



## THE IMPACT OF SHADOW ECONOMY AND GOVERNMENT EXPENDITURE ON TAX RATIOS: CORRUPTION'S ROLE IN ASEAN

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### Abstract

This study aims to analyze how shadow economy and government expenditure affect tax ratio and whether corruption perception index (CPI) can moderate these relationships. The shadow economy poses a significant challenge to tax revenue collection. Appropriate government expenditure is also expected to increase the tax base. However, the effectiveness of government expenditure is often undermined by corruption, which erodes public trust and compliance. This research was conducted using panel data regression. The samples used were countries in the ASEAN region between 2012 and 2020. The results show that shadow economy has a significant negative impact on tax ratio, while government expenditure has a positive effect. CPI significantly moderates these relationships, enhancing the negative impact of shadow economy and reducing the positive effect of government expenditure on tax ratio. The study concludes that reducing shadow economy and increasing government expenditure are crucial for improving tax ratio in ASEAN countries. However, the effectiveness of these measures depends on strong corruption control. Policymakers should prioritize anti-corruption efforts to enhance public trust and compliance, thereby optimizing tax revenue collection.

**Keywords:** Corruption Perception Index, Government Expenditure, Shadow Economy, Tax Ratio

### INTRODUCTION

Taxes are the principal source of a country's revenue, funding government expenditure to pursue balanced national development, enhance social welfare, and grow the economy. Being a significant mechanism for regulating and molding a nation's economic framework, tax receipts play a vital role in promoting economic activities, with rising tax revenues enabling governments to execute their functions effectively and facilitate balanced development. The contribution of taxation to economic growth can be measured by the tax ratio, which is the proportion of national tax collection to Gross Domestic Product (GDP). The tax ratio reflects the ability of the government to raise taxes as a percentage of economic activity, so that a rise in the tax ratio implies a rising contribution of taxation to the economy (Yossinomita et al., 2024; Zuhrah et al., 2024).

Government expenditure of the central and regional governments is crucial in spurring long-run national economic growth through efficient utilization of resources, improvement in goods and services delivery, public services quality, consumption, and investment by the private sector (Nguyen & Bui, 2022). Prioritization of government expenditures in important areas such as education, infrastructure, and healthcare provide significant impetus to Indonesia's economy. But if these appropriations cannot be financed in their entirety from state revenues such as taxes, excise taxes, non-tax state revenues, or grants, a budget deficit is established, where government spending exceeds revenue (Cempakasari & Kuntadi, 2022). This deficit is subsequently financed by other sources of finance, including debt. Findings from a study by Kurniawan et al. (2020) indicate that government spending has the tendency to influence tax revenues in Indonesia, supported by Adigbole et al. (2023), who add that expenditure on infrastructure and education positively and significantly influences the tax ratio among ECOWAS countries. The inference is that higher government spending is linked to a higher tax ratio, an indicator of increased efficiency in collecting taxes relative to economic activity.

Conversely, Adigbole et al. (2023) also set the stage that government expenditure on health has no influence on the tax ratio in ECOWAS countries. This implies that expenditure in infrastructure and education can enhance tax revenue performance but that health spending has no similar effect, meaning other factors play a more significant role in maximizing the tax ratio. These findings justify the strategic government expenditure priorities to areas of direct



participation in economic production and tax revenue generation and the need to explore further into determinants of tax efficiency within classes of expenditures.

On the other hand, economic activities that are not detected by tax authorities are referred to as the shadow economy. The shadow economy comprises all legal and illegal economic activities and incomes that are not officially recorded (Omodero, 2019) and have minimal or no impact on the official economy (Oanh et al., 2024). According to Indupurnahayu & Walujadi (2019), the shadow economy is illegal and hidden activities conducted by enterprises or economic agents, such as tax evasion, black-market activities, or smuggling. Similarly, Samuda (2016) views the shadow economy, or underground economy, as all those productive activities of goods and services, either legal or illegal, which are not captured in the measurement of Gross Domestic Product (GDP).

