ANALYSIS GLOBAL BUSINESS CYCLE AND FISCAL RISKS : AN EMPIRICAL STUDY OF ASEAN-5

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ABSTRACT

This thesis aims to analyze global business cycle and fiscal risk in ASEAN-5 which is expected to be explained by several explanatory variables including primary balance/GDP, oil price, economic growth, output gap, and LIBOR interest rate. More spesifically, this thesis focus on the effect of oil price with Debt/GDP is a benchmark of fiscal risk. This research used panel data of ASEAN-5 period 2000-2014. Prior to conducting the analysis, this study looked at the correlation coefficients between the cycle components (output gap) and the primary balance per GDP to identify the fiscal policy character in each country. The cycle component is calculated by using the difference between original series and trend components using Hodrick Prescott Filter. The fiscal policy characteristics of Indonesia, Malaysia, Phillipines, and Thailand apply procyclical policies while singapore implements countercyclical fiscal policy.

The results of the analysis conducted using the fixed effect method show the global business cycle and world oil price fluctuations affect the fiscal risks. The results of this study indicate when the business cycle in a state of booming domestic governments tend to increase government spending and create fiscal risks. Meanwhile, the LIBOR and Primary Balance rate per GDP which is a variable derivative of the fiscal suistanability concept has an effect on fiscal risk. However, economic growth has no effect because the current debt is the tax burden in the future.

***Keywords**: Global Business Cycle, World Oil Price, Fiscal Risk, Hodrick-Prescott Filter, Fixed Effect Method*

***JEL Classification**: F44, F68, H30*

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INTRODUCTION

The fiscal risks in ASEAN-5 marked the fluctuating condition of the economy, could rise up to the peak at some point followed by a degradation afterwards. Hemming (2000), fiscal risk is when governments fail to coordinate between overall fiscal policies. One indicator of risk due to the failure of government coordination is the presence of risk and uncertainty in the implementation of fiscal policy. Uncertainty in budget execution leads to fiscal risks and will lead to fiscal vulnerability.

The fluctuation of the global business cycle is closely related to the global commodity prices, one of them is the world oil price. Suharsih (2013) claims that the turning point of the world oil price happened in 1999 after the oil production gradually degradates. The attacks on the WTC in 2001 started the increase of the world's oil price, followed by United State's invasion to Iraq in 2003 which strengthened the world's economy, causing the world's oil demand to increase and the decline on the oil reserve which limited the stock. The situation of London trade worsened in 2003, the price of Brent oil rises up to US$ 57.68 per barrel, which is the highest since 1998.

This is followed by the increase on the price of Dubai Crude Oil, which reached US$ 49.35 per barrel, and West Texas Intermediate's, which reached US$ 56.59 per barrel. The global crisis in 2008, which was caused by the bankruptcy of several US financial institutions, pushed the world oil price to be as high as US$ 119.90 per barrel. The weakening of US dollar value and the instability of Middle East nations in 2011 lifted the price even higher. Another factor which causes the problem is high demand of oil in the Asian countries, along with equable economic growth. By the end of 2014, the oil price started to decrease following the market's ability to create a new balance and to fulfill the importers' demands.

The situation of global economy caused by the increase of world oil price and the open economy system implemented by the countries in ASEAN-5 have an influence on the external shock which is transmitted into the domestic economy condition. Generally, the increase of the world oil price will create a *spillover effect* which will affect the production, consumption, and investation. In their study, Jha, Quising, and Camingue (2009) claims that the world oil price volatility will affect the government's budget. The government will increase the budget to balance the domestic oil consumption. If the policy continues, it will cause a huge fiscal deficit. Thus, the big pressure on the government's budget will create a

fiscal risk. The government's intervention on the impact of the world oil price to the fluctuation of global business cycle will be needed to develop Keynes' theory. The government will provide a policy to respond the price (increase) and to manage the fiscal risks. The policy could be *countercyclical*, *procyclical*, or *acyclical*.

This research is intended to analyze the influence of the business cycle on the fiscal risk in the ASEAN-5 nations in the period of 2000-2014 and to analyze the influence of world oil price on the fiscal risks in the ASEAN-5 nations in the period of 2000-2014.

