Fiscal and Monetary Policy Interaction : Evidences and Implication for Inflation Targeting in Indonesia

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A b s t r a c t

Paper ini menganalisa interaksi kebijakan fiskal dan moneter di Indonesia pada masa sebelum dan sesudah krisis, dengan melakukan estimasi atas quasy fiscal activity *(QFA) Bank Indonesia dan mengurai interaksi antara kebijakan fiskal dan moneter. Penulis menemukan bahwa selama masa krisis, aktifitas ini (QFA) ada dan dilakukan oleh bank sentral Indonesia. Hal ini berbeda dengan masa sebelum krisis dimana QFA memiliki besaran yang netral. Dalam kaitan interaksi kebijakan fiskal-moneter, fakta ini menunjukkan dominasi kebijakan fiskal pada masa setelah krisis.*

Analisa interaksi antara kebijakan fiskal dan moneter ini membawa implikasi kebijakan di Indonesia yakni perlunya disiplin dalam kebijakan fiskal dan perlunya komitmen untuk mempertahankan sustainability *kebijakan tersebut. Kegagalan mencapai kebijakan fiskal yang optimal akan mengurangi efektifitas kebijakan moneter dalam rangka mengontrol inflasi meski dalam kerangka inflation targeting yang secara parsial sudah diimplementasikan oleh Bank Indonesia.*

Keyword: Quasi Fiscal Activities, Fiscal Policy, Monetary Policy, Inflation Targeting
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1. INTRODUCTION

Intensive challenges in conducting macroeconomic policies emerged in Indonesia since the Asian crises hit in 1997. Monetary policy was engaged with exhaustive challenges. Exchange rate depreciated sharply while monetary base grew rapidly triggered by central bank's liquidity support. Under these circumstances, inflation increased sharply in 1998 to reach 82%. On fiscal policy side, the sharp depreciation of the exchange rate inevitable raised the foreign debt burden in term of domestic currency. Moreover, a huge amount of expenditure was still required regarding the policy to restore the banking system and also to finance other government operational expenditures.

Macroeconomic policies pursued afterwards expressed the effort to solve the problem. Tight monetary policy was conducted to absorb a huge amount of excess liquidity. From fiscal side, central government had issued domestic debt both for replacing the central bank's liquidity support and for recapitalizing banking system during period September 1998 and October 2000 (Bank Indonesia, 1999 and Hawkin, 1999). Furthermore, starting 2002 government has also issued different types of bond to finance the state budget deficit[2] . The total government debt, both domestic and external, rose from 25% of GDP at end-1996 to 96% at the end of 2000.

This paper is intended to test empirically fiscal and monetary policy interaction during that period of macroeconomic adjustment. The interaction will be viewed from the plausibility quasi fiscal activities by central bank (QFA)[3] and be extended to test fiscal versus monetary dominance. The QFA estimation is motivated by the fact that during the period adjustment, the fiscal side come under a heavy burden while in monetary side accorded a sharp increase. On assumption that consolidated government budget identity holds this fact generates some suspicion of fiscal monetization in Indonesia during that period. Conceptually, this circumstance could lead to QFA since QFA emerges if total public sector spending is above additional central government public debt. As residual of those two variables, QFA is required to finance the central government financial gap.

Moving forward from QFA issue, fiscal versus monetary dominance test is also gauged to confirm the QFA result. Still on assumption that consolidated government budget identity holds, the presence of QFA could also imply the presence of the fiscal dominance in view of fiscal and monetary policy interaction. Under this circumstance, fiscal policy which is reflected

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2 Boediono (2004) explained that the increase of the domestic debt was associated with the effort to support banking system and classified them into three main policy namely (i) policy to overcome the shortage of liquidity in banking system through Bank Indonesia's liquidity support, (ii) policy to guarantee public's deposit in banking system and (iii) policy to recapitalize banking system.

3 The acronym QFA will be used frequently to express the quasi fiscal activities by central bank

in present value of primary balance will move exogenously to the initial total public debt and sequentially required monetary policy to satisfy consolidated budget identity.

Extending method proposed by Buiter (1993), Budina-Wijnbergen (2000) and Markiewicz (2001) for the QFA estimation, the paper finds that fiscal and monetary interaction in Indonesia the during the crises has created QFA phenomenon. Most of the source behind the figure since 1998 inevitably was the effect of rescue operation held by the central bank associated with the financial system which has consecutively deteriorated central bank balance sheet. In addition to this source, huge increase in central bank securities also contribute to QFA because it has enlarged the cost of central bank on monetary instrument and again sequentially worsen central bank balance sheet position. Parallel to the QFA result, the paper also finds that fiscal policy is likely to be more dominant in view of fiscal and monetary policy interaction during the crises. Utilizing method employed by Canzoneri *et.al* (2001) and Tanner and Ramos (2002), paper obtains that fiscal policy has moved exogenously to debt performance post 1997 such that could lead to the emergence of fiscal dominance classification.

Based on the findings, the paper finds some implication for monetary policy in Indonesia. The nature of fiscal and monetary policy interaction implies that imposing monetary policy effectiveness in Indonesia still call for a higher fiscal discipline and commitment of the government to maintain the sustainability. Parallel to some arguments[4] , this paper's results imply the failure to solve fiscal performance optimally could deteriorate monetary policy effectiveness to control inflation even under inflation targeting framework which has been partially implemented in Indonesia.

Paper will be organized into five parts. Part two estimates the QFA by central bank in Indonesia. Employing part two result, part three presents the test of fiscal versus monetary policy dominance. Part four addresses some implications of the results for the effectiveness of monetary policy in Indonesia under inflation targeting framework. Part five concludes the paper.

2. ESTIMATING QUASI FISCAL ACTIVITIES BY CENTRAL BANK

In this part, firstly we estimate quasi fiscal activities by central bank. Indeed the estimation will only provide an approximation of QFA, not a precise number because the method used to estimate only applies to the aggregation level. This approach provides a good direction of QFA if the precise information of QFA is not available (Markiewicz, 2001).

4 See Loyo (1999), Blanchard (2004), Favero and Giavazzi (2004)

QFA in this estimation is obtained from the simple manipulation of consolidated government budget constraint which is formed from central government budget constraint and central bank financial account. As explained in many macroeconomic and monetary theory text books[5], consolidated government budget constraint defines that in addition to revenue from tax, to meet the spending, government sells bonds to public and/or to the central bank. On assumption that consolidated government budget identity holds, QFA will be acquired if total public sector borrowing requirement[6] is higher than additional central government public debt which eventually finance from central bank to fill central government financial gap.

2.1. Analytical Review

To describe the QFA in Indonesia, I modified and extended the Buiter (1993), Budina-Wijnbergen (2000) and Markiewicz (2001) analytical framework such that it could represent Indonesia's consolidated public budget identity 'prototype'. As explained earlier, to derive QFA, firstly we should form consolidated government budget constraint which is amalgamated from central government budget constraint and central bank's financial account.

Government Budget Constraint

As explained in many standard analyses, central government budget constraint can be depicted as:

$$\begin{aligned} & G - T + iB^{t}_{-1} + iDC^{g}_{-1} - iDEP^{g}_{-1} + [(1+\hat{E})(1+i^{*}) - 1]B^{*}_{-1}E_{-1} \\ & \quad = \Ä B^{t} + \Ä(B^{*}E) + \Ä DC^{g} - \Ä DEP^{g} + CBT \end{aligned} \tag{2.1}$$

where G – the non interest government spending, T – government domestic revenue including non-tax revenue, i – nominal interest rate, B^{t} - total government' domestic debt, DC^{g} - credit to government from central bank, DEP^{g} - government deposits at the central bank, B*- government' foreign debt, E – nominal exchange rate, CBT – transfer from central bank which obtained from some proportion of central bank profit. The asterisk * denotes variable in foreign currency, Δ indicates the absolute change in the expression that follows and ^ denotes a percentage change in variable.

