

4-30-2011

## THE SUSTAINABILITY OF STATE BUDGET IN DEBT REPAYMENT

Haryo Kuncoro

*Jakarta State of University, Indonesia, har\_kun@feunj.ac.id*

Follow this and additional works at: <https://bulletin.bmeb-bi.org/bmeb>

---

### Recommended Citation

Kuncoro, Haryo (2011) "THE SUSTAINABILITY OF STATE BUDGET IN DEBT REPAYMENT," *Bulletin of Monetary Economics and Banking*: Vol. 13: No. 4, Article 2.

DOI: <https://doi.org/10.21098/bemp.v13i4.400>

Available at: <https://bulletin.bmeb-bi.org/bmeb/vol13/iss4/2>

This Article is brought to you for free and open access by Bulletin of Monetary Economics and Banking. It has been accepted for inclusion in Bulletin of Monetary Economics and Banking by an authorized editor of Bulletin of Monetary Economics and Banking. For more information, please contact [bmebjournal@gmail.com](mailto:bmebjournal@gmail.com).

## **THE SUSTAINABILITY OF STATE BUDGET IN DEBT REPAYMENT**

*Haryo Kuncoro*<sup>1</sup>

### Abstract

*This paper is designed to analyze the sustainability of the central government budget in Indonesia over the period of 1999-2009. First, we explore the theoretical background of the fiscal sustainability. Second, we develop a model to capture some factors determining the fiscal sustainability. Unlike the previous studies, we use both domestic debt and foreign debt to assess the fiscal solvency. Finally, we estimate it empirically. Based on the quarterly data analysis, we concluded that the government budget is unsustainable. This is associated with domestic debt rather than foreign debt. They imply that the central government should manage the debts carefully including re-profile, re-schedule, and re-structure them in order to spread the excess burden in the future. Also, the fiscal risks should be calculated comprehensively in order to maintain solvency.*

*Key words: Domestic debt, Foreign debt, Fiscal sustainability, Primary balance*

*JEL Classification: E62, H63*

---

<sup>1</sup> Lecturer Faculty of Economics, State University of Jakarta (har\_kun@feunj.ac.id)

## I. INTRODUCTION

Fiscal sustainability is currently the topic of intense discussion among macroeconomic expertise in both developed and developing countries. The discussion is becoming more intense, notably since the economic crisis that took place in 1997, and repeated in 2008. The economic crisis was marked by the increasing government expenditure mainly to overcome the impact of the crisis. On the other hand, government revenue has decreased dramatically.

Such similar situation was also encountered by Indonesia. The economic crisis has made the Indonesian government collapsed under a heavy debt to cover the budget deficit. The government debt has increased by three to four times higher than pre-crisis conditions, and nearly three quarters of this increase is the domestic debt to be paid for bank restructuring (Boediono, 2009).

The obligations of debt closure (interest and amortization) will exceed 40 percent of government revenue for several years, while new financing needs (both foreign and domestic) in the coming years are still highly required to meet the expenditure needs. This will severely limit the fiscal space in the running government, in which the problem has shifted from fiscal stimulus to fiscal sustainability (Rahmany, 2004).

Conceptually, the state budget is said to sustainable if it has the ability to finance all spending during an unlimited period of time (Langenus, 2006; Yeyati and Sturzenegger, 2007). Consequently, fiscal sustainability should also be able to take into account the fiscal risks. Fiscal risks arise when there are direct liabilities occur, which can be predicted in advance, and contingency liabilities as a result of any events beyond control (Brix and Mody, 2002).

Furthermore, the issue of fiscal risks is an integral part of the discussion about the ability to pay debt (solvency) in the long term. The inability to balance the soaring expenses with the revenue increase obviously endangers the ability of the state budget to pay the debt. To maintain fiscal solvency, the state must be in surplus (Chalk and Hemming, 2000).

The main problem of the continuity of the state budget is the presence of deficit budget. The problem is how to keep the budget deficit at a safe level to find the way to finance the deficit. The elucidation of Article 12 paragraph 3 of Law no. 17 of 2003 on State Finance states that the budget deficit is limited to a maximum of 3 percent and a maximum debt of 60 percent of gross domestic product (GDP).

The occurrence of a fiscal risk improperly anticipated will burden the budget and affect the economic growth targets with the different scope and depth of effects between the

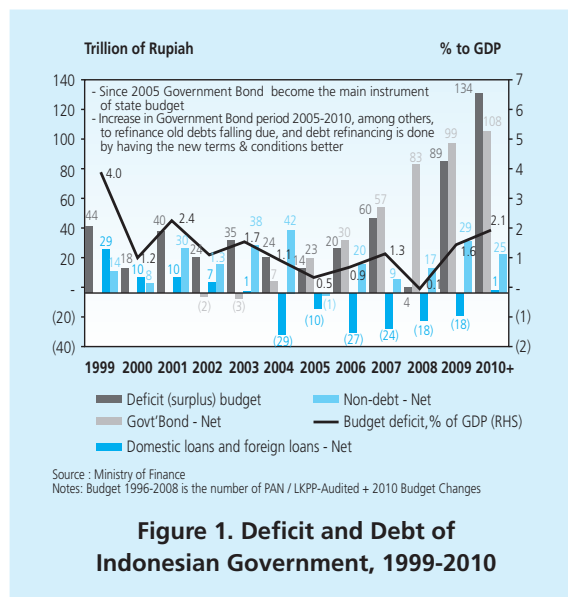
developed countries with the developing countries. Fiscal risks that occur in developed countries will lead to the burden on the budget and potentially inhibit the economic growth.

