Spillover Effect Of Us Economic Policy Uncertainty On Indonesian Economic Growth

SitiKomariyah, Mohammad Saleh, Darwis Muhammad Ahrori

Abstract: This study aims to examine the spillover effect of the uncertainty of US economic policy on Indonesia's economic growth. SVAR model is used to observe the connecting channel of the spillover effect. The results show that the uncertainty of US economic policy can spill on Indonesia's economic growth through FDI as a financial channel. The higher the percentage of US FDI to total FDI in Indonesia, the more vulnerable the Indonesian economy will be when there is shock in the US economic policy uncertainty.

Index Terms: Economic Policy Uncertainty, Spillover Effect, Financial Channel, Trade Channel, Indonesia, US, SVAR.

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1. INTRODUCTION

UNCERTAINTY of economic conditions is becoming an intensive topic discussed mainly starting when the United States (US) experienced the sub-prime mortgage crysis that occurred in 2008. Some European countries have taken anticipatory steps by implementing fiscal intervention policies that tend to be aggressive, but this action triggered a further crisis. Starting from the Greek government debt which caused a crisis, the crisis then spread to other European countries such as Ireland, Italy, Portugal and Spain [1], [2]. In addition, the crisis also has an impact on the economies of developing countries such as Southeast Asian countries or ASEAN[3], [4].Global economic uncertainty is increasing rapidly after the implementation of policy and regulation packages formulated by the US Government such as monetary policy through the reduction of the Federal Reserves (The FED) interest rate to close to 0% and also the Quantitative Easing (QE) policy that is applied gradually [1]. This series of US policies has an influence not only on the domestic economy, but also on other countries, both developed and developing countries. Uncertainty in the US fluctuates in times of crisis until the implementation of QE policies. In addition, QE policies also have an impact on Peru's economy[5]. Studies of uncertainty in economic conditions have been conducted by many researchers. Baker, Bloom and Davis[6]measure uncertainty in economic policies implemented by the government. They measure economic policy uncertainty by calculating the frequency of articles that contain various matters related to economic uncertainty in 10 leading newspapers in the US. The index is developed using data from the frequency of words: "economic" or "economy"; "Uncertain" or "uncertainty"; and

also includes "congress", "deficit", "Federal Reserve", "legislation", "regulation" or "White House". They named it the Index Economic Policy Uncertainty (EPU). They also measured the EPU index of several other countries and also the global EPU.Economic policy uncertainty can also have an impact on other countries' economic growth. Trung[7]found that global economic growth could be shaken by US EPU shock. Contrary to Trung, Curth[8]found that European EPU had an impact on the macroeconomic performance of the US. Within the framework of the business cycle, the Chinese EPU has a significant impact on the US economy when the US is experiencing an economic slowdown, while during a boom, the Chinese EPU has no impact on the US[9]. The South Korean economy is known to be significantly affected by the domestic EPU and the US EPU [10]. International trade activities and international finance are the reasons for the importance of considering global economic conditions. This opinion was strengthened by Bank Indonesia[11] which explained that the global financial crisis in 2008 had a Spillover Effect through international trade and financial channels. The trade channel will have an impact on Indonesia's trade performance both exports and imports. While on the financial side, foreign direct investment and portfolio investment received an impact from the global financial crisis. Indonesia as a developing country has also experienced the spillover effect of uncertainty on global economic policies, including from the US. The Indonesian Government's development policy in the last few years also considers the conditions of US uncertainty, even though the slowdown in Indonesia's GDP growth was relatively smaller compared to other countries which also received the spillover effects of the crisis.This research was conducted in order to examine the effects of the US EPU spillover effect and its transmission channel on Indonesia's economic growth. This study is important to do in order to mitigate global economic shocks, especially from countries that have high economic integration. Based on empirical facts, the US is one of the countries that has the largest contribution to world GDP and has an influence on international trade.

