Role of Socioeconomic Uncertainty on Foreign Direct Investment (FDI) Inflows and Economic Growth in ASEAN

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Abstract

The interconnectedness begins with active trade and foreign investment flowing to the host country, making the economies in the world integrated into one another. Unfortunately, the rise of interconnectedness has sky-rocketed uncertainty. Economists then build the considered socioeconomic index, namely the World Uncertainty Index (WUI). This research aims to determine whether such an index can affect Foreign Direct Investment (FDI) inwards and economic growth, especially in ASEAN. We use yearly data of FDI inflows, economic growth, and WUI as a proxy for the global level of domestic uncertainty, inflation, and real effective exchange rate from 2015 to 2019 for each ASEAN member state. We estimate a System Generalized Method of Moments (Sys-GMM) to see the dynamic relationship and the short- and long-run effect of the socioeconomic uncertainty proxies with respect to FDI inflows and economic growth. The results show that the uncertainty index with respect to FDI inflows and growth has been negative and significant. Meanwhile, only FDI inflows sensitively respond to socioeconomic uncertainty in the long run, despite the growth for ASEAN member state.

Keywords: socioeconomic uncertainty, FDI inflows, economic growth, ASEAN

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Introduction

Uncertainty is assumed to have adversely affected investment and, later, economic growth (Bloom et al., 2007). Investment is considered important in boosting national output, based on the Solow-Swan model combined with the Cobb-Douglas Function and Harrod-Domar model. With the urgency of heightened uncertainty, economists have built an index to measure uncertain conditions. One of the uncertainty indexes made by economists is named the World Uncertainty Index (WUI). This index is based on data mining and taken from the Economist Intelligence Unit (EIU). This index aims to enhance the scope of socioeconomic uncertainty.

Ahir et al. (2018) found that foreign investors might reduce their investment according to the possibility of uncertainty arising. Then, Carrière-Swallow and Céspedes (2013) and Cheng (2017) figured out that rising uncertainty outside of a country could harm the domestic economy when the country was linked to trade and investment activities. Next, Canh et al. (2020) suggested that countries—especially those categorized as emerging economies—should be aware of the uncertain climate.

Most emerging economies are located in Asia, specifically in Southeast Asia. The fully known and recognized organization is ASEAN (an acronym for Association of Southeast Asia Nations). It is a political and economic union of 10 member states in Southeast Asia, remarking to be one of the most prominent multilateral agreements that helps its members in any kind of international activities. Established in 1967, the members now are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. Subsequently, the ten members of ASEAN have agreed to accelerate economic growth and promote regional peace and stability as well as active collaboration and mutual assistance (Hill & Menon, 2010).

ASEAN has been experiencing rapid growth for the past 25 years. It is, by far, not limited to a steady and conducive socioeconomic climate through expanding cooperation and economic dynamism that has created a virtuous cycle. Nevertheless, this economic integration is expected to last in the long run. There is a need to assess the long-run foundations of ASEAN economic cooperation of openness and convergence to reach a long-run objective of structural economic transformation and keep the rapid economic growth in ASEAN (Verico, 2022).

The open economy can be seen by the amount of Foreign Direct Investment (FDI) inflows to the country. It is built by several macroeconomic variables that will affect the inflows of the host country. Globally, ASEAN is considered one of the most attractive destinations for foreign investors. The progressive economic integration within the region has leveled up the percentage of FDI inwards.

However, ASEAN is seen to be unable to respond decisively under uncertain conditions (Hill & Menon, 2010). According to Verico (2022), ASEAN has yet to achieve economic convergence, which is one of the foundations for reaching stability and sustainable economic integration. The socioeconomic issues, such as unresolved intra- and extra-regional territorial

disputes, domestic friction, external shocks from developed countries, water-energy-food security, and lack of disaster management, still haunt most ASEAN members to keep the stability. According to Sari and Prasetyani (2021), ASEAN countries are predominantly developing countries that are rapidly adapting to global changes. Hence, instability is another challenge for further FDI inflows and later economic growth as investment remains important to boost ASEAN economic growth.

It is essential to understand and analyze the effect of socioeconomic uncertainty subject to FDI inflows and economic growth, seeing that uncertainty can harm the rest of the world. A study about the effect of uncertainty has been conducted before, but it has never been done in Southeast Asia. To discover the effect of uncertainty in ASEAN countries, we will use the two-step System Generalized Method of Moments (Sys-GMM) due to endogeneity issues within FDI inflows and economic growth, as found in prior studies. Furthermore, the study will also discover the possible existence of the long-term effect of the uncertainties on FDI inflows and economic growth to complete the scope of the research.

Literature Review

Foreign Investment Inflows and Economic Growth

FDI inflows are presumed to push the new technological combination in production function at the host country (Borensztein et al., 1998). It has been found that FDI has a positive impact on economic growth (Basu et al., 2003). According to Verico and Pangestu (2021), the relationship between FDI inflows and economic growth can be explained by the Solow growth model. Economic growth is linked to FDI inflows through technological transfers and advanced technology to drive research and development that requires investment. It is also stated that the interconnection of FDI to economic growth is from the balance of payment (Krugman et al., 2018). FDI has been a consistently necessary source of capital in emerging countries.

However, it has also been found that the more a country depends on foreign investment from a particular country, the more it can affect the host country's economic growth (Komariyah et al., 2019). Another research finds that direct investment flow in several business sectors, such as mining, can contribute to slower economic performance (Khaliq & Noy, 2007). It is also argued that the proofing evidence is caused by differences in technological absorption between countries of origin and destination countries so that it will outperform the economic growth of the go-to country (Stockhammar & Österholm, 2016). Another notable gap in the literature is how FDI and economic growth, which are assumed to have an endogenous relation, do not have a causality (Agya & Wunuji, 2014).