In developing countries, the implications are far more severe. The occurrence of fiscal risks that burden the budget will spread quickly on the overall economy, encourage the capital outflow, and even change the direction of economic growth. Furthermore, within developing countries with weak economic institutions, expectations of fiscal risks will affect the behavior of economic agents that potentially discourage economic growth despite the fiscal risk is yet to take form (Barnhill and Kopits, 2003).

This paper seeks review of fiscal sustainability with the case of Indonesia. To arrive at these targets, the government debt profile would be firstly observed. Next, the conceptual review on fiscal sustainability will be conducted along with the previous studies. The research method shall be delivered in the fourth chapter. Empirical estimation results will be shown after. And finally, this paper shall be concluded with several notes.

## II. INDONESIAN DEBT PROFILE

Debt is an integral part of fiscal policy within the framework of the overall economic management policies. Debt becomes the consequence of the deficit state budget posture. Configuration between deficit and debt (domestic and foreign) can be observed in Figure 1. In addition to covering up the deficit, the debt is also used for debt refinancing.



The large nominal of Indonesia's debt has accumulated from the previous regime. If we trace back, since the regime of Old Order, Indonesia has used foreign loans to finance its development. Foreign debt is used during the first period of 1966 to reconstruct the economy after the political turmoil. After that, the New Order regime has several fixed donor countries, united in the IGGI (Intergovernmental Group on Indonesia). Every year, IGGI provided funds (from ADB, World Bank, IMF, UNDP, and several major developed countries) to finance development spending, designed within the state budget.

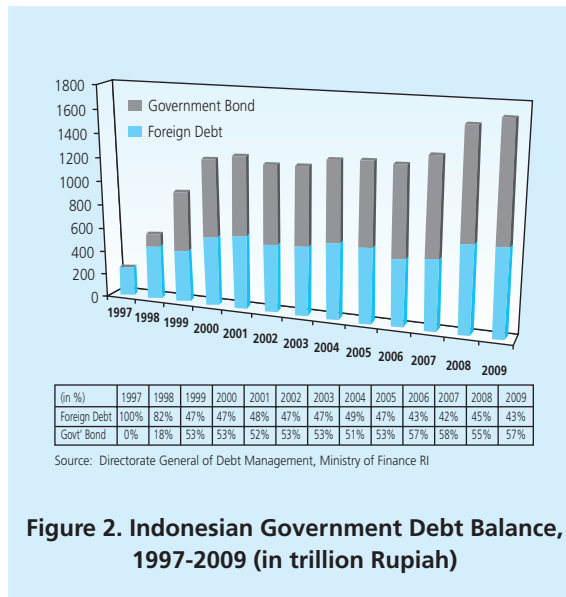
During the oil boom in the 1970's foreign debt increased rapidly to encourage economic growth. High oil prices were followed by a high debt. As one of the oil exporting countries (at that time), Indonesia has a windfall profit as a sort of "guarantee" to obtain new loans from creditor countries (Kuncoro, 1997). Foreign debt and high oil revenues have increased economic growth. In that period, the rate of economic growth record was high, on the average of 20 percent in a year.

Surprisingly, when oil prices declined in the first half of the 1980s the debt still increased. World economic recession and trade protection imposed by most trading partners were the main causes. Percentage of total foreign debt to GDP increased from 26.8 percent in 1980 to 53.6 percent in 1986.

In the late 1980s and during the economic boom in the mid-1990s, long-term foreign debt was dominated by the state-owned enterprises, in particular, and private cooperates. Government debt increased because PERTAMINA was largely expanded. BULOG took foreign debt to assure the food security. As a result, debt repayment to exports ratio at end of the 1980s, rose to an average of 40 percent. In 1992, IGGI was disbanded and replaced by the CGI (Consultative Group on Indonesia).

During the Asian financial crisis in mid-1997, the foreign debt increased significantly from more than \$136 billion in 1997 to more than Rp 151 billion in 1998, mainly due to the depreciation of the rupiah. At that time, the government of Indonesia has experienced a fall in revenue and, on the other hand, an increased government spending to cope with socio-economic impacts arising from the crisis.

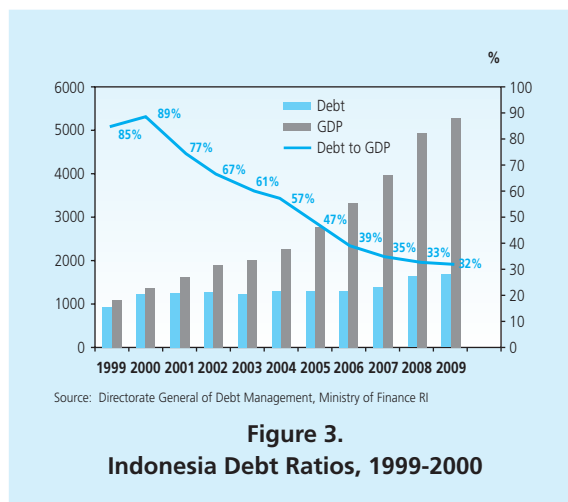
In the era of reformation, the government and Parliament make the political decisions that the deficit must be financed by domestic financial resources. Therefore, the CGI was dissolved in 2007. As a result, total domestic debt stock (Government Securities) has soared ten folds (100 trillion in 1998 to nearly 1.000 trillion in 2009). In just one decade, domestic debt has been higher than external debt (Figure 2). As a result, public debt interest is also skyrocketing. Interest payment on domestic debt is two-times higher than the foreign debt.