Various techniques are used to estimate the shadow economy, with the most widely used being monetary and model-based methods. The monetary method, alternatively known as the currency demand approach, is based on the assumption that shadow economy players prefer to use cash instead of other methods of payment to avoid being detected by the authorities. Since cash payments typically leave no records, receipts, or third-party documentation, they cannot be tracked by tax authorities (Omodero, 2019; Samuda, 2016).

The model-based approach, for example, the Multiple Indicator Multiple Cause (MIMIC) model, estimates the shadow economy by representing one indicator influenced by several causal indicators. Omodero (2019) demonstrates through research that the MIMIC model employs determinants of the shadow economy, including tax burden, regulatory burden, unemployment rate, corruption, and informal sector, to estimate its size. One of the major indicators in such an estimation is the level of corruption. Indrawan et al. (2020) conceptualizes corruption as the misallocation of public resources to private ends, typically by public agents in violation of laws.

Corruption is equated with monopoly power plus discretion minus accountability. Corruption, if high, can erode public trust and lead to citizens' refusal to pay their taxes (Omodero, 2019). Such findings refer to complex interlinks among corruption, unofficial economic activity, and their impact on tax compliance and economic transparency.

With the background provided above, and considering the variable results of previous studies on the relationship between the variables in focus, the study strives to better comprehend the interaction among government expenditure, tax revenue, and the shadow economy, as well as explore the impact of corruption and other variables. By so doing, the study seeks to complement existing literature and offer observations that can be applied to design policy interventions towards enhancing economic transparency and tax compliance.

## **LITERATURE REVIEW**

The linkages between shadow economy, government spending, and tax revenue have also been extensively studied in the literature on economic development and public finance. Shadow economy, commonly referred to as the underground or informal economy, denotes economic activity not recorded officially and therefore evading taxation and regulation. Defined by (Schneider & Enste, 2000), the shadow economy consists of legal activities that are deliberately concealed from public authorities in order to avoid taxation, social security contributions, or regulation of the labor market. This most frequently takes place in developing countries, where high tax levels, bureaucratic regulatory mechanisms, and weak governance institutions prompt people and businesses to carry out informal activities. The existence of a huge shadow economy has significant consequences for tax revenues, as it reduces the tax base and undermines the ability of the government to increase taxes (Buehn & Schneider, 2012).



To the general public, the failure of the state to credibly track tax compliance allows each and every individual as well as business to believe that they are safe from paying taxes. Hence, the less voluminous the shadow economy in the entire economic system of a nation, the easier it is for the government to increase taxes, therefore, optimizing the tax-to-GDP ratio (Chandra Bhuana & Wijaya, 2024). This highlights the need for policies and interventions that reduce the magnitude of the shadow economy, enhance transparency, and enhance tax compliance frameworks to optimize fiscal performance and economic governance.

H1: The Shadow Economy has a significant negative impact on tax ratio

Government spending, particularly on social programs, plays a crucial role in shaping the size of the shadow economy. (Buszko & Skorwider-Namiołko, 2021) proved that higher social spending is linked with a reduction in shadow economy activities. This is on the grounds that increased social expenditures can increase citizens' confidence in government institutions, improve tax morale, and develop alternative sources of income that decrease the incentive for engaging in the shadow economy. The efficiency of government spending to contain the shadow economy, nonetheless, is inclined to be curbed by both the quality of governance and corruption levels. In extremely corrupt countries, government spending can be siphoned or pilfered away, reducing the positive impact of government spending on economy formalization (Mauro, 1998).

Government expenditure, a widespread characteristic of the economy in developing countries, is a central driver of taxation because taxes are the primary source of funds for government expenditure (Gurdal et al., 2021). Kurniawan et al.'s (2020) research indicates that the government's expenditure is likely to significantly impact Indonesian tax revenue, something also echoed by Adigbole et al. (2023), noting that government infrastructural and education spending has positive and significant effect on the ECOWAS country's tax ratio. These findings suggest that higher government spending in such industries is linked with a higher tax ratio, which is higher tax collection efficiency in relation to economic activity. However, Adigbole et al. (2023) also suggest that public spending on health does not significantly affect taxation, demonstrating that the impact of public expenditure on taxation varies by industry. This underscores the need for strategic government investment in the areas of effort that directly yield economic productivity and tax revenues, alongside the imperative of further studies in a view to comprehending sector-specific fiscal policy effectiveness patterns.

