DOES THE CREDIBLE FISCAL POLICY REDUCE ITS VOLATILITY?
The Case of Indonesia

Haryo KUNCORO
Faculty of Economics
State University of Jakarta, Indonesia
har_kun@feunj.ac.id

Abstract
The objective of this paper is to investigate whether fiscal policy credibility, in form of explicit deficit rule or debt rule numerical constraints, can reduce the degree of its volatility. The main motivation behind this research is in one hand, a negative and robust correlation of fiscal policy volatility and long-run growth documented in several papers and on the other – relatively small number of works that discuss possible relation to the credibility. To test the hypotheses, we use the quarterly data in the case of Indonesia over the period 2001(1)-2013(4). By applying ordinary least squares method, we demonstrate that the impact of fiscal policy credibility on the fiscal policy volatility typically depends on characteristics of fiscal rule commitment. In one hand, the debt rule credibility significantly reduces the fiscal policy volatility. In contrast, the deficit rule incredibility increases the fiscal policy volatility. Those findings suggest the specific enforcement mechanism to promote automatic correction dealing with the dynamics of overall balance deficit.

Keywords: Fiscal Rules, Deficit, Debt, Credibility, Fiscal Policy Volatility
JEL Codes: D70, E62, H60

1. Introduction

One of the most striking macroeconomic developments during the last decades is the rise and persistence of large fiscal deficits in a number of countries. This trend had already been visible in the years preceding the implementation of massive fiscal stimulus, following the eruption of the 2007-08 financial crises. Despite recent major fiscal reforms around the world, many countries suffer from recurrent large fiscal imbalances that often reflect lack of fiscal discipline (Woo, 2006).

The lack of fiscal discipline generally stems from the injudicious use of policy discretion. While policymakers can respond to unexpected shocks and in allowing elected political representatives to fulfill their mandates, the discretion can be misused, resulting in persistent deficits and pro-cyclical policies, rising debt levels, and, over time, a loss in policy credibility (Kumar and Ter-Minassian, 2007).

Evidence of pro-cyclicality in fiscal policy has been covered in a number of studies (see for example: Lane, 2003). It seems that counter-cyclicality in developed countries and pro-cyclicality of fiscal policy in developing countries to have become the received wisdom (Kaminsky, Reinhardt, and Végh, 2004). Moreover, the pro-cyclicality applies to a wide variety of measures including total expenditure, the share of total expenditure in GDP, public consumption, and public investment (Kraay and Servén, 2008).

The mistiming of fiscal interventions in the form of correlation among those types of government expenditures (Gavin and Perotti, 1997) calls for adequate institutions or for rules, or both (Wyplosz, 2012). While the governments with a strong reputation of fiscal prudence may have less need for discretionary policy action if they have flexible fiscal rules (World Bank, 2014), fiscal rules are mechanisms to support fiscal credibility, sustainability, and counter-cyclical fiscal policies (Gutierrez, 2012). Eventually, all of them can induce the fiscal discipline to reduce fiscal policy volatility.

Knowing the fiscal policy volatility is important for several reasons (Javid et al., 2011). First, due to high deficit volatility, it is not possible to predict the timing and magnitude of fiscal policies and this generates inefficiency of economic decision making. Second, the fiscal deficit volatility may also cause the government spending volatility and the distortions created by temporary or infrequent measures to meet these fluctuations in spending.
Furthermore, when government spending volatility depends on fiscal deficit volatility, the quality and efficiency of the government services may also be reduced. Third, high fiscal deficit volatility may divert investment towards short term investment projects and leads to irreversible human capital losses. The high deficit volatility may lead to high volatility of interest rates which represents a financial burden for investments.

Indonesia is a good example to identify the relationship between fiscal credibility and fiscal policy volatility. Asian financial crisis in 1997/98 has directed government expenditures to focus on the economic recovery. The sharp increase in fiscal deficits and public debt in that period has raised concerns about the sustainability of public finances and highlighted the need for a significant adjustment over the medium term. According to the Law No. 17/2003, since 2004 Indonesia has been operating a fiscal rule based on maximum deficits and debt replacing the balance budget rule implemented since 1967.

