THE GOVERNMENT BUDGET DEFICIT AND THE REAL SECTOR IN INDONESIA

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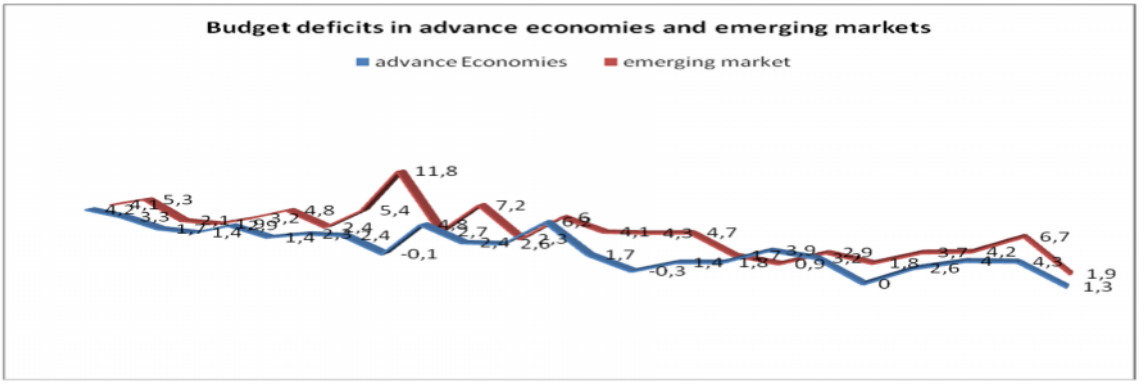
ABSTRACT

The main aims of the study are examine the effect of Indonesian government budget deficit which is financed from internal and external debt: (i) the private sector which is predicted will lead crowding-out of private consumption expenditures; (ii) foreign sector which is related with the trade balance or the twin deficits phenomenon and (iii) The role of domestic interest rate to connect fiscal policy. The sources of data which are used in this study are secondary data. The sources are published by many institutions. One of them is Indonesian Statistic books (Indonesian Bureau of Statistic) from various years. Other sources are International Financial Statistics yearbook, Balance of Payment Statistic yearbook and government financial Statistic yearbook which is published by IMF and Statistik Keuangan Ekonomi Indonesia which is publised by Bank Indonesia. Our dataset consists of annual report from 1985 to 2011. The analysis used simultaneous equations structural framework. The conclusion of the study shows that, (i) there is no crowding-out effect on private consumption. It means the government budget deficit increased with relevance on government spending then it has an impact on the decrease in private consumption level but not significant (ii) There is no twin deficits problem in Indonesia. It means the increasing in government budget deficits does not raise the trade deficits (iii) The domestic interest rate is significant to influence the demand for money. These results highligt the importance of fiscal policies to manage government budget balances and arrage the interest rate related with the real sector.

Keywords: Government budget deficit; crowding-out consumption; twin deficits

INTRODUCTION

Budget deficit policy is still widely applied in developed countries such Europe and America, also in the emerging countries (*emerging market*). Fiscal policy instrument with budget deficits are used to increase economy growth (Gaber, 2010). In addition, the budget deficit policy is intended to improve economy growth and stimulate the government to optimize the budget usage (Tempo, 2011). In the graph below, it will show the development of ratio budget deficit between advance economy countries and middle-income economy countries.



Source : World Economic Surveys- Fiscal Monitor, IMF

Figure 1.1 : Budget deficit (% GDP) of advance economy countries and emerging market in 2015

ISBN: 978-979-3649-77-1

Figure 1.1 shows that the deficit budget policy is still applied in advanced economies countries in 2015. The highest level of budget deficit country is Japan with 6.2 percent from GDP total. Then, the countries which grouped in high budget deficit as follow England 4.8 percent, Spain 4.3 percent, USA 4.2 percent and Portugal 3.9 percent. For the rest of the countries, the budget deficit value turns around 3.2 percent. Swiss is the lowest deficit country, on the other hand Iceland (-0,1 percent) and South Korea (-0,3) are not involved in a budget deficit (called surplus). This condition indicates that countries with high budget deficit pursue high economy growth target. However, it must be done carefully and accurately that the highest of budget deficit will infect on high debt and repayment and interest of the country used to close the budget gap.