H2: Government Expenditure has a significant positive impact on tax ratio

Corruption, as identified by the Corruption Perception Index (CPI), is an essential variable that predicts both the shadow economy and tax income. Corruption undermines the tax administration's integrity, erodes citizens' trust in the government, and creates an environment where tax evasion and an informal economy thrive (Huňady & Orviská, 2015). (Omodero, 2019) highlighted that corruption imposes a more and more powerful negative effect on tax revenues compared to the shadow economy. This is because corruption not only stimulates tax evasion but also distorts the allocation of public resources, with inefficient government spending and reduced provision of public services. As a result, the presence of high corruption levels can amplify the negative effect of the shadow economy on tax revenues, leading to a vicious circle of low tax compliance and bad governance.

Corruption is a malfeasance that erodes public confidence in government. Control of corruption is essential in order to foster such confidence, as it directly influences attitudes of citizens towards governance. When the public perceives that corruption is kept in check, they will trust the government more, leading to greater voluntary compliance with taxation and, consequently, more efficient tax revenue collection (Chandra Bhuana & Wijaya, 2024; Wiguna & Wijaya, 2024). Control of corruption is also a controllable variable on the government's part,



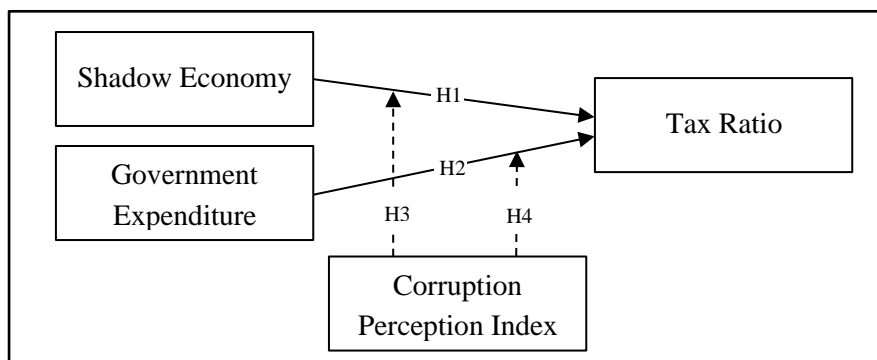
and therefore, it is a very important moderating variable for this research. High public trust in corruption control not only strengthens the positive effect of per capita income on tax revenue but also weakens the negative effects of the shadow economy on tax revenue collection. This highlights the mutual dependence of the quality of governance, economic transparency, and fiscal outcomes and argues the need for effective anti-corruption strategies to enhance tax compliance and economic stability more broadly. By curbing corruption, governments can offer a setting that breeds trust, encourages formal economic participation, and maximizes tax revenue potential.

H3: Corruption Perception Index reducing the negative impact of shadow economy on tax ratio

Defective audit mechanism and control means offer space to officials to undertake corrupt activities. In the period when government expenditures are increasing, officials are more likely to make use of the spaces for individual gains. Research by Nan (2021) confirms that strengthening anti-corruption efforts not only represses the spread and transmission of corruption among government officials but also maximizes government expenditures' scale and composition and makes it more efficient and effective. High levels of corruption usually push governments to boost fiscal expenditure as a form of reaction. Moreover, studies Iliyasu & Muhammed (2023) show that reducing corruption indirectly enhances the favorable contribution of government spending to economic growth. However, if the level of Corruption Perception Index (CPI) is less than 42.25, the effect of economic growth from government spending will be reduced. These findings underscore the critical significance of effective anti-corruption to ensure that government spending is effective and efficient and that, in the end, economic growth is sustainable. Through corruption elimination, governments not only promote fiscal transparency but also ensure the optimal developmental benefits of public expenditure.

H4: Corruption Perception Index enhancing the positive impact of government expenditure on tax ratio.