In line with the global financial crisis in 2008, the government attempted to revive economic activity through various fiscal stimulus measures. After that, gradually Indonesia in 2010s is one of the largest developing countries to implement various economic liberalization reforms that produce strong economic growth (Abdurohman, 2013). Surprisingly, the rule has not been tested, as Indonesia’s fiscal performance has been significantly better than the limits contained in the fiscal rule (Blöndal et al., 2009).

This paper enriches the literature on fiscal policy in the context of developing countries with focus on Indonesia. We hope that lessons from Indonesia will be useful to develop a better stabilization fiscal policy design for developing countries. The study is organized as follows. Section 2 discusses the theoretical and empirical literature on this area. The methodology and data is presented in section 3. The empirical results are discussed in section 4 and the last section delivers the concluding remarks.

2. Literature Review

In the theoretical strand, according to the most widespread definition, fiscal policy rules set numerical targets for budgetary aggregates. More specifically, they pose a permanent constraint on fiscal policy, expressed in terms of a summary indicator of fiscal outcomes, such as the government budget balance, debt, expenditure, or revenue developments (Kopits and Symansky, 1998).

The adoption of fiscal rules is supported by various schools of thoughts. The (Neo) Classical paradigm advocates the importance of fiscal rules that primarily aim at restricting government spending, budgetary deficits, and government debt in order to safeguard fiscal sustainability. The (Neo) Classical paradigm argues that those restrictions are necessary condition to avoid crowding-out effect.

The (New) Keynesian school of thought believes the existence of crowding-in effect induced by budgetary deficit and government debt. Therefore, the (New) Keynesian paradigm emphasizes that fiscal rules primarily aim at stabilizing macroeconomic fluctuations. These fiscal rules are guided by short-run (New) Keynesian principles of fiscal management (see: Marneffe et al., 2011).

In the institutional economics point of view, while the first primary objective of fiscal rules is to enhance budgetary discipline, they can also foster policy coordination between different levels of government depending on their institutional coverage. Fiscal rules typically aim at correcting distorted incentives and containing pressures to overspend, particularly in good times, so as to ensure fiscal responsibility and debt sustainability.

Political economists argue that the adoption of fiscal rules seek to provide a solution to the deficit bias problem that is caused by politicians’ short-sightedness, the common pool, and the free rider problems. In their perspective, therefore, the effectiveness of fiscal rules depends on the political and public support of fiscal sustainability and on the existence of a sound fiscal framework.

Those different perspectives provide the same basic idea of fiscal rules. Most of them suggest that fiscal rules should be supported by legal frameworks as prerequisite to ensure credible fiscal policy. It seems that all of the above paradigms agree that in the long-term fiscal rules may further contribute to the reduction of uncertainty about future fiscal policy developments.

In general, the existing empirical studies could be divided into two grand categories. The first group deals with the macroeconomic consequences induced by the fiscal policy volatility. The second one is devoted to explain the volatility of fiscal policy. In the first group, Galí (1994), for example, constructs
a theoretical framework predicting output-stabilizing effects of government purchases. Ramey and Ramey (1995) presented evidence that government spending volatility has a negative effect on real GDP per capita growth.

The seminal article by Fatás and Mihov (2003) is particularly enlightening: they firstly estimate a measure of discretionary fiscal policy starting from a government expenditure series in order to exclude endogenous fiscal reactions to economic conditions, and then investigate its effects on output volatility. Conclusions suggest that the aggressive use of fiscal policy reduces macroeconomic stability.

Rother (2004) presents similar results focusing on inflation volatility. Subsequent studies are broadly in line with those initial findings (see, among others, Herrera and Vincent 2008), with some exceptions. For example, Badinger (2009) confirms the positive relationship between discretionary policy and output volatility, but not that between the former and inflation volatility, using data for OECD countries. Recently, Sacchi (2014) comprehensively analyzed the impact of fiscal rule on the stabilization function either on output growth or inflation volatility.

In the second category, although it has received less attention in the literature, excessive volatility in fiscal policy can undermine fiscal sustainability and lead to macro-financial distortions. Ciarlone and Trebeschi (2006) observed the sovereign debt in the developing countries. They found that their key determinants fail to predict the debt crisis. Tunner and Samake (2006) found that the probability of fiscal vulnerability can be reduced by fiscal adjustment programs. Celasun, et al. (2007) analyzed the probability of fiscal vulnerability in 5 developing countries. The most interesting result is that the fiscal policy itself is the source of fiscal vulnerability risks.

