CORRUPTION AND FOREIGN DIRECT INVESTMENT: BAYESIAN ANALYSIS APPROACH

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Abstract

The paper is aimed to analyze the impact of corruption control on foreign direct investment (FDI). The dataset is collected from ten Association of Southeast Asian Nations (ASEAN) countries (including Brunei Darussalam, Indonesia, Cambodia, Lao PDR, Myanmar, Malaysia, Philippines, Singapore, Thailand, and Vietnam) during the period 2002–2021. The paper utilizes the Bayesian method for estimation in the research model, highlighting its superiority in estimating regression results as a probability distribution and enhancing the stability of estimation outcomes (McNeish, 2016). Moreover, to test the robustness of the estimation results, the paper also conducts the estimation using traditional methods, including the generalized method of moments (GMM) proposed by Arellano and Bond (1991). By employing various estimation methods, the research results ensure robustness, increase reliability, and offer a more detailed explanation of the findings. Both the Bayesian and other traditional estimation methods reveal a positive impact of corruption control on FDI in the ASEAN countries. Particularly, the Bayesian estimation results show a 93.7 percent probability of this impact, which is an interesting finding compared to previous studies. Additionally, FDI is positively influenced by economic growth and trade openness while negatively affected by unemployment. The findings are significant for these countries, especially in enhancing their abilities to attract FDI.

Keywords: ASEAN, Bayesian, Corruption, Foreign Direct Investment

1. INTRODUCTION

Foreign direct investment (FDI) plays a crucial role in promoting economic growth in many countries (Çakërri et al., 2021; Gamariel et al., 2022; Marenga et al., 2022; Zangina & Hassan, 2020; Nguyen, 2022). This is because FDI can narrow the savings-investment gap, particularly evident in developing countries

struggling to attract capital to meet their investment needs. Furthermore, FDI contributes to technological development, increases employment, and enhances a host country's competitiveness (Nguyen et al., 2021; Quazi, 2014). With these benefits, many countries have made and continue to make efforts to identify appropriate measures to enhance their ability to attract FDI, with corruption control being one of the key measures that many countries are currently concerned about.

Corruption can be understood as the misuse of public office for personal gain, which means abusing the entrusted power for personal benefits (D'Agostino et al., 2016; Nguyen & Bui, 2022). Conversely, corruption control can limit corruption. As a result, corruption control can improve the efficiency of resource allocation in the economy, thereby enhancing the investment environment (Miao et al., 2021; Nguyen et al., 2022). Moreover, corruption control also increases the certainty of return on investment (Blackburn et al., 2006), thereby improving the ability to attract investment, especially from the private sector (D'Agostino et al., 2016). This demonstrates how the host country's ability to attract FDI can be enhanced through corruption control (Hayat, 2019). However, in some empirical studies, there are still contradictory views on the relationship between corruption control and FDI. More than that, the impact of corruption control on FDI may vary depending on the estimation method and characteristics of the data sample. Therefore, it is essential to use different estimation methods to test the robustness of the estimation results, thereby increasing the reliability of the findings. Despite this, most of the previous studies often relied on traditional estimation methods (Erdogan & Unver, 2015; Kurul & Yalta, 2017; Morrissey & Udomkerdmongkol, 2012; Qureshi et al., 2021), while very few empirical studies employed a variety of estimation methods, especially modern ones, to demonstrate the robustness of the estimation results on this topic. This is evidently a gap in the previous research, suggesting trends for future investigation. On the other hand, generating additional empirical evidence on this impact in different countries or regions is crucial for identifying appropriate solutions for each country or region. This contributes to enriching the existing literature. Recognizing this limitation, this research is conducted with the expectation of making contributions to the current literature, particularly by potentially suggesting interesting implications for improving the ability to attract FDI in the Association of Southeast Asian Nations (ASEAN) countries. These are countries that are making efforts to attract FDI and are promoting impressive corruption control. This shows that this is an interesting and necessary topic for these countries. Therefore, this study was conducted to analyze the impact of corruption control on FDI in ASEAN countries. Furthermore, by combining the Bayesian method and other traditional estimation approaches (such as the pooled ordinary least squares (POLS) model, the fixed effects model (FEM), the random effects model (REM), and the generalized method of moments (GMM)) to estimate the model, this paper introduces a novel approach to testing the robustness of the estimation

results. It also contributes to providing a clearer explanation of the findings, which represents a significant difference compared to previous studies.