By defining D = G –T as primary deficit, equation (2.1) describes that funding requirement for the general government primary deficit, interest paid on domestic government debt, interest paid on domestic credit extended by the central bank to the government minus government deposit at the central bank plus interest on foreign debt expressed in terms of

5 See Walsh (2003, chapter 4) for the an example

6 which is also called overall budget balance obtained from tax revenue minus total government spending

domestic currency should be equal to the financing sources i.e. government's domestic and foreign debt issue, net credit to government extended by the central bank and transfer from central bank.

Following Budina-Wijnbergen (2000) and Markiewicz (2001) to capture the impact of the exchange rate on domestic value of foreign debt, changes in the value of government foreign liabilities are broken down into the change in stock of foreign debt, exchange rate changes and cross-term product:

$$\text{(2.1a)} \qquad \Ä(B^{*}E) = \hat{E}_{-1}\ÄB^{*} + B^{*}_{-1}\Delta E + \ÄB^{*}\Delta E$$

Combining (2.1a) to (2.1) to obtain the central government budget constraint that has eliminated the effect of exchange rate devaluation on the government foreign debt:

$$\text{(2.2)} \qquad \begin{aligned} & D + iB^{t}_{-1} + iDC^{g}_{-1} - iDEP^{g}_{-1} + (1+\hat{E})i^{*}B^{*}_{-1}E_{-1} \\ & \quad = \ÄB^{t} + (\ÄB^{*})E_{-1} + \ÄB^{*}\Delta E + \ÄDC^{g} - \ÄDEP^{g} + CBT \end{aligned}$$

The Central Bank's Financial Account

The central bank's financial account is formed trough central balance sheet and central bank's profit and loss account. Referring to Bank Indonesia's balance sheet, we have the following identity:

$$\text{(2.3)} \qquad NW + \ÄM + \ÄB^{m} = \ÄB^{g} + \ÄDC^{g} - \ÄDEP^{g} + \ÄC^{p} + \Ä(NFA^{*}E)$$

where M – monetary base, B^{g} - government bond held by the central bank, B^{m} - central bank securities used as monetary instrument, C^{p} - credit to non-governmental sector (commercial bank and private sector), NFA – net foreign asset, NW – net worth obtained from profit of central bank minus CBT.

Equation (2.3) show different characteristic from the standard central bank balance sheet in many in industrial countries. Equation (2.3) provides the use of central bank securities, B^{m} , in the identity and later will have some implications to the result of QFA. The contribution of central bank securities in QFA is also parallel to Rodriguez (1994) and Beckerman (1995) arguments for Argentina experience in 1989-1990 which showed a considerable QFA due to the large use of central bank securities in Argentina's monetary management at that time. As Van't dack (1999) and Hawkin (2004) survey experiences of emerging countries and show that many central banks use them for open market operation.

Meanwhile from the profit and loss account, the central bank's 'net' profit is defined as:

$$(2.4)\quad NW = \{ iDC^{g}_{-1} - iDEP^{g}_{-1} + iB^{g}_{-1} + iC^{p}_{-1} + [(1+i^{*})(1+\hat{E}) - 1]\, NFA^{*}_{-1} E_{-1} - iB^{m}_{-1} \} - CBT$$

Combining balance sheet (2.3) and profit and loss account of the central bank (2.4) and eliminating the exchange rate effect will reproduce central bank's financial account as:

$$(2.5)\quad \begin{aligned} & iDC^{g}_{-1} - iDEP^{g}_{-1} + iB^{g}_{-1} - iB^{m}_{-1} + iC^{p}_{-1} + (1+\hat{E})\, i^{*}\, NFA^{*}_{-1} E_{-1} \\ & = \Delta B^{g} - \Delta B^{m} + \Delta DC^{g} - \Delta DEP^{g} + \Delta C^{p} + \Delta E_{-1} \Delta NFA^{*} + \Delta E \Delta NFA^{*} - \Delta M + CBT \end{aligned}$$

Consolidated Government Budget Identity

By defining $B=B^{t} - B^{g}$ as the government debt held by the private or commercial bank and substituting into combined government budget constraint (2.2) and central bank financial account (2.5), we get the total public sector budget constraint. However, because we are trying to focus on the changes of net foreign debt then the small changes of exchange rate can be ignored to obtain:

$$(2.6)\quad \begin{aligned} & D + iB_{-1} + iB^{m}_{-1} + (1+\hat{E})\, i^{*} (B^{*}_{-1} - NFA^{*}_{-1}) E_{-1} - iC^{p}_{-1} \\ & = \Delta B + \Delta B^{m} + E_{-1} (\Delta B^{*} - \Delta NFA^{*}) - \Delta C^{p} + \Delta M \end{aligned}$$

Equation (2.6) expresses consolidated government budget constraint. The deficit of public sector can be financed by increasing domestic – including central bank securities- - or foreign debt, money creation or increasing liabilities (in foreign currencies or in domestic currency for non-governmental entities) of the central bank. Unlike standard consolidated government budget constraint, the central bank securities appears as a part of government spending in consolidated sense and can be part of the total public debt held by the private.

Approximation of Quasi Fiscal Activities

Indeed, the proxy of QFA could be captured from equation (2.6) if the total public sector borrowing requirement as described from the left hand side of equation (2.8) is above additional central government public debt. QFA can be obtained from the residual of those two variables because it implies the money needed to finance the central government financial gap. Nevertheless, this approach could bring some misleading result if government borrowing requirement grow faster than government deficit. Following Markiewicz (2001), to overcome the problem equation (2.6) will be slightly manipulated by separating the source of financing from central bank and government as follows:

$$(2.7)\quad \begin{aligned} & \Delta B + \Delta B^{m} + E_{-1} (\Delta B^{*} - \Delta NFA^{*}) - \Delta C^{p} + \Delta M = \\ & [\Delta B + E_{-1} (\Delta B^{*}) + \Delta DC^{g} - \Delta DEP^{g}] - [\Delta DC^{g} - \Delta DEP^{g} - \Delta B^{m} + E_{-1} (\Delta NFA^{*}) - \Delta M + \Delta C^{p}] \end{aligned}$$

The right hand side of (2.7) describe the borrowing requirements of the general government and borrowing requirement of the central bank. The second part of the right hand side of (2.7) expresses the net other items in central bank behaviour which will be the main part of analysis or exclusively be defined as:

$$\Delta DC^{g} - \Delta DEP^{g} - \ddot{A}B^{m} + E_{-1}(\Delta NFA^{*}) - \ddot{A}M + \ddot{A}C^{p} = \ddot{A}NOI \quad (2.8)$$

Equation (2.8) is the centre of analysis of the QFA which describes the amount of money required by the central bank to balance the fiscal operation by central government such that can satisfy the consolidated government budget constraint in equation (2.6). Equation (2.8) implies the amount of money created by central bank as part of public entities to finance the central government spending. By definition, indeed equation (2.8) indirectly also reflects the flows of central bank's net worth for a certain period because it also shows the difference between bank's asset and its liabilities[7]. The negative value of NOI could reflect that liabilities of the bank has exceeded asset and could indirectly provide the fragility of the central bank's financial position. With respect to our case, the negative value of NOI could indicate a QFA by central bank at that period.

