

The Model of GDP Growth in ASEAN-4 Countries: Control of Corruption as an Intervening Variable

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ABSTRACT

The purpose of this study is to analyze various macroeconomic factors that affect Gross Domestic Product growth in ASEAN-4 countries. The type of research is descriptive and explanatory. The research method used is the quantitative method. Based on the phenomenon, purposive sampling is used to determine the countries studied. Using secondary data, the panel data is formed from a combination of countries and a certain period of years. Multivariable regression is used to process panel data. The results show that inflation rate, political stability, and control of corruption have a significant effect on GDP growth. The novelty of this research is the new model of GDP growth in ASEAN-4 countries where control of corruption serves as an intervening variable that affects GDP growth. The findings suggest that to maintain an increase in GDP growth in this region, the governments should keep the inflation rate under control and continue striving to reduce corruption. Controlling the level of corruption can be done by maintaining the stability of the political situation and controlling the inflation rate.

ABSTRAK

Tujuan dari penelitian ini adalah untuk menganalisis berbagai faktor makroekonomi yang berpengaruh terhadap pertumbuhan Produk Domestik Bruto di negara-negara ASEAN-4. Jenis penelitiannya deskriptif dan eksplanasi, metode penelitian yang digunakan adalah metode kuantitatif. Berdasarkan fenomena yang terjadi, purposive sampling digunakan untuk menentukan negara-negara yang diteliti. Dengan menggunakan data sekunder, data panel terbentuk dari kombinasi negara dan periode tahun tertentu. Regresi multivariabel digunakan untuk memproses data panel. Hasil penelitian menunjukkan bahwa tingkat inflasi, stabilitas politik, dan pengendalian korupsi memiliki efek signifikan terhadap pertumbuhan PDB. Kebaruan penelitian ini adalah model baru pertumbuhan PDB di negara-negara ASEAN-4 di mana pengendalian korupsi berfungsi sebagai variabel intervensi yang mempengaruhi pertumbuhan PDB. Temuan menyarankan bahwa untuk menjaga peningkatan pertumbuhan PDB di wilayah ini, pemerintah harus menjaga tingkat inflasi tetap terkendali dan terus berupaya untuk mengurangi tingkat korupsi. Pengendalian tingkat korupsi dapat dilakukan dengan mempertahankan stabilitas situasi politik dan pengendalian tingkat inflasi.

1. INTRODUCTION

The economic growth of a country which is usually measured by Gross Domestic Product (GDP) growth, is always a concern for economists and investors, especially if the country or region is the catalyst of world economic growth. GDP growth is one of the main indicators to assess the economic condition of a country in a certain period. In addition, GDP growth can also be used to benchmark the economic progress of a country or

become the basis for the government in making a policy. World economic growth is usually influenced by the economic growth of developed countries such as the United States, China, and the European region.

The United States' financial policies, such as lowering or increasing the rate of interest rates to trigger economic growth in the country, will also have an impact on interest rates and stock markets of developing countries which will eventually

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trigger changes in the level of the economy in those countries (Mishra et al., 2014). The reality also happens with China's economic growth. China is a producer country for various electronic goods and the number one manufacturer in the world that needs various raw materials from developing countries; for example, nickel from Indonesia for battery production. Suppose China experiences a slowdown in the production of electronic goods. In that case, the nickel exports will also be affected, further impacting Indonesia's economic growth. European countries are also export markets for developing countries. The slowdown in economic

growth in European countries will also trigger a slowdown in economic growth in developing countries.

The International Monetary Fund, in its January 2022 World Economic Outlook Report, has predicted that the world economy will decline by 0.5 percent compared to the previous year as the economic growth of the United States, China, and the European region declines. Meanwhile, four countries will experience increased economic growth in the ASEAN region, i.e., Indonesia, Malaysia, Thailand, and the Philippines (BKF, 2022).



Figure 1. GDP Growth for Indonesia, Malaysia, Thailand, Philippines, and the IMF's Forecast
Source: International Monetary Fund, World Economic Outlook (www.imf.org)

Head of the Badan Kebijakan Fiskal (or Fiscal Policy Agency) of the Ministry of Finance revealed that for 2022-2023, the projected economic growths are as shown in Table 1 (BKF, 2022). Table 1 shows a

phenomenon in the form of a gap between two realities: many countries experience a decrease in GDP growth. In contrast, four developing countries in the ASEAN region experience increased growth.

