

## The Effect of Intervening Variable towards Twin Deficit in Indonesia: The Application of Path Analysis

*(Kesan Pemboleh ubah Intervensi Terhadap Defisit Kembar di Indonesia: Aplikasi Analisis Laluan)*

**Erni Ummi Hasanah**  
Janabadra University

**J.J. Sarungu**  
**Mulyanto**  
**A.M Soesilo**  
Sebelas Maret University

**Suparjito**  
Papua Office of the Directorate General of Treasury

### ABSTRACT

*This study examines twin deficits in Indonesia during the period of 1969-2015 using Path Analysis. Path analysis can test the direct and indirect effect of the variables studied and simultaneously identify the role of the intervening variables. Data used in this study include government budget deficit (BD) as the exogenous variable, interest rate (IR) and domestic exchange rate (FER) as the endogenous intervening variables, and deficit on the current account of balance of payment (DBOP) as the endogenous variable. This study found no direct effect between BD and DBOP. The finding indicates that an increase in budget deficit may not necessarily lead to an increase in current account deficits, and therefore do not prove twin deficits in Indonesia. Therefore, Mundell-Fleming's theory in Indonesia is not applicable because the role of intervening variables (IR and FER) in mediating twin deficits is relatively weak.*

*Keywords: twin deficits; path analysis; intervening variables*

### ABSTRAK

*Kajian ini mengkaji defisit kembar di Indonesia semasa tahun 1969-2019 menggunakan Analisis Laluan. Analisis Laluan boleh menguji kesan langsung dan kesan tak langsung bagi pemboleh ubah yang dikaji dan pada masa yang sama mengenal pasti peranan pemboleh ubah intervensi. Data yang digunakan dalam kajian ini termasuklah belanjawan defisit kerajaan (BD) sebagai pemboleh ubah eksogen, kadar faedah (IR) dan kadar pertukaran domestik (FER) sebagai pemboleh ubah intervensi endogen, dan defisit akaun semasa baki pembayaran (DBOP) sebagai pemboleh ubah endogen. Kajian ini menemui kesan tidak langsung antara BD dan DBOP. Penemuan ini menunjukkan bahawa peningkatan dalam belanjawan defisit adalah tidak semestinya menyebabkan peningkatan dalam defisit akaun semasa, seterusnya tidak membuktikan defisit kembar di Indonesia. Oleh itu, teori Mundell-Fleming di Indonesia tidak dapat diaplikasikan kerana peranan pemboleh ubah intervensi (IR dan FER) di dalam mengantar defisit kembar yang secara relatifnya lemah.*

*Kata kunci : Defisit kembar; laluan analisis; pemboleh ubah intervensi*

### INTRODUCTION

The Annual Report of Bank Indonesia (2016) revealed that the realization of Indonesia's government budget deficit in 2016 reached Rp 307.7 trillion, or 2.46% of Gross Domestic Product (GDP). The budget deficit occurred as the state revenue was only Rp 1,551.8 trillion, while the state expenditure reached Rp 1,859 trillion. More surprisingly, the government budget deficit in 2017 has reached 2.92% of GDP. The high deficit raises concern as the amount is close to the safe threshold (3%) of the budget deficit set by Law No. 17 of 2003 on State Finances. The amount of government budget deficit in 2017 ballooned because state expenditure was

set at Rp 2,133.3 trillion, but total state revenue was only Rp 1,736.1 trillion. State spending has surged because in the era of president Jokowi's administration, one of the priority development agenda was infrastructure development to pursue economic growth and reduce the development gap among regions in Indonesia. The high budget deficit needs to be considered and the government needs to take measures to control it. If we examine the trend of the budget deficit during the period of 2010-2015, the average deficit was only about 2.1% with the highest amount of only 2.38% recorded in 2013. However, in the last two years, the deficit has experienced a significant surge. Figure 1 below illustrates the trend of the Indonesian budget deficit during 2010-2017.