One of the source of the deficit in equation (2.8) is a higher of $\ddot{A}M$. This equation implied that any shock that could rise $\ddot{A}M$ and subsequently will lead a deficit in QFA. Following Mackenzie and Stella (1996), the source of $\ddot{A}M$ rise could be initiated from the central bank rescue operation related to the financial system which can take a variety of form – from a simple infusion of capital, to an assumption of nonperforming loans, to an after-the-fact exchange rate guarantee. Table 1 reproduce Mackenzie and Stella (1996) classification.

Further discussion could be addressed to the role of central bank securities ($\ddot{A}B^{m}$) in estimating the QFA. By definition equation (2.8) implied that sterilization by central bank through increasing $\ddot{A}B^{m}$ implies will raise QFA. Nevertheless, by practice this hypothesis could not be always occurred because when base money ($\ddot{A}M$) would also contract the same amount when central bank sterilize the money supply by selling the central bank securities. The higher $\ddot{A}B^{m}$ would raise the QFA only if AM does not change due to other source of monetary policy expansion which is higher that central bank policy contraction through that central bank securities. The Argentina's experience in 1989-1990 referred by

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7 Stella (1997) distinguished definition between net worth and capital in view of central bank balance sheet. He defined net worth as the price a fully informed risk neutral investor would pay to purchase the bank under normal condition. Meanwhile capital was defined as the amount directly invested by shareholder plus accumulated retained earning minus losses. The term of net worth is more appropriate to our paper because it captures the changes in the value assets and liabilities both for past and future changes.

Rodriguez (1994) and Beckerman (1995) could be parallel to this hypothesis because tight monetary policy employed central bank securities caused a monetization and could not be fully sterilized by central bank.

Tabel 1.
Clasification of Quasi Fiscal Activities

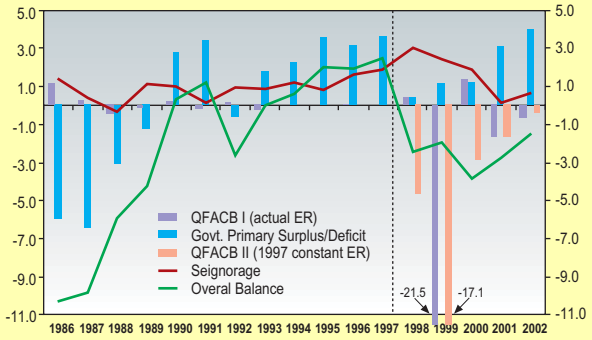
Operation Related to the Exchange Rate System
Multiple exchange rate
Import deposits
Deposit on foreign assets purchases
Exchange rate guarantees
Subsidies exchange risk insurance
Operation Related to the Financial System
Subsidized Lending
Administrered lending
Preferential rediscounting practices
Poorly rediscounting practices
Loan guarantees
Reserve requirement
Credit ceiling
Rescue operations
Source : Mackenzie and Stella (1996), page 4

2.2 *Empirical Result: the crises forced the central bank run quasi fiscal deficits*

Employing the ratio to GDP for each variable of annual data 1986 – 2003, the empirical result of (2.8) indicates that banking crises played a big role in raising central bank's QFA. The central bank has been running QFA since 1997 which reached the highest level in 1999. These figures were really contrast to pre-1997 environment which posed mostly neutral position in term of QFA. In comparing to primary balance of the central government reported by the central government, this QFA figure deviated in a wide range because central government primary balance during that period always showed a surplus number (Graph 1).

From QFA and primary balance figures deviation, an interesting characteristic of those deviations between NOI and the government primary balance is the emergence of three different regimes of the fiscal adjustment and monetary movement. The first period is prior 1990 which provide deficit number in central government primary balance and a relatively neutral in central bank operation. The second regime refers to the period between 1990 and

1997 which describes fiscal adjustment to maintain primary surplus while the central bank maintained a neutral position. The last period is period after 1997 which engages deficits in central bank quasi-fiscal activities while primary balance turned positive.



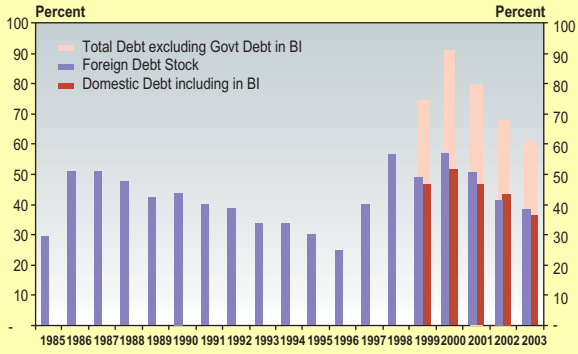
Source : Bank Indonesia, Ministry of Finance, author's calculation

Graph 2.1. Quasi Fiscal Activities by Central Bank, Seigniorage, Government Primary and Overall Balance

Several facts explain the three different regimes. In **first period** (i.e prior 1990), the deficit figures in government spending notably relates to the role of the government as the economic agent to enhance economic growth. To support the objective, the government used foreign debt as the financing source of deficit. This was possible because under small contribution of the private agent, government placed itself in the centre of economic development. From QFA analysis, several positive NOI implies that not all the foreign debt was spent into domestic economy. Instead, some of them were placed as deposit in the central bank account. The government account and NFA of central bank increased steadily in this period. In monetary policy part, this figure also represents the central bank role to sterilize government expenditure. Nevertheless, the figure in this regime could also lead a misleading interpretation because in this episode the lack of transparency in fiscal policy has a strong environment. During this time, the use of off-budget account also appeared in other financial institution. Therefore the deficit primary budget balance number can be misleading figures of central government operation during this regime.

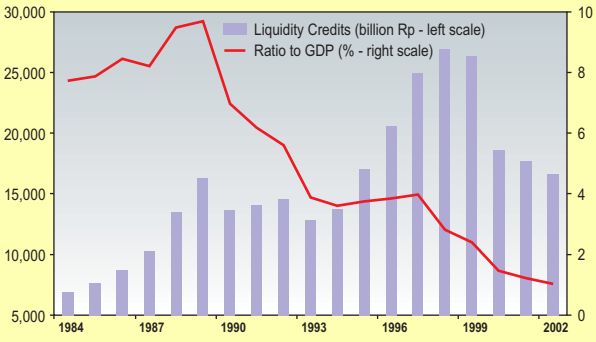
From the **second period** (1990 – 1997), the positive primary surplus of central government budget corresponds to higher revenue from the positive impact of high economic growth and high oil and gas price. Except in 1992, this economic environment leads the fiscal policy to accumulate surplus on both primary and overall balance. In result of the accumulated primary surplus and the high economic growth, fiscal sustainability tend to

emerge described from declining trend of debt to GDP ratio (Graph 2). From monetary movement, it is again slightly neutral. Nevertheless some events still occurred at that time which contribute to QFA. As stipulated in central bank law 1968 act, the central bank should support government effort to enhanced economic growth and create employment. One policy of central bank related to the QFA in this regime corresponded to the activities of central bank credit to finance the private sector through liquidity credit of Bank Indonesia, so called KLBI. Before 1998, this credit posed a high number (Graph 3). Mackenzie and Stella (1996) argued this type of financing can be classified into QFA because it was formed as subsidized lending ranging from relative direct practice of lending at administered rates set below market, lending to poor credit risk and lending without adequate collateral.



