

Policy for Enhancing Fiscal Sustainability: The Case of Indonesia

Abstract

The sustainability of fiscal condition or public finance is very crucial given its central role in country's development. The rapid increase in the size of Indonesian government budget, both in revenue and expenditure side, over the past eight years has triggered a question whether its sustainability has improved respectively. To answer this, the indicators used in several papers on fiscal sustainability are used. Furthermore, it is complimented by deeper analysis on Indonesian government budget structure. As the result of the analysis, some policy recommendations to improve Indonesia's fiscal sustainability are drawn.

1. Introduction

The issue of public finance or fiscal policy has been a long interest of scholars around the world. Researches on the topic have been done both in analytical or quantitative aspect as well as in its administration aspect.

Public finance has four main functions: allocation, distribution, stabilization, and performance management. It is aimed to allocate state budget to programs which are deemed important in government administration. It also entails distribution function, where government distribute the resources from a relatively wealthy area to the less developed area or to equalize the development achievement. Public finance also has stabilization function, i.e. to stabilize the economy in the boom or bust period. Lastly, it entails performance management function. Public finance can be a tool or incentive to influence performance of an administration.

In regards to Indonesia's development condition, as of 2011, the poverty level in the country is around 12.49% or around 31 million of the population. Average school year for the

population is still 5.8 years and life expectancy around 69.4 years. These contribute to Indonesia's human development index that is around 0.617. Furthermore, the development in Indonesia is unequal. Most of the eastern part of the country remains underdeveloped, either in physical infrastructure or in quality of life.

The responsibility to develop a country does not solely in the hand of government, rather, participation from the private sector as well as non-profit organization are highly needed, nonetheless, incentive or trigger from the government is very crucial in this effort. For example, the availability of infrastructure (which lies in government responsibility) in one region will attract business activity and more investment in that region. Besides that, the quality of government operation or institution (which are funded or depend on the budget availability) will also determine the development in the region.

The above mentioned factors have made public finance as an important part of country's development. That is why the sustainability of public finance or fiscal condition is very important.

Indonesia's budget has increased considerably in the last eight years. The revenue has grown 220% from 2004 to 2012 and the expenditure has grown 221% from 2004 to 2012 (Indonesian Minister of Finance 2012). However, the question remains: Does the significant increase in government budget means that the fiscal position has become more sustainable?

In this paper, the indicator fiscal sustainability will be elaborated, followed by assessment of Indonesia's fiscal sustainability, and closed by policy options to enhance Indonesia's fiscal sustainability.

2. Fiscal sustainability and its indicators

There are many papers are written on fiscal sustainability since 1980s and moreover recently after the aftermath of the sub-prime mortgage crisis 2008-2009 and sovereign debt crisis in the Eurozone which deteriorate government public finance around the world. There is no single definition of the sustainable fiscal policy; however the same notion of a sustainable fiscal policy is shared among many scholars.

The fiscal condition is said to be sustainable if the government can continue to pursue their set of budgetary policy indefinitely. In another words, Fiscal sustainability is the capacity to maintain the current fiscal condition without needing to make adjustments in tax or

expenditure policies in order to assure solvency as defined by the present value budget constraint (Marks 2004). Thus, the ability of government operation to maintain or improve the current living standard in the long term, without jeopardizing the future generations' can be categorized as a sustainable fiscal policy (Mikesell 2011). The goal of the fiscal sustainability is to avoid deterioration in fiscal condition without undermining the macroeconomic targets, such as inflation, unemployment, and GDP target (Fraser 2000).

In regards to the indicators of fiscal sustainability, its indicator seems to be convergent, that is the use of debt to GDP ratio as an indicator, either in policy paper or research paper. There are also some papers which use 'derivatives' measures¹ of debt to GDP ratio.

In many policy paper literatures, mainly from recent OECD working papers², government deficit and debt to GDP ratio are mainly used as indicators of fiscal sustainability; however, there is no exact number of how much is the threshold. Furthermore, most of the papers took into account the demographic characteristic of a country. For example, whenever there is ageing population trend which entails potential huge pension spending, the paper concluded that the fiscal condition is not sustainable, such as in the United States, Japan, etc.

In many research papers, such as Edwards (2002) and Koo (2002) two main indicators (which are still derivatives of debt to GDP ratio) for fiscal sustainability are used:

- Public debt grows at a rate less than the interest rate (government solvency). In another words, debt should not be serviced indefinitely by borrowing. If the public debt grows at a rate higher than the interest rate, then it implies that to pay the debt, they need to borrow again.
- The amount of government debt at any given time relative to the present value of primary balance deficit in the future (called present value budget constraint or intertemporal budget constraint).

The two main concepts above can be specified to three measures below, as introduced by Blanchard (1990). He mentioned that the fiscal condition is said to be sustainable when the debt to GDP ratio is stabilized. What he meant by a stabilized debt to GDP ratio is a constant

¹ Derivatives in this context means there are some indicators used, but the idea behind those indicators are still about debt to GDP ratio.

² For example in *Restoring Fiscal Sustainability in the United States* (Lenain, Hagemann and Caret 2010); In *Restoring Fiscal Sustainability in Spain* (Beynet, et al. 2011); In *Restoring Fiscal Sustainability in the Euro Area* (Cournede and Gonand 2006); in *Reforming the Tax System in Japan to promote fiscal sustainability and economic growth* (Jones and Tsutsumi 2008); and in *Bringing French Public Debt Down* (egert 2011).

debt to GDP ratio over the next years (Blanchard 1990)³. In applying Blanchard work, some indicators used in *Indicators of Fiscal Sustainability* by Horne (1991) are:

- **Primary gap** that is measure of required adjustment in the primary deficit needed to stabilize the outstanding public debt to GDP ratio, given the current and projected paths of the primary balance, the real interest rate and output growth. Positive sign means need for fiscal retrenchment. Mathematically expressed as:

$$K_2 = (r-n)*b - s$$

Where r = real interest rate (i-p); n = real growth rate of GDP; b = initial outstanding debt per GDP; and s = the current primary surplus per GDP (s = -d); (r-n)*b can be called also as **sustainable primary surplus (s*)**.

- **Medium-term tax gap** that is measure of required adjustment in the tax ratio needed to stabilize the outstanding public debt ratio, given the projected path of non-interest expenditures and transfers, expressed as a ratio to GDP, real interest rate and economic growth. Positive sign means the need for increase in tax ratio. Mathematically expressed as:

$$K_3 = \sum (g+h)/n + (r-n)*b - t$$

Where g = ratio of public expenditures to GDP (excluding interest payment); h = ratio of transfer to GDP; and t = current tax ratio.

- **Long-term tax gap** is similar to medium-term tax gap but it uses longer time horizon, such as 30-40 years, instead of 3 years as in the medium term.