Almost same condition also occurs in Emerging market countries which has the highest budget deficit is Egypt with 11.8 percent deficit from GDP total. It refers to the economic condition in Egypt after turbulence among parties. As a result, the government needs more funding to achieve the standard development level. The next rank for highest budget deficit is India with 7.2 percent, Sri Lanka 6.7 percent and Brazil by 5.3 percent.

The phenomenon in Indonesia, the government budget deficit occurred because of the gap between income and government expenditure in the government budget or refers to Peraturan Pemerintah No. 23 tahun 2003 which is the difference between the government income and government expenditure in the same fiscal year. The government can close the gap either by having a debt in the form of Surat Berharga Negara (SBN), internal debt and external debt.

In the table below, it will be described the government budget deficit condition (APBN) of Indonesia started from 2008 until 2013, funding sources and the percentage ratio of the government budget deficit number to Gross Domestic Product (GDP). Total cumulative of budget deficit is not outnumbered from 3% (three percent) of GDP for the year.

Table 1.1: Deficit Development and Financing Budget
year 2008-2013 (trillion rupiah)

Explanation (1)	**2008 (2)**	**2009 (3)**	**2010 (4)**	**2011 (5)**	**2012 (6)**	**2013 (7)**
A. Government Revenue	895	871	992,4	1.169,90	1.358,20	1.529,60
B. Government Expenditure	989,5	1.000,80	1.126,10	1.320,80	1.548,30	1.683,00
C. Budget Deficits	-94,5	-129,8	-133,7	-150,9	-190,1	-153,4
% of GDP	2,1	2,4	2,1	2,1	2,2	1,7
D. Budget Financing	94,5	129,8	133,7	150,8	190,1	153,4
I. Non-Debt	10,2	43,3	25,4	25,5	33,9	8,1
II. Debt	104,7	86,5	108,3	125,3	156,2	161,5
Funding Difference	0	0	0	0	0	0

Note:
APBNP is Anggaran Pendapatan dan Belanja Negara Perubahan
Source : Nota Keuangan dan APBN 2014

Discussing the budget deficit financing through internal debt or external debt will implicate the economy performance. According to McEachern (2009), the impact is related to crowding-out and crowding in problem on private sector investment. The crowding out occurred due to the increasing government outcome which can decrease consumption level and private investment (Boyes and Melvin, 2011).

There is a difference interpretation about crowding-out (Arnold, 2010). Crowding-out means the decreasing of private sector expenditure as a result of government expenditure increasing (ΔG) or the financing purpose of the government budget deficit (McEachern, 2009). Crowding-out also can be observed into IS-LM perspective (Dornbush, 2011), stated that crowding-out occurred when expansive fiscal policy is applied then cause the increasing interest rate that impacts expenditure declining in private sector investment.

Additionally, McEachern (2000) also stated that the existence of expansionary fiscal policy in small open economy will implicate for a twin deficit problem. Terminology twin deficit refers to a long-term relation between the

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budget deficit and trading deficit. The proposition of the budget deficit has a positive effect and significance toward trading deficit called twin deficit. The hypothesis basically shows that the trading deficit is the main cause of highest government budget budget.

THEORETICAL REVIEW

The Crowding-out effect

To influence the aggregate demand (AD) in economic matter, the government can apply fiscal policy. Fiscal policy is a policy that is decided by the government related to government expenditure aspects and taxation. Associated with aggregate demand consists of consumption, investment, net export and government spending, so the government spending on goods and services have a direct impact on the aggregate demand level (Boyes and Melvin, 2011).