Table 1. GDP growth for selected countries during 2022-2023

Countries	2022	2023
USA	4.0%	2.6%
China	4.8%	5.2%
Europe	3.9%	2.5%
Indonesia	5.6%	6.0%
Malaysia	5.7%	5.7%
Thailand	4.1%	4.7%
Philippines	6.3%	4.9%

Source: processed data, 2022

This study is conducted to examine which macroeconomic factors have a significant effect on the GDP growth of Indonesia, Malaysia, Thailand, and the Philippines. The novelty of this research is the new model of GDP growth in ASEAN-4

countries where control of corruption serves as an intervening variable that affects GDP growth. This study only discusses four ASEAN countries because the news from the IMF states that only four countries are experiencing increased economic growth. The

rest of the other ASEAN countries are not discussed in this study due to the phenomenon found in ASEAN-4.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Gross Domestic Product (GDP, the overall value of services and goods produced by residents of a country over a given period, is the most important indicator for measuring economic activity. The word “gross” indicates that all capital products, machinery, and buildings do not count for depreciation. The term “domestic” refers to all services and goods produced within the territory of a particular country regardless of nationality. The word “product” refers to all services and goods considered from consumer spending, the amount of government spending, the amount of all state investments, and the country’s total net export. Although the gross domestic product cannot measure people’s quality of life in detail, this measure of the level of the economy has been widely accepted worldwide (OECD, 2016).

Gross domestic product is influenced by many factors, such as inflation rate, political stability, and control of inflation. A commonly used inflation rate is the consumer price index (World Bank, 2016). The consumer price index (CPI) reflects changes in the prices of a group of services and goods commonly purchased by almost all households, except those in prisons and inside military barracks (OECD, 2016). Political stability is the lack of change in a political system for the continuity of a political regime (Nir & Kafle, 2013). According to the World Bank, the control of corruption indicator is evidence of a country’s success or inability to fight corruption (Mungiu-Pippidi & Dadašov, 2016).

High inflation reduces people’s purchasing power. The public, especially those in power, engages in corruption to maintain their purchasing power. Therefore, the inflation rate has a positive and significant effect on the control of the corruption index, which means the lower the inflation rate, the lower the corruption act (Ali & Gasm, 201; Türedi & Altiner, 2016; Uroos et al., 2022). Meanwhile, Elkamel (2019) showed that the inflation rate has no significant effect on corruption in the USA. Therefore, the proposed hypothesis is below:

H₁: Inflation rate has a positive and significant effect on the control of corruption index

Political stability is a necessary condition for controlling corruption. In other words, political

instability can foster corrupt practices among bureaucrats, members of parliament, and members of political parties. Therefore, political stability has a positive and significant effect on the control of corruption index, which means the more stable the political situation, the more controllable the corruption act (Goel & Saunoris, 2017; Nurudeen et al., 2015; Türedi & Altiner, 2016). However, Elbahnasawy & Revier (2012) proved that political stability has no significant effect on corruption in 150 countries.

H₂: Political stability has a positive and significant effect on the control of corruption.

Corruption reduces people’s purchasing power, reducing the demand for goods and services. Therefore, inflation hampers the country’s economic growth (Basirat et al., 2014; Thanh, 2015). Previous studies have shown that the inflation rate has a negative and significant effect on the GDP growth of eight developing countries: Indonesia, Malaysia, Egypt, Iran, Bangladesh, Nigeria, Pakistan, and Turkey (Heidari et al., 2014), 23 upper-middle-income countries (Kiliç & Arica, 2014), and African countries (Adaramola & Dada, 2020; Wollie, 2018). Meanwhile, Adeniran et al. (2014), Aziz & Azmi (2017), and Kuzheliev et al. (2020) proved that the inflation rate has no significant effect on GDP growth. The proposed hypothesis is as follows.

H₃: Inflation rate has a negative and significant effect on GDP growth.

Political stability provides a conducive climate for people and entrepreneurs to do business (Cox & Weingast, 2018). It encourages productive activities that increase national economic growth. Therefore, political stability has a positive and significant effect on GDP growth in Indonesia, Malaysia, Egypt, Iran, Bangladesh, Nigeria, Pakistan, and Turkey (Shabbir et al., 2016), in 120 developing countries (Uddin et al., 2017), and in seventeen Middle Eastern and North African countries (Baklouti & Boujelbene, 2020). Research that only focused on one country also states that political stability has a significant effect on GDP growth, including research in Romania (Radu, 2015), Pakistan (Manzoor et al., 2019), and Kenya (Yakubu et al., 2020). However, Polachek & Sevastianova (2012) showed that political instability, which did not continue into war, had no significant effect in 188 countries. The proposed hypothesis is mentioned below:

H₄: Political stability has a positive and significant effect on GDP growth

Corruption causes the budget for economic development, such as infrastructure, education, and health, to be used for personal and particular group interests. It, of course, will hamper economic growth (Shabbir et al., 2016). Previous studies have showed that control of corruption has a negative and significant effect on GDP growth in twenty-two developing countries (Shera et al., 2014), in twenty-two countries in Africa (D'Agostino et al., 2016), thirteen of the Middle East, and North African countries. Meanwhile, Bibi et al. (2020) reported that control of corruption had no significant effect on

GDP growth. In this study, the next hypothesis is as follows.

H₅: Control of corruption has a negative and significant effect on GDP growth

From previous research, it can be found that several factors that affect GDP growth consist of control of corruption, political stability, and inflation rate. On the other hand, from several research results, it turns out that the control of corruption factor is also influenced by political stability and inflation rate. The research framework is presented in Figure 1.

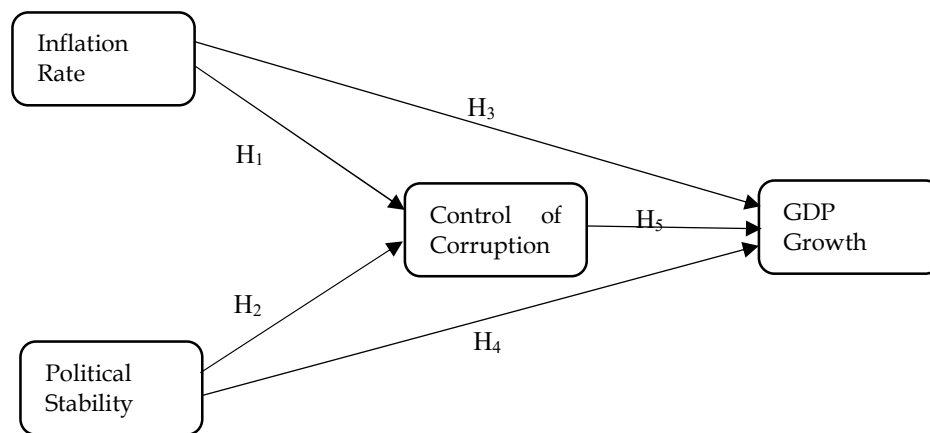


Figure 3. Research framework

3. RESEARCH METHOD

The type of research is descriptive and explanatory. The research method used is the quantitative method. The population of this study is ASEAN countries, and the sample is the ASEAN-4 countries, namely Indonesia, Malaysia, Thailand, and the Philippines. Based on the phenomenon, purposive sampling is used to determine the countries studied. Based on the selected phenomenon, literature review, and sampling methods, the sample used is GDP growth, control of corruption, political stability, and inflation rate from www.imf.org, from 2012 to 2021. The period was chosen because the furthest data available regarding the Control Corruption Index and Political Stability is from 2012, and the latest data is only available for 2021.

The secondary data is a combination of countries and specific years. Therefore data panel is formed. Multivariable regression is used to process panel data by testing whether a suitable model is a fixed effect model, common effect model, or random

effect model. The second step is to process the panel data based on a matching model. The third step is to analyze the results and form the equation model.

Based on the research framework, it can be formed the following research models:

$$CC_{it} = \alpha_0 + \alpha_1 \cdot INF_{it} + \alpha_2 \cdot PS_{it} + \mu_{it} \quad (1)$$

$$GDPG_{it} = \gamma_0 + \gamma_1 \cdot INF_{it} + \gamma_2 \cdot PS_{it} + \gamma_3 \cdot CC_{it} + \mu_{it} \quad (2)$$

where α_0 , γ_0 are intercepts; α_1 , α_2 , γ_1 , γ_2 , and γ_3 are coefficients; INF is the inflation rate; PS is political stability; CC is control of corruption; GDPG is gross domestic product growth; μ is the term of error; t is time; i is country.

Variable Measurement

The research variables used are independent variables consisting of INF and PS, CC as an intervening variable, and GDPG as a dependent variable. The operational definitions of variables are shown in Table 2.