The nexus between shadow economy, government spending, and corruption suggests that the resolutions to these issues have to be holistic. Good tax policy, transparency in government, and targeted social spending can reduce the size of shadow economy and improve tax revenue performance. Anti-corruption policy and institutional changes are also vital to ensure that government spending is effective in desired sectors and fosters a culture of tax compliance. Subsequent research can investigate how corruption mediates the interaction between shadow economy, public expenditure, and tax receipts, especially for developing nations that are highly informal and have weak governance. The research framework of this study is shown in Figure 1.





## METHODS

This study follows a quantitative research design, with secondary data being utilized in analyzing the interconnections between shadow economy, government expenditure, tax revenue, and corruption perception in Southeast Asian countries with complete data related to the required variables as referred to in Table 1. Shadow economy data are from the Global Informal Economy Database (World Bank) which employs the Multiple Indicators Multiple Causes (MIMIC) approach in estimating the size of informal economic activity. Information on government expenditure, as a ratio of total government expenditure to GDP, and tax revenue, as a ratio of total tax revenue to GDP, is also from the World Bank. Lastly, the Corruption Perception Index (CPI), which captures the perceived levels of corruption in the public sector, is from Transparency International. The sample includes seven Southeast Asian countries—Cambodia, Indonesia, Laos, Malaysia, Singapore, Thailand, and the Philippines—spanning data for 2012-2020.

The research uses panel data regression analysis, conducted with the assistance of EViews 14, to account for both cross-sectional and time-series heterogeneity in the data. Panel data regression is employed due to its ability to provide stronger and more efficient estimates by controlling for unobserved heterogeneity across both the country and time dimensions (Baltagi, 2008). The model seeks to examine the impact of shadow economy and government expenditure on tax revenue while controlling for the moderating influence of the corruption perception index. By incorporating fixed or random effects, the study aims to address biases that may arise and ensure the validity of the findings. The methodological approach aligns with the literature that has used panel data to examine fiscal and governance matters in developing economies (Adigbole et al., 2023; Nan, 2021). The results should provide valuable insights into the interplay of these variables, contributing to the broader discussion of Southeast Asian economic policy and governance.

**Table 1. Variables Used in Research**

Variables	Unit	Sources
Tax Ratio (TR)	Ratio	World Bank
Estimation of Shadow Economy based on MIMIC Model (SE)	Ratio	CERP
Government Expenditure (GE)	Ratio	World Bank
Corruption Perception Index	Index	Transparency International

Sources: Processed by the author

The data collected is then analyzed by means of multiple regression analysis. Following the regression, a series of tests were conducted as seen in Table 2 below in order to determine the best panel data regression model of this study. For an  $\alpha$  of 5%, if Prob is less than  $\alpha$ , the  $H_0$  is rejected by the decision.

**Table 2. Series of Regression Model Tests**

Regression Model Tests	$H_0$	$H_1$
Chow Test	Pooled least square model selected	Fixed-effects model selected
Lagrange Multiplier Test	Random-effects model selected	Pooled least square model selected
Hausman Test	Random-effects model selected	Fixed-effects model selected

Sources: Processed by the author

Having selected the correct regression model, the following set of assumption and model precision checks was first conducted as shown in Table 3 below. Having assumed that assumptions and the accuracy of the model were met, one can interpret the regression results.

**Table 3. Series of Assumption Tests and Model Accuracy**

Assumption Test	$H_0$	$H_1$
Normality Test	Data is normally distributed	Data is not normally distributed



Variance Inflation Factor (VIF) Test	No multicollinearity between variables	There is multicollinearity between variables
Glejser Test	Homoskedastic data	Heteroscedastic data
Durbin Watson test	There is no autocorrelation	There is autocorrelation
<b>Model Accuracy Test</b>	<b>H<sub>0</sub></b>	<b>H<sub>1</sub></b>
F Test (Simultaneous)	Model does not fit, all variables have no effect	Model fit, at least one significant variable
T Test (Partial)	Independent variables have no significant effect	Independent variables have a significant effect