**Figure 2. Indonesian Government Debt Balance, 1997-2009 (in trillion Rupiah)**

Most government debt is due in early 2000. Consequently, the interest payments and amortization swallow a 40% portion of the total state budget expenditure. The other important expenditures are education (20 percent), subsidies for fertilizer and energy (15 percent) and transfers to regional governments (26 percent). This composition of expenditure is, of course, very limited to fiscal space.

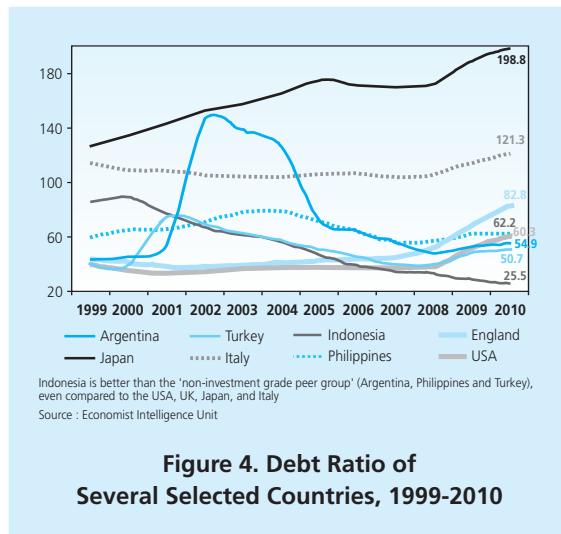
Although the fiscal space has decreased, the Indonesia’s debt ratio has shown a consistent downward trend over the last decade (Figure 3). In line with the ongoing economic recovery,



**Figure 3. Indonesia Debt Ratios, 1999-2009**

national income experiences a stable growing trend (an average of 4.5 percent per year). With this condition, in 2000, for example, the ratio of Indonesia’s total debt, which reached 89 percent, has decreased to 32 percent in 2009.

These debt ratio figures are much better than the other countries also affected by the crisis. Compared with some other countries with relatively similar income per capita level, such as the Philippines, Argentina, and Turkey, Indonesia’s debt ratio is also better, even with developed countries like America, Britain, Italy, and Japan (Figure 4).



### III. THEORY

The above map of government debt raises concerns over how far the sustainability of the state budget to cope with all the obligations that follow. Theoretically, so far there is no restriction on fiscal sustainability which can be generally acceptable. Macro-economic literatures introduce three definition approaches of a fiscal sustainability. The *first* approach is based on the accounting rules that link the fiscal and debt conditions:

$$D_{t+1} = (1+r) D_t + (R_t - G_t) \tag{1}$$

If the deficit (the difference between revenue and expenditure,  $R - G$ ) in the current budget is financed with a debt  $D$ , then the amount of debt in the next budget period ( $t+1$ ) will be at  $D$  itself plus the burden of interest rate ( $r$ ).

The element of  $(R - G)$  is the primary balance (PB) apart the debt interest payments. By rearranging equation (1) above, we shall obtain

$$D_{t+1} - D_t \equiv \Delta D_t = r D_{t-1} - PB_t \quad (2)$$

From equation (2) above it can be concluded several that:

- If  $PB_t = 0$ , then the debt would be increased by the interest of the previous debt;
- If  $PB_t < 0$ , then  $\Delta D_t$  is positive, which means that the principal of government debt will continue to rise;
- If  $PB_t > 0$ , then  $\Delta D_t$  is negative, which means that the principal of government debt will continue to decline.

Following this accounting approach, fiscal sustainability can be achieved if there is no debt. Even if the government should owe one, fiscal sustainability conditions can still be maintained if the amount of additional debt is proportional to the surplus value of  $PB$ .

Equation (2) if disclosed in the relative form to the national income (GDP or  $Y$ ) will become:

$$\Delta [D / Y]_t = r [D / Y]_{t-1} - [PB / Y]_t \quad (3a)$$

$$\Delta d_t = r d_{t-1} - pb_t \quad (3b)$$

The second definition approach of fiscal sustainability is described by its relation with solvency. Dinh (1999) states the fiscal solvency of a country is highly dependent on the of assets and liabilities of the states, which can be simply defined as *net worth = assets - liabilities*. If the net worth shows a negative value then the country is in insolvent condition.

Following (3), the distribution toward GDP brings the consequences that the  $Y$  growth should also be taken into account. If  $Y$  grows at  $g$ , then the addition to the debt will become:

$$\Delta d_t = \frac{r - g}{1 + g} d_{t-1} - pb_t \quad (4)$$

If there is no addition of new debt ( $\Delta d_t = 0$ ), then

$$pb_t = \frac{r - g}{1 + g} d_{t-1} \quad (5)$$



From the definition (5) above, a country can be addressed as a net debtor (as reflected by  $d_t > 0$ ) will face two possibilities as follows:

- a. If  $(r-g) > 0$ , then to achieve the fiscal solvency, it requires surplus in the primary balance by the value of  $pb$ .
- b. If  $(r-g) < 0$ , even if a country has already a loan stock of  $d_t$ , it is possible to have a budget deficit (measured in the primary balance) without risking the fiscal solvency as long as the deficit does not exceed the value of  $pb$ .