Crowds out terminology on private sector refer to the fiscal policy expansion which is applied by the government with budget instrument. The government budget deficit conditions require the government to close the gap by having a debt. The point is that crowds out includes crowding-out private consumption and crowding-out private investment.

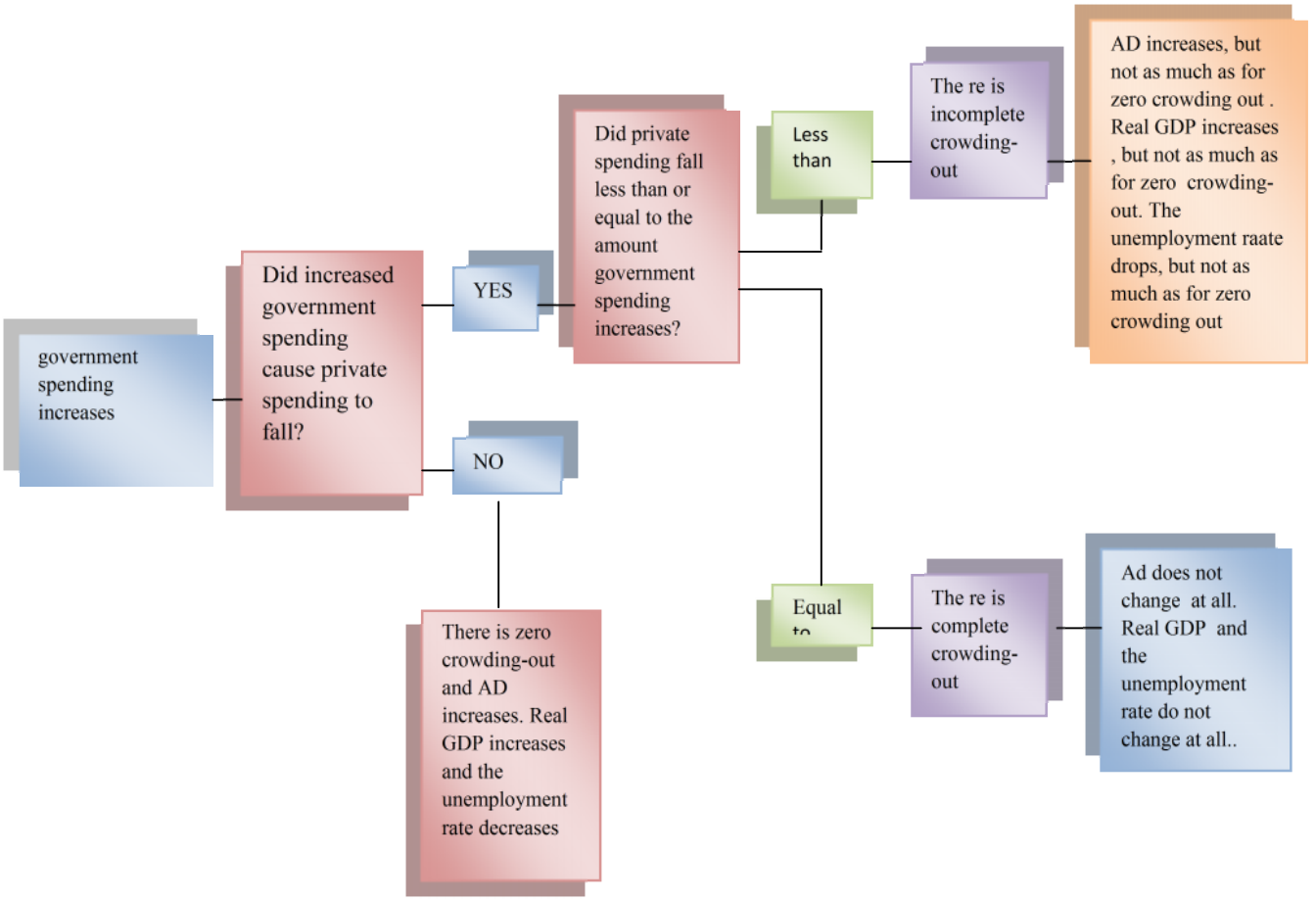

Figure 2.1 : Expansionary fiscal policy (increasing of government spending), crowding-out and real GDP changes and Unemployment level rate
Source : Arnold (2010)