The use of debt to GDP ratio as a main indicator for fiscal sustainability is not without deficiencies. Some of them are:

First, it omitted the influence of interest rate and economic growth variable. A country with a low level of debt to GDP ratio can face a fiscal problem when facing a poor economic outlook, for example when their loan interest rate is higher than the economic growth rate, such as in many least developed countries.

³ The same notion is also expressed by Edwards (2002) as follow: “An economy is said to have achieved fiscal sustainability when the ratio of public sector debt to GDP is stationary, and consistent with the overall demand – both domestic and foreign –for government securities. An important by-product of public sector sustainability analyses is the computation of the public sector’s primary balance compatible with a sustainable and stable debt to GDP ratio.” (Edwards 2002).

Second, a country with a low debt to GDP ratio can also face serious fiscal problem when the debt maturity profile is concentrated or not manageable. A concentrated debt maturity profile could lead to government insolvency and default.

Lastly, the notion of a sustainable debt to GDP ratio as a constant debt to GDP ratio can also be misleading. A country which start with a high debt to GDP ratio might seems to be sustainable, just because they are able to maintain their high debt to GDP ratio, but actually it possess a bigger default risk.

To account the weaknesses above, it is better to conclude that a country is said to have achieved fiscal sustainability when they are able to manage their fiscal risk indefinitely. This definition will erase the bias of high initial debt to GDP ratio. The fiscal risk here includes economic growth prospect, demographic challenges, shock from external, and other factors which could undermine fiscal health.

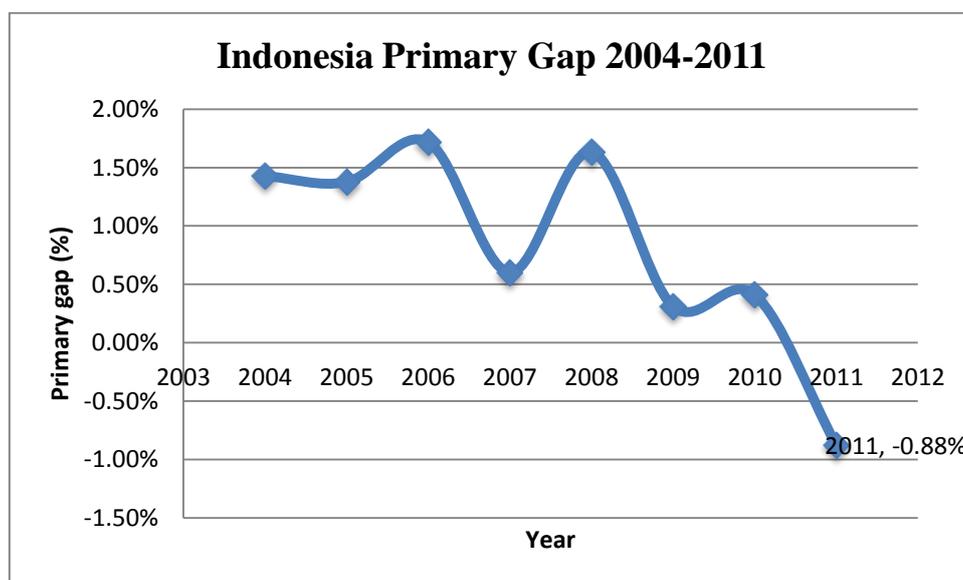
The following section will try to assess Indonesia's fiscal sustainability based on the three-debt to GDP ratio-related indicators discussed above, followed by reflection whether such analysis is enough and concluded by conclusion on Indonesia's fiscal sustainability condition.

3. Assessment on Indonesia's fiscal sustainability

3.1 Indonesia's fiscal sustainability based on debt to GDP ratio-related indicators

Based on the work of Blanchard and Horne above, here is the trend of Indonesia's primary gap from 2004-2011.

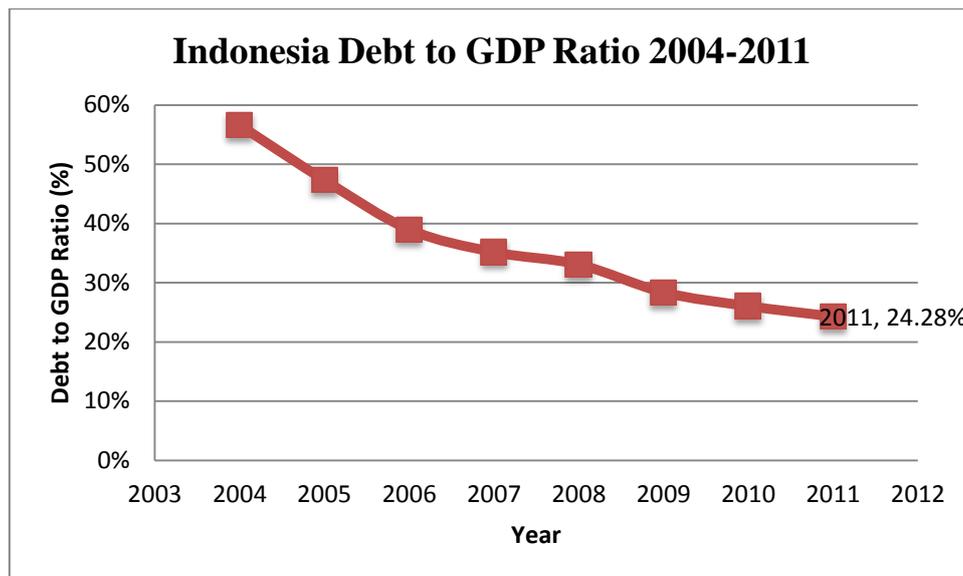
Figure 1. Indonesia Primary Gap 2004-2011



Source: Author's calculation

From the figure above we can see that Indonesia's primary gap has been improving from where it was in 2004, except in 2008 when there was spike in world oil price which affected Indonesia's budget badly through higher energy subsidy. In 2011, the primary gap already negative, which means there is fiscal space to increase spending without deteriorating the fiscal sustainability. Similarly, the debt to GDP ratio has constantly declined from 2004 onwards, as shown in figure below.

Figure 2. Indonesia Debt to GDP Ratio 2004-2011



Source: Indonesia statistic agency, processed

The figure above shows that Indonesia's debt to GDP ratio has constantly decreasing from 2004. It now reaches a very low level of debt to GDP ratio (28.28%). This debt to GDP ratio is much lower than many countries, such as Japan (230%), Italy (120%), USA (100%), India (65%), Turkey (45%), and many other developed and emerging economies. Finally, here is the trend of Indonesia's tax gap from 2004 to 2011.