The study is organized as follows: Section 2 provides an overview of the literature and hypothesis development, Section 3 outlines the methodology and data, the next Section 4 presents the empirical results, and the final Section 5 concludes the study.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Corruption control can indeed be a determining factor in the scale of FDI into a host country, as it directly affects the cost and efficiency of utilizing FDI capital (Dabour, 2000). This effect can be explained on the basis of a number of theories, such as the theoretical framework using public choice, game theory, and transaction cost economics proposed by Rose-Ackerman (1975), Macrae (1982), Shleifer and Vishny (1993), and Husted (1994). Besides, Shleifer and Vishny (1993) concluded that corruption has a significant impact on the economy. Mauro (1995) argues that persistent corruption can lead to the ineffectiveness of economic activities. Gupta et al. (1998) have demonstrated that corruption has a significant impact on the economy and worsens poverty. However, in some empirical studies, there still exist contradictory perspectives on the effect of corruption control on FDI. Indeed, a majority of empirical studies have revealed a positive effect of corruption control on FDI, while others have found a negative impact. There are also studies that have reported no significant impact of corruption control on FDI.

The positive impact of corruption control on FDI. Improvements in corruption control in the host country reduce the investment costs for foreign investors. Corruption is often seen as "sands in the wheels of commerce" because it adds a financial burden and directly affects investment efficiency (Habib & Zurawicki, 2002). Furthermore, corruption increases instability and prolongs the implementation of investment activities (Kaufmann, 1997; Kaufmann & Wei, 2000). Therefore, investors tend to avoid investing in countries with significant institutional quality shortcomings, where corruption control is often weak (Mengistu & Adhikary, 2011). The positive impact of corruption control on FDI is also found in empirical research by Morrissey and Udomkerdmongkol (2012), Mathur and Singh (2013), Abala (2014), Erdogan and Unver (2015), Ferreira and Ferreira (2016), Kurul and Yalta (2017), Kasasbeh et al. (2018), Brada et al. (2019), Chih et al. (2023), and Cieślik and Ryan (2023). In particular, Morrissey and Udomkerdmongkol (2012) analyzed a dataset comprising 46 developing countries over the period 1996–2009. Mathur and Singh (2013) examined a dataset from 29 countries during the period 1980–2000, predominantly consisting of emerging markets and developing economies. Abala (2014) investigated data from Kenya in the 1970–2010 period. Erdogan and Unver (2015) conducted an analysis of a dataset of 88 countries from 1985 to 2011. Ferreira and Ferreira (2016) examined data

from 48 countries in Sub-Saharan Africa. Kurul and Yalta (2017) analyzed a dataset involving 113 developing countries over the period 2002–2012. Kasasbeh et al. (2018) examined data from Jordan from 1980 to 2015. Brada et al. (2019) analyzed data on bilateral FDI stocks between 43 home countries and 151 host countries during 2005–2009. More recently, Chih et al. (2023) investigated data from localities in China over the period 1998–2011. Cieślik and Ryan (2023) studied the impact of corruption in 179 host countries on Japanese FDI flows into these nations during the period 1995–2019.

The negative impact of corruption control on FDI. Some empirical studies have found the negative impact of corruption control on FDI. This is because corruption can be seen as an "efficient grease" that allows investors to overcome legal barriers more easily (Bardhan, 1997), and even get priorities in the implementation of their investment activities (Lui, 1985). This impact has also been reported by Bellos and Subasat (2012), Subasat and Bellos (2013), Quazi et al. (2014), Yang et al. (2018), and Qureshi et al. (2021). To be specific, Bellos and Subasat (2012) analyzed a dataset from 14 transition countries during the period 1990-2003. Subasat and Bellos (2013) examined a dataset from 55 countries from 1985 to 2008. Quazi et al. (2014) studied data from 53 countries in Africa during the period 1995–2012. Yang et al. (2018) investigated China's outward FDI in 132 economies worldwide over the period 2003–2012. More recently, by examining a dataset comprising 54 developing and developed countries during the period 1996–2018, Qureshi et al. (2021) indicated that corruption control has a negative effect on FDI in developing countries, whereas this impact is positive in developed countries.

The insignificant impact of corruption control on FDI. Contrary to the two views mentioned above, some empirical researchers, including Anyanwu (2012), Cleeve (2012), Jadhav (2012), Bannaga et al. (2013), Gani and Al-Abri (2013), Goswami and Haider (2014), Okafor (2015), and Hoa and Lin (2016), have reported the insignificant impact of corruption control on FDI. In specific, Anyanwu (2012) analyzed a dataset from African countries during the period 1996–2008. Cleeve (2012) examined a dataset comprising 40 Sub-Saharan African countries from 1988 to 2008. Jadhav (2012) analyzed data from the BRICS economies (Brazil, Russia, India, China, and South Africa) during the period 2000–2009. Bannaga et al. (2013) studied a dataset from 18 Arab countries during the period 2000–2009. Gani and Al-Abri (2013) examined data from four of the six Gulf Cooperation Council (GCC) countries (Kuwait, Oman, Saudi Arabia, and the United Arab Emirates). Goswami and Haider (2014) analyzed a dataset comprising 146 countries worldwide from 1984 to 2009. Okafor (2015) investigated local factors determining the United States (US). FDI in 23 Sub-Saharan African countries during the period 1996–2010. In another study, Hoa and Lin (2016) analyzed a dataset from three countries (Cambodia, Laos, and Vietnam) during the period 1996–2012.