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Crowding-out private consumption

To explain crowding-out private consumption problem will refer on relationship between government spending and private consumption. Based on research Bailey (1971) proposed that there may be a dgree of subtitutability between government spending and private consumption. Therefore, the consumption function is constructed to explain the effect of government debt and private consumption tax (Cardia, 1997). In the paradigm of basic consumer theory (basic theory) states that the consumption function of the individual or private consumption expenditures depends on the level of income which is disposable income (the income after taxes) and other factors are constant (ceteris paribus). If the variables are considered to be constant, it will affect the consumption function that moves aside the early consumption function. The constant variables: the net wealth, price level, interest rate and expectation (McEachern, 2000). According to Abel, et.al (2008) the factors that influence household to have consumption and saving is a current income, expected income (Y_{t+1}), wealth changes, interest rates changes. But another side, Ismail (2010) investigated in Malaysia economy found that the argument occured degree of subtitutability between government spending and private consumption is rejected (Adji, 2006; Zayanderoody, 2009; Siddiki, 2010).

Crowding-out private investment

Parkin (2012) reviews the crowding-out issues from Loanable Funds Market perspective (see also Dadkhah, 2009). According to macroeconomics framework, Loanable Funds Market is a group of financial markets which are united in a single market called Loanable Funds Market. Related with the government budget deficit condition, it will increase the demand for the Loanable Funds. The interest rate will increase and it stimulates people to have a savings and increase private funding offering. However, the high interest rates on the one side reduce investment and fund investment demand to finance investment. So, crowding-out is the tendency of government budget deficits that increase real interest rates and lower investment (Cebula, 1981; Ahmed and Miller, 2000).

Twin Deficits

Theoretically Twin Deficits Hypothesis refers to the Keynesian proportion with the Mundell-Fleming framework (Magazzino, 2012). It confirms that the government's budget deficit results in increasing or additional government expenditure then reduces the current account and the trade surplus or vice versa. In perspective theory, the relation between the government budget deficit and the current account deficit in Balace of Payment (BoP) as the following proportion: rising government budget deficits will increase also the current account deficit only if the rising deficit in government budget deficits reduce people's desire to have savings (Abel et.al, 2008). Few studies investigate the relationship between government budget deficits and trade defcits (Kulkarni and Erickson, 2001; Datta and Mukhopadhyay, 2010; Farahbakhsh and. Poorgholamali, 2011; Gursoy and Ceylan, 2011; Elhendawy, 2014).