Figure 3. Indonesia Medium Term Tax Gap 2004-2011⁴



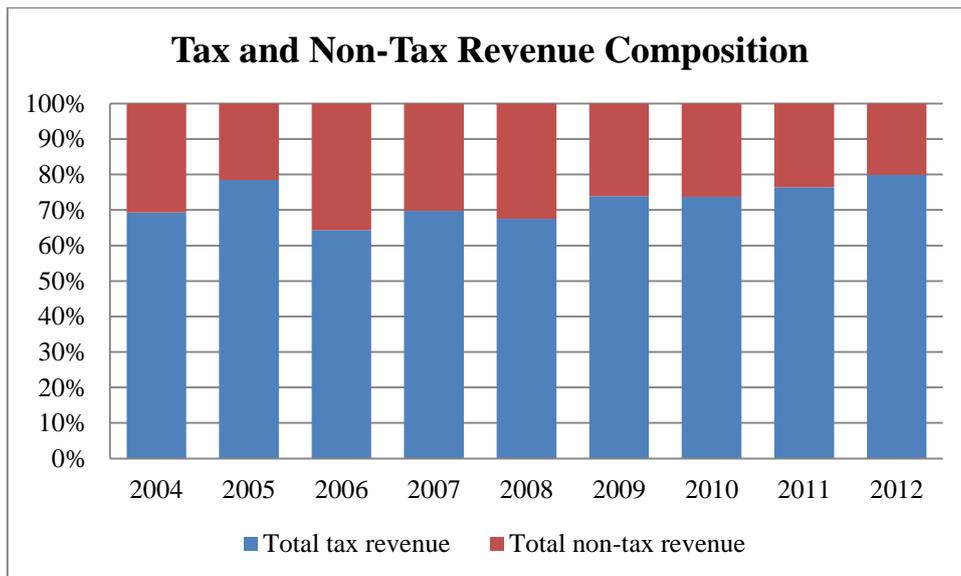
Source: Author's calculation

The figure above gives different message from the previous two figures. The previous two figures showed that Indonesia's fiscal sustainability has been improved, while the figure above shows that in medium term, Indonesia need to increase its tax revenue by 5.37% so that the fiscal sustainability can be achieved. The result seems to be a little bit contrary. It might be because the formula that was used to calculate the medium term tax gap only assume tax revenue as the only source of budget fund, while in Indonesia case, the non-tax revenue also contribute significantly to the state revenue. The proportion of non-tax revenue to the overall revenue can be as high as 30%, as shown in the figure below⁵.

⁴ For the 2010, data on 2012 used is the approved budget 2012; while the data to calculate the 2011 medium term tax gap use the projection of government expenditure and transfer in 2013. The projection was made based on the trend from the last two years.

⁵ In this figure and the rest figures on Indonesia, the data from 2004 to 2011 are based on the actual expenditures (audited); while the data of 2012 is based on the approved 2012 budget.

Figure 4. Tax and Non-Tax Revenue Composition



Source: Indonesia Minister of Finance, processed

From the three indicators above, in general, we can see that Indonesia's fiscal sustainability is improving from years to years, but still there is vulnerability from external shock, such as oil price shock, as well as the need to increase its tax revenue so that dependency on non-tax revenue (such as oil and gas revenue) can be removed. In short, we can conclude that there is no much problem with Indonesia's fiscal sustainability.

3.2 Going beyond Debt to GDP Ratio

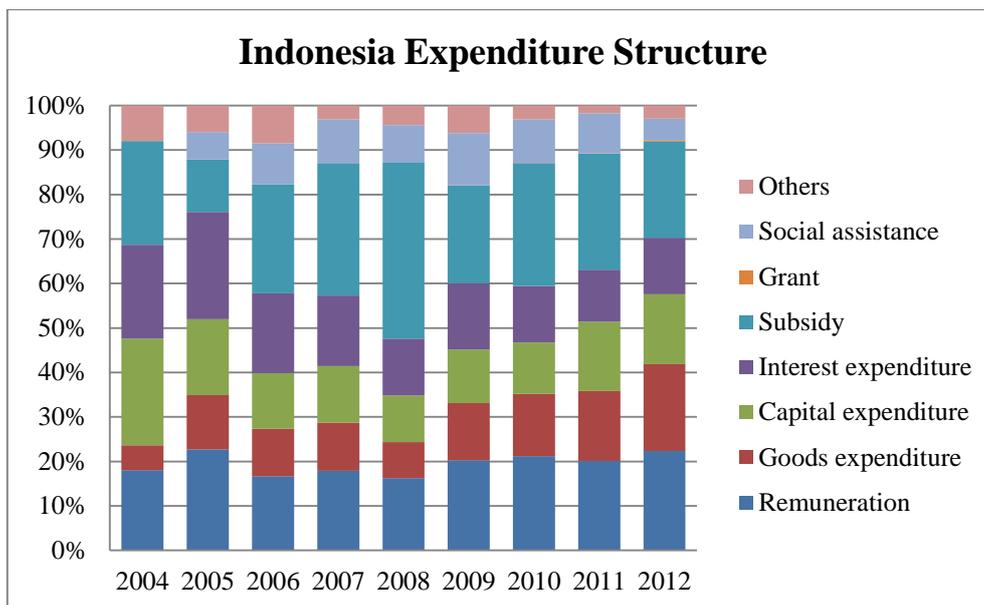
It seems to be too early to conclude that Indonesia's fiscal sustainability is in a good shape, besides, in academic, it is good to be more conservative and be prepared for the worst. There is possibility that the problem in Indonesia's fiscal sustainability is hidden, which means it cannot be seen from debt to GDP ratio alone. One possibility is that the problem might lie in the composition of government revenue and expenditure. There are two main reasons why we have to look to composition of revenue and expenditure in assessing fiscal sustainability.

First, the composition of expenditure can give sign of how vulnerable one country is to a shock from external, such as the oil and commodity prices volatility. A country which provide significant amount of energy and food subsidy could face unfavourable fiscal situation when there is rapid increase in energy and commodity prices. Besides that, the composition of expenditure can also explain whether the demographic characteristic will or will not affect the fiscal sustainability in the long run.

Second, the composition of revenue can give sign whether the source of revenue is sustainable or not and whether the revenue potential has been realized. A country which its source of revenue come from unsustainable sources, such as from oil & gas and other minerals, can looks like having a good fiscal sustainability from debt to GDP ratio indicators, yet it might not be sustainable in the long run.

In regards to the reasons above, here is the composition of Indonesia’s expenditure and revenue in 2004-2012 budgets.