Generally, corruption control can be an essential factor in enhancing the ability to attract FDI into the host country. However, there still exist contradictory perspectives on the impact of corruption control on FDI. This has caused certain challenges for the countries in identifying appropriate solutions to enhance their FDI attraction capabilities. Therefore, obtaining additional empirical evidence on this impact in different countries or regions is indeed significant for determining suitable solutions for each country or region and enriching the existing literature. Furthermore, the impact of corruption control on FDI may depend on the estimation method and characteristics of the data sample. Therefore, using various estimation methods to test the robustness of the estimation results is essential to enhancing the eliability of the findings. In the ASEAN region, the lack of empirical evidence in these countries has posed challenges for policymakers in formulating effective policies to increase corruption control and attract FDI. Therefore, analyzing the impact of corruption control on FDI is a crucial research topic for the ASEAN countries, as it can uncover many interesting discoveries compared to previous studies.

To address the gaps mentioned, this study aims to analyze the impact of corruption control on FDI in ASEAN countries. These nations have recently made concerted efforts to control corruption, particularly by achieving significant milestones in attracting FDI. To achieve this, corruption control can be an important factor for these countries to enhance their FDI attractiveness. This is because corruption control can help reduce investment costs for foreign investors, even increasing stability in the investment process (Kaufmann, 1997; Kaufmann & Wei, 2000). This effect has also been identified by different previous researchers, such as Morrissey and Udomkerdmongkol (2012), Mathur and Singh (2013), Abala (2014), Erdogan and Unver (2015), Ferreira and Ferreira (2016), Kurul and Yalta (2017), Kasasbeh et al. (2018), Brada et al. (2019), Chih et al. (2023), and Cieślik and Ryan (2023). Based on this foundation, the hypothesis of this study is proposed as follows.

H1: Corruption control has a positive impact on FDI.

3. METHODOLOGY AND DATA

3.1. Research model

Based on the current literature, the impact of corruption control on FDI may take the following model:

$$FDI_{it} = \alpha + \beta\,CC_{it} + \delta\,Control_{it} + \varepsilon_{it} \qquad (1)$$

In which, *FDI* stands for foreign direct investment, defined as FDI capital (net inflows) as a percentage of gross domestic product (GDP). The independent variable *CC* represents a country's level of corruption control, published in the World Governance Indicators (WGI) by the World Bank since 1996. The measurement of dependent and independent variables in this model is designed to align with the majority of previous studies, including Bellos and Subasat (2012), Morrissey and Udomkerdmongkol (2012), Mathur and Singh (2013), Subasat and Bellos (2013), Abala (2014), Quazi et al. (2014), Erdogan and Unver (2015), Ferreira and

Ferreira (2016), Kurul and Yalta (2017), Kasasbeh et al. (2018), Yang et al. (2018), Brada et al. (2019), Qureshi et al. (2021), Chih et al. (2023), and Cieślik and Ryan (2023). The control variables (*Control*) include *EG*, which is economic growth, determined by the annual growth rate of GDP per capita; *TRA*, which is trade openness, measured by the total trade (exports and imports) as a percentage of GDP; *INF*, which is inflation, identified through the annual growth rate of the consumer price index; *UNE*, which is unemployment, determined by the proportion of unemployed people to the total labour force. These control variables are based on the studies of Erdogan and Unver (2015), Meressa (2022), and Woldetensaye et al. (2022). The measurement of the variables is described in Table 1.

Table 1. Variable definitions

Variable	Code	Definition	Source
Dependent variable			
Foreign direct investment	*FDI*	Net inflows of foreign direct investment (% of GDP).	WDI
Independent variable			
Corruption control	*CC*	Corruption control index representing the effectiveness of the government's efforts in controlling corruption is valid from -2.5 (weak) to 2.5 (strong).	WGI
Control variables			
Economic growth	*EG*	Annual growth rate of GDP per capita.	WDI
Trade openness	*TRA*	The sum of exports and imports (% of GDP).	WDI
Inflation	*INF*	Annual growth rate of the consumer price index.	WDI
Unemployment	*UNE*	Unemployment, total (% of total labour force).	WDI

3.2. Research methodology

For the estimation method, the Bayesian method is applied to estimate the impact of corruption control on FDI. It is superior in estimating regression results as probability distributions, applicable to small sample sizes, and enhances the robustness of the findings (McNeish, 2016). Accordingly, the Bayesian method is employed in the expectation of determining the extent and the probability of the impact of corruption control on FDI.

