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DOES CORRUPTION PERCEPTION INDEX MODERATING THE TAX RATIO FACTORS'S DETERMINANTS?

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Abstract

This research aims to determine whether the Corruption Perception Index will significantly influence the determinant variables on the tax ratio as measured by GDP, Population, and Purchasing Power Parity. The analysis test in this research uses multiple linear regression through the EVIEWS program using sample panel data from ASEAN countries for the period 2012-2020. The analysis results show that GDP has a partial negative and significant effect on the tax ratio, Population has a positive and significant effect on the tax ratio, purchasing power parity has a negative and insignificant effect on the tax ratio, while CPI is indicated to moderate the influence of these three determinant variables on the tax ratio. From this research, it can be learned that to increase the tax ratio, the main thing that must be improved is improving state governance, so that public trust and awareness of paying taxes will also increase.

Keywords: Tax, Fiscal, Macro Economy, GDP, Policy, Corruption

1. INTRODUCTION

Taxes are generally used as a tool to stimulate economic growth, distribute income, and increase state revenues (Cung, 2019). Taxes finance state development and infrastructure. Unstable fiscal revenues, largely derived from taxes, can negatively impact public policy, particularly in developing countries (Lim, 1983; Bleaney et al., 1995; Ebeke and Ehrhart, 2012). Taxes maximize income distribution through public spending and create economic stability (Gnangnon, 2020). Poor tax revenues can lead to low investment and trigger inflation, which can lead to a decline in a country's economic growth (Gnangnon, 2020; Afonso and Furceri, 2010; Gong and Zou, 2002). As a vital aspect for economic stability, taxes are supported by several other indicators that have a significant influence; Individual Population (Goudsward & Hans, 1994; Sriyana, 2011; Aisyah, et al, 2022), Gross Domestic Product (Aisyah, et al, 2022; Tosun & Abizadeh, 2005), Power Parity Purchasing (Eydam & Qualo, 2024), factors that have a significant influence on tax revenue also show various results, that partially these variables can show a significant negative influence on tax revenue, or, some research shows a different narrative that these indicators actually have a positive influence on tax revenue.

In the Indonesian context, the issue of taxation has a contradictory issue, there is a contradiction in terms of public spending which according to several studies (Cung, 2019; Lim, 1983; Bleaney et al., 1995) is a mechanism of economic distribution by the state, but the findings of Alim - (2021) show that public spending and tax revenue have a significant effect on the Corruption Perception Index, meaning that the growth of tax revenue and public spending also

increases the potential for corruption, the same thing is also the finding of Cung (2019). This contradiction in the current tax mechanism is a problem in itself, because if tax revenue cannot be distributed properly due to corrupt behavior, then economic distribution will be hampered and the country's growth will be disrupted. Therefore, this research will further attempt to explain how corrupt behavior represented by the Corruption Perception Index will moderate/influence other variables on state revenue (Tax Ratio), the purpose of this research is to describe how corrupt behavior will impact/influence macro indicators that drive tax revenue.

2. METHODOLOGY

This research employs a quantitative method, utilizing data obtained from the World Bank. The sample size is Southeast Asian countries from 2012 to 2020. The analytical tool used in this research is regression, assisted by EVIEWS software.

Based on the research results outlined in the background section, which demonstrate the central role of GDP, Population, PPP, and the Corruption Perception Index in influencing the tax ratio, the following hypotheses are developed in this research:

H1: Gross Domestic Product has a significant effect on the Tax Ratio

H2: Population has a significant effect on the Tax Ratio

H3: Purchasing Power Parity has a significant effect on the Tax Ratio

H4: Corruption Perception Index has a significant effect on the Tax Ratio

H5: Corruption Perception Index moderates the effects of Gross Domestic Product, Population, and Purchasing Power Parity on the Tax Ratio

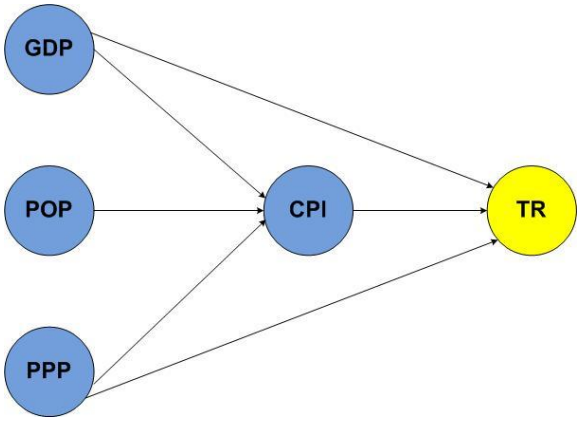

Figure 1. Conceptual Framework

Source: Author's Data Processing

3. RESULT AND DISCUSSION

The sample used in this research is countries in Southeast Asia from 2012 to 2020. The economic conditions used for analysis are: 1. Gross Domestic Product, 2. Population, 3. Purchasing Power Parity.