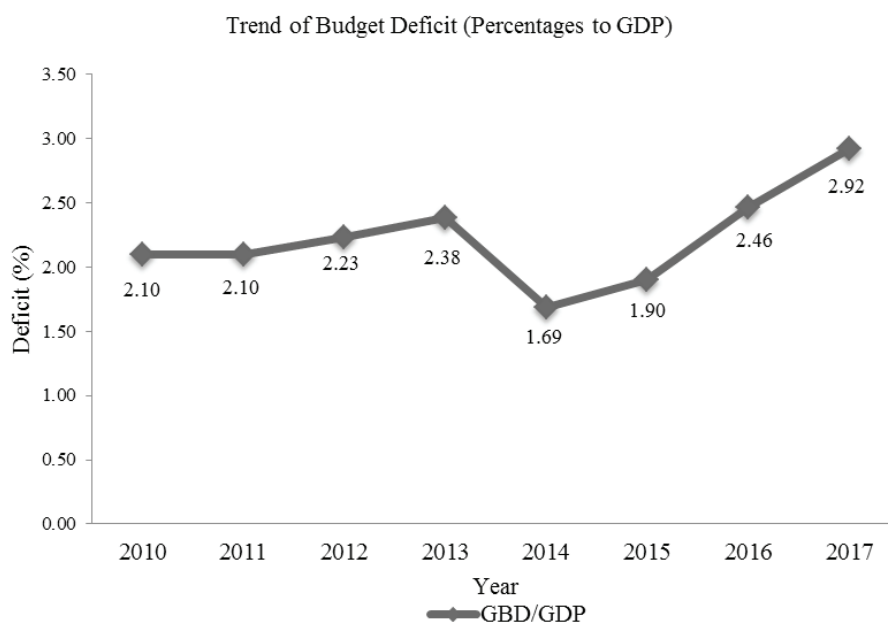


FIGURE 1. Indonesian Budget Deficit in 2010-2017 (% GDP)

Source: Financial Note and State Budget Plan (Ministry of finance)

Expansionary fiscal (budget deficit) policy is still widely applied in both developed countries such as European and American countries and emerging markets such as Indonesia. One of the objectives of this policy is to promote economic growth (Gaber 2010). In the 1980s in America, discussions about the budget deficit, later known as Reagan fiscal experiment policy, were frequent and had even led to debates in various circles (Baharumshah et al. 2006). Many economic observers and policy makers in the United States argue that budget deficits can harm the American economy and the world because it can lead to high interest rates, low public savings, and low economic growth (Barro 1989; Ball & Mankiw 2009; TAS, 1986). Indonesia faces sluggish global economic growth caused by geopolitical uncertainty and poor international trading. These conditions have an impact on the position of Balance of Payment (BoP), especially on current account that continues to deficit. In 2017, current account deficit (CAD) in the second quarter reached US\$ 5 billion or 1.96 percent of gross domestic product (GDP).

Over the years, researchers have explored the link between the budget deficit (BD) and current account deficit (CAD) because, in order to maintain macroeconomic stability and sustained economic growth, CAD and BD must be kept under control (Lau et. Al 2010). Research by Kim and Kim (2006) estimates twin deficits using bivariate VAR models but they suggest that the additional variables that should be considered are the exchange rate and the interest rate, since the theoretical literature suggest that these variables play an important role in channel through which budget affects the current account deficit.

The suggestion is supported by Baharumshah et.al (2006) who argue that mutual relationships between BD, CAD, and other intervening variables (eg, interest rates and exchange rates) have not been investigated. These intervening variables enable transmission mechanism mapping in the twin deficits issue, but have not been widely researched and analyzed comprehensively. The importance of intervening variables in the twin deficit relationship is emphasized by Abell (1990) who state, "Using a vector autoregressive model, support is found for the notion that budget deficits influence trade deficits indirectly rather than directly. Evidence is obtained through causality testing and impulse response functions that the twin deficits are connected through the transmission mechanisms of interest rates and exchange rates."

Nizar (2013) argues that the size of the government budget deficit is related to the current account deficit summarized in the twin deficits paradigm. In addition, Anwar (2014) notes that the establishment of expansionary fiscal policy shows no direct impact on the macro economy. Therefore, fiscal policy should be combined with other policies (monetary policy) or involve other variable elements (instruments). The purpose of this study was to examine whether there is a direct and indirect relationship through intervening variable transmission mechanisms, i.e., interest rates and exchange rates against twin deficits. This study differs from previous studies in several respects. First, previous studies rarely use the Path Analysis approach to detect direct and indirect relationship among variables. Second, this study involves mediating variables, i.e., interest rates and exchange rates.