Source : Bank Indonesia, Ministry of Finance, author's calculation

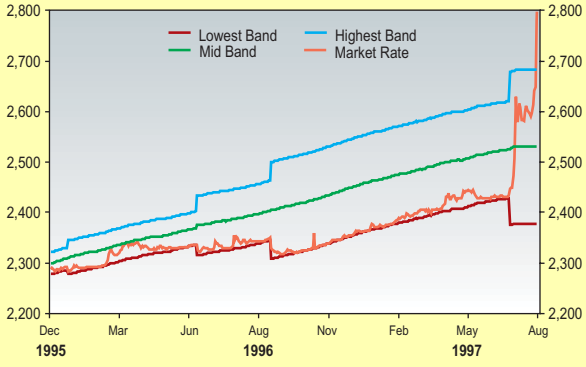
Graph 2.2.
Government Foreign and Domestic Debt



Source : Bank Indonesia, author's calculation

Graph 2.3.
Bank Indonesia Liquidity Credit

Another item contributed to the QFA in this region relates to the managed floating exchange rate regime adopting during this period. Following Mackenzie and Stella (1996) classification, operation to exchange rate system can be classified into QFA by central bank because it both provide a hidden subsidy to the market that should paid by the central bank by maintaining the level of the exchange rate at certain range. Central banks in this period pursued sterilization policy of capital inflow in foreign exchange market such that could prevent the further domestic currency appreciation at that time (Graph 4). Hence, this managed floating exchange rate system inevitably reduces the central bank reserve and bring down the QFA level lower than the government primary balance.



Source : Bank Indonesia

Graph 2.4. Rupiah Exchange Rate 1995 – 1997: Intervention Band and Actual Rate

The **third period** was occurred since the Asia financial crises hit. The issue emerged in this region is apparently loose monetary policy stance as reflected by the deficit number in NOI while fiscal stance keep trying to maintain government primary surplus balance. In the fiscal side performance, the primary balance indeed still reflects a government idea to keep concerning to debt sustainability. The sharp depreciation of Indonesia's exchange rate lead an increase in foreign government debt in term of domestic currency (Graph 2). Unavoidably, this problem cause higher principal and interest repayment debt that ultimately cause deficit in overall balance.

This unfortunate debt burden performance has both limited the government stimuli to the economy and restricted financing to restore the banking system. Fiscal problem had forced the government to issue the domestic debt. From September 1998 to October 2000, government issued two different domestic bonds i.e. bonds to replace the central bank's

liquidity support[8] and bonds to recapitalize the banking system (Bank Indonesia, 1999 and Hawkin, 1999). In addition, starting 2002 government also issued domestic bond through market auction to finance the government budget deficit. This additional debt consequently brought to the higher burden of interest debt repayment than primary surplus obtained which reached the peak on 2000 (Graph 2).

Interesting figures emerge since 1998 from the monetary side. Two type of analysis of equation (2.10) employed current exchange rate and constant exchange rate generally indicated that in this regime central bank run a high quasi fiscal deficit. The difference between current exchange rate result and 1997 constant exchange result is only in the year of 1998 which obtained a surplus number for the NOI. However, this figure could bring a misleading interpretation because those are more affected by the sharp depreciation effect of the exchange rate such that could raise the net foreign assets (NFA) in term of domestic currency value. Referring equation (2.1a) and (2.6) we should focus on the changes of the stock of the net foreign asset instead of the effect of exchange rate changes. Therefore, the rest of analysis, we will focus on 1997 constant exchange rate.

The general justification of this post 1997 performance was the effect of rescue operation held by the central bank associated with the financial system. In 1998 central bank engaged deficit of NOI amounted -4.7% of GDP while in 1999 deficit was apparently getting higher. Those figures were contributed from liquidity support from central bank as lender of the last resort (Bank Indonesia, 1998, 1999). Mackenzie and Stella (1996) survey in some developing countries showed the possibility of the similar rescue operation could generate QFA were mostly contributed from an infusion of capital to a troubled institution, an assumption of non-performing loans, or an exchange rate guarantees by the central bank. Those sources of QFA probably existed in Indonesia while the crises occurred.

In addition, some aspect in the central bank operation also contributes the deficit. Following equation (2.8), the positive central bank securities could also contribute to the deficit QFA. Following Mackenzie and Stella (1996) argument, increase of open market operation to sterilize the liquidity injection of the financial rescue operation could be classified to QFA because this central bank open market operation will enlarge the cost of central bank. Similar arguments were also proposed by Rodriguez (1994) and Beckerman (1995) for the case of Argentina in 1989-90. For Indonesia case, this relates to the sharp increase of central bank securities (SBI) as shown since 1998 and subsequently has generate higher cost for monetary expenses of the central bank (Graph 5).

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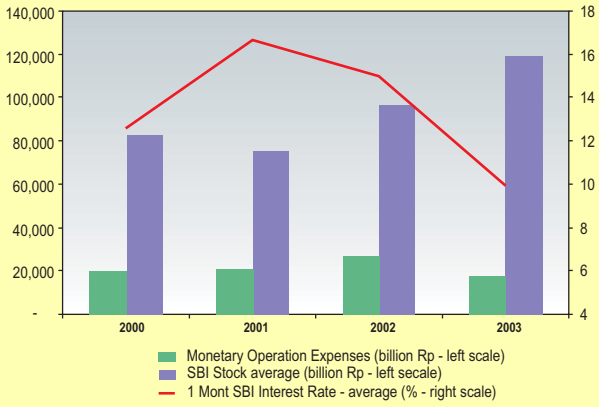
8 These liquidity support were issued to prevent bank run and payment system failure



Source : Bank Indonesia's annual report

Graph 2.5. Central Bank Securities: Stock, Interest Rate and Monetary Operation Expenses

3. TEST OF FISCAL VERSUS MONETARY DOMINANCE

Part two results emphasize Mackenzie and Stella (1996) argument that central bank can affect the overall public sector balance without affecting the surplus in government primary balance. Period three of Indonesia fiscal adjustment and monetary movement justify this argument by showing that the central bank has supported the consolidated government financing. This fact is indicated from deficit figures of NOI while primary balance still obtained surplus. These results lead a further question whether the sequential government primary surplus sufficiently expresses fiscal commitment and discipline regarding to debt performance and can be classified into monetary dominance in term of fiscal and monetary interaction sense.

To answer these questions, the study will be extended to investigate the fiscal versus monetary dominance in view of macroeconomic policy coordination. In this test, if government does not adjust the primary balance sufficiently to reach sustainable debt level while the central bank is forced to drive up the debt, then such regime will be classified into fiscal dominant regime. By contrast, if the government could always ensure the primary balance to balance intertemporal budget in balance while monetary policy is set independently, then the economy is under monetary dominant (MD)[8]. As we will in the next section, the answer of this question will have some further implication to the monetary independence to maintain the price stability.

9 The distinction between MD and FD regimes is due to Sargent and Wallace (1981)

3.1. Analytical Framework

This test basically is also initiated from the public sector budget one-period identity as described in (2.6). Recall that $D_t = G_t - T_t$ and Δ indicates the absolute change from the previous number for the respective variable. Use that definition and also define $\ddot{A}M=S_t$ as the nominal value of seigniorage then we rewrite (2.6) as the following form:

$$\begin{aligned} & G_t - T_t + i_{t-1} B_{t-1} + i_{t-1} B_{t-}^{m1} + (1 + \hat{E}_{t-1})\, i_{t-1}^{*} (B_{t-1}^{*} - NFA_{t-1}^{*})\, E_{t-1} - i_{t-1} C_{t-1}^{p} \\ (2.6a) \qquad & = (B_t - B_{t-1}) + (B_t^{m} - B_{t-1}^{m}) + E_t[(B_t^{*} - B_{t-1}^{*}) - (NFA_t^{*} - NFA_{t-1}^{*})] - (C_t^{p} - C_{t-1}^{p}) + S_t \end{aligned}$$