Table 2. Definition of variables

No	Variables	Variable Type	Measurement	Symbol	Definition	Reference
1	Gross Domestic Product Growth	Dependent	Ratio	GDPG	The overall value of services and goods produced by residents of a country over a given period is the most important indicator for measuring economic activity	(OECD, 2016)
2	Control of Corruption	Intervening	Ratio	CC	Evidence of a country's success or inability to fight corruption	(Mungiu-Pippidi & Dadašov, 2016)
3	Inflation Rate	Independent	Ratio	INF	A commonly used inflation rate is the consumer price index	(World Bank, 2016)
4	Political Stability	Independent	Ratio	PS	The lack of change in a political system for the continuity of a political regime	(Nir & Kafle, 2013)

4. DATA ANALYSIS AND DISCUSSION

Langrangian Multiplier Effect

Langrangian multiplier effect tests which model is more suitable between common and random effects. If the result of the p-value test is > 0.05 , then the common effect model is more suitable than the

other. If the result of the p-value test is ≤ 0.05 , then the random effect model is more suitable than the other. The test results showed that the more suitable model is the random effect model. Table 3 shows that the first test is performed for equation (1).

Table 3. Model selection of panel data

		Model 1	Model 2
Langrangian Multiplier Effect Test	Breusch-Pagan -Test Hypothesis		
	Cross-section	8.5572 (0.0034)	1.9766 (0.1597)
	Time	0.1094 (0.7407)	16.474 (0.0000)
	Both	8.6667 (0.0032)	18.451 (0.0000)
Chow Test	Test cross-section fixed effects		
	Cross-section F	Statistics	16.9484 0.0962
	Cross-section Chi-square	36.5788 d.f. (3,33)	0.3483 (3,33)
		3	3
Hausman Test	Random cross-section	Prob.	0.0000 0.9616
		Chi-Sq. Statistics	0.0000 0.9507
		d.f.	12.7595 0.2886
		Prob.	2 0.1017
			3 0.9621

Source: Processed secondary data, 2022

Chow Test

Chow test tests which model is more suitable between common and fixed effects. If the result of the p-value test is > 0.05 , then the common effect model is more suitable than the other. If the result of the p-value test is ≤ 0.05 , then the fixed effect model is more suitable than the other. Chow test results show that the more suitable model is a fixed effect model.

Hausman Test

The Hausman test is used to test which model is more suitable between random effect and fixed effect. If the result of the p-value test is > 0.05 , then the random effect model is more suitable than the other. If the result of the p-value test is ≤ 0.05 , then the fixed effect model is more suitable than the other. The test results showed that the more suitable model is the random effect model.

Langrangian Multiplier Effect

Langrangian multiplier effect tests which model is more suitable between common and random effects. If the result of the p-value test is > 0.05 , then the common effect model is more suitable than the other. If the result of the p-value test is ≤ 0.05 , then the

random effect model is more suitable than the other. The test results showed that the more suitable model is the random effect model.

The second test is performed for equation (2). The results of this test are presented in Table 4 below.

Table 4. Multivariate regression test

Model 1	Variable	Coefficient	Std. Error	t-Statistic	Prob.
	C	0.0790	0.0873	0.9049	0.3713
	INF	0.0259	0.0152	1.7080	0.0960
	PS	0.2529	0.0894	2.8265	0.0075*
	Weighted Statistics				
	Adjusted R-squared	0.1830			
	F-statistic	5.3689			
	Prob(F-statistic)	0.0089			
Model 2	C	-0.2491	0.986986	-0.2524	0.8021
	INF	1.3742	0.282232	4.8693	0.0000*
	PS	3.3119	1.470953	2.2515	0.0305
	CC	-5.8515	2.331348	-2.5099	0.0167*
	Weighted Statistics				
	Adjusted R-squared	0.3762			
	F-statistic	8.8425			
	Prob(F-statistic)	0.0001			

*= Significant

Source: Processed secondary data, 2022

Referring to Table 4, the equations model that can be formed are as follows:

$$CC_{it} = 0.079 + 0.0259INF_{it} + 0.2529PS_{it}$$

$$GDPG_{it} = -0.2491 + 1.374INF_{it} + 3.312PS_{it} - 5.85CC_{it}$$

To interpret the model's equations, it must first understand the existence of different directions of movement used by www.imf.org in indicating a situation. As seen in the example of the table below, Scandinavian countries and Japan, which are considered to have better political stability and control of corruption than generally developing countries in Southeast Asia, have negative figures.

Thailand's figures, which often experience political instability and corruption problems, are positive and higher than the previous countries. It shows that the country's smaller and more negative political stability and control corruption figures indicate good political stability and a low level of corruption, which is the opposite of the GDP growth figures that indicate the more positive the figure is, the better. As for the inflation rate, as generally known, many countries use the following rule of thumb: the positive inflation rate is better than the negative inflation rate (deflation), with a record that the positive inflation rate is still below the 10 percent figure, so that hyperinflation does not occur.