Sources: Processed by the author

After choosing the best model and ensuring that the data fulfils the classical assumption test, the data is processed using the Eviews application. The regression equation from this test is as follows:

$$TR = \beta_0 + \beta_1SE + \beta_2LOGGE + \beta_3CPI + \beta_4SE\_CPI + \beta_5LOGGE\_CPI + \varepsilon_{it}$$

- TR : Tax Ratio
- $\beta_0$  : Constant
- SE : Proportion of Shadow Economy based on MIMIC model (% of GDP)
- LOGGE : Government Expenditure in providing goods and services (% of GDP) transformed into logarithm.
- CPI : Corruption Perception Index as moderating variable
- SE\_CPI : Corruption Perception Index as a moderating variable interacting with Shadow Economy variable
- LOGGE\_CPI : Corruption Perception Index as a moderating variable interacting with Government Expenditure variable transformed into logarithm
- $\varepsilon_{it}$  : Residual / Error

The variable Government Expenditure (GE) was converted into a log form (LOGGE) to stabilize the data's variance, which was exhibiting heteroscedasticity, and to enable the interpretation of the coefficients as elasticities. The transformation is consistent with the recommendation by Wooldridge (2016) and Gujarati & Porter (2020) in economic analysis. To check the robustness of our findings, we compared models that included the logarithmic transformation with those that excluded it. The findings demonstrate that the log transformation did not change the significance and the direction of relationships among the variables but rather allowed for easier interpretation and fulfillment of classical assumptions of linear regression.

## RESULTS AND DISCUSSION

According to the results of the analysis with the panel data type multiple linear regression model, the author classifies the test results into four, i.e., descriptive analysis, panel model selection result, classical assumption tests result, and regression result based on the model selected.

**Table 4. Descriptive Statistics**

Variable	Mean	SD	Min	Max
TR	13.3745	2.1135	8.3101	19.7320
SE	31.5700	12.5697	11.6632	48.7931
GE	15.5100	2.9215	10.5733	25.7218
CPI	41.4285	19.8719	20.0000	87.0000

Sources: Processed by the author

Descriptive statistics in the table 4 provide a summary of the key variables employed in this study: Tax Revenue (TR), Shadow Economy (SE), Government Expenditure (GE), and Corruption Perception Index (CPI). Tax Revenue (TR) records a mean of 13.3745 and standard deviation (SD) of 2.1135, indicating moderate variability in the sample. The minimum and



maximum values of TR are 8.3101 and 19.7320, reflecting huge differences in the tax revenue performance of the countries in the sample. For Shadow Economy (SE), its mean value is 31.5700 with a rather high standard deviation of 12.5697, suggesting a great variety of the size of informal economic activities in the region. The SE statistics range from 11.6632 to 48.7931, indicating the diversity of the size of shadow economies in Southeast Asia.

The Government Expenditure (GE) mean and standard deviation are 15.5100 and 2.9215, respectively, indicating relatively moderate variability of fiscal expenditure as a share of GDP. GE statistics range from 10.5733 to 25.7218, indicating variation in both the fiscal priorities and fiscal capacities of the countries included in the sample. Lastly, the Corruption Perception Index (CPI) stands at 41.4285 with a high standard deviation of 19.8719, reflecting extensive disparities in corruption perception levels across the region. The CPI scores range from 20.0000 to 87.0000, reflecting the varying degrees of quality and transparency of governance within the countries being studied. Together, these descriptive statistics suggest considerable heterogeneity in both governance and fiscal indicators in Southeast Asia, providing a foundation for empirical analysis to consider relationships between these variables.