Thus the amount of loans of a country may indirectly describe its fiscal sustainability. A country with a low debt level will be still facing the problem of fiscal solvency under a poor economic prospect, as reflected in  $(r-g) > 0$ . Conversely, a country can have a relatively high lending rates without endangering its fiscal solvency due to a bright economic outlook, technically reflected as  $(r-g) < 0$ . But it should be noted that this sort of thing does not mean a country can have a level of borrowing is too high. The most serious risk when interest rates are high and low economic growth prospects.

The third definition approach of fiscal sustainability third approach that develops the accounting approach requires a discount factor on the debt. This method is popular in economic literature as the present value constraint approach of the debt. The innovation in this method is by making the next iteration until  $k$  period for equation (1), as follows:

$$D_t = \sum \frac{1}{(1+r)^{1+k}} \{ D_{t+1+k} - PB_{t+k} \} \quad (6)$$

The limit value for an infinite time of the first element in the right hand side of equation (6) will end up (asymptotically) by converging to zero\*). The equation that remains will be

$$D_t = - \sum \frac{1}{(1+r)^{1+k}} PB_{t+k} \quad (7)$$

For the record, the minus value of  $PB$  is a deficit and the plus value is a surplus.

Equations above are described as the intertemporal government financing constraints. Equation (7) states that the amount of government debt at a given time should be as large as

---

2 Persamaan yang bersangkutan ketika tidak sama dengan 0 (nol) menunjukkan adanya Ponzi Game. Sebuah istilah yang diambil dari nama pencetusnya, Charles Ponzi (1919) untuk menyatakan utang baru untuk menutup utang lama sedemikian rupa sehingga hasil akhir sebesar nilai tertentu yang tidak sama dengan nol.

the present value of the primary balance deficit in the future (Cuddington, 1996). That means that the debt growth must be lower than the growth rate (Buiter, 2002). If the condition is met then the budget policies are categorized sustainable.

These three definitions above give the same understanding, that fiscal sustainability is the fiscal capacity to implement various government policies and programs by maintaining macroeconomic stability in the emphasis in keeping the state debt to GDP ratio relatively constant. Some of the concepts mentioned above later inspired a variety of empirical research to assess the fiscal sustainability.

In general, the developing research can be categorized into four perspectives (Arnone, Bandiera, and Presbitero, 2005), namely (1) optimization model, (2) non-optimization model, (3) fiscal space model, and (4) disincentive effects model. Optimization model examines fiscal sustainability with emphasis in the loan costs. Non-optimization model monitors the dynamics of debt by connecting it to the growth rate of loan interest.

Model (3) observes changes in fiscal space due to the expense for the loan interest. In the end, this model would detect the consequences on the economic growth when the government maintains fiscal space in order to maintain fiscal sustainability. More in-depth, model (4) expands the impact analysis of the currency depreciation, deficit, inflation, and uncertainty on fiscal sustainability. In a glance model (1) is an empirical operation of the accounting approach. Meanwhile, model (2), (3), and (4) describe the solvency approach and the present value constraint approach.

Hamilton and Flavin (1986) were the first to examine fiscal sustainability. In the framework of optimization models, their question was whether the ongoing deficit remains in control of the long-term budget sustainability. They use a fixed rate in their analysis for the U.S. data. The conclusion is the presence of compatibility between the deficit and the ability to pay debts.

Wilcox (1989) developed this approach of Hamilton and Flavin (1986) by assuming that the interest rates are no longer fixed. The result of his studies with non-optimization model showed that America's debt remains sustainable as far as fluctuation in the interest rate changes is stationary. Both studies confirmed that long-term sustainability (the ability to pay debt) is achieved through short-term sustainability (deficit stability control).

In addition to the standard factors above, some researchers began trying to identify other factors in the frame of fiscal space model. Buiter (1993) identified that high rate inflation will increase the primary deficit by lowering the real value of tax revenue. As a result, debtor countries have difficulties in their fiscal operations. Consequently, adjustment of debt maturity

with the period of tax revenues (tax smoothing) would be a solution for fiscal sustainability (Barro, 1997).

Buiter (1997) identified other factors that also affect fiscal sustainability, that are the exchange rate, foreign exchange reserves, consumption expenditure and government investment spending. Within the complexity of these problems, Buiter (2002) suggested that government debt is used only for investment spending purposes in order to promote fiscal conservatism. Meanwhile, the tax increase only as a constant part of GDP.

In connection with the exchange rate, Turner (2002) noted that the demand for U.S. dollar-denominated bonds will generally increase when the monetary regime use free (floating) exchange rates. This is because the confidence toward exchange rate in developing countries and emerging markets is still generally low.

Calvo (2003) found an interesting example of the economic impact to the fiscal burden. In 1981-83 Mexico experienced a sudden stop, which is the cessation of a large numbers of capital inflows into the country. This is due to the declining confidence from investor in the performance of the economy and uncertain political situation. As a result, foreign reserves of Mexico have decreased by 20 percent of GDP.

Mendoza and Oviedo (2004) pioneered the analysis of foreign debt sustainability by introducing a natural debt limit (NDL). Natural debt limit is the annuity value of the fiscal balance in times of fiscal crisis. The result of their studies for the four countries in Latin America shows that the ratio of debt to GDP varies above the NDL, thus the solvency is also different.