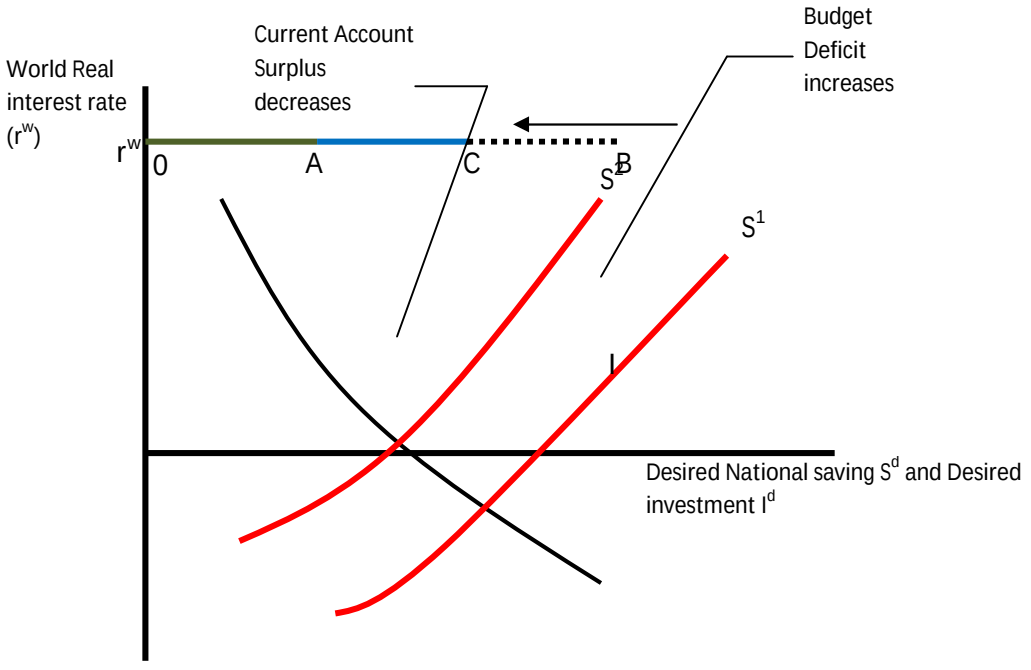

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Figure 2.2 : Government budget deficit and the current account in a small open economy
Source **:** Abel et.al (2008)

RESEARCH METHOD

Variables and Data Sources

The data used in this research is time series secondary data in the period 1985-2011. The composition of data sources include the International Financial Statistics yearbook, Balance of Payment Statistics yearbook and the Government Financial Statistics yearbook published by the IMF. Other data is sourced from Bank Indonesia on the publication '*Statistik Ekonomi Keuangan Indonesia'* and *Laporan Tahunan Bank* Indonesia and the data published by BPS on *Statistik Indonesia* book.

The variables involved in this study categorized as endogenous variables, predetermined variables and instrument variables. PC is Private Consumption, INC is Gross Domestic Product, GE is Government Expenditure, GBF is Government Budget deficit, OWN is Government Debt, CAD is Current account deficit, IM is import, EX is export, YF is Indonesia's external income, IR is domestic interest rate, MS is money supply, INV is investment, FER is foreign exchange rate, IRF is international interest rate and MD is money demand.

Simultaneous Equation Model

Simultaneous equation model in this study is used for one-way relation in the economy cannot be described the actual economy condition. Simultaneous equation model is the number of equations forming a system of equations that would describe the dependence between different variables in equations formed.

Structural Equation

Structural equation model was established to describe a complete structure relation between various economic variables. A structural equation models which is built contains several types of variables that can be categorized as endogenous variables, exogenous variables, and disturbance (error) variables.

Estimation of Simultaneous Equation

The method used to solve the simultaneous equations problem can use two approaches based on instrumental variables principle (IV). First, single equation method or often called limited information method. Second, system method is often called full information method (Ghozali, 2013).

The estimation method in this study is system method and often called full information method. Principally, it is done by setting down in the same time and estimation simultaneously. 3SLS (Three Stage Least Squares) is a system method with one step and the second step using 2SLS and the third step uses Seemingly Unrelated Regression (SUR) and Generalized Least Squares (GLS). 3SLS method application is assumed for equation that has complete specification, non-autocorrelation, contemporaneous correlation and over-identified. 3SLS system method is used because the endogenous variable information in the model and contemporaneous correlation between the equations are not considered into a single equation method so that interpretation is less accurate (Hamzah, 2001).

Model Specifications

Specifications model in this study refers to the Mundell-Fleming model which is assumed as an open economy. Mundell-Fleming model also assumes that the economy as a small open economy with perfect capital mobility (Nanga, 2001). The consequence of perfect capital mobility is that the economy can borrow or lend as much as needed in the world financial market. Therefore, the interest rate in the economy is determined by the world interest rate (Mankie, 2001). Both economists' contributions are including the effect of capital movement between countries in macroeconomic models based on the IS-LM Keynesian framework.

Goods Market Block (IS Curve)

Block I

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On the block I, structural equation is formed to explain the phenomenon or crowding-out consumption. Crowding-out consumption problem can be described by function equations of private consumption and the function of government spending.