Although there are several arguments about this topic, most studies agree that the service of FDI inflows can affect economic growth, especially in emerging economies. Otherwise, the growth rate of Gross Domestic Product (GDP) can also affect the FDI inflows

to come. According to Jana et al. (2019), FDI inflows in more rapidly growing markets can be higher than inflows in countries with advanced economies. It is because the investment can trigger a more open and better infrastructure, and it will also give positive feedback to the investors.

Measurement of Uncertainty

Economic uncertainty is knowingly divided into two and has been measured as indexes. The first index was founded in 2016 named Economic Policy Uncertainty (EPU) (Baker et al., 2016). This index reflects the frequency of articles in several leading local newspapers (approximately 10 local newspapers) in a country that contains "economic" or "economy" and "uncertain" or "uncertainty" words. The index also takes into account what economists or experts have mostly said about the economic situation, whether there will be a crisis happening or not relating to the possibility of uncertainty happening as a proxy for uncertainty. After the reports are collected, the raw counts are then scaled by the total number of articles in the same newspaper and month. BBD has standardized each monthly newspaper-level series to unit standard deviation from the year the reports are released and average across the ten papers by month.

The second index is World Uncertainty Index (WUI) built by Ahir et al. (2018). The difference between Economic Policy Uncertainty (EPU) and WUI lies in where the data are obtained. WUI takes data from EIU reports by The Economist and the country's economic report covering politics, economic policy, domestic economy, and overall impact on the country's risk. According to Ahir et al. (2018), using the global EPU index is suggested because it is more related to global nature than what WUI does. However, WUI can be the best tool to project the uncertainty of a country. All indices in WUI for each country have been computed by counting the frequency of the world uncertainty (or its variant) in EIU country reports. The indices are normalized by total number of words and rescaled by multiplying by 1,000. A higher number means higher uncertainty and vice versa. The computing method is not really different compared to the EPU one.

The Effect of Uncertainty on the Economy

Uncertainty has recently been an important factor in slower economic growth in several countries that can impact the economy to grow (Bloom, 2014). With uncertainty, households will have a portfolio choice between capital and riskless bonds. However, prior findings suggest that uncertainty has no effect on investment because firms invest as long as the value of new capital exceeds the cost of acquiring it (Romer, 2012). Reversely, according to Bloom et al. (2018) foreign investors may reduce their investment and do a 'wait-and-see' because it is considered costly if there are reversed investments happening. It has also been found that uncertainty has directly impacted the economy (Canh et al., 2020). It is also suggested that uncertainty has an adverse effect on economic growth, both in advanced and developing markets (Trung, 2019).

The significant volatility of uncertainty in emerging markets is pointed out between the 2007 global financial crisis and the 2009 European debt crisis, seeing the direction and pattern of volatility links (Liow, 2015). However, the impact of the European sovereign debt crisis is weaker than the impact of the collapse of Lehman Brothers. According to Constatinescu et al. (2020), rising policy uncertainty can reduce trade through the GDP growth rate. The uncertainty may also affect trade directly, affecting firms' decisions to serve foreign markets or source inputs internationally through their investment activities. Strong uncertainty about the GDP growth rate is proven to have a negative listing effect on mergers and acquisitions (Kim et al., 2021). This result goes along with Romer (2012) stating that uncertainty can happen because of asymmetric information that grows among investors.

The uncertainty about U.S. and European fiscal, regulatory, and monetary policies contributed to an economic step-back in the 2008 global financial crisis, according to the economic reports by Board of Governors of the Federal Reserve System (2010) and International Monetary Fund (2012). Macroeconomic uncertainty caused a negative impact on FDI flow in 40 Sub-Saharan African countries from 1996–2011, according to Asamoah et al. (2016). It is also found that the increases in domestic EPU have a significant negative impact on FDI inflows in a sample of 21 economies over 2003–2014 (Canh et al., 2020).

Some indirect effects are found, such as a fall in FDI caused by increasing EPU index, both at global and domestic levels. This fall in domestic economic activities, especially the prospect of future economic performance, can reduce FDI inflows due to the decreasing attraction from host countries (Caggiano et al., 2017). Most countries worldwide, especially those categorized as emerging economies, have a significantly higher risk of uncertainty (Ahir et al., 2018).

ASEAN as Regional Economic Integration

ASEAN, Association of Southeast Asia Nations, was established on 8 August 1967. It started with five original member countries: Indonesia, Malaysia, Singapore, Thailand, and the Philippines. The multilateral agreement body consisted of ten member states, followed by Myanmar, Lao PDR, Vietnam, Brunei Darussalam, and Cambodia. This multilateral body of agreement was committed to transforming Southeast Asia's economic integration through trade and investment activity. The 1967 Bangkok Declaration objectively pointed out these issues in forming the ASEAN to accelerate economic growth, promote regional peace and stability, and promote active collaboration (Hill & Menon, 2010).

ASEAN made several agreements and talks to promote convergence to sustain growth, such as the ASEAN Economic Community (AEC) at the end of 2015 to be more cooperative and integrated. It had some prior projects in economic cooperation projects, such as the ASEAN Industrial Project (AIP), the ASEAN Industrial Complementation (AIC), and the ASEAN Preferential Trade Agreement (PTA) for trade liberalization. Alas, the project did not achieve its objective, so in 2015, it decided to implement the AEC Blueprint as submitted in November 2007 at the 13th ASEAN Summit. The AEC aimed to establish ASEAN as a single market and production base, a highly competitive region, an economic region, an equitable

economic development region, and a region fully integrated into the global economy (Ishikawa, 2021).