## LITERATURE REVIEW

Theoretically, there are several approaches to explain the twin deficits. This study uses a Keynesian (conventional) proposition approach with the Mundell-Fleming model framework. Baharumshah and Lau (2007) and Daly and Siddiki (2009) posit the view that BD increase can induce upward pressure on interest rates that will subsequently elicit capital inflows and appreciation of exchange rates. In the end, the domestic currency appreciation will lead to CAD growth. Private saving will remain the same because the public saw the government bond issuance to finance the deficit as boosting their wealth. The domestic investment and CAD responses mainly depend on capital mobility. If the capital is highly mobile, domestic interest rate will become unresponsive (inelastic) to fiscal shock and thus no crowding-out effect on domestic investment because foreign capital will be able to immediately offset the dip in domestic investment. Capital inflow will in turn create upward pressure on FER (foreign exchange rate) through either an increasing minimal exchange rate (in a flexible exchange rate system) or escalating prices (in a fixed exchange rate system). Therefore, based on the conventional Mundell-Fleming model, the relationship between the two deficits is predicted to be positive.

The theoretical framework for investigating the link between government budget deficits and current account based on national accounting systems can be found in Vomvoukas (1999). He defines the current account as follows:

$$CA = S^P - I - (G - T) \quad (1)$$

where CA is current account balance;  $S^P$  represents private saving, I is investment. In addition, G is government expenditure; T is tax; finally G minus T are government budget deficits. The government budget deficit increases the current account deficit if it reduces national income. If current taxes are constant and savings minus investment (S-I) remain the same or stable, then an increase in government spending will increase the government budget deficit (G-T) which in turn affects the current account balance positively. In this way, a government budget deficit caused by an increase in purchases reduces a country's current account surplus or widens the current account deficit.

Some research on twin deficits have been done in both developed and developing countries with various approaches, models, and data, and yields varying findings. Kulkarni and Erickson (2001) and Islam (1998) examine twin deficits with the causality approach. This causality relationship can illustrate the direction of the relationship between the budget deficit and the trade deficit: the budget deficit causes the trade deficit or vice versa.

Kasibhatla et.al (2001) and Leachman and Francis (2002) analyzed the twin deficits with the Error Correction Model (ECM) in the United States. Kasibhatla

et al. (2001) examines the period of 1959-1993, while Leachman and Francis (2002) the period after World War II. Both studies suggest that in the long run the United States economy is experiencing a twin deficits.

Other studies investigating twin deficits were performed by Altintas and Taban (2011) with the Autoregressive Distributed Lag (ARDL) approach and the Toda-Yamamoto cointegration test using data from 1974-2010 period in Turkey. The study found that Turkey experienced twin deficits and hence the Ricardian hypothesis was refuted. This means, in Turkey, there was a relationship between the budget deficit and the current account deficit. In addition, the Feldstein-Horioka puzzle hypothesis applies in Turkey, as the Turkish economy is not fully integrated into the global market.

Different results are revealed by studies by Datta and Mukhopadhyay (2010) through their case study in Maldives. They claim that the Maldives economy did not experience twin deficits, or in other words, the Ricardian hypothesis applied. Studies with similar results were done by Hashemzadeh and Wilson (2011) who examine twin deficits in several countries in the Middle East and North Africa with data from the 1970-1990 period using the Vector Autoregressive (VAR) and Vector Error Correction Model (VECM) approaches. They conclude that twin deficits do not occur universally in the countries studied, but only in certain countries.

The study with a relatively different approach was done by Baharumshah and Lau (2009), Kim and Kim (2006) and Baharumshah, et.al (2006) who analyzed twin deficits by including mediating variables. Baharumshah and Lau (2007) and Baharumshah, et.al (2006) recommend interest rates (IR) and exchange rate (FER) as mediating variables to explain the effect of the budget deficit on the current account deficit (CAD). Kim and Kim (2006) argue that interest rate and exchange rate variables need to be considered because these variables play an important role through the transmission mechanisms in the influence of the budget deficit on current account deficits.

## METHODOLOGY

This study uses multivariate time series analysis to examine the linkages between government budget deficits and trade deficits. The multivariate approach is applied because complex models cannot be adequately described by an equation in multiple regression, but must be described with more than one regression equation and those equations are linked (Gudono 2011). In addition, the pattern of relationships between economic variables can run directly or indirectly so that a mechanism is needed to identify the causality of a variable against other variables that it influences (Haryono & Wardoyo 2013).