Similar researches for the case of developing countries have been conducted, for example by Yamauchi (2004) for the case of Eritrea, Yilanci and Ozcan (2008) for the Turkey, and Makin (2005) for south-east Asian countries. These studies do not provide any firm conclusion about the fiscal sustainability. The diversity of these results is due to the characteristics of fiscal policy and macroeconomic environment which typically occur in each country.

Researches on debt that took place in Indonesia, especially domestic debt, are still rarely performed. This is understandable because the domestic government bond market began only in 2001. Consequently, most of the research that developed in Indonesia is still devoted to foreign debt. Kuncoro (1999) obtain empirical fact that the deficit policy, financed from foreign loans, crowd out private investment whose consequence is the lack of the role of foreign debt in economic growth. Saleh (2002) examined the role of foreign debt in the Indonesian economy with similarly negative result. The null contribution of the foreign debt is mostly caused by its inability in creating domestic revenues.

In Indonesia, the new fiscal risks itself appear explicitly in the state budget of 2008. Previously, fiscal risks are implicitly expressed, there are even less attention devoted to them. The awareness toward fiscal risk arose after the 1997 economic crisis. Study by Soelistijaningih (2002) showed that debt risk could be reduced by diversifying the loan currency. These results are supported by the findings of Mark (2004). Indonesia's fiscal sustainability can only be maintained in the absence of heavy depreciation.

PPE UGM and BAF (2004) concluded that Indonesia's foreign debt is large since the cost of borrowing is cheaper than the cost of domestic debt. This is reason of the low efficiency of foreign debt. However, PPE UGM and BAF (2004) confirmed that Indonesia's debt is still relatively safe from the risk of default. On the other hand, Ulfa and Zulfadin (2004) obtained rather ambiguous results. Some fiscal policies which they identified (such as budgeting reforms) have reduced the contingency liabilities in the form of debt reduction. On the other side some fiscal policies would increase the contingency liabilities (in the form of deposit insurance schemes).

Related to fiscal decentralization since 2001, Kuncoro (2005) examined the impact of contingent liabilities in the form of transfers on economic growth and regional disparities. The result of his study proved that local governments respond over-actively these transfers. As for the implication, the central government transfers are required to allocate a greater amount in order to reduce disparities between regions.

Hanni (2006) examined the factors affecting Indonesia's fiscal sustainability. The result of his study concludes that some external macro economic variables are important determinants for fiscal sustainability. Jha (2009) incorporated the oil price factor into the analysis of fiscal sustainability. The results of his analysis for 32 countries in Asia (including Indonesia) stressed that oil price fluctuations have significant impacts on fiscal sustainability through the amount of subsidy and the amount the government revenue.

Departing from these identifying results of the determinants of fiscal sustainability, the currently developing researches lead to the detection of fiscal vulnerability due to debt burden. Ciarlone and Trebeschi (2006) examined the external debt burden of developing countries. They found little correlation of these key factors in estimating the debt crisis.

Tunner and Samake (2006) found the probability of fiscal vulnerability can be reduced by making fiscal adjustments. Celasun, Debrun, and Ostry (2007) studied the possibility of fiscal sustainability in 5 developing countries. The most interesting finding is that the fiscal policy itself is an important factor in creating the risk of fiscal vulnerability.

#### IV. METHODOLOGY

Many studies above suggest several important things. Firstly, the configuration of the government budget will bring an enormous impact on the economy. Secondly, external factors appear to be more dominant in influencing a country's fiscal condition. Third, so far there has been no specific study in Indonesia, which estimates the future fiscal condition associated with the integration of all external factors aforementioned.

This study seeks to bridge the gaps in the empirical study of fiscal policy in Indonesia by taking the synthetic angle studies. Unlike the models in previous research, the first innovation of this research is in analyzing the problem by using 2 types of debt: the domestic debt (DD) and foreign debt (FD).

$$D_{total} = DD + FD \quad (8)$$

Following equation (2), the basic model of fiscal sustainability Indonesia (8) can be reformulated as

$$\Delta D_{total} = f(DD_{t-1}, FD_{t-1}, PB_t) \quad (9)$$

Equation (9) is still in absolute form. With no intention to change it, it can be transformed into a relative form of the ratio to GDP.

$$\Delta (RD_{total})_t = \alpha_0 + \alpha_1 (RDD)_{t-1} + \alpha_2 (RFD)_{t-1} + \alpha_3 (RPB)_t + \mu_t \quad (10)$$

Equation (10), derived from equation (5), implicitly assumes that the interest rate and economic growth (EG) are constant.

These assumptions will be dismantled by bringing it explicitly as explanatory variables. Furthermore, several other variables are included in the model as a control. Associated with two kinds of debt, foreign interest rates ( $r$ ) and domestic interest rate (SBI) will be displayed. In connection with foreign debt measured in domestic currency, depreciation (Dep) is also used as explanatory variables. The completed models is as the following:

$$\begin{aligned} \Delta (RD_{total})_t = & \alpha_0 + \alpha_1 (RDD)_{t-1} + \alpha_2 (RFD)_{t-1} + \alpha_3 (RPB)_t \\ & + \alpha_4 (r)_t + \alpha_5 (SBI)_t + \alpha_6 (EG)_t + \alpha_7 (Dep)_t + \mu_t \end{aligned} \quad (11)$$

The second innovation of this research is that the sustainability of the state budget is estimated with the quarterly data during the post-crisis period (1999-2009). The data required for the purposes of this study are generally already available on a quarterly basis to facilitate the

implementation of the execution model. One exception occurs in the primary balance. The data available from official publications are the annual data. The data are then linearly interpolated in such a way that fit with other data.