Figure 5. The Structure of Government Expenditure by Type



Source: Indonesia Minister of Finance, processed

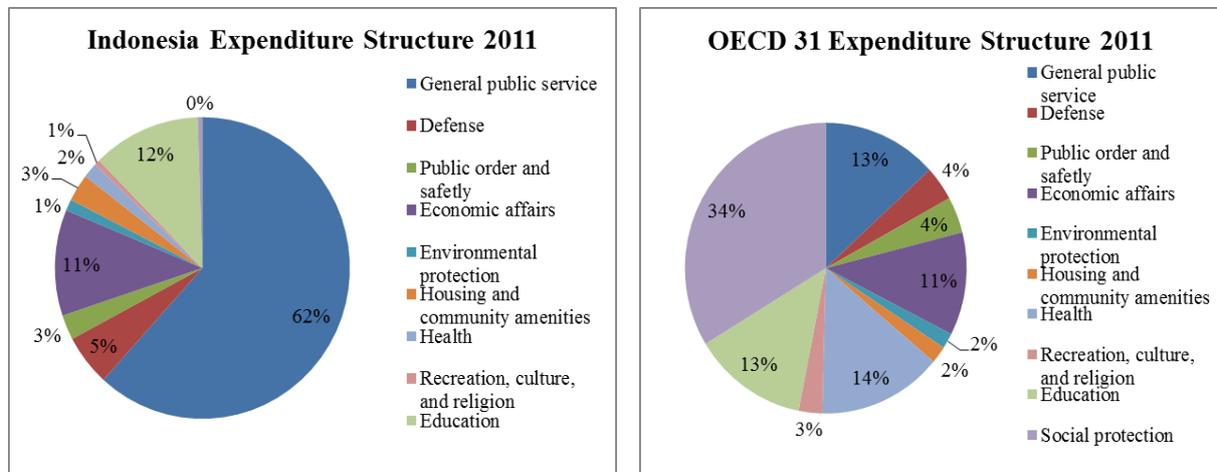
From the figure above we can see that government expenditure has been dominated by employee remuneration (around 20%), goods expenditure (around 20%), interest expenditure (around 10%) and subsidy (around 20%). Capital expenditure constitutes a fair amount (17%) of the budget, while social assistance just contributed to small percentage (5%). This type of budget composition shows that government budget has been dominated by routine expenditure and less allocation for development purposes, such as infrastructure or capital expenditure.

However, as mentioned earlier, routine expenditure in other countries, such as the 31 OECD countries⁶, is composed mainly by entitlement, such as pension and medical care expenditure.

⁶ OECD countries are chosen as a comparison because it is a group of world most developed country which can be a role model for Indonesia. The author aware that some aspects cannot be forced to be on par with OECD condition, yet it is still worthwhile to see Indonesia’s position compared to OECD’s.

So the composition is very different with Indonesia. The figure below compares the budget composition of Indonesia and 31 OECD countries by function in 2011.

Figure 6. The Composition of Indonesia and OECD Government expenditure



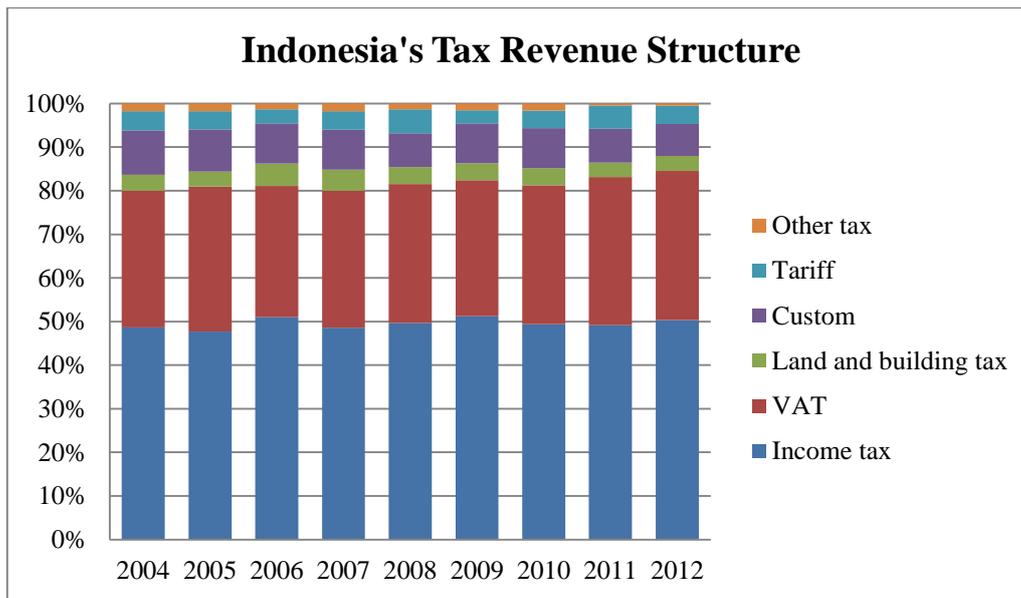
Source: Indonesia Ministry of Finance and OECD Data Base, processed

From the figure above, as mentioned earlier, the proportion of social protection expenditure is very high in OECD countries, i.e. around 34%, while the percentage is negligible (less than 1%) in Indonesia. The expenditure of general public service expenditure, such as remuneration of public servants, debt payment, and interest payment, constitute the biggest chunk of Indonesia budget, i.e. around 62%, while it is only 13% in OECD countries.

The comparison above can explain why Indonesia's fiscal condition can be categorized, to some extent, as sustainable. Most of OECD countries, who experience ageing population problem, will face big fiscal challenge such as increasing pension and medical assistance expenditure. On the other hand, 20 years from now, when the demographic bonus period will end in Indonesia and the percentage of elderly will increase to the total population; Indonesian government's fiscal condition will not be much affected because they are not liable to provide pension and medical care to the elderly.

From the revenue side, here is the structure of Indonesia's tax revenue and its OECD counterpart.

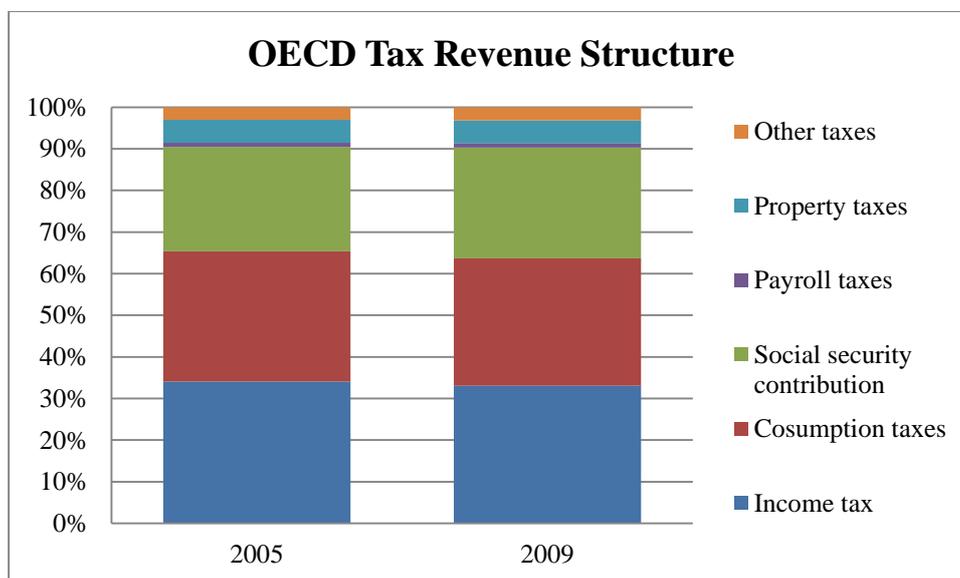
Figure 7. The Structure of Indonesia Tax Revenue



Source: Indonesia Minister of Finance, processed

As a comparison, the figure below is the OECD tax revenue structure.