Assume uncovered interest parity holds i.e $i_t^{*} = i_t / \hat{E}_t$ and define net total public liabilities excluding seigniorage as :

$$(2.6b) \quad L_t^{g} = B_t + B_t^{m} + E_t(B_t^{*} - NFA_t^{*}) - C_t^{p}$$

then equation (2.6a) can be simplified:

$$(3.1) \quad g_t + i_{t-1} l_{t-1}^{g} = \tau_t + l_t^{g} - l_{t-1}^{g} + s_t$$

where the small case letters have expressed the scaling of the respected variable to nominal GDP. Following Walsh (2003), let assume the interest factor i is a constant and positive, equation (3.1) can be solved forward to yield :

$$(3.2) \quad (1+i) l_{t-1}^{g} + \sum_{k=0}^{\infty} \frac{g_{t+k}}{(1+i)^k} = \sum_{k=0}^{\infty} \frac{\tau_{t+k}}{(1+i)^k} + \sum_{k=0}^{\infty} \frac{s_{t+k}}{(1+i)^k} + \lim_{k \to \infty} \frac{l_{t+k}^{g}}{(1+i)^k}$$

If discounted value of government liabilities approaches zero over an infinite horizon in the last term of equation (3.2) ie.

$$(3.2a) \quad \lim_{k \to \infty} \frac{l_{t+k}^{g}}{(1+i)^k} = 0$$

then equation (3.2) and (3.2a) summarize that the present discounted value of all and future non-debt central government and seigniorage revenue should be equal to the present discounted value of all current and future government expenditure plus current outstanding net public liabilities plus interest.

Let as the net government primary balance that has involved seignoirage then the intertemporal budget implies from (3.2):

$$(3.3) \quad (1+i) l_{t-1}^{g} = -\sum_{k=0}^{\infty} \frac{pb_{t+k}}{(1+i)^k} \qquad \text{or}$$

$$(1+i)l_{t-1}^{g} = -\left\{ pb_t + E\sum_{k=1}^{\infty} \frac{pb_{t+k}}{(1+i)^k} \right\} \quad \text{(3.3a)}$$

Equation (3.3) describes that government should react negatively to the current outstanding government liabilities. The higher government debt liabilities should lead the lower present value of primary deficit decrease (ie. the government should run a primary surplus in the present value). By definition, this equation implies that primary balance surplus can be generated through adjustment in expenditures, taxes or seigniorage.

3.2. Empirical Result: Since the crises fiscal plays dominant role

To test empirically the existence fiscal or monetary dominance, equation (3.3) will be applied into VAR method which is similar to Canzoneri et.al (2001) and Tanner and Ramos (2002)[10]. Following Tanner and Ramos (2002), equation (3.3a) can also be manipulated into changes form. To obtain this, add the net government primary balance from both side of equation (3.3). Because $adl \equiv pb_t + (1+i)l_{t-1}^{g} = L_t^g - L_{t-1}^g$ represent the additional liabilities (L) required to finance the operational deficit then (3.3) is re-written as:

$$adl = -\sum_{k=1}^{\infty} \Delta \frac{pb_t}{(1+i)^{k-1}} \quad \text{(3.4)}$$

Equation (3.4) interpret current additional debt required to finance operational deficit is equal to the sum of discounted changes in the primary deficit. Following Tanner and Ramos (2002) argument that refer to Campbell (1987) logic[11], the VAR implied from this theory is:

$$\mathbf{X_t} = \mathbf{a_0} + \mathbf{a_1 X_{t-1}} + \mathbf{a_2 X_{t-2}} + \mathrm{K} + \mathbf{v_t} \quad \text{(3.5)}$$

where $\mathbf{X} = [\Delta pb, adl]$, $\mathbf{a_i}$ is a vector of coefficients, and $\mathbf{v_t} = (\mathrm{v_{pb}}, \mathrm{v_{adl}})$ is a vector of error term. In standard form, assume that each element of the error vector $\mathbf{v_t}$ is in turn composed of own error term $\mathbf{w_t} = (\mathrm{w}_{pb_t}, \mathrm{w}_{adl})$ and contemporaneous correlation with other error:

$$\mathbf{v_t} = \mathbf{B}\,\mathbf{w_t} \quad \text{(3.6)}$$

where $\mathbf{B}$ is a 2 x 2 matrix whose diagonal element ("own correlation") equal one and whose non zero off-diagonal elements reflect contemporaneous correlation among the error term. Equation (3.6) also obtains impulse response functions that describe the effects of current innovations $\mathbf{w_t}$ on values of $\mathbf{X}$. Like any VAR framework, system (3.5) estimates relationships of time-series causality that run in both directions.

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10 Komulaenen and Pirttilä (200) used other VAR technique to investigate empirically fiscal and monetary dominance issue

11 Campbell (1987) employed the similar idea to test the permanent income hypothesis in US data

To interpret VAR result which estimates in both directions of the variables then the interpretation of checking fiscal or monetary dominance should be treated in similar way and still need to consult to equation (3.3a). Following Tanner and Ramos (2002), first consider the effect of additional debt (adl_t) innovation to future primary balance (pb_{t+1}). The equation (3.3a) interpret that the fiscal dominance (FD) will exist under this type of shock if primary balance are determined exogenously and unrelated to the level of previous additional debt and therefore the nominal and or discount factor must adjust in equilibrium to satisfy the equation. In addition, Tanner and Ramos (2002) also argue that the positive relationship could also indicate FD because it reflects that the primary deficits respond to liabilities in unstable fashion.

On contrast, monetary dominance (MD) exist in this type of shock if primary balance is determined in such way that (3.3a) is always satisfied, regardless the nominal income and discount factor behave. According to this interpretation and equation (3.3a), the relationship between primary balance and the additional government liabilities should be negative and significant because they indicate that primary deficits compensate the changes in liabilities to help limit debt accumulation. Walsh (2003) classified this as a traditional analysis in which fiscal policy always adjust to ensure government's intertemporal budget identity while monetary policy is free to set nominal money stock or nominal of interest rate.

A second type of shock is to consider the effect of current primary balance innovation to future additional debt. The FD will appear if there is no significant impact on the additional future debt of the positive innovation of primary balance. Meanwhile, the MD will occur in this type of shock if current innovation to the primary deficit should be positively related to the additional future government debt and hence adl_t . This figure imply that if the government run the surplus primary balance then it can pay down the debt and hence reduce additional future debt. Another interpretation also appears in MD regime if we extend the assumption to a variable real interest rate. Under this scenario, negative relationship between primary balance innovation and future debt should appear because it reflect a negative government response of reduction of primary deficit by lower (higher) expected future interest payment and hence could make a more (less) additional borrowing. Table 2 reproduce Tanner and Ramos (2002) economic interpretation of the VAR system result regarding to the issues.

Employing quarterly data since 1984:2 to 2003:2, the estimations are grouped into three sub-periods as indicated by QFA result i.e. period prior 1990, period between 1990 and 1997 and period after 1997. Some quarterly raw data are obtained from author's calculations from old government budget format. Since the quarterly data for external

Tabel 2. Hypothetical Economic Interpretation, System (3.5), $X=[\Delta pb, adl]$	
Current Primary Deficit (Δpb_t)* → Future Liabilities (adl_{t+i})	
Positive	Government pays down future debt, consistent with fiscal dominance regime
Zero	Primary deficit exogenous, consistent with fiscal dominance regime
Negative	Government anticipates future interest bill or other obligation, consistent with monetary dominance regime
Current Liabilities (adl_t)* → Future Primary Deficit (Δpb_{t+i})	
Positive	Unstable policy, consistent with fiscal dominance regime
Zero	Primary deficit exogenous, consistent with fiscal dominance regime
Negative	Government pay down past debt, consistent with monetary dominance regime
* Innovation	

government debt stock is not available prior 1990, the external debt stock before 1990 was calculated from net inflow government debt from balance of payment data of Bank Indonesia. The primary surplus/deficit of government prior 1997 is generated by excluding the interest and principal repayment foreign government debt from government budget.

