

Corruption and Economic Growth in ASEAN Countries

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Abstract — This paper studies the impact of corruption on economic growth in ASEAN countries over the period of 1999-2019. Ten ASEAN countries are Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, Vietnam, and Singapore. The economic growth is measured by annual percentage growth rate of a country's gross domestic product and annual percentage growth rate of per capita gross domestic product. The corruption is measured by the corruption perception index published by Transparency International. The regression results show that corruption has a positive impact on economic growth for countries with high level of corruption, whereas corruption has no impact on economic growth for countries with low or medium level of corruption. For control variables, foreign direct investment is found to have a positive impact on countries with high level of corruption and government expenditure is found to have a negative impact on economic growth for countries with low or medium level of corruption.

Keywords — Economic growth, Corruption, ASEAN

I. Introduction

Corruption issue has drawn more and more attention globally. The International Association of Anti-Corruption Authorities (IAACA) has been established in 2006 to fight against corruption, and the tenth IAACA annual conferences and general meeting has already been held in January 2019. The theme was “15 years of the United Nations convention against corruption: accomplishments and prospects”.

Ten South-East Asia countries - Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam - formed an organization named Association of Southeast Nations (ASEAN) to promote the rapid and sustained economic growth. The ASEAN's gross domestic product (GDP) increased from US\$577 billion in 1999 to US\$2.5 trillion in 2016, which ranked the sixth-largest economy in the world [1].

However, Campbell and Thomas [2] showed that ASEAN was falling behind in controlling corruption. The survey was carried out in 2017 in Cambodia, Indonesia, Thailand, Vietnam, Malaysia and Myanmar. It was found that almost half the people thought that the level of corruption in their country had increased during the preceding 12-month period, and 46 percent of respondents thought that the government was doing badly against the corruption.

Hence, it is of great interest to study the relationship between corruption and economic growth in ASEAN countries. The paper attempts to find out whether corruption has a positive effect “grease the wheels” or negative effect “sand the wheels” on ASEAN countries' economic growth, then to provide some implications for the authorities to fight against corruption. The corruption will be measured by the Corruption Perceptions Index (CPI) developed by Transparency International, and the economic growth will be measured by annual GDP growth rate and annual per capita GDP growth rate.

The rest of the paper is organized as follows: section II reviews the literature on corruption and economic growth, section III describes the methodology, section IV details the empirical results of the study, and the conclusion is in section V.

II. Literature Review

Transparency International has published the Corruption Perceptions Index (CPI) annually since 1995. The CPI is scored from 0 (highly corrupt) to 100 (very clean), hence the higher the CPI score, the lower the level of corruption. CPI is popular among researchers studying corruption such as [3], [4], [5], [6], [7], [8], [9] and [10]. For measuring economic growth, annual GDP growth rate and annual per capita GDP growth rate are commonly used such as [3], [4], [5], [6], [7], [8], [10], [11], [12] and [13].

These are different views on the relationship between corruption and economic growth in the literature. The main view is that corruption has the negative effect on economic growth, which is called “sand the wheels” [14], this result is supported by other research papers such as [4], [5], [6], [7], [11], [13], [15], [16], [17], [18]. However, the other opposite view “grease the wheels” [3] indicates that corruption has the positive effect on economic growth [17], [19]. Occasionally, it is found that corruption has no impact on economic growth [15].

III. Methodology

This paper attempts to study the impact of corruption on economic growth in ASEAN countries, including Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, Vietnam and Singapore, over the period of 1999-2019. This period is chosen to avoid the effect of the Asian financial crisis, which was started in 1997, on economic growth. Following literature, the corruption is measured by the Corruption Perceptions Index (CPI) developed by Transparency International, and the economic growth will be measured by annual GDP growth rate and annual per capita GDP growth rate which is used to capture the population factor.

Three control variables are chosen based on literature to capture the country differences in economic structures: general government final consumption expenditure as a percentage of GDP [6], [9], [13], [17], gross fixed capital formation as a percentage of GDP [6], [9], [17], and foreign direct investment as a percentage of GDP [5], [8], [9].

The annual data of CPI scores are collected from the web page of Transparency International. And the annual data of GDP and per capita GDP growth rates, general government final consumption expenditure as a percentage of GDP, gross fixed capital formation as a percentage of GDP, and foreign direct investment as a percentage of GDP are collected from the World Development Indicators, web page of the World Bank. Since some data of some countries are not available in some years, there are 171 country-year observations collected in total.