Figure 8. The structure of OECD tax revenue



Source: OECD Tax Database, processed, available at www.oecd.org/ctp/taxdatabase

From the two figures above we can observe that Indonesia's tax revenue has been dominated by income tax, i.e. around 50%, while it is only 30% in OECD countries. The consumption tax both in Indonesia and OECD constitutes for about 30% of the revenue. The main difference is in the social security contribution. Indonesia currently does not have social

security system⁷. This is why there is no social security contribution in government budget revenue, while in OECD countries, this contribution has constituted quite significant amount of government revenue (around 24%).

3.3 Conclusion on Indonesia's Fiscal Sustainability Condition

Based on the analyses above, we could conclude the following for Indonesia's fiscal sustainability:

First, based on the three debt to GDP ratio-related indicators, Indonesia's fiscal condition can be said has achieved sustainability. The primary gap ratio is negative, which means the fiscal space is available; the debt to GDP ratio is also among the lowest in emerging countries; but the tax gap has been increasing in the recent years.

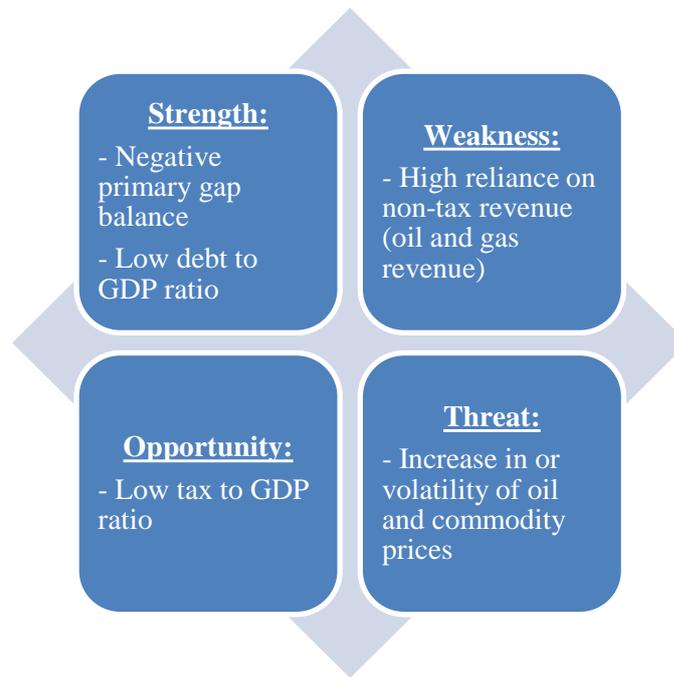
Second, from further analysis on the composition of Indonesia's budget, the budget faces sustainability threat, mainly from the external factor, such as oil and commodity prices volatility. Besides that, if the government can maintain the status quo, where there is no obligatory spending on the pension and medical care for the elderly or to the population in general, the fiscal condition is in sustainable shape.

Third, from the revenue side, on one hand, the fiscal position is not quite sustainable because of high reliance on unsustainable-non-tax revenue, such as revenue from oil and gas; however the low tax ratio (tax to GDP ratio) also implies that the country has big tax collection potential. Thus improvement in tax collection system is needed.

In short, Indonesia's fiscal sustainability can be summarized as follow:

⁷ Social security system in simple term is what we called by pension in daily life. Two types of social security system are exist, i.e. funded program (defined contribution and defined benefit) and Pay As You Go program. (Population Refence Bureau 2009). Indonesian government provide pension to its civil servant. This pension is administered by the state own insurance company (Jamsostek Co.). In regards to health service, Indonesia also does not have universal coverage, however recently government provide free health care service to the poor in government own community health center and hospital.

Figure 9. SWOT Analysis of Indonesia's Fiscal Sustainability



Source; Author's analysis

Given this special character and dynamic of Indonesia's fiscal condition, the policies to enhance its position should be taken appropriately. The section below will focus on outlining such policies.

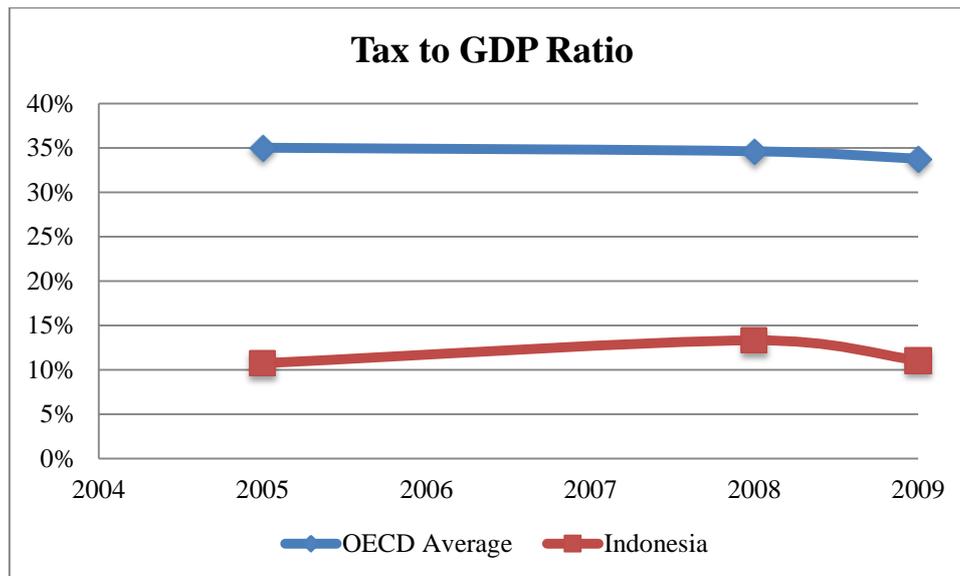
4. Policies to enhance Indonesia's fiscal sustainability

As implied from the fiscal sustainability SWOT analysis above, policy to capitalize the opportunity and mitigate the threat should be taken to improve Indonesia's fiscal sustainability. Several policies that Indonesia government could take are:

4.1 Policies to capitalize the opportunity

Indonesia's tax ratio is only around 12%, while the average is around 30% in OECD countries.