**Table 5. Regression Model Test Results**

Model Tests	Prob Value	Conclusion
Chow Test	0.0000	Reject H <sub>0</sub> : Fixed-effects model selected
Lagrange Multiplier Test	0.0042	Reject H <sub>0</sub> : Pooled least square model selected
Hausman Test	0.0000	Reject H <sub>0</sub> : Fixed-effects model selected

Sources: Processed by the author

Following regression model test results (Table 5), it was revealed that the fixed-effect model (FEM) was the most appropriate for this research. In the classical tests of assumption performed, the test for normality provided a probability value of 0.1870, which is greater than 0.05, and hence it implies that the data is normally distributed. The multicollinearity test results (Table 6) further confirmed there was no significant relationship between the independent variables as all the correlation values were lower than the critical value of 0.80. It implies that the variables are independent enough, thus the regression analysis is valid. The Glejser method conducted had probability values (prob) of greater than 0.05, which means that there is no heteroscedasticity present in the model. This confirms that the variance of the error terms is homogeneous across the observations, and this is proof of the validity of the regression output. Similarly, the Durbin-Watson (DW) statistic autocorrelation test provided a value of 1.8152, which falls within the acceptable range of  $-2 < DW < 2$ . This indicates that there is no evidence of autocorrelation in the model and therefore the regression analysis is correct.

**Table 6. Multicollinearity Test Results**

SE	LOGGE	CPI	SE
SE	1,00000		
LOGGE	0.11339	1,00000	
CPI	-0,67489	0.17452	1,00000

Sources: Processed by the author

The regression outcome reveals a coefficient of determination (R-squared) of 96.93 percent, which means that the model explains approximately 96.93 percent of variation in the performance of tax ratio among the countries under study. The meaning of the remaining 3.07 percent is that there exist other variables outside the purview of this research model, which may also influence the performance of tax ratios. Such unexplained variables could be institutional variables, determinants based on culture, or individual country-specific policy interventions. Despite this, the significance of Prob(F-Statistic) at 0.0000 confirms that the determinants in the model collectively have a statistically significant impact on the tax ratio. This confirms the robustness of the model in picking out the determinants of tax performance. The outcomes of



the panel data regression analysis, utilizing the panel-corrected standard errors (PCSE) model, are presented in Table 7.

**Table 7. Regression Analysis Results**

Variables	Coefficient	Std. Error	Prob
C	1,93088	4,45658	0,00001
SE	-0,41388	0,08219	0,00000
LOGGE	3,49533	1,01598	0,00117
CPI	-0,29807	0,05948	0,00000
SE_CPI	0,02435	0,00142	0,00000
LOGGE_CPPI	-0,03030	0,01656	0,07316
R-Squared	0,96934		
Prob(F-Statistic)	0,00000		

Sources: Processed by the author

From a series of tests that have been carried out, it is safe to conclude that this research model is adequate for further analysis. The regression equation used in this study is described as follows.

$$TR = 1,93088 - 0,41388SE + 3,49533LOGGE - 0,29807CPI + 0,02435SE\_CPI - 0,03030LOGGE\_CPI + \epsilon_{it}$$

### Interpretations

The Shadow Economy (SE) coefficient is -0.41388 in the equation of regression, and it implies a negative relation between the tax ratio and shadow economy. It implies that whenever the shadow economy increases, the tax ratio decreases. It indicates that for a 1% increase in the shadow economy, the tax ratio decreases by 0.41388%, controlling other variables. The negative impact of the shadow economy on tax ratio is in agreement with evidence from the existing literature. For instance, Buehn & Schneider (2012) and Omodero (2019) argue that the shadow economy reduces the tax base since it renders economic activities unreported and untaxed. Since enterprises and individuals engage in informal businesses, they do not pay taxes, hence government revenues are reduced directly. This is particularly the case in countries with weak tax administration and enforcement infrastructures, where the shadow economy thrives due to high tax rates, complex regulation, and corruption.

Moreover, the shadow economy has a tendency of leading to a tax morale loss as people and businesses believe that others are evading taxes and are not being penalized for doing so. This leads to a vicious cycle where tax compliance decreases, further reducing the tax ratio. The findings in the regression equation also concur with Kodila-Tedika & Mutascu (2013), who found that the shadow economy negatively impacts tax revenue in African countries, and Omodero (2019), who noted that the shadow economy leads to massive tax revenue losses for Nigeria. This shows that the hypothesis: The Shadow Economy has a significant negative impact on tax ratio (H1), is accepted.