From a macro-fiscal point of view, Fatás and Mihov (2006) showed that numerical fiscal rules tend to lead to a lower degree of volatility in fiscal policy implementation. Looking at the underlying determinants, Furceri and Poplawski-Riberio (2008) found that smaller countries tend to have more volatile government spending which is contrast to Albuquerque (2012). Debrun et al. (2008) study the relationship between fiscal discipline and fiscal rules in the EU-25, and they found that fiscal rules lead to more stable budget policies and less pro-cyclical fiscal policies.

Woo (2009) shows that the degree of social polarization, by influencing the behavior of opportunistic policymakers, is also a factor that affects fiscal policy volatility. Hence, there is strong evidence that fiscal policy volatility, like other features of fiscal policy, is an outcome of opportunistic behavior of policymakers, political games, and conflict. Recently, Agnello and Sousa (2014) observed significant linkages between deficit volatility and the level of economic development, political instability, and inflation, especially in countries with trade openness.

Other studies directly assess the impact of explicit fiscal rules on fiscal policy volatility. Brzozowski and Siwinska-Gorzelak (2010) argued that fiscal rules have a significant impact on fiscal policy volatility, depending on the target of the rule - public debt or fiscal balance - and that, rules will increase or decrease policy volatility. In addition, Tapsoba (2012) directly documented the effect of national numerical fiscal rules upon fiscal discipline in a panel of developing countries and comes to the conclusion that fiscal rules have significant disciplinary effect on fiscal balance.

In the case of Indonesia, specific study dealing with fiscal policy is rare. In general, the previous studies relate with the impact of fiscal policy. Simorangkir and Adamanti (2010), for example, assessed the effectiveness of fiscal stimulus in accordance with the global financial crisis. Using financial computable general equilibrium approach, they found that relative to the effectiveness of fiscal expansion without monetary policy expansion or monetary expansion without fiscal expansion, the combination of those two policies is more effective.

Basri and Rahardja (2011) found that unanticipated shocks in central government spending had a little negative effect on real GDP. By using VAR models, they also found that impact multiplier for unanticipated tax shocks to real GDP are higher than that of unanticipated shocks in government spending. In the same spirit, Hur, et al. (2010) found the similar results. The fiscal stimulus programs have contributed substantially to developing Asia’s countries faster and stronger than expected recovery from the global financial crisis.
Regarding to the cyclicality of fiscal policy, Akitoby et al. (2004) and Baldacci (2009) had not found any counter-cyclicality in fiscal policy, i.e. the Indonesian fiscal policy tends to be more a-cyclical or even pro-cyclical. Jha, et al. (2010) found the absence of cyclicality of fiscal policy in the case of developing Asian countries. Overall, their panel empirical results lend limited support to the popular belief that counter-cyclical fiscal policy boosted aggregate demand and output.

Abdurohman (2013) investigated the practical behavior of fiscal policy in Indonesia in response to economic cycles to establish whether it follows general fiscal wisdom or amplifies the cycle. He showed that fiscal policy in Indonesia tends to be pro-cyclical. Surjaningsih, et al. (2012) concluded that the absence of discretionary fiscal policy made by the government. Unfortunately, they did not explore further the volatility of fiscal policy.

In contrast, Javid et al. (2011) observed that that high income, rising inflation, and large budget to GDP ratio are associated with budget instability; where as a strong inertia in budget deficit volatility exists. Therefore, Indonesia needs to be cognizant of specific structural and institutional features when employing fiscal policy as an economic stabilization tool (Dorasami, 2013). Those empirical studies bring us back to the issue of credibility of fiscal policy. In the next section, we empirically examine whether fiscal policy credibility significantly reduces the fiscal policy volatility.

3. Research Method

Given that a wide range of fiscal rules is conceivable and that the design of the appropriate fiscal framework depends on country-specific circumstances (see for example: Hallerberg et al., 2009), the effectiveness of fiscal credibility to address the fiscal policy volatility is hard to be generalized, however. Studies of the effect of fiscal institutions in general and fiscal rules in particular, face severe empirical limitations.