## TYPES AND SOURCE OF DATA

The data used in this research is secondary time series data in the period of 1969-2015. Data were obtained from various official Indonesian government publications as well as publications from credible international institutions such as the International Financial Statistics Yearbook, the Balance of Payment Statistics Yearbook and the Government Financial Statistics Yearbook published by the IMF. Other data are sourced from Bank Indonesia publication of 'Indonesia Economic Financial Statistics,' Annual Report of Bank Indonesia, as well as the Indonesian Statistics Book published by the Central Bureau of Statistics (BPS).

## OPERATIONAL DEFINITION OF VARIABLES

This subsection describes the variables involved in this study. These variables are categorized as endogenous, exogenous, and intervening variables.

## DATA ANALYSIS TECHNIQUE

Path analysis is a method to examine direct effects and indirect effects of variables (Widarjono 2010). This method of analysis tests theoretical relationships between variables and detects causal relationships with structural model patterns. In addition, all variables both endogenous and exogenous must be observable variables. These are the steps of Path Analysis:

## 1. Theoretical-Based Model Development

The basic model of Path Analysis should be established on the basis of strong theories. The model will illustrate causality, where the change of one variable is assumed to result in another variable change. In this study, Twin Deficits theory is based

on the Mundell-Flemming framework (Baharumshah 2007). According to this model, an increase in budget deficit will raise the pressure on interest rates, which then trigger a capital inflow. Subsequently, this capital inflow will cause the appreciation of the exchange rate of domestic currency. Finally, exchange rate appreciation will increase the current account deficits.

## 2. Constructing Path Diagram

Constructing a path diagram of the relationship that has been established based on the Fleming-Mundell theory and then developing the equations. The path diagram in this study is as follows:

Figure 2 shows that the path diagram consists of structures and substructures. The arrows describe the relationship between variables. Each p value indicates path and path coefficient. There are 4 (four) variables to be estimated, i.e. budget deficits (BD), current account deficits (DBOP), interest rate (IR) and foreign exchange rate (FER).

## 3. Constructing Structural Equation

After the path diagram is formed, the next step is to convert the path diagram into a series of equations. These equations can be used to detect direct effects and indirect effects of intervening variables (IR and FER) in their role as a transmission line of the government budget deficit against the current account deficit. Then, the relationship or impact of the government budget deficit on the current account deficit can ultimately be identified.

$$IR = \alpha_1 + \beta_1 BD + \varepsilon_1 \quad (2)$$

$$FER = \alpha_2 + \beta_2 BD + \beta_2 IR + \varepsilon_2 \quad (3)$$

$$DBOP = \alpha_3 + \beta_3 BD + \beta_3 IR + \beta_3 FER + \varepsilon_3 \quad (4)$$

TABLE 1. Variables: Definitions and Sources

No.	Variable Notations	Variables name	Operational Definition	Types of Variables	Source of Data
1	BD	Government's Budget Deficit	If the total state revenue is less than the total state expenditure in the general equilibrium category of the APBN (state budget plan) balance sheet posture	exogenous	Statistical Year Book of Indonesia
2	CAD	Current Account Deficit	Accounts that measure receipts and expenses arising from transactions of goods and services, income and current transfers with non-residents in the account of the International Balance of Payment	endogenous	Bank Indonesia
3	IR	Domestic Interest Rate	The interest rate on deposits applicable to bank deposits with a period of three months	intervening endogenous	International Financial statistics (IMF)
4	FER	Foreign Exchange Rate	the price of a country's currency (Rupiah) as measured in the currency of the other country (US\$)	intervening endogenous	International Financial statistics (IMF)

