: $TR_{gov,ngo} = NGOtaxrate . INGO, \quad ngo \in in$		
36b	NGO Transfer Payments to Non-Government Institution: $TR_{iwg,ngo} = TRNGO_Share_{iwg,ng} . DINGO, \quad ngo \in in$	8 x 1	$TR_{iwg,ngo}$
37	Actual Disposable Income of NGO: $ADINGO = DINGO - \sum_{iwg} TR_{iwg,ngo}, \quad ngo \in IWG$	1	$ADINGO$
38	NGO Expenditure: $ENGO = \sum_{i} P_{Z_i} CNGO_i, \quad i \in C$	1	$ENGO$
39	Saving of NGO: $SNGO = ADINGO - ENGO$	1	$SNGO$
Rest of The World (ROW) Block			
40	Total outflow of the Rest of the World: $IROW = \sum_{i} EXR + P_{MW_i} + M_i \sum_{in} TR_{r,in}, + RL_{Share} . P_L . \left(\sum_{j} PDIST_L{}^{j} L^{j} + L_r \right) + RK_{Share} . P_k . \left(\sum_{j} PDIST_K^{j} K^{j} + K_r \right) \quad r \in in$	1	$IROW$
41	Total inflow to the Rest of The World: $EROW = \sum_{i} EXR + P_{EW_i} + E_i + \sum_{in} TR_{in,r} + P_L . L_r + P_k + K_r$	1	$EROW$
42	ROW Transfer Payments to Institutions: $TR_{iwr,r} = TRW_Share_{iwr,r} \; EXR . TROW_Bar, \quad r \in iwr$	8 x 1	$TR_{iwr,r}$
43	ROW Savings: $SROW = EROW - IROW$	1	$SROW$

Investment Block			
44	Investment Demand: $CINV_i = CINVIN_i \,.INVADJ, \qquad i \in C$	17	$CINV_i$
45	Walras Identity/Saving-Investment Balance: $WALRAS = \sum_h SH_h + SB + SG + SNGO + SROW - \sum_i P_{Z_i} \,.\, CINV_i \,, \qquad h \in in,\ i \in C$	1	$WALRAS$
Armington Aggregation			
46	Total Supply Equals with Total Demand: $Z_i = D_i \,,$	17	Z_i
47	Imported Commodity Used: $M_i =$ $\delta_{mi} \,.\, Z_i \left(\frac{P_{Z_i}}{EXR \,.P_{MW_i}}\right)^{-\frac{1}{1+\phi_i}} .\, sz_i^{\frac{\phi_i}{1+\phi_i}} \qquad i \in CM$	17	M_i
48	Domestic Commodity Used: $D_i =$ $\delta_{di} \,.\, Z_i \left(\frac{P_{Z_i}}{P_{D_i}}\right)^{-\frac{1}{1+\phi_i}} .\, sz_i^{\frac{\phi_i}{1+\phi_i}} \,, \qquad i \in CD \cap CM$	17	D_i
49	Zero-Profit Condition: $P_{Z_i} Z_i = EXR \,.P_{MW_i} M_i + P_{D_i} \,.D_i, \qquad i \in CM \cap CD$	17	P_{Z_i}
50	Zero-Profit Condition: $P_{Z_i} Z_i = P_{D_i} \,.D_i$		P_{D_i}
51	Gross Domestic Output in the case where the industry produces only domestic commodities : $D_i = Q_i, \qquad i \in CD/CI$		*Redundant*
52	Industry Export Demand: $E_i = \omega_{ei} \, Q_i \,.\left(\frac{EXR \,.P_{EW_i}}{P_{Q_i}}\right)^{\frac{1}{(\mu_i - 1)}} .\, sq_i^{\frac{1}{(\mu_i - 1)}}, \quad i \in CE \cap CD$	17	E_i
53	Industry Domestic Demand: $D_i =$ $\omega_{di} \, Q_i \,.\left(\frac{P_{Q_i}}{P_{D_i}}\right)^{\frac{1}{(\mu_i - 1)}} .\, sq_i^{\frac{1}{(\mu_i - 1)}}, \quad i \in CD \cap CE$	17	D_i
54	Zero Profit Condition, for Domestic Market: $EXR \,.P_{EW_i} \,.E_i + P_{D_i} \,.\, D_i \;\; = P_{Q_i} \,.Q_i$	17	P_i^Q
55	Zero Profit Condition for Non-Exported Commodities: $P_{D_i} = P_{Q_i}, \quad i \in CD \setminus CE$	17	P_{D_i}
Market Clearing			
56	Commodity Market-Clearing Condition: $Z_i = \sum_h CH_{i,h} + CG_i + CINV_i + \sum_j X_{i,j} \qquad i \in C$	0	$Redundant$
57	Factor Market-Clearing Condition for Capital: $\sum_j K_j + K_r + KU = KS, \quad r \in in$	1	P^K
58	Factor Market-Clearing Condition for Labour:	1	P^L

	$\sum_{j} L_j + L_R + LU = L_S, \quad r \in in$		
Total number of equations		**1044**	