The Government Expenditure coefficient (LOGGE) in the regression equation is 3.49533, indicating that there is a positive relationship between government expenditure and tax ratio. That is, tax ratio increases as the government expenditure increases. Specifically, an increase of 1% in government expenditure (on a logarithmic scale) is followed by an increase of 3.49533% in the tax ratio, *ceteris paribus*. This indicates that public spending conducted by the government raises the rate of compliance by taxpayers, as citizens tend to pay taxes if they are able to realize some benefits from government expenditures. This study is in line with research conducted by Adigbole et al. (2023) where he found that government spending in education and infrastructure increased their tax revenues, but conversely, government spending in health does not have much influence on the tax ratio due to the fact that health spending is



perceived as an elementary duty of the government and not something that can actually determine the compliance of taxpayers.

The findings accord with the spend-tax hypothesis of increased government expenditures leading to raised tax revenues when money is allocated to sectors creating public confidence and economic development. In the views of Gurdal et al. (2021), stated that government expenditure and tax revenues show a stable long-run relationship, especially for spending on education and infrastructure. Similarly, Mawejje & Munyambonera (2016) also found that government development expenditure, particularly on infrastructure, is correlated with improved tax revenue performance. These results highlight the need to concentrate government spending on those sectors which are directly accountable for economic growth and taxpayer satisfaction so as to foster tax compliance and revenue collection (Adigbole et al., 2023). This shows that the hypothesis: Government Expenditure has a significant positive impact on tax ratio (H2), is accepted.

The relationship between the Corruption Perception Index (CPI) and the Shadow Economy (SE) carries a coefficient of 0.02435 with a positive sign indicating increased CPI (reflecting less perceived corruption) enhances the negative impact of the shadow economy on the Tax Ratio. This would imply that with a more transparent and accountable regime, the negative effect of the shadow economy on tax revenues is reinforced. The reduction in corruption is typically associated with improved governance but can also inadvertently spur informal actors to persist in remaining outside the formal economy in a bid to evade detection. This exacerbates the adverse effects of the shadow economy on tax performance. On the contrary, higher levels of corruption, particularly the type of bribery directed towards public officials—and most egregiously featured—is the potential for economic agents to reap advantages, such as securing strategic contracts that formalize more of their economic activity.

was consistent with a study by Dreher & Schneider (2010), where they conclude that more anti-corruption efforts and transparency have the effect of forcing actors in the shadow economy to stay informal, if they perceive more risk of being discovered. In more affluent countries, corruption has the effect of enabling actors in the formal economy to obtain licenses or public contracts. For example, individuals might bribe officials to secure big public contracts (e.g., building) or to obtain development licenses for land, with the latter then being conducted in the formal economy instead of the informal one (Choi & Thum, 2003; Dreher et al., 2004). In these instances, corruption is being employed as a mechanism for moving economic activity into the formal sector, while decreasing corruption might drive these activities deeper into the informal sector.

Earlier studies, including Johnson et al. (1998), emphasize the mutual relationship between corruption and the shadow economy, arguing that corruption lowers tax revenues by decreasing compliance and governance. The present study expands on theirs by demonstrating that, though corruption promotes the shadow economy, the corrupt-shadow economic activity nexus could be less harmful to tax revenue than has been considered. In the other scenario, the moderating effect of corruption perception refers to a complex interaction: high corruption can, paradoxically, mitigate some of the negative impact of the shadow economy on tax performance. The result is in line with the findings of Wiguna & Wijaya (2024), which demonstrated that when there is no control of corruption, the shadow economy can boost Corporate Income Tax Revenue (CITR) due to the promotion of competition and stimulation of economic activity. However, once corruption control is increased, the shadow economy decreases, eliminating its beneficial effect on CITR and perhaps leading to a decline in corporate tax revenue.

These results highlight complicated interlinkages among the governance quality, corruption, and unofficial economic activity. Though fighting corruption is necessary to achieve



governance improvement, it unintentionally reinforces the adverse impact of the shadow economy on tax revenues by deterring informals from transitioning to the formal sector. This highlights the need for encompassing policy interventions that tackle both corruption and the shadow economy to improve fiscal sustainability. The study rejects the hypothesis that a higher CPI weakens the negative impact of the shadow economy on the Tax Ratio (H3), instead finding a more nuanced relationship that warrants further exploration. Policymakers must formulate well-tailored policies that not only combat corruption but also persuade informal economic actors to join the formal economy, resulting in sustainable tax revenue enhancement.