LITERATURE REVIEW

Real Business Cycle

The Real Business Cycle Theories is presented by several economic figures, one of them is Keynes which argues that the business cycle in the economy is determined by the real shock. The real shock is the shock which is caused by the scientific and technological advances, term of trade, tax policies and the shock caused by a change in a production process. One example is the the increase of the oil prices which leads to a change in the importers' term of trade. The production decrease caused by the increase in one input results in the output decrease in those nations attributed to the supply shock.

Kaminsky, Reinhart and Vegh (2005) account the conceptual framework in the business cycle and its relation to the character of the government's policy, that is, procyclical, countercyclical, and acyclical to the fiscal policy with expenditure component (G) and tax (T). The cyclicality of the fiscal policy and the global business cycle correlation to the primary balance can be seen in table 2.1.

Table 2.1

The Fiscal Policy Cyclicality and The Global Business Correlation to The Primary Balance

Policy Characteristics	(G)	(T)
Countercyclical	-	+
Procyclical	+	-
Acyclical	0	0

Source : Kaminsky, Reinhart, dan Vegh (2005)

The fiscal policy is countercyclical when the government's expenditure is lower while the revenue is higher on the expansion. We can say that the countercyclical policy tends to stabilize the economy's business cycle. The fiscal policy is procyclical when the expenditure is higher and the revenue is lower on the expansion. This policy tends to strengthen the economy's business cycle. Lastly, the fiscal policy is acyclical when both the expenditure and revenue have a constant value in the cycle. Compared to the other two, this policy does not strengthen nor stabilize the business cycle.

New Keynesian Phillips Curve

New Keynesian Phillips Curve (NKPC) is the development of the business cycle theory. The New Keynesian presents the correlation between the real activities which are realized in the form of output gap and inflation. Mankiw (2007) explains that the Phillips Curve shows how the inflation (π) is determined by the expected inflation (π_e), the number of the natural rate of unemployment (u*) to the actual unemployment rate (u_t), and the supply shocks (v). In general, the concept can be written down in the following equation:

$$\pi = \pi_e + (u^* - u_t) + v \quad \text{..... (2.1)}$$

From the equation above we could see that the expected inflation is often times influenced by the previous period's inflation. The Phillips Curve also shows that the unemployment cycle is able to push the inflation up and down. The low rate of unemployment will the inflation up. This is called the demand-pull inflation. Besides, inflation is also caused by the supply shock's ups and downs. The supply shock which worsens, such as the increase on world oil price in the 1970's, shows a positive value (v) causing the inflation to rise. This condition is called cost push inflation. In this context, we can assume the markup pricing will happen. It is the condition where the price of goods is determined by the company based on the labor cost. The price of goods will increase along with the rise in the labor cost. Such condition is formulated into the following equation:

$$\pi = \pi_e + \beta(y_t - y*_t) + v \quad \text{..... (2.2)}$$

Where (yt – yt*) is the output gap which is the difference between actual and potential gap, and v is the supply shock factor.

The pressure of inflation from the demand side is explained through the output gap variable, which is the gap between actual and potential output (in full employment). In the condition where the actual output is above the potential output (positive output gap), the gap raise depicts the increase in inflation pressure.

Risk and Uncertainty

Risk can be defined as disadvantageous events. Another definition which is oftenly used in investment analysis is the possibility where the outcome diverges from the one expected. Uncertainty is experienced by business entities such as companies or one nation's economy. In performing its functions, a country faces a serious problem of unstability which eventually leads to some risks. One of them is a failure in fiscal policy implementation because of the economy crisis due to the market's uncertainty, causing several investigators from the World Bank, pioneered by Brixi, Hana, and Shick (2003), to put the risk and uncertainty into the fiscal policy analysis, particularly budgeting.

The fiscal risk refers to fiscal balance sheet and public debt. The diversion often happens because the budget is based on the assumption that the budgeting itself may not succeed. This diversion is usually small and manageable, but there are other factors which can change and make an unexpected burden in the fiscal balance sheet, for instance a severe financial crisis which increases the public debt.

Solvency vs Suistanability

Croce and Juan-Ramon (2003) discusses the differences between solvency and sustainability. According to them, a set of policy is called unsustainable when the policy triggers *insolvency* (a condition where the upcoming income and expenditure will not meet the inter-temporal budgeting constraints). However, they argue that solvency is a necessary condition to keep the sustainability and an implication in the future whether the government is able to keep the balance in budgeting without harming the solvency, The policy is called sustainable when the loaner is expected to sustainably pay the loan by fulfilling the installment and interest at once in order to minimize the disturbance in the sustainability of income and expenditure.