To test the robustness of the estimation results, the authors estimate the model using traditional estimation methods. Specifically, the paper uses basic estimation methods on panel data, including POLS, FEM, and REM estimators. Subsequently, the authors applied the GMM estimation proposed by Arellano and Bond (1991) to address the shortcomings of the model, which are limitations of the basic estimation methods. This approach has also been implemented by most prior researchers, such as Morrissey and Udomkerdmongkol (2012), Erdogan and Unver (2015), Kurul and Yalta (2017), and Qureshi et al. (2021). By estimating the model using different methods, the authors strive to demonstrate the robustness of the estimation results and enhance the reliability of the findings.

3.3. Data

The data are gathered from ten ASEAN countries during the period of 2002–2021, including Brunei Darussalam, Indonesia, Cambodia, Lao PDR, Myanmar, Malaysia, Philippines, Singapore, Thailand, and Vietnam. The data on corruption control (*CC*) are collected from the WGI database. The data for the remaining variables are obtained from the World Development Indicator (WDI) database.

4. EMPIRICAL RESULTS

4.1. Descriptive statistics

Table 2 shows that the average *FDI* is 5.570%, with the lowest value (-1.321%) occurring in Brunei in 2016, and the highest (32.691%) occurring in Singapore in 2021. As for *CC*, its average value is (-0.268), with the lowest value (-1.673) observed in Myanmar in 2010, and the highest value (2.301) in Singapore in 2004.

Table 2. Descriptive statistics

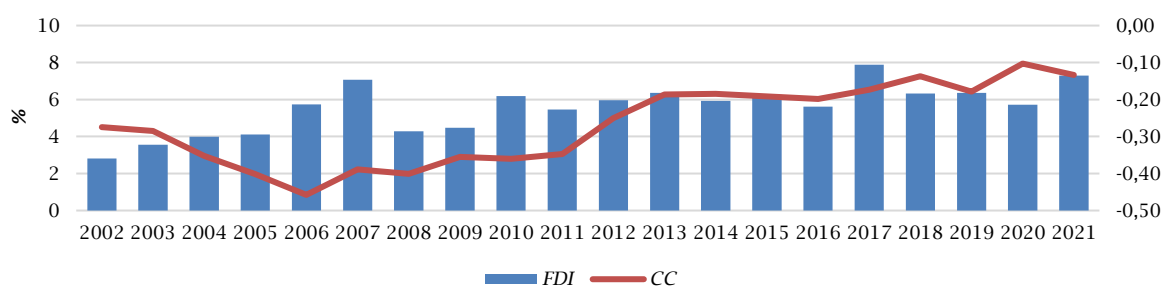| Variable	Mean	Std. dev.	Min	Max
FDI	5.570	6.178	-1.321	32.691
CC	-0.268	1.003	-1.673	2.301
EG	3.761	3.947	-18.485	13.519
TRA	130.748	90.804	11.855	437.327
INF	4.514	6.506	-2.315	57.075
UNE	2.973	2.159	0.140	9.320

Figure 1. The mean of corruption control and FDI of the ASEAN countries

Figure 1 illustrates a significant rise in *CC* in ASEAN countries in recent years. As for *FDI*, this factor shows a long-term upward trend but exhibits instability over the period, for example, a sharp decrease in FDI in 2020 followed by an increase in 2021.

The convergence diagnostics indicates that the trace plot is relatively perfect. The autocorrelation shows relatively low autocorrelation, primarily centred below 0.02. Meanwhile, the histogram and density simulate a normal distribution's form (Appendix, Figures A.1–A.6). Therefore, basically, the variables in the model meet the convergence criteria and can be applicable.

4.2. Regression analysis

Next, the study estimates the model using the Bayesian method. The results are presented in Table 3 as follows.