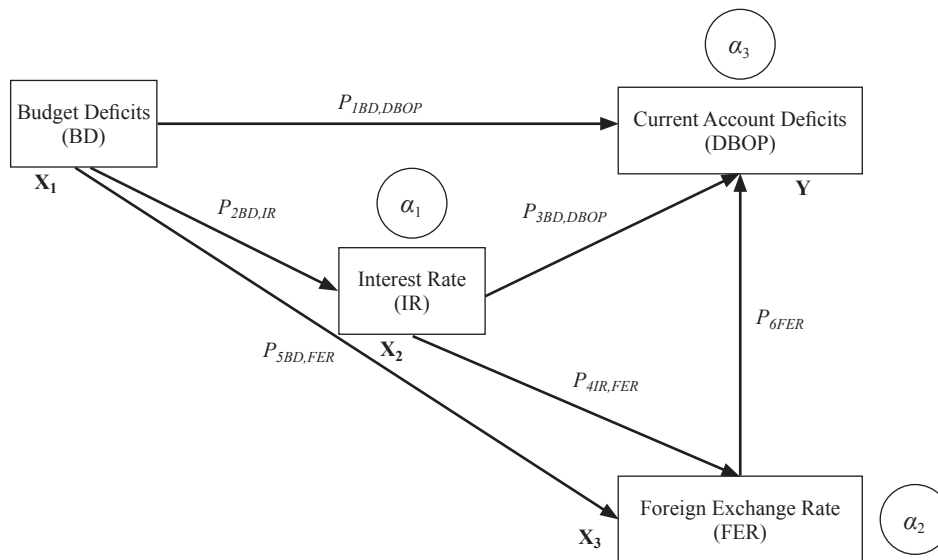


FIGURE 2. Structural Relationships between variables (BD, DBOP, IR and FER)

4. Constructing Hypotheses

The next step is to formulate a research hypothesis.

TABLE 2. Hypotheses Construction

No.	Hypotheses Construction
Direct Effect	
1	Is there any direct relationship between the budget deficits (BD) and the deficit of current account of balance of payment (DBOP)?
Indirect Effect	
2	Is there any indirect relationship between budget deficits (BD), through the interest rate (IR) variable, and the deficit of current account of balance of payment (DBOP)?
3	Is there any indirect relationship between the budget deficit (BD), through the exchange rate (FER) variable, and the deficit of current account of balance of payment (DBOP)?
4	Is there any indirect relationship between budget deficit (BD), through the interest rate (IR) and the exchange rate (FER) variables, and the deficit of current account of balance of payment (DBOP)?

RESULTS AND DISCUSSION

This section examines and demonstrates the effect of mediating variables on the effects of the government budget deficit on the current account deficit. Perspectives of twin deficits as stated by Baharumshah et al. (2006) need to be expanded from bivariate analysis to multivariate by including interest rate and exchange rate as intervening variables. This is supported by Kim and Kim (2006) who states that both variables need to be considered because these variables play an important

role through the transmission mechanism in the effect of budget deficit on current account deficit. Therefore, path analysis is used to test the effect of intervening variables on twin deficits. Path analysis is an extension of multiple linear regression and bivariate analysis involving several exogenous and endogenous variables at the same time allowing testing of intervening variables. In addition, path analysis can also measure the direct and indirect relationships among variables in the model (Ghozali 2009).

CALCULATION RESULT OF PATH COEFFICIENT

Figure 3 illustrates the causal relationship between the variables in this study and shows the path coefficients which are standardized coefficients ('beta'). Standardized regression coefficients show the direct influence of exogenous variables on endogenous variables in the path model. Equation (2) yields a coefficient value of path analysis from BD to IR variables (0.332) and the result of this regression yields the coefficient of determination or R2 (0.11). Thus, the path analysis coefficient showing the error with the symbol  $e_1$  is 0.943. The calculation of the error value is presented in Table 3. Equation (3) calculates the path coefficients of the BD to the FER (-0.044) and from the IR to the FER (0.009) resulting in the R2 (0.457). Equation (4) shows the coefficient value of the path analysis from the BD to the DBOP (0.214), from the IR to the DBOP (-0.230), and from the FER to DBOP (0.424).

ERROR TERMS

Gudono (2011) explains that error term is actually an element of variation of dependent variable (endogen) that can not be explained by all independent variables (exogenous). Therefore, to calculate the error term, the