Based on the definitions above, we can say that sustainability is a condition where the following items are fulfilled:

- A nation is able to meet the budgeting constraints in a certain period without having a default or adding a huge amount of debt.
- A nation cannot increase debt knowing a significant adjustment will be made in order to pay the obligations.

From the definitions above, we discover that fiscal sustainability has two dimensions, the current (current period budget constraint) and the future (inter-temporal budget constraint).

Fiscal Sustainability

The definition of fiscal sustainability has been debatable ever since the first time it was introduced. In the economics literatures, we can never find the same definition of fiscal sustainability. In an analogy, a nation's policy will have a fiscal sustainability when the government is able to meet the budgeting constraints. The government's budgeting constraints can be defined in the following equation:

$$(M_t - M_{t-1}) + (D_t - D_{t-1}) = rDt + (Gt - Rt) \quad \text{.....(2.3)}$$

G_t : expenditure in year t

R_t : income in year t

$G_t - R_t$: primary balance (the deficit or surplus of the government's budget in year t, otside the payment of national debt interest)

r : interest rate

D_{t-n} : government's outstanding bonds in the previous year (t-n)

D_t : government's outstanding bonds in year t.

M_t : additional seignorage

Equation 2.3 can be interpreted as follows:

- The left side of the equation shows the amount of the current budget deficit ($G_t - T_t$), which obviously has to be funded, and the component of interest payment and the previous year's debt to be paid.
- The right side of the equation shows how to fund it. Firstly, the government can apply for a debt in the amount of D_t through domestic bonds or foreign loans. Secondly, the government can fund it by printing money from the Central Bank.

The model of fiscal sustainability usually neglects the Central Bank's role, hence changing the equation to be as follows:

$$D_t - D_{t-1} = rD_t + PB_t$$

Where D_t is the government's debt stock at the end of period t, r_t is the interest payment, and pb_t is the primary balance. All item is measured in domestic currency. The constraint's equation can be written down into the following formula:

$$D_t = (1 + n_{t-1})\, D_{t-1} - PB_t \quad \text{.....(2.16)}$$

The equation is based on a convention. It is written in the following form of stock and flow:

$$d_t = (r - g)\, d_{t-1} - pb_t \quad \text{.....(2.17)}$$

$$d_t = D_t/(P_t y_t)$$

$$pb_t = PB_t/(P_t y_t)$$

The equation above shows the primary deficit. Futhermore, the fiscal risk measurement uses the following debt/GDP ratio indicator:

$$(r\text{-}g)\, d_{t-1} = d_t - pb_t$$

$$d_t = \frac{1}{(r-g)}\, d_{t-1} - pb_t \quad \text{.....(2.18)}$$

The equation above shows the debt's position to GDP which means showing the debt sustainability rate which can be used to measure fiscal sustainability rate. In addition to that, the equation is also a model to project the upcoming period's sustainability level.

METHODOLOGY

Research Variable

The research location is ASEAN-5 in the period of 2000-2014. In this research, the variables used consist of dependent and independent variables. The dependent variable is Debt per GDP, while the independent one includes the Output Gap, World Oil Price, economic growth, LIBOR Interest Rate, and Primary Balance per GDP.

The population in this research is the ASEAN nations. We choose the ASEAN-5 nations as samples because in the World Economic Outlook published by IMF, the samples have similar characteristics. The nations included as the object of research are Indonesia, Malaysia, Singapore, Thailand, and Phillipines. Meanwhile, the data of the ASEAN-5 nations in year 2000-2014 is chosen to observe the influence of the global business cycle to the fiscal risks.

The data source is taken from four institutions, namely, International Energy Agency (IEA), British Petroleum, World Bank and International Monetary Fund (IMF). This research uses the annual data which involves the nations in the ASEAN-5. The researcher picked the year 2000 because, according to IEA observers, the turning point of the world oil price is in the year 1999. After that, the world oil production kept decreasing before the balance in 2014.