The estimation result apparently confirms the QFA result estimation. The Granger causality test in table 3 indicates the whole sample does not provide a significant relationship between primary balance and additional debt required to finance the operational deficit. This performance generally was supported from the sub-periods prior 1990 that do not demonstrate a considerable relationship. The significant and negative relationship between those two variables only appears in period between 1990 and 1997. This 1990-1997 result is not a surprise result. Empirical data support this indication. An accumulated primary surplus was move contrastly to the decreasing of the ratio of foreign government debt to GDP which somehow could imply some sustainable fiscal policy.

The Granger causality test is also supported by impulse response function of VAR result that implied an effort from fiscal policy to response future debt growth by accumulating the government primary surplus. For period prior 1990 and since 1997 the impulse response function does not show a significant response to the each innovation, regardless the order. The significant impact only appear in period between 1990 and 1997 where the impulse response function for 1990-1997 period estimation obtain a negative and significant changes on public liabilities to an innovation of primary surplus for at least 1-2 periods (Table 4).

Tabel 3.
Granger Casuality Result X=[ΔPDEF, ODEF]

	1 Lag Model		2 Lag Model	
	Δpb_t ---> adl_{t+i}	adl_t ---> Δpb_{t+i}	Δpb_t ---> adl_{t+i}	adl_t ---> Δpb_{t+i}
1984:2 – 1990:1	0.081 (0.778)	0.236 (0.632)	0.084 (0.919)	1.120 (0.349)
1984:3 – 1997:3	0.041 (0.840)	2.111 (0.152)	0.286 (0.752)	4.055 (0.023) *
1990:1 – 1997:3	0.029 (0.865)	2.962 (0.096) **	0.067 (0.934)	1.511 (0.239)
1990:1 – 2003:1	0.012 (0.912)	2.130 (0.150) ***	0.380 (0.685)	1.095 (0.342)
1997:4 – 2003:1	0.004 (0.948)	1.472 (0.239)	0.122 (0.885)	0.659 (0.529)
1984:3 – 2003:1	0.001 (0.966)	1.203 (0.276)	0.247 (0.781)	0.572 (0.566)

F-test value of the hypothesis. P-value in parentheses

Δpb_t ---> ad_{t+i} H0 : Δpb_t does not granger cause adl_{t+i}

adl_t ---> Δpb_{t+i} H0 : ad_t does not granger cause Δpb_t

*, **, *** indicate statistical significance at the 1, 5 and 10 percent level, respectively

Tabel 4.
Impulse Response Function Result X=[ΔPDEF, ODEF]

	1 Lag Model		2 Lag Model	
	Δpb_t ---> adl_{t+i}	adl_t ---> Δpb_{t+i}	Δpb_t ---> adl_{t+i}	adl_t ---> Δpb_{t+i}
1984:2 – 1990:1	NS	NS	NS	NS
1984:3 – 1997:3	NS	NS	NS	NEG (2 Periods)
1990:1 – 1997:3	NEG (1 Period)	NEG (2 Period)	NEG (1 Period)	NEG (1 Period)
1990:1 – 2003:1	NS	NS	NS	NS
1997:4 – 2003:1	NS	NS	NS	NS
1984:3 – 2003:1	NS	NS	NS	NS

NS: Not Significant ; NEG: Negative and Significant

For period after 1997, Granger causality test provides an insignificant figure. In addition to that result, impulse response function of VAR system also obtained similar idea. The response of public liabilities to primary surplus innovation provides an insignificant impact, regardless the ordering. This result indeed slightly confirms the QFA estimation that posed a deficit number since the crises occurred.

These results imply further description of fiscal and monetary policy interaction. The period 1990-1997 indicates that the central government have slightly succeeded to pursue a debt management. Government has sufficiently reduced the future debt as responses of primary budget surplus. The impulse response function in this period indicated that a positive shock of current primary surplus has negatively affected the future liabilities. Supporting the

argument, QFA was also quite neutral such that not sufficient enough to classify monetary policy as sub-ordinate of fiscal policy. At some degree, the result of period 1990-1997 indicates that monetary policy played dominant role with respect to fiscal and monetary policy interaction.

Nevertheless the story changed abruptly while the crises hit the mid of 1997. Although the lack of observation numbers may affect the story, the result indicated a different portrait appeared. The sharp and huge depreciation of domestic currency, big amount of issuing additional domestic debt and the unavoidable liquidity support from central bank policy in 1997 – 1999 consecutively brought a big burden to fiscal policy such that also involved monetary policy. This performance apparently indicates that fiscal policy play more exogenously in this regime. Indeed, the study has also tried to exclude the central bank securities to capture 'real' government debt and to see its response to the primary balance performance. However, the result does not change and keep showing similar conclusion.

4. IMPLICATION FOR INFLATION TARGETING IN INDONESIA

The results from two previous parts suggest several summaries to fiscal and monetary policy interaction in Indonesia. First, prior crises 1997, generally fiscal policy have ensured fiscal sustainability by accumulating primary surplus to reduce the debt ratio to GDP. Following Leeper (1991) terms, fiscal policy during this period tended to be a passive policy because it always tried to satisfy government budget constraint[12] . Meanwhile, monetary policy plays an active role which was confirmed by neutral position of QFA. This result apparently shows that fiscal policy commitment on fiscal solvency lead macroeconomic policy during 1990-1997 under monetary dominance regime.

Second, since the 1997 the fiscal and monetary policy interaction exhibits a big different portrait. Fiscal policy seems not be able to generate sufficient amount of primary surplus balance to cover the rise of government debt burden both from external and domestic debt. In addition to this, banking crises also generated deficit in QFA since 1998 which mostly caused by central bank liquidity support to banking system. In addition to this, government policies to withdraw their deposit in central bank also provide another reason the emergence of QFA. In general, those two environments tend to lead the conclusion fiscal policy behaves exogenously in view of fiscal and monetary interaction framework since 1997.

12 Leeper (1991) defined passive fiscal policy as a situation in which fiscal policy always adjust their primary balance to satisfy government's intertemporal budget. On contrast, if fiscal policy is set independently such that could generate seigniorage from monetary authority then fiscal policy is defined under active fiscal policy.

How this fiscal and monetary interaction result could affect central bank objective to control inflation while in other side degree of monetary policy independence probably has increased due to the new central bank law enacted in 1999? Referring to Leeper (1991) terms, the result of fiscal and monetary interaction after 1997 and also higher independent in monetary policy could implies both active in fiscal and monetary policy regime was occurred in Indonesia since 1999. Fiscal policy is exogenous to debt performance while monetary policy restraint the policy only to inflation. This macroeconomic policy environment has different implications to the effectiveness monetary policy objective to control the inflation even under inflation targeting framework which implicitly has been adopted by Indonesia. Much of discussion corresponds to the implication of those fiscal and monetary policy stance on inflation behaviour were put under fiscal theory of price level (FTPL) literature[13]. Under this theory, inflation is not the sole of territory of the central bank but it is also contributed by fiscal authority.

Carlstrom and Fuerst (1999, 2000) summarized two version of FTPL namely weak form FTPL and strong form FTPL. Under weak form FTPL which is parallel to fiscal dominance environment in this paper, inflation is indeed monetary phenomenon but money growth is dictated by fiscal authority because an increase in future deficits must result in either a one time increase in money (a one-time jump in the price level) or an increase in future money growth (future inflation). This form is analogy to game of chicken emerges in which monetary authority loses and is forced to "blink" for this behaviour.