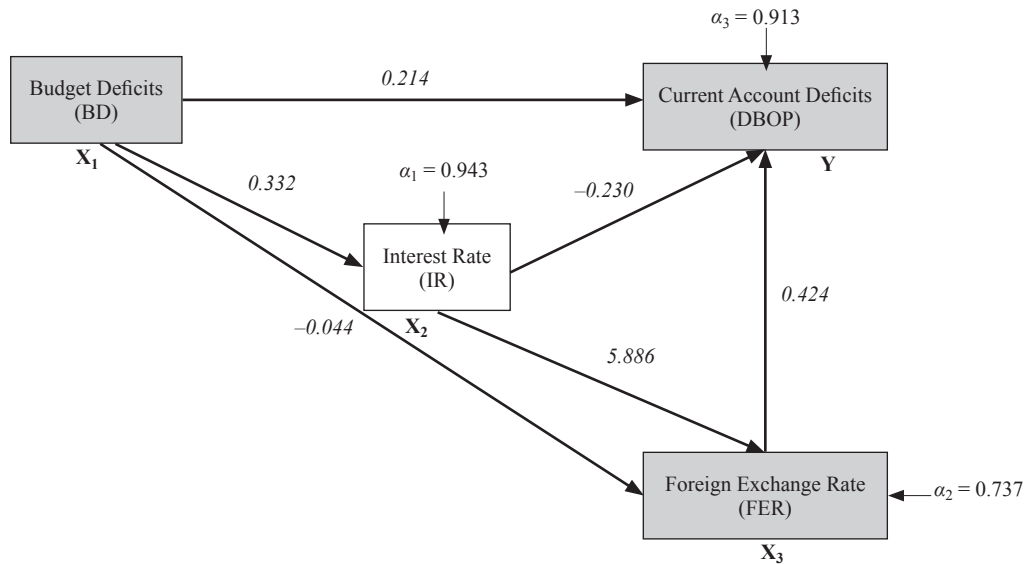


FIGURE 3. Structure of causal relation and Path Analysis coefficient

formula (1-R<sup>2</sup>) needs to be used. The number 1 reflects the total variance and R<sup>2</sup> denotes the variance described by the independent variable.

Table 3 shows the calculation of error term for the path diagram shown in Fig. 3 (R<sup>2</sup> data is obtained from calculating the result of regression from equation 2 to equation 4 using SPSS). Equation 2 gives error term (e<sub>1</sub>) value 0,943; Equation 3 error term (e<sub>2</sub>) value 0.737; and equation 4 error term (e<sub>3</sub>) value 0.913.

TABLE 3. The calculation of error terms value

Error terms	The value of 1 - R <sup>2</sup>	e = √(1 - R <sup>2</sup> )
Equation 1 (ε <sub>1</sub> )	1 - 0.110	√0.89 = 0.943
Equation 2 (ε <sub>2</sub> )	1 - 0.457	√0.543 = 0.737
Equation 3 (ε <sub>3</sub> )	1 - 0.165	√0.835 = 0.913

DIRECT EFFECT, INDIRECT EFFECT AND TOTAL EFFECT

One of the advantages of path analysis is that it can be used to analyze the overall effect of an independent

variable and break it down into direct effects and indirect effects. The direct effect is the magnitude of the change caused by one or more independent variables whose arrows lead directly to the dependent variable. The indirect effect is the magnitude of the change caused by one or more independent variables whose arrows do not lead directly to the dependent variable because they are interfered by one or more other variables. Table 4 illustrates the value of direct effect, indirect effect, and total effect of equation 2 to equation 4.

It can be seen in Table 4 that direct effects can be observed from BD to IR, from BD to FER, and from FER to DBOP. However, IR shows no direct effect to FER (as evidenced by the significance value in Table 5).

HYPOTHESES TEST AND VERIFICATION

Table 5 shows that the hypothesis of a direct relationship between the government budget deficit (BD) and the current account deficit in Indonesia based on the 1969-2015 period data is not proven (BD to DBOP is not significant). These results prove that the twin deficits in Indonesia is not proven or, in other words, high government budget deficit does not cause increasing

TABLE 4. The magnitude of the direct effect and indirect effect

Variable Impact Patterns	Causal Relationships				
	Direct	Through X2	Through X3	Through X2 and X3	Total
BD to IR	0.332				0.332
BD to FER	-0.044				-0.044
BD to DBOP	0.214	0.332 × -0.233 = -0.076	-0.044 × 0.424 = -0.0186	0.332 × 5.886 × 0.424 = 0.828	0.947
IR to DBOP	-0.230				-0.230
IR to FER	5.886				5.886
FER to DBOP	0.424				0.424

TABLE 5. Summary of model parameter estimation results

Model	Standardized coefficient	T value	Sig.	R <sup>2</sup>	Result
<b>Sub-Structure (equation 1)</b>					
<b>IR = <math>\alpha_1 + \alpha_1BD + \alpha_1</math></b>					
BD to IR	0.332	2.36	0.023	0.11	Significant
<b>Sub-Structure 2 (equation 2)</b>					
<b>FER = <math>\alpha_2 + \alpha_2BD + \alpha_2IR + \alpha_2</math></b>					
BD to FER	-0.044	-5.768	0.000	0.457	Significant
IR to FER	5.886	0.079	0.937		Not significant
<b>Sub-structuree (equation 3)</b>					
<b>DBOP = <math>\alpha_3 + \alpha_3BD + \alpha_3IR + \alpha_3FER + \alpha_3</math></b>					
BD to DBOP	0.214	1.094	0.280	0.165	Not significant
IR to DBOP	-0.230	-1.560	0.126		Not significant
FER to DBOP	0.424	0.420	0.030		Significant

deficit in current account balance. However, it can be seen that budget deficit affects the exchange rate and the interest rate. In fact, based on the Mundell-Fleming framework, the path that should be significant is IR to FER to prove the transmission mechanism of the intervening variables role.