The Methods of Analysis

Hodrick-Prescott Filter

The Hodrick-Prescott Filter is used to obtain the estimation of long-term trends. The HP Filter aims to decompose the originat serie (y_t) to become the trend component (s_t) and cycle component (c_t). The difference betweel the original series and the trend component equals the cycle component

$y_t = s_t + c_t$

$c_t = y_t - s_t$

This method is a two-sided linear filter (backward-forward) which is used to calculate the smoothed-trend-series from the original series (y_t) by minimizing the loss function (L), which is a variant of the cycle component with the trend component derivative.

min L = $\sum_{t=1}^{T}(yt - st)^2 \ \lambda \sum_{t=2}^{T-1}[(s_{t+1} - s_t) - (s_t - s_{t-1})]^2$

Research parameter (λ) controls the smoothness of series st, the bigger the value, the smoother it (st) evolves. If it reaches infinite value, the *st* will approach the linear trend pattern. Hordrick-Prescott recommend λ = 14400 for a monthly data, λ = 1600 for a quarterly data, and $\lambda = 100$ for a yearly data (Hodrick &Prescott,1997).

Fixed Effect Method

The model that is used to analyze the data in this research is a panel data with fixed effect approach. Here is a derivation of the fixed effect method equation:

$$\mathbf{Y_{it} = \alpha_0 + \beta_1 X_{it} + \mu_{it}} \quad \textbf{.....(3.4)}$$

Error (μ) in the equation (1) contains two components, namely *unobserved individual spesific* (ε_i) *dan komponen error* (ω_{it}).

$$\mathbf{\mu_{it} = \varepsilon_i + \omega_{it}} \quad \textbf{.....(3.5)}$$

Unobserved individual spesific (ε_i) is a component in (3.5) which is not observed. The estimation of equation (3.5) depends on how we deal with this component, either we choose *Random Effect Method* or *Fixed Effect Method (FEM). Random Effect Method (REM)* treats the component *Unobserved Individual Spesific* (ε_i) as a fixed effect. The *Fixed Effect Method* assumes that the coefficient of the independent variables is indifferent

to each inter-temporal individual, hence the *Fixed Effect* can be written down into the following equation:

$Y_{it} = \alpha_{0+} \beta X_{it} + \omega_{it}$

This research aims to see the influence of global business cycle to the fiscal risks using the Fixed Effect Method. This model combines the time series with the cross section. The panel data is able to explain the observation in the five ASEAN nations and the changing of the observed variables situation. Therefore, the model of this research is written down as follows:

$Debt/GDP_{it} = \alpha_i + \alpha_1 OG_t + \alpha_2 OILP_t + \alpha_3 LIBOR_t + \alpha_4 GROWTH_{it} + \alpha_5 PB/GDP_{it} + \mu_{it}$

.....(3.6)

Persamaan 3.6 menjelaskan model awal komponen error (μ) dengan *Fixed Effect Method.*

$Debt/GDP_{it} = \alpha_i + \alpha_1 OG_t + \alpha_2 OILP_t + \alpha_3 LIBOR_t + \alpha_4 GROWTH_{it} + \alpha_5 PB/GDP_{it} + \varepsilon_i + \omega_{it}$

.....(3.7)

Equation 3.7 explains in the Fixed Effect Method that the error (μ) contains two components, namely:

ε_i : *unobserved individual spesific*

ω_{it} : error component

Fixed Effect Method treats component *unobserved individual spesific* affects the intercept, so the equation 3.8 can be written as follows:

$$\mathbf{Debt/GDP_{it} = \alpha_i + \alpha_1 OG_t + \alpha_2 OILP_t + \alpha_3 LIBOR_t + \alpha_4 GROWTH_{it} + \alpha_5 PB/GDP_{it} + \omega_{it}}$$

.....(3.8)

i	: *cross section*
t	: *time-series*
α_o	: *intercept*
$\alpha_{1,2..n}$	: independent variable coefficient
$OILP_t$	: World Oil Price
OG_t	: Output Gap
$LIBOR_t$	: *London Interbank Offered Rate*
$GROWTH_{it}$	: Economic Growth
PB/GDP_{it}	: Primary Balance per GDP
DEBT/GDP	: Debt per GDP
ω_{it}	: *error*

RESULT AND DISCUSSION

Classical assumption test is used to examine the validity of regression model in order to fulfill rule BLUE *(Best Linear Unbiased Estimator).* This condition will happen if the data is free from data "diseases", among others, normality, autocorrelation, heteroscedacity, and multicollinearity. Table 4.2 summarizes the result of the classical assumption test.