Consumption Function:

$PC_t = \alpha_0 + \alpha_1 INC_t + \alpha_2 \mathbf{GE}_t + \alpha_3 \mathbf{OWN}_t + \varepsilon_t$ ..... (3.1)

Function of Government Spending:

$\mathbf{GE}_t = \alpha_0 + \alpha_1 GREV_t + \varepsilon_t$ ..... (3.2)

Function of Government Budget Deficit:

$GBF_t = \alpha_0 + \alpha_1 INC + \alpha_2 INF_t + \alpha_3 FER_t + \varepsilon_t$..... (3.3)

Block II

In block II, structural equation is formed to explain and answer the research hypothesis about twin deficits in the balance of payment.

Function Deficit Balance of Payments

Balance Deficit Function Payment:

$CAD_t = \alpha_0 + \alpha_1 GBF_t + \alpha_2 \mathbf{INV}_t + \varepsilon_t$ ..... (3.4)

Investment Function:

$INV_t = \alpha_0 + \alpha_1 INC_t + \alpha_2 ir_t + \alpha_3 irf_t + \varepsilon_t$ ..... (3.5)

Export Function:

$IX_t = \alpha_0 + \alpha_1 FDI_t + \alpha_2 \mathbf{FER}_t + \alpha_3 YF + \boldsymbol{\varepsilon}_t$ ..... (3. 6)

Function of Exchange Rate (FER):

$\mathbf{FER}_t = \alpha_0 + \alpha_1 IR_t + \alpha 2\ INF + \alpha_3\ FDI + \varepsilon_t$..... ..... (3.7)

Import Function:

$IM_t = \alpha_0 + \alpha_1 INC_t + \alpha_2 \mathbf{FER}_t + \boldsymbol{\varepsilon}_t$ ..... (3.8)

3.3.2 Money Market Blocks (LM curve)

Block III

In the third block, structural equation is formed to explain about the effect of interest rates in the money market which will affect the fluctuations in the real sector.

Money Demand Function:

$MD_t = \alpha_0 + \alpha_1 INC_t + \alpha_2 ir_t + \alpha_3 GBF_t + \alpha_4 INF_t + \alpha_5 GE_t + \varepsilon_t$ ..... (3.9)

Interest Rate Function:

$\mathbf{ir}_t = \alpha_0 + \alpha_1 GE_t + \alpha_2 MS_t + \alpha_3 \mathbf{INF}_t + \varepsilon_t$ ..... (3.10)

Inflation Rate Function:

$\mathbf{INF}_t = \alpha_0 + \alpha_1 INC_t + \boldsymbol{\alpha_2 MS_t} + \alpha_3 GBF_t + \boldsymbol{\alpha_2 MD_t} + \varepsilon_t$..... (3.11)

Identity Equation:

National Income --- (IS)

INC = PC + INV+ GE+ (EX-IM)

Money Market ----(LM)

MD = MS

Instrument variables:

YF = income abroad is proxied by world export earnings reduced by the Indonesia export earnings
FDI = Foreign Direct Investment
Grev = Government Revenue
IRF = The world interest rate proxied by London Interbank Offer Rate (LIBOR)
OWN = government debt from overseas and domestic

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For identification test results according to order condition in a simultaneous equation 3.1 – 3.11 then the results can be displayed in the table below:

Table 3.1
Test identification according to order condition

No	Persamaan	K -k	m - 1	Identifikasi
1.	PC	4	2	*over identfied*
2.	GE	4	0	*over identfied*
3.	GBF	5	3	*over identfied*
4.	CAD	5	2	*over identfied*
5.	INV	4	2	*over identfied*
6.	EX	4	1	*over identfied*
7.	FER	4	2	*over identfied*
8.	IM	5	2	*over identfied*
9.	MD	5	5	*exact identfied*
10.	IR	5	3	*over identfied*
11.	INF	5	4	*over identfied*

Source: Data is proceed from the equation 3.1- 3:11

In Table 3.1, it is described the result of identification 11 structural equation in this study. Out of 11 structural equations, 10 equations identified as over-identified and one equation identified as exact identified. The point is that all structural equations can be estimated by 3SLS method.