Table 1. GDP

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020
Vietnam	34.636.484	36.172.998	38.084.801	40.308.502	42.549.646	45.028.320	47.881.387	50.436.503	51.298.474
Indonesia	31.484.474	32.780.967	33.965.354	35.144.532	36.498.032	37.928.906	39.467.704	41.021.608	39.684.840
Lao PDR	12.538.382	13.356.091	14.177.909	14.993.557	15.804.534	16.630.186	17.409.644	17.949.112	17.608.944
Cambodia	5.319.391	5.645.564	5.999.671	6.329.157	6.720.236	7.146.691	7.649.519	8.124.551	7.711.247
Myanmar	1.113.782	1.191.858	1.278.544	1.362.248	1.437.383	1.507.851	1.592.203	1.687.370	1.655.640
Thailand	131.240	134.157	134.896	138.565	142.791	148.244	154.018	156.829	146.973
Philippines	129.002	135.542	141.940	148.675	156.663	164.884	172.704	180.658	161.238
Singapore	71.050	73.277	75.178	76.503	78.227	81.685	84.161	84.323	81.313
Brunei Darussalam	49.076	47.486	45.806	45.090	43.466	43.099	42.114	42.347	43.719
Malaysia	34.223	34.994	36.499	37.739	38.861	40.620	42.115	43.783	41.491

Sources: Worldbank

The data above shows that Vietnam has had the largest GDP in Southeast Asia over the past 10 years, followed by Indonesia in second place. However, this does not reflect the tax ratio in these countries; in fact, it can be inversely proportional to the tax ratio in those countries. For example, Indonesia, despite having the second-highest GDP in Southeast Asia, has a tax ratio as seen in the following table:

Table 2. Tax Ratio

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020
Brunei Darussalam	31	31	26	14	9	11	17	13	6
Thailand	17	18	17	18	17	16	16	16	16
Malaysia	15	15	15	14	14	13	12	12	12
Vietnam	15	15	15	15	14	15	15	15	13
Singapore	14	13	14	13	13	14	13	13	12
Philippines	13	14	14	14	14	14	15	15	15
Lao PDR	13	14	14	14	13	12	11	11	9
Indonesia	12	12	12	12	12	11	11	11	10
Cambodia	11	12	15	15	15	16	17	17	18
Myanmar	4	5	6	6	7	7	7	7	7

Source: Worldbank

The same thing can also be seen in the Purchasing Power Parity tabulation, which shows a contrast to the GDP value, that countries with high GDP actually have low purchasing power, this can be seen from the Purchasing Power Parity in the table below.

Table 3. Purchasing Power Parity

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020
Brunei Darussalam	1	1	1	1	1	1	1	1	1
Singapore	1	1	1	1	1	1	1	1	1
Malaysia	1	1	2	2	2	2	2	2	2
Thailand	12	12	12	13	13	13	13	13	12
Philippines	18	18	19	19	19	19	20	19	20
Myanmar	268	279	294	319	347	367	378	395	413
Cambodia	1.337	1.340	1.386	1.396	1.402	1.428	1.450	1.466	1.435
Lao PDR	2.616	2.713	2.738	2.820	2.759	2.789	2.779	2.794	2.848
Indonesia	3.570	3.766	4.031	4.353	4.518	4.696	4.766	4.762	4.681
Vietnam	7.167	7.370	7.473	7.413	7.316	7.395	7.492	7.547	7.558

Source: Worldbank

Regression Analysis

In regression analysis using eViews, the Chow test and the Hausman test are used to determine which regression model to use: the Common Effects Model, the Fixed Effects Model, or the Random Effects Model.

Chow Test

In the Chow test, if the probability value is >0.05, the Common Effects Model is used. If the probability value is <0.05, the Fixed Effects Model is used.

Table 4. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	115.915472	(9,76)	0.0000
Cross-section Chi-square	242.070404	9	0.0000

Source: Author's Data Processing

The table above shows that the p-value is <0.05. Therefore, the Fixed Effects Model is used. To determine whether the model used is a Fixed Effects Model or a Random Effects Model, a Hausman test is performed.

Hausman Test

In the Hausman test, if the Probability >0.05, the Random Effects Model is used. If the Probability value is <0.05, the Fixed Effects Model is used.