In setting up a building block for its economic transformation, an open economy is a way for ASEAN. The transformation from intra-trade to intra-FDI inflows must be completed to attract investment creation (FDI inflows) from non-ASEAN member states with economic convergence. The open economy discloses an excellent chance for ASEAN to absorb positive spillover effects from various cooperations. Therefore, an open economy and economic convergence are conditions for ASEAN to have more vital and progressive regional economic integration (Verico, 2022).

Research Method

The research uses ASEAN member states' WUI subject to FDI inflows and GDP. The use of WUI as a proxy for socioeconomic uncertainty is because the index measuring uncertainty broadly covers both economic and political uncertainty rather than any other index (Anglingkusumo & Iyke, 2021). We also use inflation and real effective exchange rate to explain the relationship between the two variables of socioeconomic uncertainty towards the macroeconomy variables like FDI inflows and GDP growth.

The data are obtained from a dataset of ten ASEAN members: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam—ranging from 2015 to 2019. Including Brunei Darussalam and Singapore will not make the estimation biased because the proxy is based on the perception reported on the EIU. The two countries are considered high-income economies compared to other ASEAN member states (Hamadeh et al., 2022). However, as explained previously, using WUI captures their perception of the socioeconomic scope rather than only the economic sector.

There will also be a simultaneous model to investigate the impact of socioeconomic uncertainty's proxies subject to GDP growth and FDI inflows to ASEAN. A simultaneous equation system technique has already been built by Li and Liu (2005) to examine the endogenous relationship between FDI and economic growth. The model is presented and written as follows.

$$g_{i,t} = FDI_{i,t} + \delta X_{i,j,t} + \varepsilon_{i,t} \quad (1)$$

$$FDI_{i,t} = g_{i,t} + \delta X_{i,j,t} + \varepsilon_{i,t} \quad (2)$$

It has g as real economic growth and FDI as the ratio of FDI inflows and economic growth. The endogeneity issue between FDI and economic growth has been already there since the mid-1980s onwards (Li & Liu, 2005). FDI promotes economic growth not only directly by itself but also indirectly through their interaction terms.

Next, we proceed with the estimation and variables used by Canh et al. (2020), which are also adopted from several previous studies, such as Borensztein et al. (1994), Li and Liu (2005), and Biørn and Han (2017). The equations can be served as follows.

$$logFDI_{i,t} = f(GDP_{i,t}, WUI_{i,t}, INF_{i,t}, logREER_{i,t}) \quad (3)$$

$$GDP_{i,t} = f(logFDI_{i,t}, WUI_{i,t}, INF_{i,t}, logREER_{i,t}) \quad (4)$$

The presented models express the relationships between various economic variables. In Equation (3), logFDIi,t (the logarithm of Foreign Direct Investment for country *i* at time *t*) is modeled as a function of Gross Domestic Product ($GDP_{i,t}$), a socioeconomic uncertainty index ($WUI_{i,t}$), inflation ($INF_{i,t}$), and logarithm of the Real Effective Exchange Rate ($logREER_{i,t}$). Similarly, Equation (4) represents $GDP_{i,t}$ as a function of $logFDI_{i,t}$, $WUI_{i,t}$, $INF_{i,t}$, and $logREER_{i,t}$. The models can be expressed in a more detailed form, taking into account lagged variables and can be written as follows.

$$logFDI_{i,t} = \alpha_0 logFDI_{i,t-n} + \alpha_1 GDP_{i,t} + \alpha_2 WUI_{i,t} + \alpha_3 INF_{i,t} + \alpha_4 logREER_{i,t} + \varepsilon_{i,t} \quad (5)$$

$$GDP_{i,t} = \beta_0 GDP_{i,t-n} + \beta_1 logFDI_{i,t} + \beta_2 WUI_{i,t} + \beta_3 INF_{i,t} + \beta_4 logREER_{i,t} + \varepsilon_{i,t} \quad (6)$$

Equation (5) uses the rate of FDI inflows (logFDI) as its dependent variable. The independent variables are lag of log FDI inflows, GDP growth, WUI per country, inflation (INF), and log of the real effective exchange rate (logREER). In contrast, Equation (6) uses GDP growth (GDP) as its dependent variable. The independent variables are the lag of GDP, log of FDI inflows (logFDI), WUI per country, inflation (INF), and log of the real effective exchange rate (logREER).

Real Effective Exchange Rate (REER) is a proxy to see the competitiveness of trade products with its trading partner (Astiyah & Santoso, 2005). The REER is expressed as an index number related to a base year. The most common practices to measure REER are based on the equilibrium value of the currency. It measures a country's trade capabilities and export-import conditions and detects the underlying factors of trade flow (Giordano, 2022).

Meanwhile, the inflation rate aims to see the expectation of the market in terms of uncertainty—prices and/or money supply. This metric is also considered important for investors to see their future income streams discount and determine how much value they can gain in today's money (Pizzinelli, 2022).

Our main concern from those two estimations is that we want to investigate whether the socioeconomic uncertainty index through WUI can detect a possible relationship subjecting to FDI inflows and GDP growth of ASEAN members (presented by the coefficients: α_2 and β_2). Table 1 shows the description of all datasets used in the research.