It can be proven that conventional Keynesian propositions within the framework of the Mundell-Fleming model in Indonesia by including intervening variables related to current account deficits are not entirely applicable because the budget deficit does indeed lead to a rise in domestic interest rates (BD to IR, significant), but that does not trigger capital inflow to Indonesia. On the other hand, the condition should lead to appreciation of the domestic currency exchange rate, but since the IR to FER test result is not significant, this has no impact on the current account balance deficit (DBOP).

## CONCLUSION

This study aims to examine the causal relationship between budget deficit and deficit on the balance of payments by including intervening variables (interest rates and exchange rates) in Indonesia with data from 1965-2015 period using path analysis approach. Path analysis was applied to detect whether in Indonesia there was twin deficits influenced by interest rate and exchange rate or causality (bivariate) and to know the direct and indirect effect of the variables studied. The variables in this study consist of endogenous variables i.e. current account deficit (DBOP) and exogenous variable of government budget deficit (BD) and two intervening endogen variables namely domestic interest rate (IR) and domestic exchange rate (FER).

This study follows up on recommendations by Abell (1990), Kim and Kim (2006), and Baharumshah et al (2006) to consider and add interest rate and exchange rate

variables in estimating twin deficits as these two variables will help mapping the transmission mechanisms in the twin deficits issue.

The study finds that twin deficits in Indonesia cannot be proven or, in other words, high government budget deficits do not lead to an increase in the current account deficit. In addition, Mundell-Fleming's theory is not fully applicable because the role of interest rate and exchange rates as intervening variables in twin deficits proves to be weak. The study recommends that the Indonesian government manage its budget carefully, by controlling expenditures and keeping the budget deficit level below the 3% limit of GDP as regulated by Law No. 17 of 2003 on State Finances. In addition, the government needs to be aware of the development of the global economy, particularly the risks related to monetary and fiscal policy in the United States (US) and geopolitical pressures in some areas that may affect the overall balance of payments performance. The new Governor of Bank Indonesia stated that within this one month the rupiah currency has depreciated ("Rupiah Exchange Rate Movement", 2018). The condition is triggered by three factors: (1) The Federal Reserve has raised the interest rate and thereby increasing the capital inflow to the US and strengthens the US \$ exchange rate; (2) expansive fiscal policy of the US government by cutting corporate tax rates; and (3) continuing trade wars between the US and China and thereby increasing geopolitical pressure in various regions including Indonesia.

## ACKNOWLEDGEMENT

The first author would like to express gratitude to the Ministry of Research, Technology and Higher Education of the Republic of Indonesia for providing financial support through Doctoral Dissertation Grant Scheme number 109/SP2H/LT/DRPM/2018.