In general, the data are obtained from Bank Indonesia, Ministry of Finance (cq DMO, Debt Management Office), and the Central Bureau of Statistics. The variables that will be used are specified as follows. The debts analyzed here are the central government debts (not including Bank Indonesia, state enterprises/BUMN, prefectural enterprises/BUMD, or local government). The U.S. Federal interest rates are used as representative foreign interest rates. SBI interest rate of period of 3 months is placed as domestic interest rates\*). Depreciation is calculated as the percentage changes in the middle exchange rate of Rupiah against the official publication of the BI of U.S. dollar. Similarly, economic growth is calculated as the percentage change of GDP at constant price of 2000.

## V. RESULT DAN ANALYSIS

The assessment result of fiscal sustainability model is presented in Table 1 below. With the significance of 92 percent, domestic debt is believed to encourage an increase in total government debt amounted to an average of 36 percent. On the other hand, with a smaller significance, foreign debt pushes down total government debt by 20 percent. This last result supports the government's claim that the ratio of government debt to GDP showed a consistent decline.

Increasing foreign interest rates tends to reduce the ratio of total debt level by 22 percent. According the theoretical framework, the influence of this exchange rate in debt should be positive. Fortunately, this coefficient is not statistically significant at the 95 percent of confidence level. The most probable interpretation is that the negative value is solely related to the decrease of the ratio of government debt that was taking place. On the other hand, foreign interest rates during the analysis period experienced an improving trend.

Change in SBI rates will increase the burden of total debt (especially the domestic debt) by 27 percent. If compared, the coefficient of the effect of the rising domestic interest rates (in absolute terms) is higher than the effect of rising foreign interest rates. These results support the findings of the study by PPE UGM and BAF (2004) which indicated that the cost of foreign debt is cheaper than domestic debt financing in such a way that efficiency is also higher.

---

3 Suku bunga yang lebih cocok sebetulnya adalah BI rate sebagai suku bunga kebijakan. BI rate itu sendiri baru diintroduksi sejak 2005. Oleh karena itu, suku bunga SBI dapat dianggap merepresentasikan suku bunga kebijakan.

**Table 1.**  
**Estimation Result of Total Government Debt Level, 1999(1)-2009(4)**

Dependent Variable: D(RDTOT) Method: Least Squares Date: 03/17/10 Time: 04:38 Sample(adjusted): 1999:1 2009:4 Included observations: 44 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.487018	0.911836	0.534107	0.5966
RDD(-1)	0.365373	0.200261	1.824487	0.0764
RDF(-1)	-0.200480	0.142465	-1.407227	0.1679
R	-0.219580	0.143448	-1.530730	0.1346
SBI	0.270587	0.123241	2.195586	0.0347
DEP	0.144565	0.022899	6.313181	0.0000
EG	0.047568	0.028054	1.695606	0.0986
RPB	-0.614607	0.205085	-2.996836	0.0049
R-squared	0.668796	Mean dependent var		-0.319798
Adjusted R-squared	0.604396	S.D. dependent var		1.789638
S.E. of regression	1.125630	Akaike info criterion		3.237529
Sum squared resid	45.61356	Schwarz criterion		3.561927
Log likelihood	-63.22564	F-statistic		10.38493
Durbin-Watson stat	2.099574	Prob(F-statistic)		0.000000

The depreciation of rupiah against foreign currencies has significantly brought an increase in ratio of total government debt stock by 14 percent. The value of government debt is largely denominated into U.S. Dollars. With the same amount of foreign debt, the government expenses will be 14 percent heavier with a 1 percent decrease of depreciation of rupiah against U.S. Dollar. These results are also consistent with the results of studies by Soelistijarningsih (2002) and Mark (2004), that the debt diversification into several foreign currencies will ease the burden of government debt.

Economic growth also had an impact in increasing the ratio of government foreign debt by 5 percent. Economic growth reflects the dynamics of the economic strength of society. Increasing the economic power would bring an impact in increasing the public demand for goods and services, including the public goods supplied by the government. Consequently, the government has to increase its supply in the form of increased spending. When the amount of expenditure cannot be sustained by domestic revenues, increasing debt would become the inevitable last alternative.

When compared with the coefficient of SBI rates, the magnitude of this economic growth is smaller such that the coefficient (SBI - EG) > 0. This condition is a prerequisite to achieve fiscal solvency while assuming that the configuration support of the state does not experience any changes. These results indicate that the state budget is still under a safe condition to meet all the government's debt obligations.

Last variable as the determinant of total government debt in the above model is the primary surplus of state budget. The RPB coefficient shows a minus value. These results are in accordance with the theory in the previous chapter. If the primary balance surplus increase can be maintained, for example in the value of 1 percent, then the additional government debt can be reduced by an average of 61 percent. This, once again, means that reduction in debt burden requires the primary balance surplus through budgetary discipline.

The primary balance surplus points the position of the real fiscal space. Unfortunately, the primary surplus during the period of analysis is still relatively low (an average of only 6.84 percent of the GDP). Such minimal volume resulted in small primary surplus availability of funds that can be utilized for the reserves of debt repayment in case of any unanticipated shocks in the future. Other consequence is that the stimulus in domestic economy would absorb the impact of the crisis in order to spur economic growth which is not sufficient. Thus, the effort to preserve the primary balance surplus is the key in managing policy of the state budget.