Table 3. Estimation results using the Bayesian method

FDI	Mean	Std. dev.	Monte Carlo standard error (MCSE)	Median	Equal-tailed [95% cred. interval]	
CC	0.768	0.504	0.003	0.765	-0.221	1.770
EG	0.324	0.097	0.001	0.323	0.134	0.513
TRA	0.048	0.005	0.000	0.048	0.038	0.057
INF	-0.026	0.084	0.001	-0.025	-0.192	0.140
UNE	-0.374	0.139	0.001	-0.374	-0.647	-0.102
_cons	-0.333	0.792	0.005	-0.330	-1.884	1.225
Avg acceptance rate	1					
Avg efficiency: min	0.962					
Max Gelman-Rubin Rc	1					

Table 3 shows that the average acceptance rate, average efficiency, and maximum Gelman-Rubin Rc are satisfactory. Therefore, the model estimation results using the Bayesian method are appropriate. The Monte Carlo Standard Error (MCSE) of all parameters is very small (less than 5%), indicating that the variables all exert an impact on *FDI*. Furthermore, the study also utilizes the Interval test to determine the probability of the effects of the variables on *FDI*, and its results are presented in Table 4.

Table 4. Results of interval

Interval tests	Mean	Std. dev.	MCSE
prob: {FDI:CC} > 0	0.937	0.243	0.001
prob: {FDI:EG} > 0	0.999	0.022	0.000
prob: {FDI:TRA} > 0	1	0	0
prob: {FDI:INF} < 0	0.617	0.486	0.003
prob: {FDI:UNE} < 0	0.996	0.061	0.000

The results of the model estimation using the Bayesian method show that *CC* has a positive impact ($\beta = 0.768$) on *FDI* (Table 3), with a probability of 93.7% (Table 4). Regarding control variables, *FDI* is positively influenced by economic growth (*EG*) and trade openness (*TRA*), with probabilities of 99.9% and 100%, respectively. On the other hand, unemployment (*UNE*) exerts a negative impact on *FDI*, with a probability of 99.6%. However, inflation (*INF*) negatively affects *FDI*, but with a relatively low probability (61.7%).

4.3. Robustness test

To test the robustness of the model, the authors conduct model estimations using traditional estimation methods, including POLS, FEM, REM, and GMM estimators. By estimating the model using different methods, the authors aim to ensure the robustness of the results and enhance the reliability of the findings. The results of estimating the model using traditional estimation methods are presented in Table 5 as follows.

Table 5. Estimation results using the traditional methods

FDI	POLS	FEM	REM	GMM
	(1)	(2)	(3)	(4)
CC	0.973	0.330	2.439***	2.105***
	(0.226)	(0.768)	(0.006)	(0.005)
EG	0.342***	0.238***	0.230***	0.689***
	(0.001)	(0.002)	(0.004)	(0.000)
TRA	0.046***	-0.015	0.015*	0.038***
	(0.000)	(0.181)	(0.091)	(0.000)
INF	-0.011	-0.027	-0.034	-0.121
	(0.899)	(0.691)	(0.629)	(0.177)
UNE	-0.391*	-0.811***	-0.824***	-0.459**
	(0.051)	(0.004)	(0.001)	(0.042)
_cons	-0.229	9.442***	5.957***	0.943
	(0.880)	(0.000)	(0.000)	(0.497)
R-squared	64.01%	13.69%	75.67%	
Significance level	63.67***	4.22***	39.82***	1,748.88***
	(0.000)	(0.001)	(0.000)	(0.000)
F-test	19.62***			
	(0.000)			
Hausman test	15.80***			
	(0.008)			
Mean variance inflation factor (VIF)	3.61			
Test for heteroscedasticity	1204.03***			
	(0.000)			
Test for autocorrelation	14.005***			
	(0.005)			
Test of endogeneity	48.241***			
	(0.000)			
Number of instruments				9
Number of groups				10
Arellano-Bond test	AR (1)			-1.93*
				(0.053)
	AR (2)			0.37
				(0.708)
Sargan test				1.39
				(0.709)

*Note: *** significant at 1%, ** significant at 5%, * significant at 10%.*

The results of estimating the model using basic methods (POLS, FEM, and REM estimators) are presented in columns 1, 2, and 3 of Table 5. Accordingly, the F-test and Hausman test show that the FEM estimation results are more appropriate than those of the other basic estimation methods. The model's multicollinearity is not considered to be a serious issue because of its comparatively low average VIF. However, the research model exhibits heteroscedasticity, autocorrelation, and endogeneity. To address these issues, the authors conducted model estimation using the GMM method, with the results shown in column 4 of Table 5. The GMM estimation results are statistically significant, with all tests being appropriate. Specifically, corruption control positively influences *FDI* ($\beta = 2.105$) with a significance level of 1%. As for the control variables, *FDI* is positively affected by *EG* and *TRA* but negatively influenced by *UNE*. Meanwhile, the negative impact of *INF* on *FDI* is negligible. Therefore, the estimation results using the traditional methods in Table 5 align with the Bayesian estimation results in Tables 2 and 3. This implies that the research model ensures its robustness.