RESULTS & DISCUSSION

Based on the research block that has been designed and the basic model of structural equation then it can be described each equation which will show the interaction between the goods market and the money market in the IS-LM Mundell-Fleming model framework.

Table 3.2 The result of simultaneous equations

Equations and Variables	**Coefficients**	**t-statistics**	**Various Diagnostic tests**	
			R^2	**Durbin-Watson**
$PC_t = \square_0 + \square_1 INC_t + \square_2 GE_t + \square_3 OWN_t + \square_t$ (consumption function)				
INC	0,69	4,84	0,98	0,48
GE	-0,8	-0,89		
OWN	-3,48	-3,01		
$GE_t = \square_0 + \square_1 GREV_t + \square_t$ (government expenditure function)				
GREV	0,95	1,12	0,98	1,07

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$GBF_t = \square_0 + \square_1 \ FER + \square_2 INC_t + \square\square\square\square_t + \square_t$ **(Government budget deficit)**				
FER	0,87	0,52	0,64	1,85
INC	-0,011	-4,33		
INF	-341,74	-1,21		
$CAD_t = \square_0 + \square_1 GBF_t + \square_2 INV_t + \square_t$ **(Trade deficit)**				
GBF	0,055	0,43	0,49	2,22
INV	0,0098	2,17		
$INV_t = \square_0 + \square_1 INC_t + \square_2 ir_t + \square_3 irf_t + \square_t$ **(Investment function)**				
INC	0,33	33,6	0,97	0,62
ir	13912,62	4,07		
IRF	19,65	0,002		
$EX_t = \square_0 + \square_{1\ INCt} + \square_2 \ FDI_t + \square_t$ **(Export function)**				
INC	0,001	6	0,57	0,28
FDI	-0,0001	-1,2		
$FER_t = \square_0 + \square_1 IR_t + \square 2\ INF + \square_3\ FDI + \square_t$ **(Foreign Exchange function)**				
ir	-747,02	-5,3	0,25	1,55
INF	320,63	3,85		
FDI	-0,000047	-0,61		
$IM_t = \square_0 + \square_1 INC_t + \square_2 FER_t + \square_t$ **(Import function)**				
INC	0,0198	10,75	0,92	1,24
FER	-0,473	-0,39		
$MD_t = \square_0 + \square_1 INC_t + \square_2 ir_t + \square_3 GBF_t + \square_4 INF_t + \square_5 GE_t + \square_t$ **(Money demand fuction)**				
INC	6,64	6,64	0,98	2,12
IR	-25808,9	-4,86		
GBF	0,84	0,9		
INF	10671,65	4,39		
GE	-0,211	-0,56		
$ir_t = \square_0 + \square_1 GE_t + \square_2 MS_t + \square_3 INF_t + \square_t$ **(Domestic interest rate function)**				

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GE	0,000025	1,83	0,56	2,19
MS	-0,000015	-0,47		
INF	0,468	5,05		
$INF_t = \alpha_0 + \alpha_1 INC_t + \alpha_2 MS_t + \alpha_3 GBF_t + \alpha_2 MD_t + \varepsilon_t$ (Inflation function)				
INC	0,0003	1,33	-52,33	2,4
MS	0,0015	1,6		
GBF	0,0057	1,61		
MD	-0,0021	-1,51		

The estimation results indicate that the level of private consumption (PC) is influenced by two significant variables which are national income variable (INC) which has significantly affect the level of household consumption into critical level of 5% with the value ρ 0,000 and the government debt (OWN) has a significant negative effect to private consumption into critical level of 5% with the value ρ 0,0029. For the government expenditure variable (GE), it effects negative but not significant.