The interaction coefficient between Government Expenditure (LOGGE) and the Corruption Perception Index (CPI) is  $-0.03030$ , showing a negative relationship that suggests an increase in CPI (meaning less perceived corruption) decreases the positive effect of government expenditure on the Tax Ratio. In settings where CPI is high, government expenditure is more effective and focused, as transparency and accountability minimize leakages and misallocation of fiscal resources. Yet, this level of success is not necessarily followed by a proportionate increase in the Tax Ratio. The reason is that the accountable and transparent expenditures are being invested in areas that do not directly increase the tax base, i.e., social welfare or basic infrastructure, that have more long-term economic payoffs but have restricted short-term effects on tax revenues.

Also, governments in high-CPI contexts may favor quality over quantity of spending, and invest in projects that are sustainable and effective rather than in mass spending. Such an approach enhances the efficiency in public expenditure but reduces the short-term fiscal impact on tax revenues. For instance, expenditures in education or health, while critical to long-term growth, will not necessarily accelerate taxable economic activity in the short term directly. This is in line with the findings of (Mauro, 1998) that while low corruption (high CPI) limits government expenditure inefficiencies, its impact on tax revenues is not linear since it changes with sectors financed and their contribution towards tax base enlargement.

Moreover, (Monte & Papagni, 2001) assert that corruption in public procurement harms prospects for sustainable economic development. They show that the share of public expenditure available to provide public goods falls when government money is wasted or otherwise diverted, bypassing economic growth, as well as later growth of tax revenues. Alternatively, with high-CPI conditions, such inefficiencies are prevented to the extent feasible, although real movement into more responsible, transparent projects would not necessarily generate increases in tax ratios immediately. This underscores the intricate interconnection that exists among the quality of governance, public expenditures, and tax efficacy, stressing the imperative of an efficiently designed resource allocation towards areas of economic growth generation as well as improving tax enforcement and revenue collections in the short to medium term. Findings of this nature underscore the necessity of balancing government expenditure transparency and efficiency with policies that deliberately broaden the tax base toward attaining sustainable fiscal results. This shows that the hypothesis: Corruption Perception Index enhancing the positive impact of government expenditure on tax ratio (H4), is rejected.

## **CONCLUSION**

This paper underlines the interdependent relationships between the shadow economy, government spending, corruption perception, and the tax ratio. The results indicate that the shadow economy significantly negatively affects the tax ratio as it lowers the tax base through facilitating unreported and untaxed economic activity. On the contrary, government expenditure is positively associated with the tax ratio, particularly if directed into productive sectors such as education and infrastructure that encourage taxpayer compliance and stimulate economic development. Yet the positive effects of government expenditure are contingent on



corruption perceptions; high transparency, signified by a high Corruption Perceptions Index (CPI), can diminish its short-run fiscal gain by switching resources to long-term investments with minimal short-run tax base growth.

The research also demonstrates the multifaceted nature of perceived corruption on these relations. Though a high CPI of low corruption levels would typically imply good governance, it may also inadvertently increase the negative effect of the shadow economy on tax revenues by deterring informal players from formalizing. This highlights the importance of balanced policy initiatives tackling both corruption and the shadow economy together to achieve fiscal sustainability. The policymakers must emphasize strategic investment in industries that not only promote economic growth and expand the tax base, but also promote openness and accountability in spending. These observations provide a platform for subsequent studies to consider additional determinants of tax performance and further strengthen strategy towards sustainable fiscal results.

The limitations of the data's time range and the diverse methodologies used to estimate the Shadow Economy and corruption levels could render unequal observation outcomes and findings. This necessitates further research with the purpose of investigating more precise and uniform measurement approaches. Further studies could try to advance these methods towards improving result reliability and comparability, and eventually towards a more insightful understanding of the interplay between informal economic activity, quality of governance, and tax performance.

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