Figure 10. Tax to GDP ratio of Indonesia and OECD average



Source: Indonesia Ministry of Finance and OECD Tax Data base

This low tax to GDP ratio could be caused by low tax rate, narrow tax base, or low compliance rate. Because of time limitation, this paper will focus on the low income tax compliance rate. The tax payer compliance rate is quite low in Indonesia. The number of registered personal income tax payers is only around 15% of total work force and the compliance rate is around 40% in 2010 (Prasetya 2012).

To improve the income tax compliance rate, the tax administration in Indonesia should be improved. There are several lessons that can be drawn from Singapore income tax administration⁸:

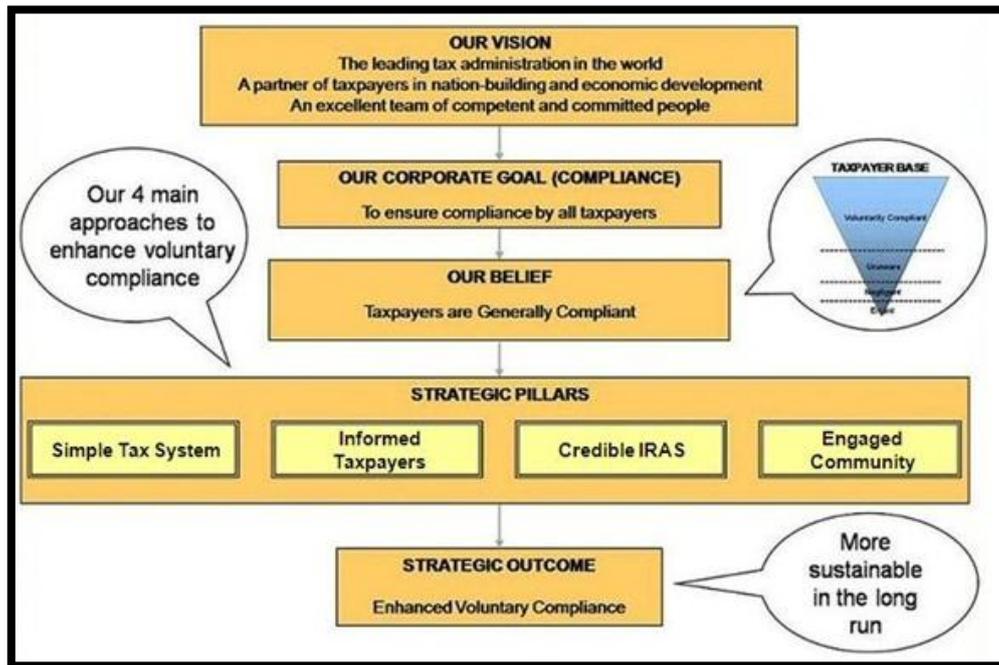
First, the main target should be to promote voluntary compliance with a low compliance cost. To apply this, four pillar in tax administration, as practiced by Singapore government can be an option, those are:

1. Simple tax administration so that it is easy to comply with the rules, process, and procedures.
2. Informed tax payers. Singapore government (in this case Inland Revenue Authority of Singapore/IRAS) provide more information to tax payers regarding their obligation.
3. Credible tax administration; i.e. every one contribute a fair share of tax.
4. Engaged community.

⁸ Singapore is chosen because it is well known for its efficient public service, including its tax administration.

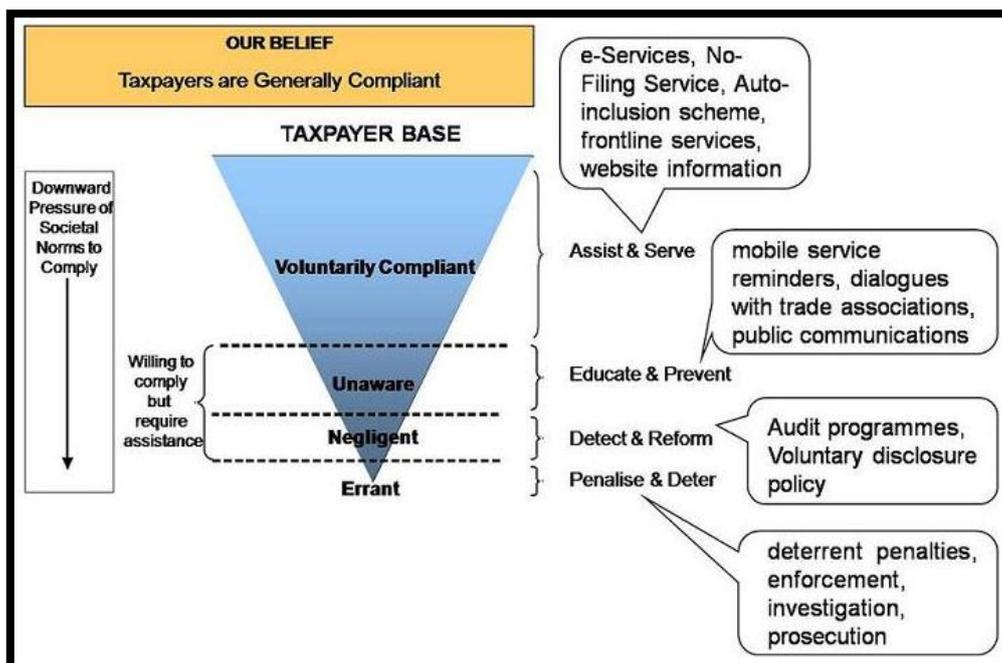
These pillars are included in the Singapore tax strategic compliance framework:

Figure 11. Singapore Tax Strategic Compliance Framework



Source: IRAS website, 2012

Currently, the tax administration in Indonesia is still very complicated. The tax payers are confused by many types of form that they have to file when reporting their tax. Furthermore, Singapore government also have concept in identifying and treating the population in regards to its tax administration.



Source: IRAS website, 2012

Second, the use of grace period to give chance to ones who made mistake in reporting their tax. This program is similar to sunset policy used by Indonesian government in 2008-2009. However the sunset policy in Indonesia is only once, while in Singapore it is continuous (every year). This will promote more tax compliance by the citizen.

Another program is to target specific industry where the compliance rate has been very low. Thus, tax education will be given to the respective industry player. This industry could include medical practitioners, hair and beauty service, tuition, etc. Currently, the personal income tax in Indonesia is dominated by people who are employed in certain industries only, which means there are several industry in Indonesia whose tax compliance rate are very low.

Besides that, people who are self-employed in Indonesia are rarely submitting their tax report. The significant number of informal sectors of the economy also explains why the tax compliance rate for personal income tax has been very low in Indonesia. Thus, policies to target this group should be taken.