Based on the data processing results applying Eviews show that government total revenue variables (Grev) effect on positive significant on government expenditures to the critical level of 5% indicated by the value of ρ 0.0000.

3SLS output function of the government budget deficit (GBF) shows that the variables that significantly affect government budget deficit (GBF) are the level of national income by GDP at current price. National income variable (INC) was significantly negative, up to 5% of critical level with value of ρ 0,000. The interpretation is the higher national income rate of a country will have implications for the lower levels of the government budget deficit.

Estimation Results of balance payments deficit function (CAD) show that the variables significantly affect the level of inflation (INF). Inflation rate variable impacts significantly negative to the critical value of 5% with the value of ρ 0,030. For government budget deficit variable (GBF) does not significantly affect the current account deficit.

The test results demonstrate the significant variables affect investment is national income (INC) and the domestic interest rate (IR). National income level variable (INC) affects a significant positive investment up to the critical value of 5% to the value of ρ 0.0000. For the variable domestic interest rates influence investment rate is a significant positive to the critical value of up to 5% to value of ρ 0.0001. For world interest rates variable (IRF) does not significantly affect the level of investment in Indonesia.

The estimation results of the export function of variables that significantly affect the level of national income (INC). The significance level with a positive direction is up to the critical value to 5% to the value of ρ at 0.0000; while for the foreign direct investment variable levels (FDI) are not significantly affected on the of Indonesia export level.

Based on 3SLS output function of the exchange rate (FER) is a significant variable which affects the domestic interest rate (IR) and the inflation rate (INF). For domestic interest rates variable (IR) affects significant negative to the critical value up to 5% by value of ρ 0.0000. For inflation variable rate (INF) affects significant negative to the critical value up to 5% by value of ρ 0.0001; while the other variables of foreign direct investment (FDI) do not significantly affect the value of rupiah against the US $.

Estimate result for the import equation, the variables that significantly affect the level of national income (INC) to the critical value up to 5% by value of ρ at 0.0000. While the rupiah exchange rate variable does not significantly affect the import of Indonesia.

For the money demand equation (MD), the variable significantly positive affects the money demand is the level of national income (INC) with the criteria of critical value to 5% to the value of ρ 0.0000. The next significant negative variables affect the money demand is the interest rate (IR) with the criteria of the critical value approximately 5% to the value of ρ 0.0000. The third variable is significantly positive affect the money demand is the inflation rate (INF) with the criteria of the critical value approximately 5% to the value of ρ 0.0000. While the government budget deficit (GBF) and government spending (GE) do not significantly affect the money demand for Indonesian people.

Based on 3SLS model estimation, the variables are significantly affect domestic interest rates (IR) which is an amount of money supply variable (MS) and the inflation rate (INF). The amount of money supply variable (MS) significantly negative affect on the domestic interest rate (IR) with critical value up to 5% by value of ρ 0.014. For inflation variable rate (INF) is a significantly positive affect on the level of domestic interest rates to the critical value up to 5% and the value of ρ 0.0000.

ISBN: 978-979-3649-77-1

Based on the testing using 3SLS methods, all of the variables do not affect significantly to the rate of inflation (INF). In addition, because the value of R2 is negative (-55.33), it can be concluded that the inflation rate equation cannot be used as a research reference due to invalid.

CONCLUSIONS

The empirical results of this study show that the budget deficit increased with relevance on government spending will increase too. Then, it has an impact on the decrease in private consumption level but not significant. It means that crowding-out of private consumption sector is rejected.

Government budget deficit Policy (GBF) does not directly effect on the trade balance deficit (CAD) in Indonesian international balance of payments (BoP). It means that the increase in GBF does not lead to increased domestic interest rates (IR) so there are no capital inflows and the appreciation of the rupiah.

On the money market (LM curve block) on money demand equation (MD) shows that the variables that significantly affect is the domestic interest rate (IR). This condition indicates that the monetary policy instrument through channel interest rate is still effective.

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ISBN: 978-979-3649-77-1