## REFERENCES

- Abell, J.D. 1990. Twin Deficits During The 1980s: An Empirical Investigation. *Journal of Macroeconomics* 12 (1): 81-96.
- Altintas, H. & Taban, S. 2011. Twin Deficit Problem and Feldstein-Horioka Hypothesis in Turkey: ARDL Bound Testing Approach and Investigation of Causality. *International Research Journal of Finance and Economics* 74: 1-45.
- Anwar, K. 2014. Analisis Dampak Defisit Anggaran terhadap Ekonomi Makro di Indonesia. *Jejaring Administrasi Publik* 6(2): 588-595.
- Baharumshah A. Z; Evan L and A.M. Khalid., 2006. Testing Twin Deficits Hypothesis using VARs and Variance Decomposition, *Journal of the Asia Pasific Economy* 11(3): 331-354.
- Bank Indonesia (BI). 2016. *Mengoptimalkan Potensi, Memperkuat Resiliensi*, Laporan Tahunan.
- Baharumshah A.Z & Evan L., 2007. Dynamics of Fiscal and Current Account Deficits in Thailand: An Empirical Investigation, *Journal of Economic Studies* 34(6): 454-475.
- Ball, L. & Mankiw, N.G., 1996. What Do Budget Deficits Do? *National Bureau of Economic Research Working Paper Series*, No. 5263: 95-120.
- Barro, R.J., 1989. The Ricardian Approach to Budget deficits. *Journal of Economic Perspectives* 3(2): 37-54.
- Daly, V. & Siddiki, J.U., 2009. The twin deficits in OECD countries: cointegration analysis with regime shifts. *Applied Economics Letters* 16(11): 1155-1164.
- Datta, K. & Mukhopadhyay, C.K., 2010. Twin Deficits Phenomenon in Maldives: Spectral and Time Domain Analysis of Time Series 9(2): 98-126.
- Gaber, S., 2010. Economic Implications from Deficit Finance, *Working Paper*. <http://eprints.ugd.edu.mk> [Accessed on 26 July 2014]
- Ghozali, I. 2009. *Ekonometrika, Teori, Konsep dan Aplikasi dengan SPSS 17*. Semarang, Badan Penerbit-UNDIP.
- Gudono. 2011. *Analisis Data Multivariat*. Yogyakarta, BPFE.
- Haryono, S. & Wardoyo, P. 2013. *Structural Equation Modelling*. Jakarta: PT. Intermedia Personalia Utama.
- Hashemzadeh, N. & Wilson, L., 2011. The Dynamics of Current Account and Budget Deficits in Selected Countries if the Middle East and North Africa 1(1).
- Islam, M.F., 1998. Brazil's Twin Deficits: An Empirical Examination, *Atlantic Economic Journal* 26(2): 121-128.
- Lau E, Mansor S.A & Puah C, 2010. Revival of Twin Deficits in Asian Crisis-Affected Countries *Economic Issues* 15: 29-50.
- Leachman, L.L. & Bill, F. 2002. Twin Deficits: Apparition or Reality? *Applied Economics* 34: 1121-1132.
- Kasibhala, K.M. et al., 2001. Twin Deficits Revisited. *Journal of Business & Economic Studies* 7(2): 52-63.
- Kim & Kim. 2006. Does Korea have Twin Deficits? *Applied Economics Letters* 13: 675-680.
- Kulkarni, K.G. & Erickson, E.L., 2001. Twin Deficit Revisited: Evidence from India, Pakistan and Mexico. *The Journal of Applied Business Research* 17(2): 97-106.
- Nizar, A.M., 2013. Pengaruh Defisit Anggaran terhadap Defisit Neraca Transaksi Berjalan di Indonesia. [https://mpa.ub.uni-muenchen.de/65609/1/MPRA\\_paper\\_65609.pdf](https://mpa.ub.uni-muenchen.de/65609/1/MPRA_paper_65609.pdf)
- TAS, R. 1986. Theoretical and Empirical Aspects of Budget Deficits, *American Economic Review* 76: 1168-1179.
- Vamvoukas, G.A., 1998. The relationship between budget deficits and money demand: Evidence from a small economy. *Applied Economics* 30: 375-382.
- Widarjono, A., 2010. *Analisis Statistika Multivariat Terapan*, Yogyakarta: UPP STIM YKPN.
- Erni Umami Hasanah\*  
Department of Development Economics  
Faculty of Economics  
Janabadra University  
Jl. T.R Mataram 55-56 Yogyakarta  
INDONESIA  
E-mail: erni\_uh@janabadra.ac.id
- J.J. Sarungu  
1st Building Fakultas Ekonomi dan  
Bisnis Universitas Sebelas Maret  
Jalan Ir. Sutami 36 A Surakarta Central Java Indonesia  
Post code: 57126  
INDONESIA  
E-mail: jj-sarungu@yahoo.com
- Mulyanto  
1st Building Fakultas Ekonomi dan  
Bisnis Universitas Sebelas Maret  
Jalan Ir. Sutami 36 A Surakarta Central Java Indonesia  
Post code: 57126  
INDONESIA  
E-mail: yanto.mul@gmail.com
- A.M. Soesilo  
1st Building Fakultas Ekonomi dan  
Bisnis Universitas Sebelas Maret,  
Jalan Ir. Sutami 36 A Surakarta Central Java Indonesia  
Post code: 57126  
INDONESIA  
E-mail: amsoesilo@fe.uns.ac.id
- Suparjito  
Regional Office of the Directorate General of Treasury  
Jl. Pasific Permai blok D7-D8 Jayapura Papua  
INDONESIA  
E-mail: jito.pdie.uns@gmail.com

\*Corresponding author