Table 4. 1

The Result of The Classical Assumption Test

Heteroscedacity	Autocorrelation	Normality	Multicollinearity
No	**Yes**	**Normal**	**No**

Source :Eviews data calculation results, processed

Global Business Cycle and The Characteristics of Fiscal Policy

We can identify the fiscal policy of each ASEAN-5 nation by looking at the coefficient of correlation between the actual output gap and the Primary Balance per GDP. The global business cycle is obtained from the calculation between the actual output gap and the potential output. The output gap is obtained from Hodrick-Prescott Filter calculation.

Kemisky, Reinhart and Vegh (2004) explains that the country will apply the procyclical policy when the coefficient of output gap correlation and the primary balance per GDP is negative. Meanwhile, when the coefficient of output gap correlation and Debt per GDP is positive, the country will apply countercyclical policy. Table 4.4 shows the coefficient of output gap correlation and primary balance.

Table 4. 2

The Characteristics of Fiscal Policy

Country	Coefficient	Fiscal Policy Characteristics
Indonesia	**-0.339235**	**Procyclical**
Malaysia	**-0.623835**	**Procyclical**
Philippines	**-0.709684**	**Procyclical**
Thailand	**-0.262243**	**Procyclical**
Singapore	**0.747401**	**Countercyclical**
ASEAN-5	**0.824718**	**Countercyclical**

Source :Eviews data calculation results, processed

The positive result of global business cycle and Primary Balance per GDP correlation indicates that the domestic economy applying the procyclical fiscal policy are Indonesia, Malaysia, Philippines, and Thailand. The negative result of global business cycle and Primary Balance per GDP correlation indicates that domestic economy applying countercyclical fiscal policy is Singapore. On the average, the ASEAN-5's output gap has a negative correlation to the Primary Balance per GDP.

A countercyclical fiscal policy is applied when the economy is in *boom* condition. In such condition, the government will take a role in controlling domestic economy when the global economy is overheating, which increases the inflation. On the contrary, when the global economy is having a recession, marked by the decrease in aggregate demand (consumption and investment), the government tend to push the economy by increasing their expenditure in order to boost economic activities. A procyclical fiscal policy is applied when the global economy is in *boom* condition. The government will take expansive policy by lowering the tax, increasing expenditure, and encouraging investments so the economy will continue to improve.

The Result of Fixed Effect Method Analysis

The data analysis is performed using Fixed Effect Method (FEM). The data processed is a panel data with ASEAN-5 nations (Indonesia, Malaysia, Philippines, Thailand, and Singapore) as the object of research in the period of 2000-2014. This analysis is intended to observe the effect of global business cycle and fiscal risks, which consists of output gap, world oil price, economic growth, interest rate (LIBOR), primary balance per GDP and debt per GDP which indicates fiscal risks.

Table 4. 3

Estimation of Fixed Effect Method Panel Regression

Variable	Coefficient	Std Error	t-statistics	Prob
OILP	0.1375	0.0529	2.5945	0.0119
OG	-2.9870	0.7360	-4.0580	0.0001
LIBOR	0.9731	0.4804	2.0257	0.0472
PB	-0.8579	0.1802	-4.7610	0.0000
GROWTH	-0.2357	0.1793	-1.3145	0.1937
_IND –C	-19.2349	4.1364	8.2090	0.0000
_MLY –C	-12.4593	3.1067	12.7264	0.0000
_FLP –C	-1.0485	2.3727	21.7490	0.0000

_THAI –C	-12.1868	2.2468	18.2739	0.0000
_SNG –C	44.92959	2.5437	40.1880	0.0000
F-statistic	486.969			
Prob(F)	0.000000			
R-Square	0.986495			

Source: Eviews data calculation results, processed

Based on the estimation of Fixed Effect Method, we can see that all independent variable affects the fiscal risk. The Oil Price has a positive correlation to the fiscal risk (Debt per GDP). The factor which supports the result is the fact that the majority of ASEAN-5 members are world oil importers which are very influential to the fluctuation of world oil price. Therefore, this research is in line with Suharsih (2013) which states that the increase in world oil price will lead to fiscal risks. These risks are caused by fuel and electricity subsidies and *DBH Migas*. Shikha Jha, Pilipinas Quising, and Shiela Camingue (2009) claims that the fluctuation of oil prices has an impact to the government's expenditure because of the amount of subsidy to keep the balance in domestic consumption. Furthermore, the respond to the oil price increase and macro-economy uncertainty will create a fiscal burden and contribute to the Debt per GDP.