The second condition is the coefficient of PB fiscal sustainability of -1 (one). The measurement is taken under 2 procedures: the ANOVA test and  $c^2$  to prove whether the coefficient on PB really meets the formula, which is equal to -1. The test results are presented in Table 2.

Table 2. Sustainability Testing Budget, 1999 (1) -2009 (4)			
Wald Test: Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic	3.531335	(1, 36)	0.0683
Chi-square	3.531335	1	0.0602
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
1 + C(4)		0.385393	0.205085
Restrictions are linear in coefficients.			

Both procedures scored 3.3513 for the value of F and  $c^2$  of each count. With the initial hypothesis of  $C(4) = 1$ , the conclusion is that to accept it, the degree limit of confidence at 90 percent is required. That is, at the risk error of 5 percent, the sustainability of the state budget is not supported by the data. If the risk of error is to be raised by 10 percent, the sustainability of the new state budget is acceptable.



The test results above indicate a message that the sustainability of the state budget is still very fragile. This fragility is related to economic circumstances that may occur. Consequently, the risk of this fiscal fragility should be anticipated early on. Anticipation that can be taken is (if supported by political decisions) to arranging the budget according to the multi-year system, which means that the state budget for the next 3 years, for example, is set in the running year. The experience of Australia, Canada, Germany and the Netherlands in the preparation of the state budget, is worth adopted to be a model by the government.

As an additional illustration, Australia and New Zealand have incorporated the explicit contingent liabilities and contingent expenditure in the government financial reports. Italy and the United States put it in the budget approval of the loan by doing the present value on the amount of the value. Progress like this then spread to many other developing countries like Colombia, Malaysia, and Philippines, particularly for the risk of infrastructure projects that are guaranteed by the government (Subyantoro, 2008). All of these are projected in order to minimize the potential range of risks that will arise.

Apart from all that, the main conclusions of this study are in opposite with results of previous research in Indonesia, which generally found the fiscal sustainability. Differences conclusion is possible because the differences in data, methods, and the definition used. The use of annual data (as did previous research) tends to eliminate fluctuations in the period of 1 year in a way that it gives in general an idea of fiscal sustainability. This study would cover fluctuations in quarterly periods and in fact give a different picture.

## VI. CONCLUSION

This paper has provided empirical facts about fiscal sustainability with a case study in Indonesia. Review on quarterly data give different results with previous studies on the same theme based on the annual data. The main finding is that Indonesia's fiscal strength has not been achieved despite having solvency for the payment of domestic and foreign debt. The source of this discontinuity is the debt burden which increases far more rapidly than the increase in foreign debt.

This study implies that the issuance of Government Securities (SUN) needs to be done with such prudence by considering the burden of payment of maturing government securities. SUN maturity should be adjusted to the ability of the state budget for the respected year. In this regard, a careful study on the other burdens of the state budget needs to be more properly calculated. Therefore, the fiscal risk exposure should appropriately serves as a guide in each issue of SUN.

In terms of foreign debt, shifting the burden of debt can be done through re-profiling, rescheduling, and debt restructuring for the burden can be distributed in accordance with the maturity. The expenses need to be aligned also with the burden of domestic debt maturity. The ratio of foreign debt of the government did show a declining trend. This momentum needs to be best utilized in order to minimize the risk of remaining debt. To reach this end, sectional, regional, fiscal, monetary, and foreign policy coordination have to be optimally synergized.

A decline of the government debt to GDP ratio does not necessarily mean an increase in the government's financial position. This is due to the possible sale of the state companies, depletion of sources of public ownership, and decline in government fixed capital. Another possibility that needs to be looked out for is the search for new debt, especially those off budgets to cover the old debts with the same amount.

In addition to fiscal sustainability, the government also needs to consider the possibility of another fiscal burden if the economy is experiencing internal problems. The quasi-fiscal activities of Bank Indonesia, state and prefectural enterprises, can be a contingent liability if they are not managed properly. Internal Finance of Bank Indonesia, state and prefectural enterprises are indeed separated from the state finances, but their involvement in debt and business is also public, publicly guaranteed and semi guaranteed because the government is still the owner of the shares and there are the reason of "too big to fail".

Further studies on the fiscal sustainability Indonesia is still open to be done. A more in-depth study can be conducted to examine the sources of fiscal fragility. Study of fiscal sustainability by considering the assumptions used in each preparation of the state budget, such as the oil price and oil production (oil lifting), is certainly interesting to be observed. Remaining weaknesses in this study can be covered by including the factors and scales from the monetary side.