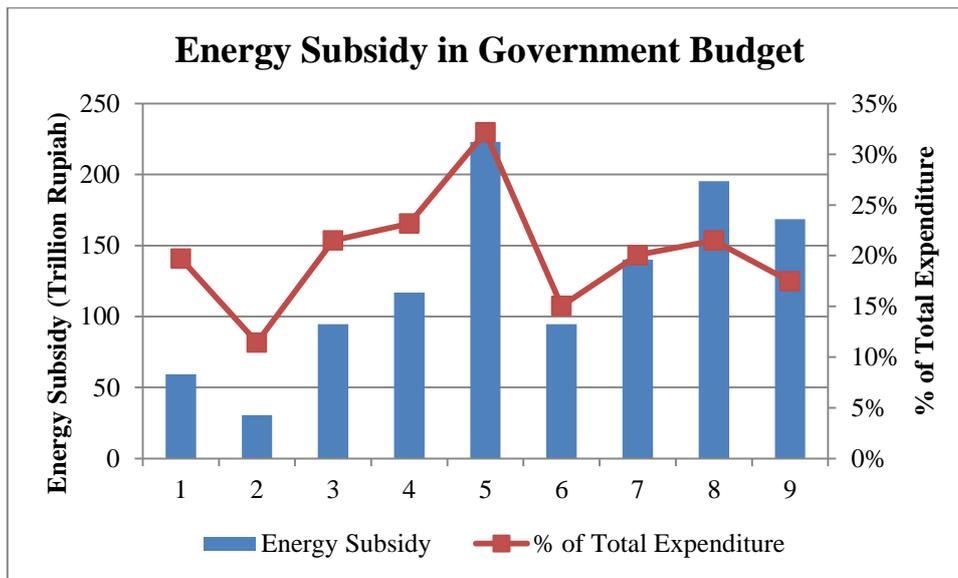
Third, extensive use of technology in tax administration. In Singapore taxation system, lower number of population has made the use of technology more feasible. Singaporean just needs to log in to the tax portal to submit their tax report; while in Indonesia, the process still very much manual. The internet literacy in Indonesia is still far below Singapore average, however, given the large number of urbanization (around 50%) and it is increasing, the e-tax administration could be started from people who live in the urban centres.

4.2 Policies to mitigate the threat

The second policy option to enhance Indonesia's fiscal sustainability is to reduce the vulnerability of government budget from external shocks. Some external factors are unmanageable, such as the world economic growth, crisis in international finance, etc., but some are still manageable. One central issue is the oil subsidy.

Oil subsidy is one of the major expenditure in government budget. Indonesian government subsidized the oil price for about two-third of the world oil price. Given the huge oil consumption, the amount of subsidy allocated each year has been significant. Here is the trend of oil subsidy in government budget.

Figure 12. Energy Subsidy in Indonesia Government Budget



Source: Indonesia Ministry of Finance, processed

From the figure above we can see that the oil subsidy accounted for about 17% of government budget. This money could have been spent more effective in other programmes. The problem with Indonesia oil subsidy is that the subsidy is not targeted. Thus the one who benefitted mainly from the subsidy is the rich and the smuggler, not the poor. The consumption of the gasoline has always been lies with the rich.

Finally, removing the oil subsidy will not only make Indonesia's budget more sustainable, but the budget can also be better allocated and better spent to a more productive areas, such as education and infrastructure development.

4.3 Policies to strengthen the strength

The strength of Indonesia's fiscal position has been in its low primary gap and low debt to GDP ratio. From non-macro side, there are several aspects that Indonesian government can improved, such as the budget administration. The impact of corruption to fiscal sustainability is still not clear, but intuitively, a corrupt fiscal administration will not give full impact of the budget to the economy. For example, corrupt infrastructure procurement could lead to a lower infrastructure quality which might deter economic activities.

In so doing, Indonesia government need to improve its internal control system and adopt a more transparent fiscal rule. A better managed budget will unleash the full function of the budget itself; those are allocation, distribution, stabilization, and performance management.

5. Summary and Limitation of research

5.1. Summary

This paper has focused mainly on the assessment of Indonesia's fiscal sustainability and outlined several policies that Indonesia government can take to improve its fiscal condition. Based on the debt to GDP ratio-related indicators, Indonesia's fiscal condition can be said in sustainable pattern. One caveat to this conclusion is that if the government want to keep the status quo, such as minimum social security for the people, then the fiscal is sustainable, but if government wants to provide social security to the people as many welfare states do, then the fiscal condition could be in trouble. Currently, the demographic challenge in Indonesia does not transform to be a fiscal challenge because of the absent of social security expenditure in the government budget.

From the analysis on government expenditure and revenue structure, it seems that the government budget is not sustainable in the long run. The expenditure has been dominated by routine expenditure which might not seem to be productive. Besides, the vulnerability to the external shock, such as world oil price could undermine the fiscal sustainability given the huge proportion of oil subsidy in the budget. From the revenue side, the budget will be more sustainable if the share of unreliable or unsustainable revenue can be reduced.

To improve Indonesia's fiscal sustainability, at least three things can be done. First, from the tax administration aspect, government should promote voluntary low cost tax compliance, tax education to specific industry, and more extensive use of IT. Second, from the expenditure side, Indonesian government needs to reduce oil subsidy, given its miss-targeted and possessing high burden to the budget. Lastly, Indonesian government needs to improve its budget execution by strengthening internal control system so that the full function of the budget can be unleashed.

5.2. Limitation of Research

There are several limitations of this paper which could be improved in further research. Some of them are:

1. The data of interest rate used in primary gap calculation is just the average of various interest rates of different government bonds. In a more precise fashion, the interest

rate used should be the individual rate. Nevertheless, the result from the calculation used in this paper is still reliable.

2. The policy recommendation on improving tax administration was only focus on the personal income tax. There many other type of tax which also require administrative improvement.

The topic of public finance has been very dynamic, both in analytical or quantitative aspect and its administration aspect. More researches in Indonesia's public financial management should be taken more often and in a deeper scale given the rapid development in Indonesia's public finance.

Bibliography

Beynet, Pierre, Andres Fuentes, Robert Gillingham, and Robert Hagemann. "OECD iLibrary." *OECD*. 18 March, 2011. <http://dx.doi.org/10.1787/5kgg9mc37d8r-en> (accessed 21 July, 2012).

Benz, Ulrich and Stevan Fetzter. "Indicators for Measuring Fiscal Sustainability: A Comparison of the OECD Method and Generational Accounting." *Public Finance Analysis*, Vol. 62, No. 3. 2006: 367-391.

Blanchard, Olivier Jean. "Suggestion for a new set of fiscal indicators." *OECD Working Papers*, 1990.