Table 1 Data Calculation and Description

Variable	Definition	Unit	Sources
FDI Inflows (FDI)	Foreign Direct Investment (FDI) is the net inflow of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than the investor's. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. The data show net inflows (new investment inflows with less disinvestment) and is divided by GDP.	Percentage (%)	World Data Indicators
Gross Domestic Product (GDP)	The annual percentage growth rate of GDP at market prices is based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	Percentage (%)	World Data Indicators
World Uncertainty Index (WUI)	WUI is an index computed by counting the frequency of the world uncertainty (or its variant) based on EIU country reports. At least 143 countries have been included to compute the index. It is normalized by total number of words and rescaled by multiplying by 1,000. A higher number means higher uncertainty and vice versa.	Index	www.worlduncertainty index.com
Inflation (INF)	Inflation, as measured by the annual growth rate of the GDP implicit deflator, shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.	Percentage (%)	World Data Indicators
Real Effective Exchange Rate (REER)	REER is a measure of the value of a currency against a weighted average of several foreign currencies divided by a price deflator or index costs.	Index	www.bruegel.org

Source: Our analysis (2022)

There will be two hypotheses in the research regarding what dependent variables are used in each short-run regression. The hypotheses are:

a) Hypothesis from Equation (5)

H_0 = Socioeconomic uncertainty (α_2) does not negatively affect FDI inflows

H_1 = Socioeconomic uncertainty (α_2) does negatively affect FDI inflows

b) Hypothesis from Equation (6)

H_0 = Socioeconomic uncertainty (β_2) does not negatively affect GDP growth

H_1 = Socioeconomic uncertainty (β_2) does negatively affect GDP growth

In summary, the hypotheses are formulated to test the specific impact of socioeconomic uncertainty on FDI inflows and GDP growth. The expected signs for the coefficients (α_2 and β_2 are crucial in determining whether there is empirical support for the idea that socioeconomic uncertainty has a negative effect on these economic indicators. Thus, the expected sign for the coefficient result can fulfill the following requirements.

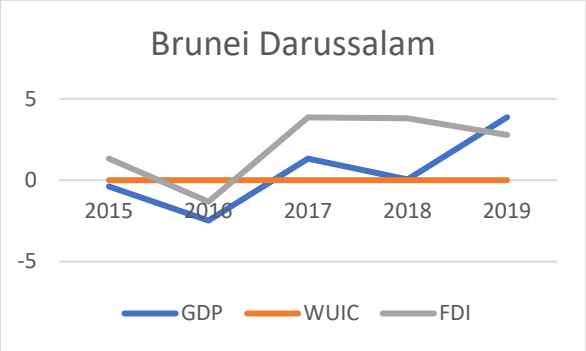
- $\alpha_2 \neq 0$, where $\alpha_2 < 0$, Equation (5)
- $\beta_2 \neq 0$, where $\beta_2 < 0$, Equation (3.6)

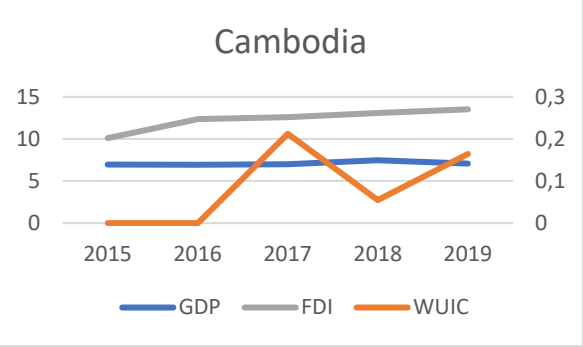
The research will also estimate the long-run socioeconomic uncertainty if the variable is statistically significant in short-run simulation. It is because of the error correction in the model. In contrast, the significant variable directly estimates the speed at which a dependent variable returns to equilibrium after a change in other variables. Although the concept is mainly taken from a common long-run stochastic trend, also known as cointegration, the dynamic panel data can detect which variable is determined in the long run. Changes that just are not possible to make in a short amount of time are realistic over a longer time frame (Lim et al., 2014).

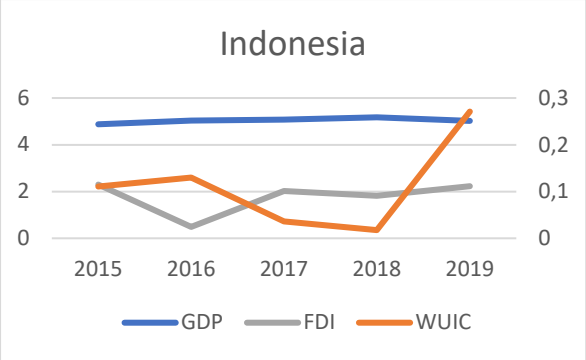
The long run will exhibit a result of the elasticity response of the dependent variable subject to the variable of interest, which in the research is socioeconomic uncertainty. Similar to short-run estimation, we hope the hypotheses fulfill the requirements where α_2 and β_2 do not equal zero and have a negative sign to both dependent variables (FDI inflows and economic growth).