## REFERENCES

- Barnhill, T.M. and G. Kopits, 2003, "Assessing Fiscal Sustainability under Uncertainty", IMF working paper.
- Barro, R., 1997, "Optimal Management of Indexed and Nominal Debt," "NBER, working paper No. 6197.
- Boediono, 2009, *Ekonomi Indonesia Mau ke Mana?*, Kumpulan Esai Ekonomi, KPG & Freedom Institute, Jakarta.
- Buiter, W. H., 1993, "Public Debt in the USA: How Much, How Bad, and Who Pays?", NBER, working paper No. 4362.
- Buiter, W.H., 1997, "Aspects of Fiscal Performance in some Transition Economies under Fund – Supported Programs," IMF Policy Discussion Paper.
- Buiter, W. H., 2002, "The Fiscal Theory of the Price Level: A Critique," "Economic Journal, Royal Economic Society, 112(127): 459-480.
- Celasun, O., X. Debrun, and J.D. Ostry, 2007, "Primary Surplus Behavior and Risks to Fiscal Sustainability in Emerging Market Countries: A "Fan-Chart" Approach", IMF working paper.
- Chalk, N., and R. Hemming, 2000, "Assessing Fiscal Sustainability in Theory and Practice", IMF working paper.
- Chouraqui, J.C., R.P. Hagemann, and N. Sartor, 1999, "Indicators of Fiscal Policy: A Reexamination," "OECD Working Paper, No. 78.
- Ciarlone, A. and G. Trebeschi, 2006, "A Multinomial Approach to Early Warning System for Debt Crises", Banca D'Italia, working paper no. 588.
- Cuddington, J.T., 1996, "Analysing the Sustainability of Fiscal Deficits in Developing Countries," WP6.0:sustain7.wpd, Economics Department Georgetown University, Washington, D.C., USA.
- Brixi, P.H. and A. Mody, 2002, "Dealing with Government Fiscal Risk: An Overview", dalam *Government at Risk*, World Bank & Oxford University Press.
- Dinh, H.T., 1999, *Fiscal Solvency and Sustainability in Economic Management*. The World Bank, 1999.
- Enders, W., 2004, *Applied Econometric Time Series*, Second edition, John Wiley & Sony Inc.

- Hamilton, J.D. and Flavin, M.A., 1986, "On the Limitations of Government Borrowing: A Framework for Empirical Testing," *American Economic Review*, American Economic Association, 76(4), September: 808-19.
- Hanni, U., 2006, "Sustainability Fiskal Indonesia dan Faktor Faktor Yang Mempengaruhinya," *Jurnal Keuangan Publik*, 4(2), September: 19-37
- Jha, S., 2009, "Macroeconomic Uncertainties, Oil Subsidies and Fiscal Sustainability in Asia", ADB Research Paper.
- Kuncoro, H., 1999, *Dampak Kebijakan Pengeluaran Pemerintah terhadap Pertumbuhan Ekonomi Indonesia*, Thesis of M.Si., Graduate School of UGM, unpublished.
- Kuncoro, H., 2005, *Pengaruh Transfer Antarpemerintah terhadap Kinerja Fiskal Pemerintah Daerah, Pertumbuhan Ekonomi, dan Disparitas Pendapatan Regional, Kota dan Kabupaten di Indonesia*, Doctoral Dissertation in Study of Economy, Graduate School of UGM, unpublished.
- Langenus, G., 2006, "Fiscal Sustainability Indicators and Policy Design in the Face of Ageing", working paper, National Bank of Belgium.
- Makin, T., 2005, "Fiscal Risk in ASEAN", *Agenda*, 12(3): 227-38.
- Mark, S.V., 2004, "Fiscal Sustainability and Solvency: Theory and Recent Experience in Indonesia", *Bulletin of Indonesian Economic Studies*, 40(2), August: 227-42.
- Ouanes, A and S. Thakur, 1997, *Macroeconomic Accounting and Analysis in Transition Economies*, International Monetary Fund, Washington D.C.
- PPE UGM and BAF, 2004, *Studi Manajemen Utang Luar Negeri dan Dalam Negeri Pemerintah dan Assessment terhadap Optimal Borrowing*", Research Final Report.
- Rahmany, F.A., 2004, "Ketangguhan Fiskal dan Manajemen Utang Dalam Negeri Pemerintah", in *Kebijakan Fiskal, Pemikiran, Konsep, dan Implementasinya*, Kompas, Jakarta.
- Saleh, S., 2002, *Pengaruh Kebijakan Defisit Anggaran Pemerintah terhadap Perekonomian Indonesia*, Doctoral Dissertation in study of Economy, UGM, Yogyakarta, unpublished.
- Soelistijaningsih, L., 2002, *Model Portofolio dalam Pengelolaan Utang Luar Negeri sebagai Alternatif mengurangi Gejolak Eksternal: Kasus Indonesia*, Doctoral Dissertation, Universitas Indonesia.
- Subyantoro, H., 2008, "Adakah Persoalan" *Contingent Liabilities dan Fiscal Risk* di Indonesia?: Sebuah Pelajaran yang Sangat Berharga", Inaguration Speech of Professor of Universitas Borobudur, Jakarta, 23 December.
- Tunner, E. and I. Samake, 2006, "Probabilistic Sustainability of Public Debt: A Vector Autoregression Approach for Brazil, Mexico, and Turkey", IMF working paper.
- Turner, P., 2002, "Bond Markets in Emerging Economies: an Overview of Policy Issues," *Bank for International Settlement*, No. 11, Basel, Switzerland.

- Ulfa, A. dan R. Zulfadin, 2004, "Seberapa Seriuskah Perhatian Indonesia terhadap Isu-isu Kontingensi Fiskal?", *Kajian Ekonomi dan Keuangan*, 8(2), June.
- Wilcox, D., 1989, "The Sustainability of Government Deficits: Implications of the Present-Value Borrowing Constrain", *Journal of Money, Credit and Banking*, 3: 291-306.
- Yamauchi, A., 2004, "Fiscal Sustainability, the Case of Eritrea", IMF working paper.
- Yeyati, E. L. and F. Sturzenegger, 2007, "A Balance-Sheet Approach to Fiscal Sustainability", working paper, Universidad Torcuato Di Tella.
- Yilanci, V. and B. Ozcan, 2008, "External Debt Sustainability of Turkey: A Nonlinear Approach", *International Research Journal of Finance and Economics*, 20: 91-98.