As noted by Bova et al. (2014), a fiscal rule, however strong, cannot substitute for commitment to comply with the rule, which is largely a political factor, and as such hard to measure. Establishing a direct link between the rule and a given outcome is equally challenging, as the outcome may be due to a host of other factors, some difficult to observe. And even if a link is found, it may be impossible to determine the direction of causality (fiscal discipline may have led to the establishment of the rule, rather than the other way around).

Moreover, in characterizing fiscal policy volatility, it is also hard to distinguish fiscal policy volatility from structural fiscal policy volatility. The former refers to variability in fiscal policy, while the latter refers to changes in policies such as product market regulations, trade taxes, regulatory trade barriers, and credit and labor market regulations (Sahay and Goyal, 2007) which often inherently include in the earlier. All these problems are compounded in the case of developing countries, given limitations regarding the length and reliability of data series and the likely existence of structural breaks.

To avoid those problems, we make some adjustments. First, we take into account government consumption expenditure as main representation of fiscal policy. Second, we choose the sample periods when the political circumstance is not highly fluctuated. Three, as a consequence, we do not explicitly incorporate the political factors rather we assume that the state budget is an optimal resultant of the political process\(^7\). It means that the fiscal policy credibility could have been captured them. Forth, unlike Brzozowski and Siwinska-Gorzelań (2010) and Tapsoba (2012) that used dummy variable to cover deficit rule and debt rule, we measure quantitatively the deficit rule and debt rule credibility respectively. The details are explained as follows.

The most important fiscal policy lever in the hands of the Indonesian government is government consumption. It would be worthwhile to see how change in government consumption impacts the final output in the economy. Following methodology used by Akitoby et al. (2006), we suppose there is a steady-state (or long-run path) relationship between government expenditure and output given by:

\(^7\) Some major transformations of public finance in early 2000s and budgeting process in Indonesia can be obtained in Blöndal et al. (2009).
\[ G = \Lambda Y^\delta \]  

(1)

\( G \) represents government expenditure and \( Y \) means output. Equation (1) can also be written in the first-difference logarithmic-linear form:

\[ \Delta \log G_t = a + \delta \Delta \log Y_t + \epsilon_t \]  

(2)

where \( \Delta \) is difference operator, \( a = \log (\Lambda) \) and \( \delta \) are parameters to be estimated, and \( \epsilon \) is unsystematic disturbance terms.

Following Fatás and Mihov (2003; 2006) and Afonso et al. (2010), equation (2) can be added by the lagged variable to accommodate persistency:

\[ \Delta \log G_t = a + \delta \Delta \log Y_t + \rho \Delta \log G_{t-1} + \epsilon_t \]  

(3)

where \( \rho \) indicates the degree of persistence and \((1-\rho)\) is the coefficient of partial adjustment.

The above derivation makes clear the underlying assumption that there is an elasticity relationship between output and expenditure (\( \delta \)), while the transitory deviations are random (\( \epsilon \)). The coefficient of \( \delta \) also represents the fiscal policy reaction function with respect to the business cycle.

Alternatively, we use cyclical component of the output variable to identify the cyclicality of fiscal policy using Hodrick-Prescott (HP) filter procedure as conducted by Furceri (2007) and Afonso and Furceri (2008):

\[ \Delta \log G_t = a + \delta \log Y_t + \rho \log G_{t-1} + \epsilon_t \]  

(4)

where \( CY \) is output gap

\[ CY_t = \log Y_t - \log (Y_t)_{\text{HP}} \]  

(5)

In cases where \( \delta \) is insignificant, there is no steady-state relationship between fiscal variable and output. Following Aizenman and Marion (1991), the unexpected effect of fiscal policy can be calculated by fitting a first-order autoregressive process and \( \rho \) is best estimated by omitting the output variable such that:

\[ \Delta \log G_t = a + \rho \Delta \log G_{t-1} + \epsilon_t \]  

(6)

Furthermore, according to Fatás and Mihov (2003; 2006), the term of \( \epsilon \) in those equations above is a quantitative estimate of the discretionary policy shock in government spending. We also extract the unsystematic component of government expenditure as measure to identify the power of discretionary fiscal policy. The volatility of fiscal policy is measured by the standard deviation (SD) of the discretionary fiscal policy for 4 consecutive quarters:

\[ \text{FPVol} = \text{SD}(\epsilon) \]  

(7)