Table 5. Hausman Test

Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	27.441743	4	0.0000

Source: Author's Data Processing

The table above shows that the p-value is <0.05. Therefore, the Fixed Effect Model is used. Based on the test results on the Fixed Effect Model, the following are the regression values formed.

$$Y = 22.76 – 0.21X1 + 0.018X2 – 0.002X3 – 0.008X4$$

Tabel 6. Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.76691	2.339594	9.731137	0.0000
GDP	-0.210162	0.051270	-4.099113	0.0001
POP	0.018499	0.000764	24.20395	0.0000
PPP	-0.002371	0.001287	-1.842616	0.0689
CPI	-0.008855	0.027430	-0.322822	0.7476

Root MSE	11.99499	R-squared	0.925941
Mean dependent var	29.53547	Adjusted R-squared	0.922456
S.D. dependent var	44.32374	S.E. of regression	12.34275
Akaike info criterion	7.917967	Sum squared resid	12949.19
Schwarz criterion	8.056845	Log likelihood	-351.3085
Hannan-Quinn criter.	7.973971	F-statistic	265.6821
Durbin-Watson stat	0.079710	Prob(F-statistic)	0.000000

Source: Author's Data Processing

The R-Square value in the tabulation shows 0.925, meaning that the independent variable in this model can explain up to 92.5% of the variation in the dependent variable, while the remaining 7.5% of the variance in the dependent variable is explained by other variables not mentioned in this article. The F-test (Probability) value based on the Fixed Effects Model in this article shows a value of 0.00 < 0.05, meaning that the variables GDP, POP, PPP, and CPI simultaneously have a significant effect on the Tax Ratio.

1. GDP

For the GDP variable, GDP has a negative and significant effect on the tax ratio, with a significance value of 0.00 < 0.05 and a variable coefficient of 0.21. This contradicts previous research conducted by Husein et al. (2016), Aisyah et al. (2022), Rahmanta (2020), and Mongdong (2018), which revealed the opposite, stating that GDP has a significant positive effect on the tax ratio. The phenomenon where GDP and Tax Ratio have a negative influence on Tax Ratios may indicate that the countries sampled in this research are experiencing a shadow economy. The shadow economy is a phenomenon that describes productive and legal economic activities that are not integrated into government data (in this case, the tax authority), so that even though these economic activities contribute to GDP, they do not contribute to taxation (Kelmanson et al., 2019; Ginevicius et al., 2020). Furthermore, Ginevicius et al. (2020) also outline several factors driving

this shadow economy, including the tax burden, economic regulations, tax morale, public trust, and the ratio of formal to informal labor. However, this remains an assumption in this research, as strong evidence for the existence of a shadow economy has not been tested in this research.

2. POP

In the POP variable, Population has a positive and significant effect on the tax ratio, with a sig value of 0.00 <0.05 and a variable coefficient of 0.018. This finding is relevant to several previous researchers such as Rahmanta (2020), Aisyah et al (2022) and Mongdong (2018) who stated that population will be positively correlated to tax revenue (Aisyah et al (2022). However, the coefficient value formed illustrates that the large population does not have sufficient significance to encourage tax revenue, because every 1% increase in population will only contribute to tax revenue by 0.018%, this is due to the large population growth cannot be recognized (recorded) properly by the government, so that the optimum potential for tax revenue cannot be achieved (Mongdong, 2018), this finding is also relevant to the previous variable (GDP) regarding the indication of a shadow economy.

3. PPP

In the PPP variable, Purchasing Power Parity has a negative and insignificant effect on the tax ratio, with a sig value of 0.06 > 0.05 and a variable coefficient of 0.0023. The insignificance of the influence of the PPP variable on the tax ratio in several available studies cannot be explained directly, because the measurement of factors that influence economic growth as a determinant that influences the tax ratio has a significant bias, PPP is one of them. Vo and Vo (2022) found that changes in the price of goods that occur in the market are driven by high trading volumes, which therefore contribute to salary increases as one of the determinants of acquisition prices, therefore individual purchasing power is actually a productivity bias, because increasing individual welfare (salary increases) also increases the price of goods available in the market. In line with this, Eydam and Qualo (2024) also explained that there is a negative relationship between the tax ratio and income inequality, where the higher the tax ratio, the smaller the income inequality that occurs, this confirms the opinion of Vo and Vo (2022) which states that there is a productivity bias that occurs in the market when the market experiences economic growth, because the distance between the income received and the rate of increase in the price of goods is getting smaller which has an impact on the tax revenue ratio.