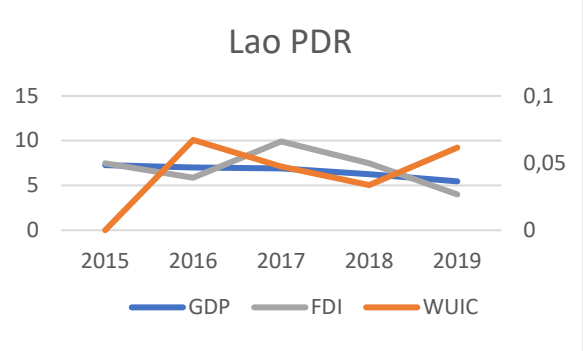
Analysis

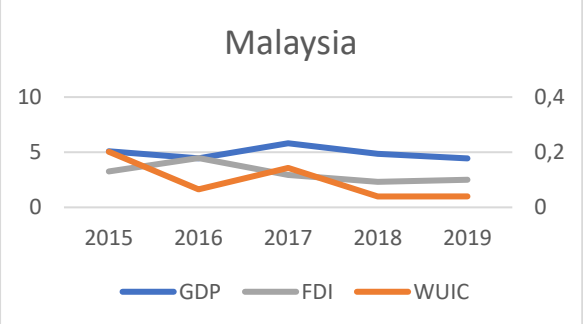
The research aims to find how socioeconomic uncertainty can affect foreign investment inward and economic growth in ASEAN, as found by Canh et al. (2020) and Anglingkusumo and Iyke (2021) that if uncertainty is rising, FDI inflows and economic conditions will likely decrease. After we have partly compared the dynamics of socioeconomic uncertainty, FDI inflows, and economic growth, we can see Figure 1. We have compared those three variables into one graph for each member state.

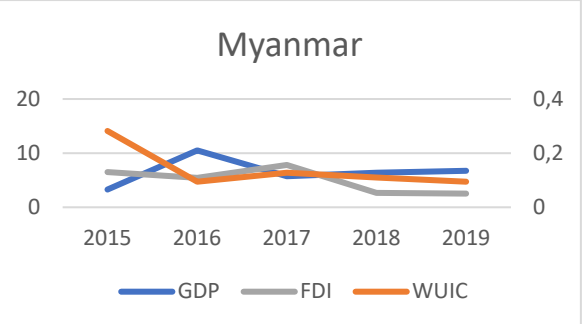












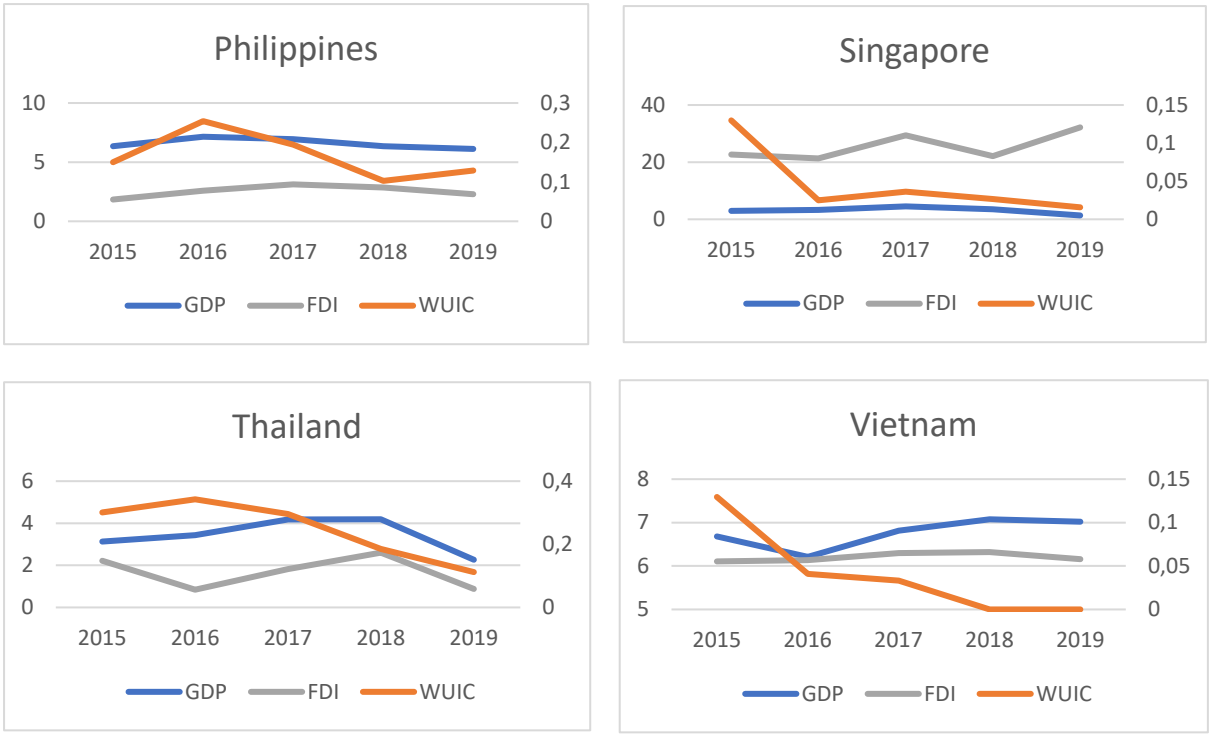


Figure 1 The Dynamics for each ASEAN Member State

Source: World Bank Data Indicators and www.worlduncertaintyindex.com, graphed by authors

In several member states like Thailand, Indonesia, Vietnam, Malaysia, and Myanmar, the socioeconomic uncertainty seems to have a similar movement to their FDI inflows and economic growth. The increasing uncertainty is a significantly declining output (Ahir et al., 2022). Meanwhile, other member states' uncertainty, FDI inflows, and GDP growth are fluctuating and tend to move incoherently. Some information regarding the numerical number from the data collection of this study, along with its number of observations, standard deviation, and minimum and maximum points of the data, are presented in Table 2.