Table 5. Example of vulnerability indicators index and GDP growth in 2021

	WB political stability	WB control corruption	GDP growth
Norway	-1.2	-2.1	3.0
Sweden	-1.1	-2.1	4.0
Denmark	-1.0	-2.1	3.8
Finland	-0.9	-2.2	3.0
Thailand	0.5	0.4	1.0
Japan	-1.0	-1.5	2.4

Source: www.imf.org

The result of the multivariate regression test for equation model 1 indicates that the inflation rate has a positive and significant effect on the control of corruption. It means that the higher the inflation rate,

which causes the price of goods and services to be more expensive and has an impact on reducing people's purchasing power, will cause corruption practices to increase, and vice versa. Thus, H_1 , which

states that the inflation rate has a positive and significant effect on the control of corruption index, is supported. The conclusions from Türedi & Altiner (2016), Özşahin & Üçler (2017), Ali & Gasmi (2017), and Uroos et al. (2022) support this finding.

The result of the multivariate regression test for equation model 1 indicates that political stability has a positive and significant effect on the control of corruption. It means that the more stable the political situation will be corruption practices to decrease, and vice versa. Thus H₂, which states that political stability has a positive and significant effect on the control of corruption, is supported. The conclusions from Nurudeen et al. (2015), Türedi & Altiner (2016), and Goel & Saunoris (2017) support the result of this hypothesis testing.

Significant and positive F-statistical values for equation model 1 indicate that simultaneous inflation rate and political stability significantly affect the control of corruption in the same direction. An increase (decrease) in the inflation rate and political stability of 1 percent will affect the increase (decrease) control of corruption by 5.36 percent.

The result of the multivariate regression test for equation model 2 indicates that the inflation rate has a significant negative effect on GDP growth. An uncontrolled inflation rate will cause prices to increase dramatically. It will reduce people's purchasing power, decrease interest in investment, and will have an impact on reducing GDP growth. Thus H₃ states that the inflation rate has a negative and significant effect on GDP growth is supported and in line with the conclusions by Heidari et al. (2014), Kiliç & Arica (2014), Basirat et al. (2014), Thanh (2015), Wollie (2018), and Adaramola & Dada (2020).

The result of the multivariate regression test for equation model 2 indicates that political stability has no significant effect on GDP growth. The problem of changing power and political ideologies in developing countries and ASEAN in general, except in Singapore, is common, so people in ASEAN countries are used to the situation. As long as there is no war, it does not affect economic activity significantly. Thus H₄ that proposed political stability has a positive and significant effect on GDP growth is not supported. This result supports Polachek & Sevastianova's (2012) conclusion, mentioning that political instability, which did not continue into war, has no significant effect on GDP growth.

The result of the multivariate regression test for equation model 2 indicates that control of corruption has a negative and significant effect on GDP growth. The decrease in the value of the control of corruption indicates a decrease in the level of corruption in a

country. The fall in the level of corruption will increase interest in investment and will increase GDP growth. Therefore, H₅, which states that control of corruption has a negative and significant effect on GDP growth, is supported. It supports the conclusions by Shera et al. (2014), Shabbir et al. (2016), D'Agostino et al. (2016), and Sekrafi & Sghaier (2018).

Significant and positive F-statistic values for equation model 2 indicate that simultaneous inflation rate, political stability, and control of corruption have a significant effect on GDP growth in the same direction. It means that an increase (decrease) in the inflation rate, political stability, and control of corruption by 1 percent will affect the increase (decrease) of GDP growth by 8.84 percent

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The data processing results showed that the first, the second, the third, and the fifth alternative hypotheses have a significant effect. Inflation rates and control of corruption significantly affected GDP growth. The control of corruption serves as an intervening variable that affects GDP growth and is also significantly influenced by the inflation rate and political stability. It implies that inflation rates, political stability, and control of corruption must be seen as a unity and be managed together to produce high GDP growth.

Based on the equation model found in this study, it implies that the governments of the four countries in the study should keep the inflation rate under control and continue to reduce the level of corruption to maintain an increase in GDP growth. Reducing the level of corruption can be done by maintaining the stability of the political situation and controlling the inflation rate.

The fact that this research was only conducted on ASEAN-4 countries following certain phenomena is the limitation of the study. Subsequent research can increase the number of variables, periods, and countries or other regions according to the research gap or phenomena underlying the study.

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