Next is the variables which come from the concept of fiscal sustainability. The variables include LIBOR interest rate, primary balance and economic growth. The LIBOR interest rate has a positive correlation to the fiscal policy (Debt per GDP). This result is consistent to the initial hypothesis, which means the interest rate increases along with the growth of the fiscal risk (Debt per GDP). The primary balance has a negative correlation to the fiscal risk (Debt per GDP). This result is consistent to our first hypothesis which stated that if the balance shows a positive number (surplus), it will reduce the burden of government's budget or it will cause a decline in the fiscal risk (Debt per GDP). Otherwise, if the primary balance shows a negative number (deficit), it will cause an increase in the burden of government's budget or the fiscal risk (Debt per GDP). Thefore, this research is in line with Makin (2005) which states that the pre-crisis and post-crisis balance drastically decrease. This will lead to the condition where the government's expenditure exceeds the income, hence causing a fiscal risk in the ASEAN countries.

The economic growth has a negative correlation to the fiscal risk (Debt per GDP), it means if the economic growth increases, it will decrease the fiscal risk (Debt per GDP). However, this will not give a significant impact to the Debt per GDP. This does not

correspond with the initial hypothesis where the previous research had explained that there is no connection between the economic growth and Debt per GDP. Bitante (2013) states that the tax reduction by the government causes a deficit in the budget, implying the tax (amount) is applied in the future. A rational consumer realizes that the future tax has a present value which equals the debt (Seater, 1993).

CONCLUSION

Based on the research on the global business cycle and fiscal risk mechanism, the research would like to present the following conclusions:

1. The correlation between the business cycle with the Debt per GDP can be seen from the character of each ASEAN-5 nation. Indonesia, Philippines, Malaysia, and Thailand applied the procyclical policy while Singapore apply the countercyclical policy. This explains how Singapore tend to apply an expansive policy when the global economy is in a boom condition. Indonesia, Philippines, Malaysia and Thailand tend to apply costractive policy during the boom condition.
2. The fiscal risk in the ASEAN-5 nations is sensitive to the impact of the global business cycle. It can be seen from the output gap and world oil price variables. The increase in the oil price will enhance the fiscal risk. The fiscal risk can be measured by the Debt per GDP which is a derivation of fiscal sustainability theory which is influenced by the nation's fiscal capacity, measured by the primary balance per GDP, interest rate and economic growth. However, the economic growth of the ASEAN-5 nations does not influence the Debt per GDP because the debt made in the present time will be a tax increase in the future. In other words, the debt will not influence the economic growth.

Weakness

The researchers have tried to have this research done in a scientific procedure. However, it still weak in some ways. The observation is lacking time since the time period is only 15 years, starting from 2000 to 2014. Moreover, the researchers also lacked of up-to-date journals discussing about the global business cycle and the fiscal risk.

Suggestions

After finishing the analysis in this research, the researchers have several suggestions which can be used as an input for the future researches. The researchers hope that the next researches will have a longer time period so that we can see the result of the similar researches within a longer period and how they correlate with the theory. Furthermore, a variation in terms of research method will also develop the theoretical framework in the next researches because the use of a different method will lead to different objectives. Lastly, the researchers expect the future researchers to add references and indicators in performing the fiscal risk measurement.

REFERENCE LIST

Abimanyu, A. (2011). *Refleksi dan Gagasan Kebijakan Fiskal.* Jakarta: Gramedia.

Bittante, S. (2013). What is "Ricardian Equivalence" and when can it fail? *Norwich Economics Paper. Vol 7*.

Blanchard, & Jean, O. (1990). Sugestions for a new set fiscal indicators. *Working papers (Organisation for ECinomic Co-operation and Development. Departement of Economics and Statistics) no.79*.