4.4. Discussion

The estimation's findings demonstrate that FDI is positively impacted by corruption control (Table 3), with a probability at 93.7% (Table 4). These results are further validated through the traditional estimation methods, especially the GMM (Table 5).

By estimating the research model through various methods, this study can assert the robustness of the estimation results, enhancing their reliability. Therefore, increasing the level of corruption control in the ASEAN countries will help foreign investors reduce their investment costs, thereby improving the investment environment and ultimately enhancing the ability to attract FDI into these countries. Hence, the *H1* is accepted. This is consistent with the results of Morrissey and Udomkerdmongkol (2012), Mathur and Singh (2013), Abala (2014), Erdogan and Unver (2015), Ferreira and Ferreira (2016), Kurul and Yalta (2017), Kasasbeh et al. (2018), Brada et al. (2019), Chih et al. (2023), and Cieślik and Ryan (2023). The fact that the research revealed the probability of this impact at 93.7% is one of its interesting findings, which sets this study apart from earlier ones. Furthermore, this study also suggests a method to test the robustness of the results by combining the Bayesian method with traditional estimation methods (POLS, FEM, REM, and GMM). Through this approach, the estimation results will ensure robustness, enhancing reliability, especially as the Bayesian method and traditional estimation methods can complement each other in providing a more detailed explanation of the research findings. This is its novelty compared to previous studies.

In addition, Tables 3 and 5 demonstrate that FDI has a positive correlation with economic growth and trade openness, while it is negatively influenced by unemployment. Thus, improving the domestic economy and opening trade are important foundations to attract FDI. However, rising

unemployment may hinder the ability to attract FDI into these countries. These are consistent with the previous findings of Erdogan and Unver (2015), Meressa (2022), and Woldetensaye et al. (2022).

5. CONCLUSION

The objective of this study is to investigate the impact of corruption control on FDI in the ASEAN countries from 2002 to 2021. To address this objective, the authors employed the Bayesian method to estimate the research model. Also, the authors employ the traditional estimation methods (POLS, FEM, REM, and GMM) to assess the robustness of the estimation results. By doing so, the research findings ensure robustness, increase reliability, and, more importantly, provide a more detailed explanation of the estimation results. The results reveal that control over corruption exerts a positive effect on FDI, with a probability of 93.7%. Furthermore, FDI is also positively influenced by economic growth and trade openness but negatively affected by unemployment. Therefore, to enhance FDI attraction, the ASEAN countries need to implement a comprehensive set of appropriate solutions, with a focus on improving the level of corruption control combined with improving a favourable investment environment. To achieve this, these countries should concentrate on solutions as follows.

For corruption control. ASEAN countries need to put more effort into improving the level of corruption control. This action should be maintained continuously and steadily throughout time, implemented consistently at both the local and national levels. Only then can the effectiveness of corruption control be clear. The ASEAN countries should also recognize this as a fundamental and crucial solution for improving the investment environment, enhancing the absorption capacity of FDI, and moving towards increased FDI attraction in the future. Additionally, they should enact and refine regulations to be more suitable for reality, with strict monitoring mechanisms to detect and timely prevent corrupt practices. They should also intensify awareness campaigns to encourage citizens to actively participate in the prevention and elimination of corruption.

For economic growth. This is one of the crucial macroeconomic indicators that most countries and investors are highly concerned about. To create a favourable investment environment, it is necessary for the ASEAN countries to make efforts to improve the level of economic growth, especially aiming for sustainable growth. Furthermore, they should enhance economic forecasting activities domestically and globally, enabling them to be more proactive in regulating the economy, thereby creating a stable and favourable investment environment.

For trade openness. The ASEAN countries need to make even more efforts to open their trade, as this is one of the crucial conditions to enhance FDI attraction. Trade openness should be tailored to each country's characteristics and advantages. Specifically, they need to strive to maintain exports to traditional markets while expanding their exports to new potential markets. Importantly, trade openness should be coupled with increased management efficiency to avoid ineffective management that would waste domestic resources.

For unemployment. The ASEAN countries need to put even more effort into reducing the unemployment rate, especially by increasing the skilled workforce. This workforce plays a crucial role in improving the efficiency of business production, particularly in enhancing the application of advanced technologies, which is of great interest to foreign investors.

Despite having achieved its objective, this study still has some limitations. For instance, it concentrates on examining the linear effects of corruption control on FDI, as most previous studies have done, without exploring the possibility of nonlinear effects. Differences in the characteristics of the countries in the data sample are a major limitation of this study. Moreover, expanding the sample size or comparing results across datasets representing different regions or countries could be intriguing directions for future research.