2 LITERATURE REVIEW

The impact of US EPU on Indonesia's economic growth can be explained by spillover effect concept. Spillover effects in economic studies refer to changes in socio-economic conditions that occur in certain countries that affect indirectly to other countries. Developing countries that have economic variables with fragile status would receive a huge effect from the policies implemented by the US[12]. In addition to economic policy, the spillover effect can also come from

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changes that occur in macroeconomic variables. For example, US policy has a large influence on the economy of the whole world, especially related to the Sub-Prime Mortgage crisis mitigation policy that emerged in 2008[2]. USD exchange rates can also cause a spillover effect on other countries' currencies. The appreciation of the USD would trigger depreciation in a number of developing country currencies[13].The main causes that trigger the spillover effect are the instability of socio-economic conditions that have an impact on the domestic economic sector and the uncertainty of government policies that cause shocks to the economy. Furthermore, integration and economic openness become the main transmission of the emergence of the spillover effect. There are at least three transmission channels, namely: 1) Financial channels[14], [15], [16]; 2) International trade channels [17], [18], [19]; and 3) Geopolitical Conditions [20], [21].Based on the explanation above, in building a model framework that can describe the spillover effect of the US EPU on Indonesia's economic growth, this study also uses several supporting theories. The IS-LM Mundell-Fleming model explains that within the framework of an open economy, spillover effects are very likely to occur. The endogenous growth model explains that economic growth is not influenced by investment and domestic trade but can also be influenced by foreign investment and trade between countries. Dunning's Eclectic Theory (OLI) explains the factors that influence FDI flow. J Curve Theory explains the relationship between currency exchange rates and trading performance.

3 RESEARCH METHOD

This reseach used secondary data collected from four sources, namely Bank Indonesia, investing.com, OECD, and policyuncertainty.com. Data collected quarterly from 2005Q1 to 2017Q4. The quantitative analysis method used is the Structural Vector Autoregression (SVAR) which aims to determine the spillover effect channel of the US EPU shocks on Indonesia's economic growth. The pre estimation stage is the unit roots test, cointegration test, and lag length criteria. Endogenous growth theory, OLI theory, and J curve theory are the basis in building SVAR models.

$$y_{i,t} = a_0 + a_1 rm_{i,t} + a_2 rx_{i,t} + a_3 rFDI_{i,t} \qquad (1)$$

Equation (1) is an endogenous growth model where y is GDP growth, rm is the ratio of Indonesian imports from country j towards Indonesia's total imports, rx is the ratio of Indonesia's exports to countries j toward Indonesia's total exports, $rFDI$ is the ratio of Indonesia's direct investment from country j toward Indonesia's total direct investment, i is Indonesia, j is US, and

t is the serial time.

$$rm_{i,t} = \beta_1 er_{i,t} + \beta_2 EPU_{j,t} \qquad (2)$$

$$rx_{i,t} = \gamma_1 er_{i,t} + \gamma_2 EPU_{j,t} \qquad (3)$$

Equations (2) and (3) are built based on curve theory J where er is the nominal exchange rate of USD/IDR, EPU is an economic policy uncertainty index. Both of these equations reflect the trade channel.

$$rFDI_{i,t} = \lambda_1 BCI + \lambda_2 EPU_{j,t} \qquad (4)$$

Equation (4) is built from the OLI theory where BCI is the difference between BCI Indonesia and BCI AS. The difference illustrates the economic condition of Indonesia from a business perspective. The increasing value of the difference shows that Indonesia's economic conditions are more stable compared to the US, allowing FDI flows into Indonesia. Equation (4) shows the financial channel. Next equation (1) - (4) is arranged into the SVAR model. The basic SVAR modelling is denoted in the following equation:

$$A_0 X_t = A(L) X_{t-1} + Be_t \qquad (5)$$

Where A_0 is the $[K \times K]$ contemporaneous matrix between variables, X_t is the $[K \times 1]$ vector of the variable endogenous, $A(L)$ is the $[K \times K]$ autoregression coefficient matrix, e_t is the $[K \times 1]$ vector of structural disturbances, B_t is the non-zero diagonal matrix, and K is the number of variables used.