Celasun, Oya, Xaiver Debrun, and Jonathan D. Otsry. "Primary Surplus and Risks to Fiscal Sustianbility in Emerging Market Countries: A Fan Chart Approach." *IMF Staff Papers*, Vol. 53, No. 3. 2006: 401-425.

Claeys, Peter. "Sustainability of EU Fiscal Policies: a Panel Test." *Journal of Economic Integration*, Vol. 22, No. 1, 2007: 112-127.

Cournede, Boris, and Frederic Gonand. "OECD iLibrary." *OECD*. 30 October, 2006. <http://dx.doi.org/10.1787/414711615127> (accessed 21 July, 2012).

Edwards, Sebastian. "Debt Relief and Fiscal Sustainability." *NBER Working Paper Series*, May, 2002.

- Egert, Balazs. "OECD iLibrary." *OECD*. 21 April, 2011.
<http://dx.doi.org/10.1787/5kgdpm1hhc7k-en> (accessed 21 July, 2012).
- Fraser, A. Gabriella. "The Monetary and Fiscal Implication of Achieving Debt Sustainability ." *Social and Economic Studies, Vol 49. No. 2/3*, 2000: 47-76.
- Fullwiler, Scott T. "Interest Rate and Fiscal Sustainability." *Journal of Economic Issue Vol. XLI No 4*. 2007.
- Horne, Jocelyn. "Indicators of Fiscal Sustainability." *IMF Working Paper*, 1991.
- Indonesian Minister of Finance. "APBN 2012." *Direktorat Jendral Anggaran Departemen Keuangan RI*. 2012. http://www.anggaran.depkeu.go.id/Content/11-08-22,%20DataPokokIndonesia2006-2012_rev1.pdf (accessed 21 July, 2012).
- Inland Revenue Authority of Singapore. <http://www.iras.gov.sg/irashome/default.aspx> (accessed August 3rd, 2012).
- Jones, Randall S., and Masahiko Tsutsumi. "OECD iLibrary." *OECD*. 1 December, 2008.
<http://dx.doi.org/10.1787/230312273167> (accessed 21 July, 2012).
- Kia, Amir. "Fiscal Sustainability in Emerging Countries: Evidence from Iran and Turkey." *Journal of Policy Modelling Vol. 30*. 2008: 957-972.
- Koo, Chung Mo. "Fiscal Sustainability in the Wake of the Economic Crisis in Korea." *Journal of Asian Economics Vol. 13*. 2002: 659-669.
- Lenain, Patrick, Robert Hagemann, and David Caret. "OECD iLibrary." *OECD*. 22 October, 2010. <http://dx.doi.org/10.1787/5km5zrsp9230-en> (accessed 21 July, 2012).
- Kuncoro, Haryo. "The Cost of Public Debt Service: the case of Indonesia." *International Journal of Advance Economics and Business Management Vol. No 1, Issue No 1*, 2011: 014-024.
- Makin, Anthony J. "Public Debt Sustainability and Its Macroeconomic Implication in ASEA-4." *ASEAN Economic Bulletin, Vol. 22, No. 3*. 2005: 284-296.
- Mann, Catherine L. "Perspective on the US Current Account Deficit and Sustainability". *The Journal of Economic Perspective, Vol. 16, No. 3*, 2002: 131-152.

- Marini, Giancarlo and Alessandro Piergallini. "Indicators and test of Fiscal Sustainability: An Integrated Approach." *The Centre for Financial and Management Studies*. 2007
- Marks, Stephen V. "Fiscal Sustainability and Solvency: theory and recent experience in Indonesia." *Bulletion of Inodnesian Economic Studies*, 2004: 227-242.
- Mikesell, John L. *Fiscal Administration: Analysis and Application for the Public Sector 8th edition*. Boston: Wadsworth, 2011.
- OECD Tax Database. <http://www.oecd.org/tax/taxpolicyanalysis/oecdtaxdatabase.htm> (accessed August 3rd, 2012).
- Population Refence Bureau. "Social Security System around the World." *Today's Research on Ageing*, 2009.
- Prasetya, Rully. "Improving Indonesia Public Financial Management." *Annual Indonesian Scholar Conference*. Hsinchu, 2012.
- Raju, Swati. "Fiscal Sustainability Analysis of Tamil Nadu." *Economic and Political Weekly*, Vol. 43, No. 30. 2008: 131-135.

Appendix 1

Data Used in calculating Primary Gap, Tax Gap, and Debt to GDP Ratio

Indicators	symbol	2004	2005	2006	2007	2008	2009	2010	2011	2012*	2013*
interest rate of LT bonds	i	4.81%	5.04%	6.07%	5.90%	5.80%	5.40%	5.30%	5.30%		
Real GDP		1,656.50	1,750.80	1,847.10	1,964.30	2,082.40	2,178.80	2,313.80	2,463.20		
real economic growth rate	n	5.13%	5.69%	5.50%	6.35%	6.01%	4.63%	6.20%	6.46%		
outstanding debt	B	1299.5	1313.3	1302.16	1389.42	1636.74	1590.66	1676.85	1803.49		
primary balance	D	36.96	46.74	49.94	29.96	84.3	5.2	41.5	-44.2	-72.3	
public expenditure	G	236.809	202.084	360.95	424.817	605	535	609	801.6	951.7	
transfer	H	130.005	131.549	226.179	253.263	292.4	308.6	344.7	412.5	478.8	
Tax Revenue	T	279.207	297.844	409.203	490.988	658.7	619.922	723.306	878.685	1032.57	
GDP	GDP	2,296	2,774.30	3,339.20	3,950.90	4,948.70	5,606.20	6,436.30	7,427.10	7924.716	
outstanding debt/GDP	b	56.60%	47.34%	39.00%	35.17%	33.07%	28.37%	26.05%	24.28%		
primary balance/GDP	d	1.61%	1.68%	1.50%	0.76%	1.70%	0.09%	0.64%	-0.60%	-0.91%	
public expenditure/GDP	g	10.31%	7.28%	10.81%	10.75%	12.23%	9.54%	9.46%	10.79%	12.01%	13.00%
transfer/GDP	h	5.66%	4.74%	6.77%	6.41%	5.91%	5.50%	5.36%	5.55%	6.04%	6.20%
tax revenue/GDP	t	12.16%	10.74%	12.25%	12.43%	13.31%	11.06%	11.24%	11.83%	13.03%	
Primary gap	K2	1.43%	1.38%	1.72%	0.60%	1.63%	0.31%	0.41%	-0.88%		
1/3 (g+h) moving average		15.20%	15.59%	17.63%	16.78%	16.00%	15.40%	16.41%	17.87%		
Medium term tax gap	K3	2.85%	4.55%	5.60%	4.20%	2.62%	4.56%	4.93%	5.75%		