4. CPI

For the CPI variable, the Corruption Perception Index has a negative and insignificant effect on the tax ratio, with a significance value of 0.7476 > 0.05 and a coefficient of 0.0018. This finding aligns with research conducted by Adkoya, Augustine, and Enyi (2020), which showed a similar finding: that the Corruption Perception Index leads to decreased public trust in the government and reduced tax compliance. This finding also aligns with the theory of the Shadow Economy proposed by Kelmanson et al. (2019) and Ginevicius et al. (2020) regarding public awareness of tax compliance. From the testing of four determinant variables (GDP, PPP, POP, and CPI) and descriptive analysis on the available sample data tabulation, it can be seen that the determining factor for high or low tax ratio in a country is the perception and effectiveness of government performance in managing the country, because high GDP does not determine the tax ratio will be in line, as well as the population level that has a small contribution to the tax ratio, while Purchasing Power Parity has no significant influence on the tax ratio because the price and availability of

commodities in the market are uncontrolled which causes purchasing power not to represent welfare and the ability to pay taxes.

Moderating Variable Analysis

According to Arif and Wawo (2016), a moderating variable is a variable that has a strong dependent influence (strengthening or weakening) on the relationship between the independent and dependent variables. In this research, the Corruption Perception Index is used as a moderating variable. Several previous studies that use the Corruption Perception Index as a moderating variable include Sarihan and Yizid (2025) on climate change and its role as a moderating variable in mitigating climate change risks, and Rizqa and Wibowo (2024) in their research on investment, which uses the Corruption Perception Index as a moderating variable. Both studies illustrate how the Corruption Perception Index plays a crucial role in improving more effective governance, thereby accelerating environmental management and investment. Therefore, in this research, the Corruption Perception Index is also used as a moderating variable to measure whether the Corruption Perception Index will also moderate other determinant variables that influence the tax ratio.

Based on the test results through EVIEWS, it shows that the Corruption Perception Index is a moderating variable.

Tabel 7. Hasil Uji Moderasi

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	-0.350783	0.171544	-2.044865	0.0445
POP	-0.285587	0.189020	-1.510885	0.1351
PPP	0.164061	0.172019	0.953734	0.3434

The regression test results in Table 7 indicate changes in the coefficient and significance values of the determinant variables GDP, POP, and PPP after being moderated by the CPI. GDP has a larger coefficient of influence (-0.35 > -0.21 with a significance level of 0.04 < 0.05). Thus, the CPI has strengthened the direction of GDP's influence on the tax ratio. With CPI as a moderating variable, GDP has a greater negative coefficient of influence on the tax ratio. This indicates that the assumption of a shadow economy in the ASEAN region is increasing, and one of its drivers is the CPI. This has reduced negative public perception of public officials, which erode tax awareness.

For the POP variable, the Corruption Perception Index also moderates the effect of POP on the Tax Ratio, at -0.285 < 0.08, with a significance level of 0.135 > 0.05. The Corruption Perception Index changes the effect of POP on the Tax Ratio from being insignificant. This finding is important because the impact of the moderating variable on these two variables radically changes how the potential income tax cannot be met by the country's population due to negative public perception of state management.

Similarly, the POP variable experienced a radical change in its relationship with the tax ratio, and the PPP variable also radically changed its influence to a positive and insignificant one on the tax ratio. Although no relevant evidence has been found regarding this, at least this finding indicates that the CPI (Corruption Perception Index) causes individuals to delay tax payments, thereby providing better purchasing power. This positive purchasing power is projected as potential tax

payments. The findings in this research indicate that the CPI moderates the significance of the influence of GDP, POP, and PPP on the Tax Ratio.

4. CONCLUSION

Based on the test results, it can be concluded that H1: Gross Domestic Product has a significant effect on the Tax Ratio is accepted, although the direction of the effect of GDP on the Tax Ratio is negative. H2: Population has a significant effect on the Tax Ratio is accepted. This research shows that population has a significant effect on the tax ratio. H3: Purchasing Power Parity has a significant effect on the Tax Ratio is rejected. The regression test results indicate that PPP does not have a significant effect on the tax ratio. H4: Corruption Perception Index has a significant effect on the Tax Ratio is rejected. The regression test results indicate that CPI does not have a significant effect on the tax ratio. The test results also indicate that CPI is a moderating variable that can radically influence the significance of the influence of other determinant variables on the tax ratio. The findings in this article provide interesting information, that to increase the tax ratio is not enough to just encourage economic growth and the number of active workers, but must also create a safe state ecosystem, which can create trust in citizens so that they have awareness to fulfill their tax obligations, because the growth in the number of active workers and positive GDP do not immediately become contributors to increasing the tax ratio, without being followed by progress in good state governance.

Suggestions

There are several interesting findings from this research that demonstrate the significant role of the Corruption Perception Index in changing the significance of an independent variable on the dependent variable. Another finding is that purchasing power (PPP) does not necessarily indicate economic growth, as increased purchasing power accompanied by inflation actually creates a false sense of growth. Unfortunately, these two phenomena are not sufficiently discussed in this article. It is recommended that future research address this issue in more depth.

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