4 RESULT

4.1 PRE ESTIMATION TEST

The unit root test results show that only EPU and rFDI are stationary at the level. Unit roots test at 1st different shows that all variables are stationary. Based on these results, SVAR estimation is carried out using the 1st different of all variables.Cointegration test aims to analyse the long-term relationships of the analysis model variables. If the data is cointegrated, it can be concluded that the data has a long-term relationship or vice versa. In this study cointegration tests were carried out with Augmented Dick-Fuller (ADF) by comparing critical values with trace statistical values. The results of the cointegration test show that the model are cointegrated at a critical value of 5 percent.The results of the optimum lag test using the Akaike Information Criterion (AIC) approach show that the best model in this study is until the 5th lag. Therefore, the model built has a lag until the 5th lag.

4.2 RESULTS OF THE SVAR ESTIMATION

TABLE 1 *MATRIX A SVAR EQUATION*

Variables	EPU	BCI	er	rFDI	rm	rx	y
EPU	1	0	0	0	0	0	0
BCI	-0.009731 (0.0000)	1	0	0	0	0	0
er	1.298891 (0.5857)	0	1	0	0	0	0
rFDI	0.002649 (0.0149)	-0.13851 (0.0542)	0	1	0	0	0
rm	-0.000011 (0.6988)	0	-0.000002 (0.1671)	0	1	0	0
rx	-0.000038 (0.0179)	0	-0.000003 (0.0009)	0	0	1	0
y	0	0	0	-0.01192 (0.0001)	0.33851 (0.0001)	-0.18394 (0.2003)	1

() Significance level

TABLE 2 *MATRIX B SVAR EQUATION*

Variables	EPU	BCI	er	rFDI	rm	rx	y
EPU	28.663 (0.000)	0	0	0	0	0	0
BCI	0	0.3317 (0.000)	0	0	0	0	0
er	0	0	483.00 (0.000)	0	0	0	0
rFDI	0	0	0	0.1688 (0.000)	0	0	0
rm	0	0	0	0	0.0059 (0.000)	0	0
rx	0	0	0	0	0	0.0034 (0.000)	0
y	0	0	0	0	0	0	0.0038 (0.0000)