Meanwhile the strong form FTPL argues that even if money growth is unchanged, fiscal policy independently affect price level and inflation rate. Strong FTPL assumes that in order to uniquely determine price, the additional restriction of government budget constraint is needed. Prices will adjust so that the real of government debt can adjust to a level consistent with the fiscal budget constraint even if monetary policy is unchanged. To summarize, those two forms of FTPL subsequently imply that the central bank may be ineffective to commit to an inflation target, either because central bank does not control the money supply (weak form) or because inflation is not necessarily a monetary phenomenon (strong form).

Does this FTPL emerge in Indonesia in this period after 1997? This is empirical question and even still provides long line debatable answers for the plausible existence of the theory at least for strong form FTPL[14]. Carlstrom and Fuerst (1999, 2000) argued that strong FTPL has some empirical problem because it needs large elasticity in real interest rate in order for

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13 See Leeper (1991), Koncherlakota and Phelan (1999), Cochrane (1998) and Woodford (1996, 2001) and Walsh (2003) for this FTPL literature.

14 Some critics relates to the existence of FTPL see Carlstrom and Fuerst (1999, 2000), Buiter (2002, 2001, 1999),

self-fulfilling circle to occur. Those large real interest rate that is apparently unrealistic requires three large elaticities: (1) a large interest of money demand; (2) a large response of output to a decline in real balances and (3) large response of the real to decline in current output. Parallel to Carlstrom and Fuerst (1999, 2000) argument, strong form of FTPL likely also present empirical problem in case of Indonesia because all those assumptions seem not appear in Indonesia economy as suggested in recent empirical studies in Indonesia regarding to those issue [15].

From the weak form of FTPL, the empirical situations in Indonesia also show similar hints to strong form. So far, weak form of FTPL can not be identified clearly especially since 1999 when the central bank obtained more monetary policy independence through the new central bank act. Since that time, central bank does not provide Bank Indonesia liquidity credit (KLBI) as shown before 1999. In addition, the new act also prohibits government intervention to monetary policy including seigniorage from the central bank. Despite QFA by central bank show deficit number, some evidences support the idea that fiscal policy keep trying to avoid financing from central bank. Except in 2003, domestic financing from central bank tend to be negative which implies accumulating government deposit in the central bank (Table 5). Instead, the sources of deficit financing were source from government bond issuance and privatization of state enterprises. In addition to it, base money also grew at a low level.

To sum up, the empirical data identified can not clearly identify FTPL occurrence in Indonesia since 1999 for both strong and weak from of FTPL. The QFA in central bank seems can be classified into monetary policy discretion due to liquidity support problem while the fiscal dominance conclusion using VAR approach in part three test might still be an ambiguous result due to the lack of data. Zoli (2004) employed data from some emerging countries argues that VAR method could provide an ambiguous result. This result implies that monetary policy could be still dominance in term of fiscal and monetary interaction since period 1999.

Despite those empirical results rejection on FTPL and the tendency of monetary policy dominance in Indonesia, some literatures still show that fiscal performance can still affect the effectiveness of monetary policy even under inflation targeting. Using Brazil experience, Blanchard (2004) indicated that expectation channel of fiscal performance deterioration could cause a reversal effect of monetary policy to control inflation. Employing fiscal dominance term to represent the deterioration of domestic government debt, Blanchard

15 Among others see Anglingkusumo (2004) and Simorangkir (2002) that examined demand for money function in Indonesia. Macroeconometric model of Bank Indonesia (MODBI) also show a small elasticity result of interest rate impact on output.

Tabel 4.
Government Budget, 1997 - 2003 (*Central Government Operation[1] (% of GDP, Otherwise stated)*)

Items	1997/98	1998/99	1999/00	2000	2001	2002	2003
	Level	Level	Level	Level	Level	Level	Level
Total revenue and grants	**112,276.0**	**156,408.5**	**200,643.7**	**205,334.5**	**301,077.7**	**300,185.9**	**342,787.0**
Domestic revenue	**112,276.0**	**156,408.5**	**200,643.7**	**205,334.5**	**300,599.5**	**299,885.4**	**342,446.9**
Tax revenue	**70,935.0**	**102,394.5**	**125,951.1**	**115,912.5**	**185,540.9**	**210,952.7**	**248,444.5**
Nontax revenue[2]	**41,341.0**	**54,014.0**	**74,692.6**	**89,422.0**	**115,058.6**	**88,932.7**	**94,002.4**
Grants	**0.0**	**0.0**	**0.0**	**0.0**	**478.2**	**300.5**	**340.1**
Total expenditure and net lending	**109,302.5**	**172,669.2**	**231,879.0**	**221,466.7**	**341,562.7**	**327,863.0**	**377,197.5**
Central government expenditures	**88,377.5**	**146,019.6**	**201,943.0**	**188,391.9**	**260,508.3**	**229,340.5**	**257,919.6**
Current expenditures	**61,491.9**	**104,452.6**	**156,755.6**	**162,577.1**	**218,923.3**	**189,069.1**	**191,796.3**
Personnel	**17,269.0**	**23,216.1**	**32,718.8**	**29,612.9**	**38,713.1**	**39,687.1**	**50,425.6**
Goods and services	**8,999.3**	**9,862.4**	**10,764.5**	**9,604.8**	**9,930.9**	**12,432.5**	**16,150.7**
Interest payment	**10,817.6**	**32,864.3**	**42,735.3**	**50,068.1**	**87,142.4**	**89,867.7**	**72,223.4**
Interest on domestic debt	0.0	8,384.8	22,230.4	31,237.9	58,197.0	64,461.3	48,902.9
Interest on external debt	10,817.6	24,479.5	20,504.9	18,830.2	28,945.3	25,406.4	23,320.5
Subsidies	**21,121.0**	**35,785.7**	**65,916.4**	**62,745.3**	**77,443.4**	**40,006.3**	**34,726.9**
Other current expenditures	**3,285.0**	**2,724.1**	**4,620.6**	**10,546.0**	**5,693.5**	**7,075.5**	**18,269.7**
Development expenditure	**26,885.6**	**41,567.0**	**45,187.4**	**25,814.8**	**41,585.0**	**40,271.4**	**66,123.3**
Transfers to regions	**20,925.0**	**26,649.6**	**29,936.0**	**33,074.8**	**81,054.4**	**98,522.5**	**119,277.9**
Primary Balance[3]	**13,791.5**	**16,603.6**	**11,500.0**	**33,935.9**	**46,657.4**	**62,190.6**	**37,812.9**
Statistical discrepancies	**(0.5)**	**(0.0)**	**0.0**	**0.0**	**0.0**	**(0.3)**	**0.0**
Overall Balance	**2,973.5**	**(16,260.7)**	**(31,235.3)**	**(16,132.2)**	**(40,485.0)**	**(27,677.1)**	**(34,410.5)**

Items	1997/98	1998/99	1999/00	2000	2001	2002	2003
Financing	**(2,974.0)**	**16,260.7**	**31,235.3**	**16,132.2**	**40,485.0**	**27,676.8**	**34,410.5**
I. Domestic financing	**1,307.4**	**(4,799.3)**	**1,847.5**	**5,936.5**	**30,217.6**	**20,561.3**	**31,504.5**
1. Domestic bank financing[4]	1,307.4	(6,433.3)	(1,941.4)	(12,963.5)	(1,227.4)	(4,712.8)	8,500.0
2. Domestic nonbank financing	0.0	1,634.0	3,788.9	18,900.0	31,445.0	25,274.1	23,004.5
a. Privatization proceeds	0.0	1,634.0	3,727.2	0.0	3,465.0	7,664.9	6,400.0
b. Recovery of bank asset	0.0	0.0	61.7	18,900.0	27,980.0	19,548.6	19,600.0
c. Net government bonds	0.0	0.0	0.0	0.0	0.0	(1,939.4)	(2,995.5)
d. Others		0.0	0.0	0.0	0.0	0.0	
II. Net foreign financing	**14,385.6**	**21,060.0**	**29,387.8**	**10,195.7**	**10,267.4**	**7,115.5**	**20,498.1**
1. Gross drawing	0.0	51,106.7	49,584.0	17,818.4	26,152.0	19,374.2	5,744.7
Program loan	14,385.6	24,925.7	25,200.9	848.8	6,415.9	7,042.3	14,753.4
Project loan	0.0	26,181.0	24,383.1	16,969.6	19,736.1	12,331.9	-
2. Amortization	(18,667.0)	(30,046.7)	(20,196.2)	(7,622.7)	(15,884.6)	(12,258.7)	(17,592.1)