The two multiple regression models are as follows:

$$GDPG = a + b_1CPI + b_2GOVEX + b_3CAPFORM + b_4FDI + e \quad (1)$$

$$GDPPCG = a + b_1CPI + b_2GOVEX + b_3CAPFORM + b_4FDI + e \quad (2)$$

Where GDPG is the annual GDP growth rate, GDPPCG is the annual per capita GDP growth rate, CPI is corruption perceptions index, GOVEX is general government final consumption expenditure as a percentage of GDP, CAPFORM is gross fixed capital formation as a percentage of GDP, and FDI is foreign direct investment as a percentage of GDP.

IV. Empirical Results

A. Descriptive Statistics

Table I shows the descriptive statistics of variables across the 10 countries. It can be seen that 6 countries – Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam - have 21 observations, whereas Cambodia, Laos, Brunei, and Myanmar have 15, 12, 9, and 9 observations respectively due to missing data. On average, Singapore has the highest CPI score of 89.71, the cleanest one among ASEAN countries; Brunei and Malaysia have the medium level CPI scores of 57.78 and 49.14 respectively. The other seven countries have the average CPI score-range of 20 – 35, which can be considered as high level of corruption. Cambodia has the lowest average score of 20.67. The overall CPI score is averaged at 39.57 for the ASEAN region. The GDP growth rate is 5.43 percent per year on average, where Laos, Cambodia, and Myanmar have the highest GDP growth rates of above 7 percent per year and Brunei has the lowest growth rate of 0.68 percent per year. On average, the growth rate of per capita GDP is 4.01% per year, the government expenditure is 11.08 percent of GDP, the capital formation is 25.67 percent of GDP, and foreign direct investment is 8.22 percent of GDP.

The correlations matrix of all variables are displayed in Table II. It can be seen that all correlations are low at the acceptable level, which indicates that there will be no multicollinearity problem in the regression. The high correlation between the two dependent variables implies that the regression results for the 2 models would be similar.

TABLE I: DESCRIPTIVE STATISTICS OF VARIABLES ACROSS COUNTRIES (TO BE CONTINUED)

	CPI	GDPG (%)	GDPPCG (%)	GOVEX (%)	CAPFORM (%)	FDI (%)
Brunei Darussalam: 9 observations						
Mean	57.78	0.68	-0.51	22.74	31.95	3.13
Standard Deviation	3.73	2.45	2.45	3.07	7.96	1.76
Minimum	52.00	-2.48	-3.61	18.44	17.55	-1.32
Maximum	63.00	3.87	2.83	26.48	40.89	4.54
Cambodia: 15 observations						
Mean	20.67	7.42	5.77	5.32	19.72	11.26
Standard Deviation	1.11	2.81	2.76	0.77	2.30	2.70
Minimum	18.00	0.09	-1.40	3.46	15.97	6.09
Maximum	23.00	13.25	11.48	6.34	23.36	14.40
Indonesia: 21 observations						
Mean	27.52	5.05	3.69	8.54	27.35	1.70
Standard Deviation	7.64	1.18	1.18	0.99	5.45	2.02
Minimum	17.00	0.79	-0.61	6.53	19.43	-2.76
Maximum	40.00	6.35	4.95	9.75	32.81	3.99
Laos: 12 observations						
Mean	24.00	7.76	6.07	11.92	30.93	5.29
Standard Deviation	4.33	0.51	0.49	3.33	2.14	1.95
Minimum	19.00	7.02	5.39	7.57	27.46	1.01
Maximum	33.00	8.62	6.87	17.07	34.06	8.17
Malaysia: 21 observations						
Mean	49.14	5.11	3.29	12.32	23.54	6.67
Standard Deviation	2.65	2.16	2.12	0.97	1.82	2.71
Minimum	43.00	-1.51	-3.29	10.17	20.57	0.88
Maximum	53.00	8.86	6.36	13.84	26.48	11.15
Myanmar: 9 observations						
Mean	21.67	7.21	6.42	17.05	29.87	3.91
Standard Deviation	6.24	1.31	1.27	3.59	2.88	1.77
Minimum	14.00	5.59	4.78	10.82	22.92	1.82
Maximum	30.00	9.63	8.88	21.38	32.48	6.87
Philippines: 21 observations						
Mean	29.71	5.36	3.52	10.42	20.75	2.67
Standard Deviation	5.21	1.63	1.75	1.10	2.97	1.16
Minimum	23.00	1.45	-0.21	8.81	18.18	0.91
Maximum	38.00	7.33	5.56	12.53	27.28	5.32
Singapore: 21 observations						
Mean	89.71	5.15	3.31	10.10	26.63	31.63
Standard Deviation	3.93	3.68	3.88	0.76	3.09	9.83
Minimum	84.00	-1.07	-3.70	8.86	23.09	9.72
Maximum	94.00	14.53	12.51	11.84	34.57	48.76