Furthermore, budget deficit is the difference between government revenue end government expenditure. This applies for the actual (subscript A) and the planned (subscript P) budgets:

\[ \text{Def}_A = \text{Rev}_A - \text{Exp}_A \]  

(8)

\[ \text{Def}_P = \text{Rev}_P - \text{Exp}_P \]  

(9)

In short, fiscal policy is said to be credible if there is a little difference between actual and projected fiscal measures (Naert, 2011). Hence, the ratio of the actual deficit to the planned deficit represents the deficit policy credibility.

\[ Z_t = \frac{\text{Def}_A}{\text{Def}_P} \]  

(10)

The accuracy of deficit rule policy is indicated by a score of 1. If the deficit budget realization in the current period is less than what has been targeted before, the budget deficit credibility index would be indicated less than 1. Meanwhile, if the budget deficit realization exceeds the projected figures, the index will be more than 1.

The similar idea is applied for debt because debt is a legacy of past deficits. Unfortunately, neither flow nor stock of the planned debt for each year in Indonesia is unavailable. Hence, we estimate the projected total debt level using HP filter procedure. The difference between the actual debt stock and the projected debt stock level indicates the debt rule policy credibility.

\[ Z_2 = \frac{\text{Debt}_A}{\text{Debt}_P} \]  

(11)

Eventually, we can construct the fiscal policy volatility (FPVol) model that is a function of deficit rule credibility (\( Z_t \)), debt rule credibility (\( Z_2 \)), and other control variables (\( X \)):

\[ \text{FPVol} = \theta + \phi_1 Z_t + \phi_2 Z_2 + \phi_3 X_t + \xi_t \]  

(12)
The vector $X$ includes economic openness, dummy variable to accommodate the change in fiscal rules (DFR) since 2004, and global financial crisis (DGFR) in 2008. The degree of economic openness is calculated from the following equation:

$$\text{Openness} = \frac{(EX + IM)}{Y}$$  \hfill (13)

where $EX$ is export and $IM$ is import values respectively.

The sample periods chosen for this study extend from 2001(1) to 2013(4). The total observation operationally is 52 sample points. Most of the data are publicly available in quarterly. Even the debt data are published in monthly basis. Unfortunately, both the planned budget and the actual budget data are available only in annual basis. We interpolated linearly them into quarterly in order to fit to the other data.

Most of the data are taken from the central bank of Indonesia (www.bi.go.id) and Central Board of Statistics (www.bps.go.id). The total debt (summation of domestic and foreign debts) in domestic currency comes from Debt Management Office (www.djpu.kemenkeu.go.id). All of the variables are stated in 2010 base year (2010 = 1) using GDP price deflator. Most of the results are calculated in econometric program Eviews 8.

4. Results and Discussion

Table 1 reports the OLS estimation results of three models specified in the previous section. Estimation of the model with lag of dependent variable, as is actually done by Fatás and Mihov (2003; 2006) and Afonso et al. (2010) to avoid endogeneity problems, offers the worst and inconsistent result. The coefficient of lagged dependent variable as equation (3) and (4) is found to be negative implying dynamic instability. So, we did not report them in the Table 1.

<table>
<thead>
<tr>
<th>Dep. Var: $\Delta \log G_t$</th>
<th>Log-Linear</th>
<th>HP</th>
<th>AR</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C$</td>
<td>0.0897</td>
<td>0.0467</td>
<td>0.0725</td>
</tr>
<tr>
<td>$\Delta \log Y_t$</td>
<td>-3.1472</td>
<td>-3.1514</td>
<td>-0.5997</td>
</tr>
<tr>
<td>$\Delta \log G_{t-1}$</td>
<td>-0.0920</td>
<td>0.0735</td>
<td>0.3431</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.0920</td>
<td>0.2308</td>
<td>0.1959</td>
</tr>
<tr>
<td>$R^2$-adj</td>
<td>0.0920</td>
<td>0.2308</td>
<td>0.1959</td>
</tr>
<tr>
<td>SEE</td>
<td>4.9663</td>
<td>4.9635</td>
<td>26.5957</td>
</tr>
<tr>
<td>$F$</td>
<td>51</td>
<td>51</td>
<td>50</td>
</tr>
</tbody>
</table>

We start with the simplest model connecting directly the growth rates of government spending and output (model log-linear). Surprisingly, the corresponding coefficient is found to be negative, -3.15, and statistically significant. It suggests that the government decreases 3.15 percent as a response of 1 percent increase in output growth. This finding is contrast to the previous studies in Indonesia such as Akitoby et al. (2004), Baldacci (2009), Jha, et al. (2010) and Abdurohman (2013).