Table 2 Descriptive Statistics

Variable	Calculation	Observation	Mean	Std. Dev.	Min.	Max.
FDI	Foreign Direct Investment (FDI) net inflows (% of Gross Domestic Products (GDP))	50	6.71	7.31	-1.32	32.17
GDP	Real GDP growth (annual %)	50	5.05	2.33	-2.47	10.50
WUI	World Uncertainty Index (WUI) per ASEAN country	50	0.09	0.09	0	0.34
INF	Inflation, GDP deflator (annual %)	50	1.82	3.97	-17.61	9.21
REER	Real Effective Exchange Rate	50	116.62	24.53	63.99	159.58

Source: Our analysis (2022)

The lowest FDI inflows to ASEAN members were experienced by Brunei Darussalam back in 2016. In OECD (2016), there was a decline in oil and gas prices, making it a challenge to its economy. Like many resource-driven countries, Brunei Darussalam was only putting its concern on sectors such as mining and quarrying and did not bat an eye to others. Meanwhile, the highest was experienced by Singapore, with a total percentage of FDI inflows to their country marked 32% in 2019. From the World Investment Report released by UNCTAD (2020), the 2019 was a record-breaking year for foreign direct investment in Singapore, with an increase of 15.5% to approximately USD92.1 billion.

Economic growth ranges from -2.47% to a maximum of 10.5% in our data. Brunei Darussalam experienced declining growth in the same year when oil and gas prices were exacerbated by global prices back in 2016. The highest GDP growth happened in Myanmar in 2017. Results from the government's effort to liberalize the economy through revised regulations and development strategies encouraged the private sector (Tang & Li, 2021).

Compared to other ASEAN members, Brunei Darussalam has the advantages of a politically stable government, macroeconomic stability, low taxes, low energy costs, low crime, and a pristine environment (OECD, 2016). It leads to a 0 rate of domestic uncertainty inside the country even though several mitigations are strategized to keep the climate right.

Ranging from 0 to 0.3425%, the highest domestic uncertainty experienced by one of the ASEAN members was Thailand in 2016. Thailand faced several domestic headwinds, such as severe drought, subdued exports, and heightened volatility in the global financial market, which increased domestic uncertainty (Bank of Thailand, 2016).

REER captures the weighted average of a country's currency related to an index or basket of other major currencies. It includes price indices and their trends, instead of only accounting for the differences in purchasing power between the two currencies (Hayes, 2021). The highest point of REER in ASEAN members happened at Lao PDR, with 159.59 in 2016. It indicated a higher cost for people in the country to buy exported products, while they could pay less for the products that they imported. The lowest point happened in Myanmar in 2019, with a REER of 64. It was because of higher economic growth for Myanmar, which resulted in a lower calculated number for their REER.

We also test the unit root test for all the data through the Fisher by Im et al. (2003) (IPS) and the Harris-Tzavalis test. IPS tests are the most widely used method for panel data unit root tests in literature (Li & Liu, 2005). Meanwhile, the Harris–Tzavalis test assumes that the number of panels tends to be infinite while the number of periods is fixed. The null hypothesis is the series containing a unit root, and the alternative is the stationary series. Then, the robustness check is tested due to the importance of variables and estimation being robust. It is also done to test the heteroskedasticity issue. The presence of outliers can lead to the model becoming heteroskedastic and make the Ordinary Least Square (OLS) no longer the Best Linear Unbiased Estimator (BLUE) (Wooldridge, 2009).

Finally, before estimating the regression, it is important to check the correlation among variables to prevent a multicollinearity symptom. Only FDI inflows and REER have transformed to log purposefully to see their elasticity. Table 3 shows the results.

Table 3 Correlation between Variables

	logFDI	**GDP**	**WUI**	**INF**	**REER**
logFDI	1.0				
GDP	0.14	1.0			
WUI	-0.35	0.02	1.0		
INF	-0.13	0.23	0.06	1.0	
logREER	-0.39	0.21	-0.21	0.03	1.0
Notes: logFDI is Foreign Direct Investment (FDI) inflows in log and logREER is annual Real Effective Exchange Rate (REER) in log. Variables like Gross Domestic Product (GDP), World Uncertainty Index (WUI), and inflation (INF) are not treated like the previous two variables due to their adjustment and control issues.					

Source: Our analysis (2022)

According to Gujarati (2004), variables are considered not to have any collinearity issue if the number does not exceed the 0.8 threshold. As shown in Table 4, there are no indications that all data have an issue. Then, we can proceed to the estimation results. The eligibility of GMM in analyzing the dynamic panel data model can be done by identifying some of the model's criteria. The total observations after passing the iteration process are commonly 38 out of 50 collected data. All estimations are considered robust, with no indication of autocorrelation among the variables. Table 4 shows the results of the short-run effect of socioeconomic uncertainty on FDI inflows in ASEAN.

The results show that in the short-term, the lag of FDI inflows negatively reduces investment at present time by 0.954%. This is in contrast with a previous study by Al-Sadig (2013), which shows that past domestic investment robustly enhances the current domestic investment rate by about 0.62%. Furthermore, domestic currency depreciation will increase FDI inflows to ASEAN members by 3.49%. It benefits foreign investors by increasing their wealth through a relatively lower investment cost due to a cheaper domestic currency value (Huong et al., 2020).

A higher percentage goes for socioeconomic uncertainty, captured by a decreasing 9.698% of inward investments to the host countries for each 1% increasing domestic uncertainty rate. The result aligns with Haque et al. (2022) that a 1% increasing uncertainty will decrease the FDI inflow, especially in 19 countries with higher incomes. According to Okunoye et al. (2023), the effect of economic uncertainty on inward FDI to Asia is negative.