TABLE I: DESCRIPTIVE STATISTICS OF VARIABLES ACROSS COUNTRIES (CONTINUED)

	CPI	GDPG (%)	GDPPCG (%)	GOVEXP (%)	CAPFORM (%)	FDI (%)
Thailand: 21 observations						
Mean	34.95	4.01	3.40	15.02	24.16	4.29
Standard Deviation	2.06	2.22	2.15	1.51	1.96	1.38
Minimum	32.00	-0.69	-1.19	12.93	20.41	2.60
Maximum	38.00	7.51	6.99	17.12	27.71	6.83
Vietnam: 21 observations						
Mean	28.62	6.40	5.33	6.14	28.33	5.85
Standard Deviation	3.72	0.77	0.80	0.38	4.15	1.83
Minimum	24.00	4.77	3.55	5.47	23.64	3.50
Maximum	37.00	7.55	6.56	6.79	35.11	9.97
Overall: 171 observations						
Mean	39.57	5.43	4.01	11.08	25.67	8.22
Standard Deviation	21.70	2.61	2.61	4.55	5.09	9.90
Minimum	14.00	-2.48	-3.70	3.46	15.97	-2.76
Maximum	94.00	14.53	12.51	26.48	40.89	48.76

Note: GDPPCG stands for annual per capita GDP growth rate, GDPG stands for annual GDP growth rate, CPI stands for corruption perception index, CAPFORM stands for gross fixed capital formation as a percentage of GDP, FDI stands for foreign direct investment as a percentage of GDP, GOVEXP stands for general government final consumption expenditure as a percentage of GDP.

B. Regression results

The regression results for the overall sample of 171 observations are shown in Table III. The results of the two regressions are similar as expected. The coefficients of CPI are negatively correlated to both GDP growth rate and per capita GDP growth rate at the 1 percent significance level. This result is consistent with [3], [17] and [19], indicating that lower CPI scores can increase the growth rates of GDP and per capita GDP in ASEAN countries as a whole. This finding is supporting the “grease the wheels” view that higher level of corruption would have a positive effect on economic growth.

For control variables, capital formation is not significant in both regressions, which is not consistent with [6] and [9]. Foreign direct investment has a significant positive impact on the growth rates of GDP and per capita

TABLE II: CORRELATION MATRIX OF VARIABLES

	CPI	GDPG (%)	GDPPCG (%)	GOVEXP (%)	CAPFORM (%)	FDI (%)
GDPG (%)	-0.23					
GDPPCG (%)	-0.29	0.96				
GOVEXP (%)	0.22	-0.41	-0.35			
CAPFORM (%)	0.15	-0.04	0.01	0.30		
FDI (%)	0.76	0.08	0.02	-0.16	0.01	

Note: GDPPCG stands for annual per capita GDP growth rate, GDPG stands for annual GDP growth rate, CPI stands for corruption perception index, CAPFORM stands for gross fixed capital formation as a percentage of GDP, FDI stands for foreign direct investment as a percentage of GDP, GOVEXP stands for general government final consumption expenditure as a percentage of GDP.

GDP at the 1 percent level, which is consistent with [9]. Hence, foreign direct investments have enhanced the economic growth in the ASEAN region. Government expenditure is found to have a significant negative relationship with the growth rates of GDP and per capita GDP at the 1 percent and 5 percent levels respectively, which is consistent with [6] indicating that higher government expenditure would slow down the economic growth in ASEAN region.