Furthermore, when we replace the rate of output growth with the growth of output gap based on HP filter procedure, model HP yields the similar coefficient, -3.15. It seems that the actual output growth is highly correlated with the growth of output gap. It implies further that the actual economic growth is almost closely to the potential one. Those two models prove that the government expenditure (in a broader sense: fiscal policy) in Indonesia is moderately counter-cyclical. It suggests that stabilization in recent years – instead of economic growth – has already become one of the primary objectives in Indonesian economic development.

However, incorporating lag of dependent variable in model HP gives the negative sign as found in models log-linear and HP. Those results are confirmed when we execute the autoregressive model by omitting the output growth variable (model AR). The coefficient of auto-regression is found also to be negative and statistically significant. In this case, we re-estimate the autoregressive model at the level data.
The later produces much better result. The coefficient of lag dependent variable is 0.93 indicating high degree of persistence. There is only 7 percent partial adjustment to respond to the desired expenditure level. We will use it along with models log-linear and HP (without lag dependent variable respectively) to identify the discretionary fiscal policy and further the volatility of fiscal policy. The calculation results of standard deviation of forecast error for each model are presented in Figure 1.

![Figure 1 Fiscal Policy Volatility](image-url)

Figure 1 offers the volatility of fiscal policy for each measurement. It seems that the three measurements confirm to each other. In the beginning of observation, the degree of fiscal policy volatility was relatively low. Surprisingly, the adoption of fiscal rule in 2004 tended to be followed by the increase in fiscal policy volatility. The high fiscal policy volatility in 2006 was associated with the spike in oil price. The high world oil price enforced the government of Indonesia to enlarge subsidy. After increasing the domestic oil prices in the surrounding months the volatility of fiscal policy remained stable in the next three years even though still high. The peak of fiscal policy volatility took place in 2009 as a consequence of global financial crisis. In that period, the central government launched fiscal stimuli amounting 73.3 trillion Rupiah (or equivalently 1.7 percent of GDP) allocated mostly to the social welfare in order to minimize the adverse economic impacts of global financial crisis.

It is also notable that overall the volatility of fiscal policy increases remarkably during observation periods. This raises preliminary hypothesis that the adoption of fiscal rules does not successfully yet reduce the fiscal volatility. In such a case, the fiscal policy credibility plays an important role and potentially can explain. We shall check it again empirically later using sophisticated econometric tools.

Table 2 presents the elementary statistics covering mean, median, and extreme (maximum and minimum) values for variables of interest. The average values of fiscal policy volatility for the three measurements are close to each others. Each the median value is close enough to the respective mean (in particular Z_2 and openness). The closeness of median to the mean value preliminary indicates that all of the variables of interest are normally distributed.

The symmetric distribution of the six variables is confirmed by the moderate value of skewness. Skewness measures the symmetric or normal distribution which the value is expected to be zero. The
skewness values for volatility variables are slightly lower than 0 indicating that the series are skewed to the right. In contrast, the skewness values for credibility indices and openness are greater than 0 indicating that the corresponding series are skewed to the left; the upper tail of the distribution is thicker than the lower tail.

Furthermore, the deficit policy credibility ($Z_1$) has the greatest value of kurtosis. The kurtosis measures the peakedness of flatness of the distribution with an expected value of 3.0. Most of the kurtosis values of the series are less than 3. The result shows that only $Z_1$ series have kurtosis value exceed 3 implying that the tails of the distribution are thicker than the normal (i.e. leptokurtic).

The Jarque-Bera test is used to test whether the random variables with unknown means and constant dispersions are normally distributed. The Jarque-Bera test has the null hypothesis of normally distributed residuals. The probability value indicates an acceptance of the null hypothesis that the series are normally distributed. The Jarque-Bera tests confirm that all variables (except $Z_1$) are symmetrically distributed (bell-shaped) indicated by probability value higher than 1 percent.