On the ASEAN level, it is possible that if uncertainty in one country increases, countries' investment partners will also be affected (Anglingkusumo & Iyke, 2021). It is argued that FDI

should flow into countries with a more stable economy and strong institutions (Walsh & Yu, 2010). The business conditions of ASEAN member states show a distinct positive linear relationship with the FDI, indicating that better business conditions may result in further FDI inflow (Jeong et al., 2018).

Table 4 Results of Short-Run Effect of Socioeconomic Uncertainty on Foreign Direct Investment (FDI) Inflows in ASEAN

Dependent Variable: Log of FDI Inflows	(1)	(2)	(3)
Variables	PLS	FE	Two-Step System GMM
L. logFDI	0.816***	-0.269	-0.954**
	(0.114)	(0.216)	(0.444)
GDP	0.0218	0.0173	-0.0143
	(0.0468)	(0.0793)	(0.174)
WUI	-0.991	0.254	-9.698**
	(1.104)	(1.175)	(4.725)
INF	0.00756	0.00663	0.0179
	(0.0399)	(0.0323)	(0.0472)
logREER	0.449	2.053	3.490*
	(0.406)	(2.148)	(2.072)
Constant	-1.944	-7.937	-12.37
	(1.873)	(10.00)	(8.208)
Observations	38	38	38
R-Squared	0.733	0.111	-
Hansen Test	-	-	0.9276
AR (2)	-	-	0.9769
Number of Country	10	10	10

Note: Pooled Least Squares (PLS) and Fixed Effect (FE) model are used to identify the model when there are individual-specific effects, such as time-specific in panel data. Meanwhile, AR (2) in the context of Generalized Method of Moments (GMM) typically refers to a second-order autoregressive model. Foreign Direct Investment inflows (FDI), Gross Domestic Products (GDP), World Uncertainty Index (WUI), inflation (INF), Real Effective Exchange Rate (REER). Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Source: Our analysis (2022)

In Table 5, we present the short-run effect of socioeconomic uncertainty on economic growth in ASEAN. We then investigate the socioeconomic uncertainty toward the real GDP growth rate for ASEAN members. The model has fulfilled the requirement of the two-step system GMM by identifying the probability value through the Hausman test. Table 5 shows the results of the short-run effect in ASEAN regarding economic growth.

Table 5 Results of Short-Run Effect of Socioeconomic Uncertainty on Economic Growth in ASEAN

Dependent Variable: GDP growth	**(1)**	**(2)**	**(3)**
Variables	**PLS**	**FE**	**Two-Step System GMM**
L.GDP	0.573***	-0.393**	1.030***
	(0.119)	(0.159)	(0.188)
logFDI	0.0373	0.422	-0.399
	(0.327)	(0.478)	(1.479)
WUI	0.625	1.861	-15.09**
	(3.289)	(2.677)	(7.099)
INF	-0.110	-0.0604	-0.478*
	(0.116)	(0.0734)	(0.259)
logREER	-0.174	7.909	-0.203
	(1.236)	(4.753)	(2.780)
Constant	3.347	-30.67	4.115
	(5.630)	(22.52)	(13.36)
Observations	39	39	39
R-squared	0.472	0.390	-
Hansen Test	-	-	0.455
AR (2)	-	-	0.593
Number of Country	10	10	10

Note: Pooled Least Squares (PLS) and Fixed Effect (FE) model are used to identify the model when there are individual-specific effects, such as time-specific in panel data. Meanwhile, AR (2) in the context of Generalized Method of Moments (GMM) typically refers to a second-order autoregressive model. Foreign Direct Investment inflows (FDI), Gross Domestic Products (GDP), World Uncertainty Index (WUI), inflation (INF), Real Effective Exchange Rate (REER). Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Source: Our analysis (2022)

An increase of socioeconomic uncertainty in ASEAN at the aggregate level will decline growth by about 15.09%. It is bigger than Ahir et al. (2022) in their newest paper. Thus, socioeconomic factors negatively affect economic growth in ASEAN. It has the coefficient of WUI represented by $\beta 2$ with a negative sign.

Other variables that are significant in the 1% and 10% levels in the short run are the lag of GDP growth and inflation, respectively. The lag of GDP growth shows a positive sign. It means that the previous economic growth influences growth in the present time. Meanwhile, inflation has a negative sign on GDP growth. It potentially decreases growth by 0.478% in every 1% increase.

The contrasting result for the lag of FDI inflows and GDP growth raises a question: How is it even possible? Previous studies show that the expected sign of FDI inflows and GDP growth surely has reversed sign compared to this study. The lag of FDI inflows should have a positive sign, and the lag of GDP growth should be negative, not the other way around. The lag of GDP growth with a negative sign at the coefficient shows that the economy experiences convergence. It means that the more it grows, the closer it gets to its new equilibrium and achieves its steady state. The estimated parameter of the lag of GDP is used to test the concept of convergence. Meanwhile, the lag of FDI inflows should be positive because, according to

Dellis et al. (2017), an increase in FDI inflows in the previous period can positively affect FDI inflows in the present time.

An odd finding seems to distort the results of previous studies from the results shown in this study. The concept of economic convergence is not fulfilled in the short-run result presented in Tables 4 and 5. Convergence resulting from the rapid catch-up growth will also result in a leveling-up of the country's status to a more growing economy. It will profoundly transform the world economy (International Monetary Fund, 2012).

Tables 6 and 7 provide the long-run effect result of the only significant variables in the short-run. It means that we only discover global uncertainty, domestic uncertainty, lag of GDP growth, and inflation rate. As stated previously, it is because of the error correction in the model. In contrast, the significant variable directly estimates the speed at which a dependent variable returns to equilibrium after a change in other variables.