Brixi, H. P., & Mody, A. (2002). Dealing with Government Fiscal Risk : An Overview. *Government at Risk*, 21-45.

Brixie, Polackova Hana, and Allan Shick. (2003). Government at Risk, Contingent Liabilities and Fiscal Risk. *Government at Risk*.

Buiter, & H, W. (1995). Measuring Fiscal Suistanability. *International Monetary Fund*.

Cohen, D., & Follete, G. (2000). The Automatic Fiscal Stabilizer. *Federal Reserve Bank of New York Economic Policy Review*, 35-68.

Cuddington, J. T. (1996). Analysing The Suistanability of Fiscal Rificits in Developing Countries. *Georgetown University*.

Damodar N. Gujarati dan Dawn C. Porter. (2013). *Dasar-dasar Ekonometrika Buku 2 Terjemahan. Edisi 5.* Jakarta: Salamba Empat.

Evaraert, G., Fouad, M., Martin, E., & Velloso, R. (2009). *Disclosing Fiscal Risk in the Post-Crisis World.* Washington: International Monetary Fund.

Graciela L. Kaminsky, Carmen M. Reinhart, Carlos A.Vegh. (2005). When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies. *NBER Macroeconmics Annual 2004, Volume 19*, 73.

Greetje Evaraert, M. F. (2009). *Disclosing Fiscal Risk in the Post-Crisis World.* Washington: International Monetary Fund.

Gujarati, D. N., & Porter, D. C. (2013). *Dasar-Dasar Ekonometrika Buku 1 Terjemahan. Edisi 5.* Jakarta: Salambe Empat.

Gujarati, D. N., & Porter, D. C. (2013). *Dasar-dasar Ekonometrika Buku 2 Terjemahan. Edisi 5.* Jakarta: Salamba Empat.

Hana Polackova Brixi dan Ashoka Mody. (2002). Dealing with Government Fiscal Risk : AN Overview. *Government at Risk*, 21-45.

Hanafi, M. M. (2006). *Manajemen Risiko.* Yogyakarta: UPP STIM YKPN.

Jha, S., Quising, P., & Camingue, S. (2009). Macroeconomics Uncertainties, Oil Subsidies, and Fiscal Suistanability. *ADB Economics Working Paper Series*.

Juan, Croce, E., & Ramon, J. V. (2003). Assesing Fiscal Suistanability: A cross-Country Comparison. *IMF Working Paper*.

Kaminsky, G. L., Reinhart, C. M., & Vegh, C. A. (2005). When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies. *NBER Macroeconmics Annual 2004, Volume 19*, 73.

Makin, T. (2005). Fiscal Risk in ASEAN. *International Monetary Fund*, 227-238.

Mankiw, N. G. (2007). *Makroekonomi.* Jakarta: Erlangga.

Marshall, A. (1890). *Principle of Economics.* Great Mind Series.

Nicholson, W. (2002). *Mikroekonomi Intermediates dan Aplikasinya.* Penerbit

Roomer, D. (2011). *Advance Economics.* New York: McGraw-Hill Education.

Roubini, N., & Setser, B. (2004). The effects of the recent oil price shock on the U.S and global economy. *Researc Associate Global Economic Governance Programme*.

Samuelson, P. A., & Nordhaus, W. D. (2011). *Makroekonomi.* Jakarta: Erlangga.

Seftarita, C. (2014). *Kebijakan Ekonomi Makro dan Siklus Bisnis.* NAD: Syiah Kuala University Press.

Shick, A. (2002). "Budgeting for Fiscal Risk" . *Government at Risk*.

Shick, A., Brixi, & Hana, P. (2003). Government at Risk, Contingent Liabilities and Fiscal Risk. *Government at Risk*.

Sugiyono. (2012). *Metode Penelitian Bisnis.* Indonesia: Alfabeta.

Suharsih, S. (2013). Fluktuasi Harga Minyak Dunia dan Pencapaian Suistanabilitas Fiskal Indonesia. *KINERJA Volume 17, No 1*, 28-44.

Sukirno, S. (2012). *Teori Pengantar Makroekonomi.* Jakarta: Rajawali Pers.

What is "Ricardian Equivalence" and when can it fail? (2013). *Norwich Economics Paper. Vol 7*.