() Significance level

Based on the estimation results, the EPU has a negative and significant effect on BCI and has a positive effect on the USD exchange rate but is not significant. FDI is affected positively and significantly by the EPU, while BCI has the opposite effect on FDI. Imports are not significantly affected by the US EPU and the exchange rate of USD/IDR and both of these variables have a negative direction towards imports. On the other hand, exports are significantly affected by the EPU and the USD/IDR exchange rate and both have a negative relationship to exports. In the last model, the influence of FDI, imports and exports on economic growth has different levels of significance and direction of influence. FDI has a negative and significant effect, import has a positive and significant effect, and exports have a negative but not significant effect on Indonesia's economic growth.The results of model stability testing using the Inverse Roots of AR Characteristic method shows that the SVAR coefficient is in a circle. Thus, the SVAR model is stable and stationary so that it can be used to describe the spillover effect of US EPU shocks on Indonesia's economic growth through trade channels and financial channels.The results of the IRf test show that Indonesia's economic growth shocks are more influenced by shocks originating from FDI flows compared to exports and imports. The results of IRf show that economic policy uncertainty is relatively more influential on FDI flows than exports and imports.
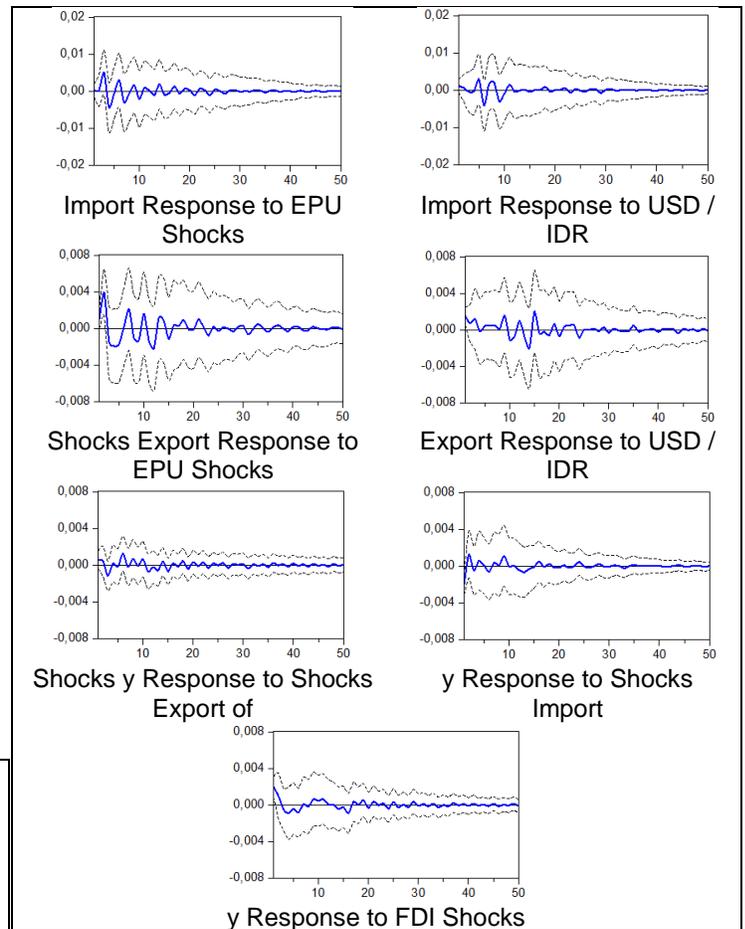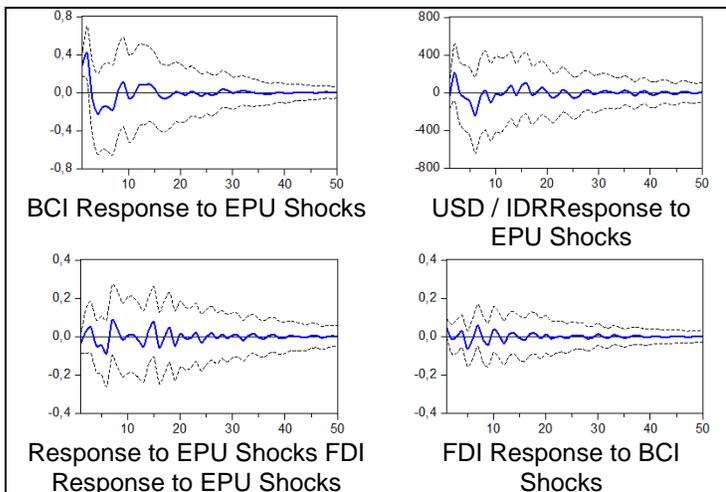

Import Response to EPU Shocks

Import Response to USD / IDR

Shocks Export Response to EPU Shocks

Export Response to USD / IDR

Shocks y Response to Shocks Export of

y Response to Shocks Import

y Response to FDI Shocks

Fig. 1. *Impulse Responses function (IRf) result from SVAR estimation above.*

BCI Response to EPU Shocks

USD / IDRResponse to EPU Shocks

Response to EPU Shocks FDI Response to EPU Shocks

FDI Response to BCI Shocks

Based on the discussion above, the results of this study are similar to the research of Khaliq and Noy[22]. They found a negative influence from the flow of direct investment in Indonesia's economic growth in several business sectors such as mining. Li and Liu[23] explained that technological differences between countries of origin and destination countries of direct investment can trigger these negative relationships. In addition, the results of this study strengthen the research conducted by Stockhammar and Ostholm[24], Armelius, Hull and Stenbacka[25], and Cheng[10].

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4 CONCLUSION

6.1 Figures and Tables

Uncertainty in US economic policy makes the direction of global economic development become unpredictable. These conditions can trigger a slowdown in global economic growth due to the increasing caution of various countries around the world. Uncertainty of US economic policy has the potential to have a negative spillover effect on the domestic economy of other countries including Indonesia. The results of this study indicate that the uncertainty of US economic policy shocks can has spillover effect on Indonesia's economic growth through financial channels. The higher the percentage of US FDI in Indonesia, the more vulnerable the Indonesian economy is affected by the US economic policy uncertainty.

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