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APPENDIX

Figure A.1. Convergence diagnostics: Foreign direct investment (*FDI*) and corruption control (*CC*)
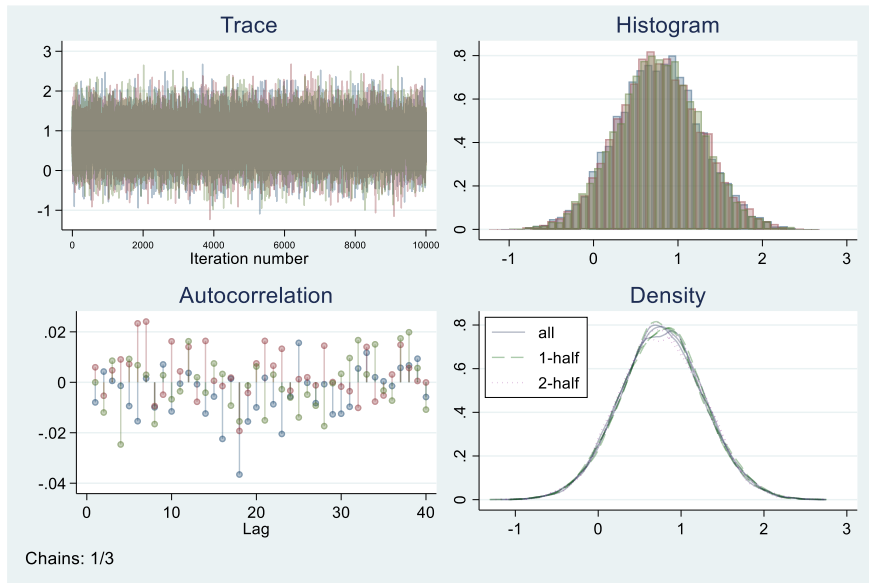

Figure A.2. Convergence diagnostics: Foreign direct investment (*FDI*) and economic growth (*EG*)
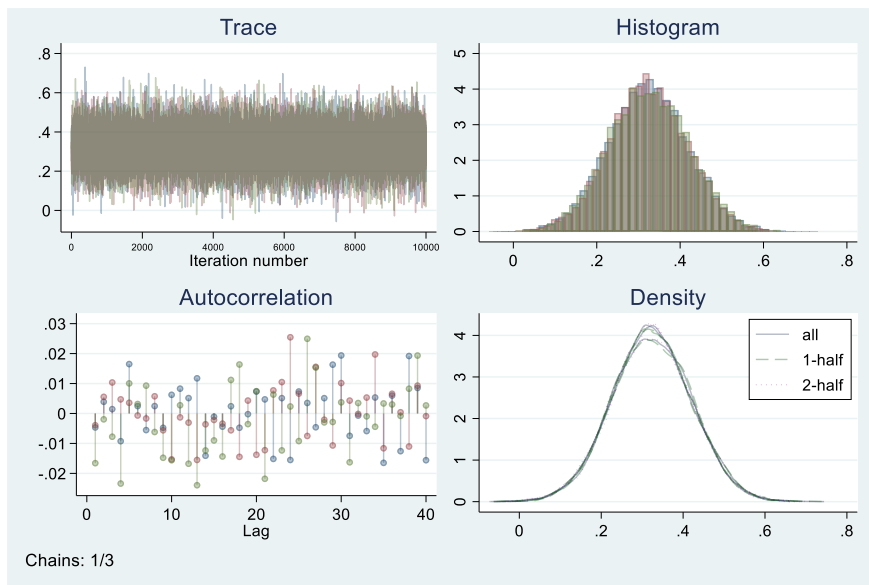
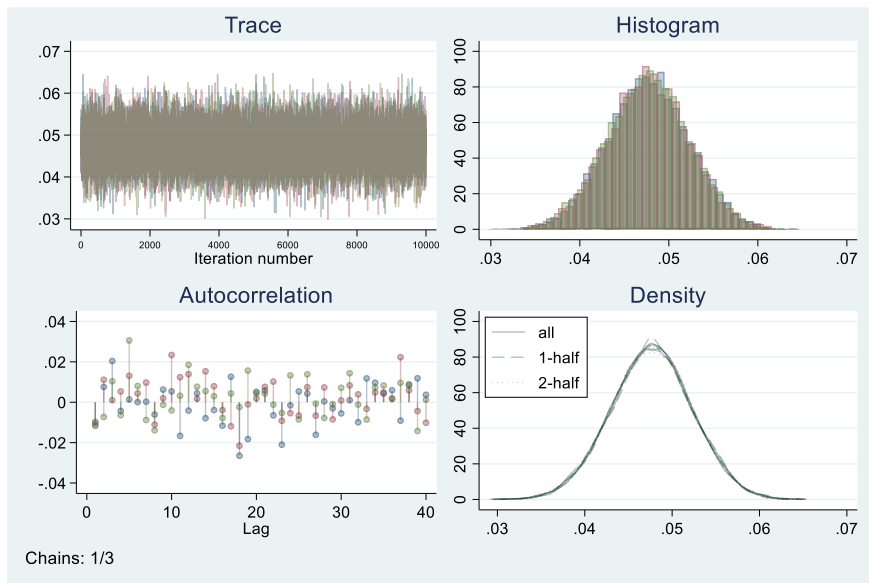**Figure A.3.** Convergence diagnostics: Foreign direct investment (*FDI*) and trade openness (*TRA*)