It is also important to note that the credibility index of deficit rule on the average is lower than unity (0.72) implying that the projected deficit is greater than the actual one. Conversely, the debt rule credibility index on the average is almost 1 indicating that the actual debt stock level equals to the expected value. Given those result above, we can say that the debt rule policy is more credible than that of deficit rule policy.

Table 2 Descriptive Statistics of Fiscal Volatility and Fiscal Policy Credibility

<table>
<thead>
<tr>
<th></th>
<th>VOL</th>
<th>VOLHP</th>
<th>VOLAR</th>
<th>$Z_1$</th>
<th>$Z_2$</th>
<th>Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.2462</td>
<td>0.2462</td>
<td>0.2533</td>
<td>0.7217</td>
<td>1.0016</td>
<td>0.5414</td>
</tr>
<tr>
<td>Median</td>
<td>0.2406</td>
<td>0.2406</td>
<td>0.2452</td>
<td>0.6975</td>
<td>0.9959</td>
<td>0.5423</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.3908</td>
<td>0.3906</td>
<td>0.3933</td>
<td>3.0792</td>
<td>1.0929</td>
<td>0.6669</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.0797</td>
<td>0.0797</td>
<td>0.0989</td>
<td>-0.4397</td>
<td>0.9402</td>
<td>0.4375</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.1008</td>
<td>0.1008</td>
<td>0.0929</td>
<td>0.6129</td>
<td>0.0369</td>
<td>0.0584</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.0514</td>
<td>-0.0513</td>
<td>-0.0561</td>
<td>1.2016</td>
<td>0.5114</td>
<td>0.0622</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.6994</td>
<td>1.6996</td>
<td>1.7536</td>
<td>6.5035</td>
<td>2.3619</td>
<td>2.2111</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>3.4045</td>
<td>3.4032</td>
<td>3.1325</td>
<td>36.0986</td>
<td>2.9070</td>
<td>1.2758</td>
</tr>
<tr>
<td>Probability</td>
<td>0.1823</td>
<td>0.1824</td>
<td>0.2088</td>
<td>0.0000</td>
<td>0.2338</td>
<td>0.5284</td>
</tr>
</tbody>
</table>

In the proceeding section, we focus on the impact of the two fiscal rules policy credibility on the fiscal policy volatility. Table 3 reports the OLS estimation results of three regression models as specified equation (12) in the previous section. All of the hypothesized variables are found to be statistically significant at least at 10 percent or even lower confidence level. They are confirmed by the high coefficient of determination ($R^2$) and F statistic values.

The estimation results show that the impact of the deficit rule is everywhere significant and positive. This indicates that deficit rules increase the volatility of public consumption expenditure. The sign of the coefficient of the debt rule is negative and significant. This suggests that in presence of debt rules attenuates fiscal policy volatility.

It seems that the lower credibility of policy (deficit rule) tends to induce the fiscal policy volatility. The deviations of the deficit from the target are theoretically associated with higher costs in terms of public disapproval or the loss of credibility which translates into larger premium on government securities in the financial markets. Conversely, the higher credibility of policy (debt rule) tends to reduce the fiscal policy volatility. Those findings basically support to the study of Brzozowski and Siwinska-Gorzelak (2010) and Tapsoba (2012).

The degree of economic openness can also potentially decrease the fiscal policy volatility. A substantial portion of central government consumption is to purchase goods and services from abroad.
Therefore, the international trade fosters the stable fiscal policy. This result is in line with Agnello and Sousa (2014). Hopefully, joining the AEC (ASEAN Economic Community) membership in 2015 will significantly reduce the excessive fiscal policy volatility.

As expected before, the coefficients of dummy variable of fiscal rules adoption and global financial crisis are positive respectively. Those are plausible result because the implementation of fiscal rules in Indonesia is in the earlier steps after switching from the balance budget rule adoption for a long time. Along with the evolution of public finance which is currently taking place continually, the adoption of fiscal rules will reduce the fiscal policy volatility.

Overall, the fiscal policy volatility tends to sharply incline. Since the volatility here refers to government consumption expenditure, we can say that there is high degree of variability and instability or even uncertainty in the government expenditure. The main source of that situation is energy subsidy. Energy subsidy is burden to the budget. Since the budget deficit limit at 3 percent of GDP, an increasing the energy subsidy has cost other important sectors like infrastructure and health (Ikhsan, 2014).