Table 6 Results of the Long-Run Effect of Domestic Socioeconomic Uncertainty on Foreign Direct Investment (FDI) Inflows in ASEAN

Variable	Coefficient
WUI	-4.961** (0.00057)
L.logFDI	-0.488*** (1.169553)
logREER	1.785** (0.01881)

Note: World Uncertainty Index (WUI), Foreign Direct Investment inflows (FDI), and Real Effective Exchange Rate (REER). Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Source: Our analysis (2022)

In the long run, the percentage change in socioeconomic uncertainty will cause outward investment. The coefficient is at -4.96, meaning that the 1% uncertainty increase will make foreign investment fly out from ASEAN by about 4.96%. It is a similar result to Canh et al. (2020). Aligned with the expectation, foreign investors tend to strategize their movement about whether they will be investing (Rodrigo & Randika, 2022). The negative effect of increasing uncertainty will be a matter for investment-determined countries because institutional quality and stable macroeconomic conditions are needed to attract FDI inflows and promote economic growth (Noria & Fernández, 2018).

Besides uncertainty, previous FDI inflows will depreciate in the long run. This result aligns with Jana et al. (2019) that FDI inflows in more rapidly growing markets can be higher

than inflows in advanced economy countries. Hence, if one country has a rapid growth of FDI inflows, it will likely decrease over time until it reaches a steady state.

Table 7 Results of the Long-Run Effect of Global Socioeconomic Uncertainty on Gross Domestic Product (GDP) Growth in ASEAN

Variable	Coefficient
WUI	503.16 (2970)
L1.GDP	-34.34 (209.72)
INF	15.92 (94.34)

Note: Gross Domestic Products (GDP), World Uncertainty Index (WUI), and inflation (INF). Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Source: Our analysis (2022)

Conclusion

To conclude, socioeconomic uncertainty affects the real sector, portrayed through FDI inflows and growth in the short run. Both estimation results show similar negative and significant effects of increasing socioeconomic uncertainty towards inflows and growth. It is because the response to foreign investment inflows and economic growth toward uncertainty is completely shocking. However, in the long run, it does not significantly affect economic growth, while the response of FDI inflows remains sensitive if socioeconomic uncertainty experiences any increasing trend.

In the long run, foreign investment inflows result in a negative and significant sign on its coefficient. Investment subject to uncertainty is believed to be the most important channel. Uncertainty influences the business cycle due to its heavy reliance on opinions about future events. The result of this study is remarkably relevant to previous studies about the effect of socioeconomic uncertainty on FDI inflows and, later on, economic growth.

As a regional economic integration, ASEAN still has challenges to face in the near future, especially regarding socioeconomic uncertainty. The reason is that uncertainty will most likely attack whenever it may happen, and the integration system in ASEAN is not quite responsive to uncertain climates or conditions.

The key findings are that, in general, socioeconomic uncertainty has affected FDI inflows and economic growth in ASEAN. In fact, ASEAN still needs to manage its growth to achieve sustainable growth and a steady environment. This is because ASEAN can attract

non-ASEAN members to invest through its uniqueness, cooperation, and integration. In parallel, increasing the FDI inflow stream to ASEAN can boost the current account balance and stimulate economic growth to grow and achieve economic convergence.

From the result, we recommend several relevant things to this study. Firstly, policymakers should pay close attention to socioeconomic uncertainty through the socioeconomic index proxied by WUI. The effect of heightened socioeconomic uncertainty on an economy may be multifaceted through diverse channels. It is applied to all member states to be fully aware of keeping their uncertain climate manageable because this index initially observes the effect at the country level.

Secondly, clear communication between governments, policymakers, and stakeholders should be strengthened. It is a part of managing socioeconomic uncertainty because, as stated before, foreign investors tend to see ASEAN in a broader scope and as an integrated economy before deciding to invest in one or two of its member states.

Thirdly, ASEAN needs to remain focused on the open economy to enhance its structural economic transformation from intra-trade to intra-investment. The long-run output from the transformation is that ASEAN, being an integrated economy, can have sustainable growth. This transformation is the key to ASEAN economic integration pathways from the economic community to the common market as the comprehensive real sector integration.

Based on those points, we are conscious of the limitations of this study. The use of WUI as a proxy for socioeconomic uncertainty is very uncommon in estimation, especially when it comes to real sector estimation. However, this index can at least be capable of capturing the degree of socioeconomic uncertainty fluctuations when the concept of uncertainty itself remains abstract. Thus, this study is considered an early step in introducing the concept of socioeconomic uncertainty to FDI inflows and economic growth in Southeast Asia, specifically for ASEAN member states in the 2015-2019 period. During this period, the ASEAN economy was very healthy due to minimal shock happening in-between the time. Hence, the result of this study will probably best explain how the socioeconomic uncertainty index can capture the dynamic effect of uncertainty toward FDI inflows and economic growth.

Future research in this area can delve deeper into understanding the intricacies of the long-term effects of socioeconomic uncertainty on the real sector within the ASEAN context. Exploring why socioeconomic uncertainty does not significantly impact economic growth, in the long run, may uncover specific mechanisms or contributing factors. Moreover, comparative studies across ASEAN member states can shed light on how countries respond to socioeconomic uncertainty, considering policies, economic structures, and governance variations. Additionally, developing a more dynamic model that captures the evolving nature of socioeconomic uncertainty over time, possibly through time-series analysis, can offer insights into the changing impact of uncertainty. Last, a global comparison with other regions or global trends may provide insights into how the impact of socioeconomic uncertainty in ASEAN compares to the broader context.

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