Figure A.4. Convergence diagnostics: Foreign direct investment (*FDI*) and inflation (*INF*)
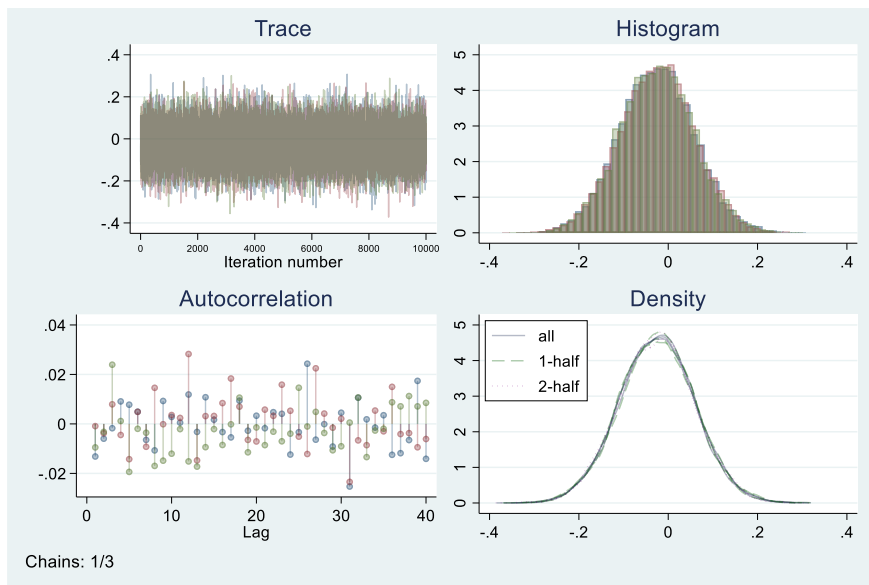
Figure A.5. Convergence diagnostics: Foreign direct investment (*FDI*) and unemployment (*UNE*)
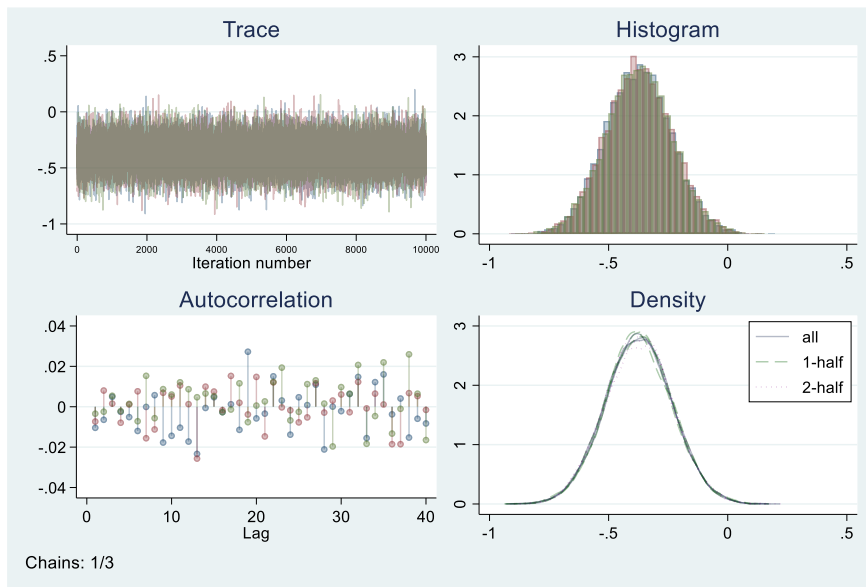

Figure A.6. Convergence diagnostics: Foreign direct investment (*FDI*) and constant (_cons)