Since the CPI scores are so different among ASEAN countries from the lowest 14 to the highest 94 (see Table I), it is of great interest to study whether the impact of corruption on economic growth would be different among different groups. Therefore, the whole sample is divided into 2 subsamples: the first subsample is high and medium CPI scores including 3 countries namely Singapore, Brunei, and Malaysia; and the remaining 7 countries forming the second subsample as low CPI scores. Table IV shows that the results of the two subsamples are different. CPI has a negative impact on economic growth only in the countries with low CPI scores at the 5 percent or 10 percent significance level, whereas it has no impact for the countries with high or medium CPI scores possibly due to the low standard deviation of the CPI scores over the study period. Therefore, the “grease the wheels” hypothesis is only supported for the countries with high level of corruption. Further, capital formation and FDI are found to have significant positive effect on economic growth at the 5 percent or 1 percent level for countries with high level of corruption, and no effect for countries with low or medium level of corruption. However, government expenditure is found to have a significant negative association with economic growth for countries with low or medium level of corruption, and no association in countries with high level of corruption.

TABLE III: REGRESSION RESULTS OF THE OVERALL SAMPLE

Dependent variable	GDPG	GDPPCG
C	7.5938*** (0.0000)	5.4508*** (0.0000)
CPI	-0.0578*** (0.0004)	-0.0706*** (0.0000)
CAPFORM	0.0440 (0.4041)	0.0687 (0.1987)
FDI	0.1012*** (0.0004)	0.1107*** (0.0000)
GOVEXP	-0.1665*** (0.0060)	-0.1193** (0.0382)
Observations	171	171
Adjusted R-squared	0.2567	0.2416
Durbin-Watson stat	2.0388	1.9947

Note: GDPPCG stands for annual per capita GDP growth rate, GDPG stands for annual GDP growth rate, CPI stands for corruption perception index, CAPFORM stands for gross fixed capital formation as a percentage of GDP, FDI stands for foreign direct investment as a percentage of GDP, GOVEXP stands for general government final consumption expenditure as a percentage of GDP. ***, **, and * indicate significance at the level of 1%, 5%, and 10%, respectively.

TABLE IV: REGRESSION RESULTS OF TWO SUBSAMPLES

Dependent variable	Low CPI scores subsample		High and medium CPI scores subsample	
	GDPPCG	GDPG	GDPPCG	GDPG
C	2.6028** (0.0323)	5.3035*** (0.0001)	8.5219*** (0.0034)	11.0533*** (0.0001)
CPI	-0.0632* (0.0533)	-0.0749** (0.0445)	-0.0229 (0.6037)	-0.0161 (0.7037)
CAPFORM	0.1244** (0.0379)	0.1016 (0.1171)	-0.0657 (0.5715)	-0.0671 (0.5480)
FDI	0.1765*** (0.0060)	0.1665** (0.0133)	0.0378 (0.5412)	0.0236 (0.6911)
GOVEXP	-0.0232 (0.7343)	-0.0677 (0.3756)	-0.2449* (0.0791)	-0.3204** (0.0185)
Observations	120	120	51	51
Adjusted R-squared	0.2355	0.2629	0.1453	0.2293
Durbin-Watson stat	1.9544	2.0079	1.9887	1.9764

References

Note: GDPPCG stands for annual per capita GDP growth rate, GDPG stands for annual GDP growth rate, CPI stands for corruption perception index, CAPFORM stands for gross fixed capital formation as a percentage of GDP, FDI stands for foreign direct investment as a percentage of GDP, GOVEXP stands for general government final consumption expenditure as a percentage of GDP. ***, **, and * indicate significance at the level of 1%, 5%, and 10%, respectively.

v. Conclusion

This paper studies the impact of corruption on economic growth in 10 ASEAN countries over the period of 1999-2019. The economic growth is measured by annual percentage growth rate of a country's GDP and per capita GDP. The corruption is measured by CPI published by Transparency International. The overall sample size is 171 observations, then it is divided into 2 subsamples based on CPI scores: low CPI scores subsample, and high and medium CPI scores subsample.

The regression results for 3 samples are mixed. For the overall sample, corruption and FDI are found to have the positive effect on economic growth, whereas government expenditure has a negative effect on economic growth. For the two subsamples, it is found that corruption has a positive impact on economic growth for countries with high level of corruption, but no impact for countries with low or medium level of corruption. Further, capital formation and foreign direct investment displayed a positive impact on economic growth for countries with high level of corruption, and government expenditure is found to have a negative impact on economic growth for countries with low or medium level of corruption. Based on these results, the authorities of each ASEAN country could adjust the policies accordingly to fight against corruption and enhance economic growth.

Although the "grease the wheels" effect is supported by the results of this study, ASEAN countries have realized that the new and larger corruption would challenge the greater economic integration. Hence, ASEAN Integrity Community (AIC) was initiated to achieve anti-corruption cooperation [20].

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