Second, given that subsidies have been a rising component of expenditures in recent years, tax revenues are a declining component of overall revenues as a result of narrowness of revenue base. Presently, the government revenue is dependent mostly on direct taxes on income and contributions natural resources. The contributions from natural resources have been growing over the years. This is a risky situation, considering the fact that oil and gas is not a reliable source of revenue over the medium to long term because the commodities are depleting natural resources, and their prices are volatile.

Third, as a result, Indonesia has one of the lowest tax-to-GDP ratios in the Asia-Pacific region. For example the tax rate in 2011 was only 10.9 percent. The low collection of tax revenues and weak administration are the primary causes. Notwithstanding a nearly fourfold increase in registered taxpayers over the last decade, voluntary compliance and enforcement procedures remain low. This limits fiscal resources and constrains the government’s ability to spend on social and economic development resulting in insufficient infrastructure development expenditures.

Table 3 Estimation Results of Fiscal Policy Volatility

| Dep. Var: FPVol | Log-Linear | | HP | | AR |
|-----------------|-----------|-----------|-----|-----------|
| C               | 1.2256    | 0.0000    | 1.2259 | 0.0000 | 1.1510 | 0.0000 |
| Z₁              | 0.0252    | 0.0440    | 0.0252 | 0.0438 | 0.0253 | 0.0277 |
| Z₂              | -0.9453   | 0.0000    | -0.9451 | 0.0000 | -0.8946 | 0.0000 |
| Openness        | -0.3227   | 0.0481    | -0.3238 | 0.0474 | -0.2604 | 0.0798 |
| DFR             | 0.0887    | 0.0001    | 0.0887 | 0.0001 | 0.0917 | 0.0000 |
| DGFC            | 0.1002    | 0.0000    | 0.1001 | 0.0000 | 0.0893 | 0.0000 |
| R²              | 0.8156    |           | 0.8157 |           | 0.8182 |           |
| R²-adj          | 0.7936    |           | 0.7938 |           | 0.7965 |           |
| SEE             | 0.0458    |           | 0.0458 |           | 0.0419 |           |
| F               | 37.1531   |           | 37.1858 |           | 37.7927 |           |
| N               | 48        |           | 48     |           | 48     |           |

5. Conclusion
Volatility of government spending is an undesirable feature of fiscal policy. The smooth time profile of government spending enhances economic growth and justifies the quest for institutional solutions conducive of steady fiscal policy stance. Deficit and debt rules are among the most widespread legislative measures implemented to that end. The aim of this paper was to provide direct empirical evidence on the relationship between fiscal policy (deficit and debt) credibility and fiscal policy volatility in the case of Indonesia over the period 2001–2013.

The main motivation behind this research is in one hand, a negative and robust correlation of fiscal policy volatility and long-run growth documented in several papers and on the other – relatively small number of works that discuss possible relation to the credibility. To the best our knowledge, this is
the first study that investigates the effectiveness of fiscal policy in Indonesia by linking fiscal rules deviation and government expenditure volatility. We use the ordinary least squares method to analyze the quarterly data on deficit rule and debt rule policy and their impact on the government expenditure volatility extracted from discretionary fiscal policy.

Based on statistical analysis, we found that deficit rule policy is less credible compared with the debt rule policy. Furthermore, our pragmatic approach proves that the impact of fiscal policy credibility on the fiscal policy volatility typically depends on characteristics of fiscal rule commitment. In one hand, the debt rule credibility significantly reduces the fiscal policy volatility. In contrast, the deficit rule incredibility increases the fiscal policy volatility. In short, we can conclude that credibility matters; the incredible fiscal deficit rules tend to destabilize fiscal policy, while rules constraining the value of public debt have an opposite result – they tend to have a stabilizing effect.

Those findings provide some important economic implications. First, they suggest the need for specific enforcement mechanism to promote automatic correction dealing with the dynamics of overall balance deficit. Second, the sound and prudent fiscal policy management is necessary to anticipate possible increase in budget deficit in the long-term. Third, as a consequence, to address the credibility problem, it is sometimes suggested to install fiscal councils with independent powers on top of the fiscal rules. Fiscal councils with tasks in forecasting and assessing fiscal policy have been and are being introduced in more and more countries.

References