Memo:
Total Expenditures (billion Rp)
GDP at current price (billion Rp)

Source: Ministry of Finance

Notes:
1) 1996 - 2001 : audited figures; 2002 : Temporary figures as of Januari 2003; 2003 : provisional realization
Prior to 2000: fiscal year=April 1 - March 31; afterwards : fiscal year=calendar year
2) Prior to 1999/2000, income tax from oil and gas was included in nontax revenue
3) Primary Balance = non-interest expenditures - total revenue
4) (+) = Government accounts in central bank/banks decreases to finance deficit;
(-) = Government accounts in central bank/banks rises to accommodate excess financing
Coordination between the government and BI is required to avoid the effect of the use of govt account at BI on the excessive expansion of monetary base and on depletion of exchange rate.

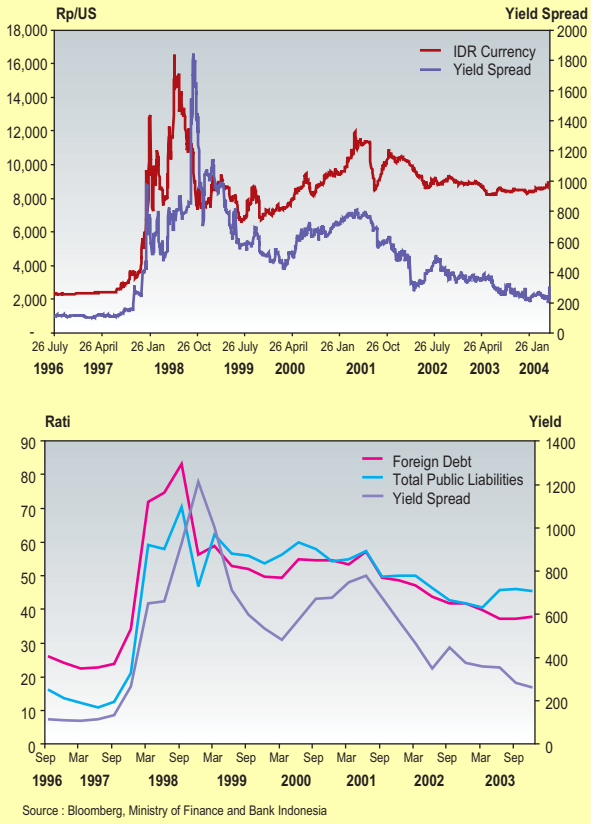
(2004) pointed out that the tight monetary policy by raising real interest rate could increase the probability of default on debt which may affect domestic government debt less attractive and eventually to lead a real depreciation. If the government debt also contains foreign currency denominated debt, the real depreciation of domestic currency could even lead higher price of risk. Under this circumstance, Blanchard (2004) proposed that inflation targeting can clearly have perverse affects: an increase in the real interest rate in response to higher inflation will lead to real depreciation which sequentially in turn to a further increase in inflation. The result implied that fiscal is dominance and the solution should be from the fiscal policy. Consistent with this result, Favero and Giavazzi (2004) also argued that default risk is at the centre of mechanism through which a central bank that targets inflation might lose control of inflation.

In addition, Loyo (1999) argued that fiscal performance may interrupt the effectiveness of monetary policy through the wealth effect if government has domestic debt problem. Under this circumstances, using Brazil for the case, Loyo (1999) argued that higher interest rate by central bank could induce higher outside financial wealth of private agents in nominal terms which could generate higher consumption and finally higher inflation. If monetary policy responds to higher inflation with sufficiently higher nominal interest rate, a vicious circle will emerge. Again, fiscal dominance interrupts monetary policy effectiveness even under inflation targeting framework.

How might all these other channel of fiscal dominance apply to Indonesia? Although required further empirical confirmation, at least those other channel could motivate to a more prudence and discipline in fiscal sustainability aspect. Indeed, some indicator in Indonesia obtains similar type of Brazilian case where government debt performance provides parallel path to Indonesia's sovereign bond spread (Graph 6). If this spread tied to probability of default as Blanchard's argument then the higher government debt ratio will cause higher probability default of the debt. Under this circumstance, central bank would confront higher challenge associated with the effectiveness of inflation targeting, as argued before. This environment also appears in other emerging countries as pointed by BIS for positive correlation between public debt to GDP ratio performance and sovereign bond spread.

Following Cochrane (2003) argument, this idea implied that implementation inflation targeting in Indonesia also need fiscal consideration and commitment ability to conduct a monetary framework. BIS (2003) also discussed the importance of fiscal discipline to the effectiveness of monetary policy to control the inflation[16]. In operational point of view,

16 See Mihaljek and Tissot (2003) and Moreno (2003) for detail discussion



Source : Bloomberg, Ministry of Finance and Bank Indonesia

Graph 4.1. Indonesia's Sovereign Bond Spread, Rupiah Exchange Rate and Publik Debt Ratio to GDP

implementation of interest rate rule in conducting monetary policy requires a greater fiscal discipline and commitment ability to control government debt performance. Furthermore Sims (2003) argued that inflation targeting framework needs an appropriate coordination with or back up by fiscal policy. The nature of the required coordination will depend on whether and how central bank independence from the fiscal authority has been implemented. In sense of debt performance, Buiter (2004) suggest that for country with weak economic and political situation, the safe level of the net public debt to GDP ratio is likely to be low. Further than that, Reinhart, Rogoff and Savastano (2003) argued that developing countries with a poor track record have a very limited capacity for carrying public debt, internal and external. For external debt, they calculated that the 'safe' threshold for highly debt intolerant emerging market may be as low as 20 percent of GDP.

5. CONCLUDING REMARK

The main purpose of the paper is not to test Indonesia's fiscal solvency and neither to solve the fiscal insolvency if it was occurred. Nevertheless, the paper inevitably still touches the idea of fiscal solvency and indirectly also implies to effect of monetary objective to control inflation. Fiscal and monetary interaction analysis in this paper found that the economic crisis has generated QFA by central bank. Further result also shows that though it can be classified in weak form with respect to the recent fiscal reform measures introduced by the government to bring down its deficits, fiscal policy play in a dominance role in fiscal and monetary interaction in Indonesia post 1997.

Does this result matter for monetary policy objective to control inflation in Indonesia while since 1999 the new central bank law has provided an independence of monetary policy? This higher monetary policy independence has provided a legal base for central bank to focuses more in controlling the inflation. This paper carefully implies the answer is yes. These fiscal and monetary policy interaction performances lead to the implication that monetary policy under inflation targeting framework in Indonesia still call for a higher fiscal discipline and commitment of the government to maintain the sustainability. The failure to solve fiscal performance optimally could deteriorate monetary policy effectiveness to control inflation even under inflation targeting framework. The emergence of fiscal dominance particularly from public expectation and wealth effect channel on debt performance could bring tight monetary policy paradox. Under this circumstance, inflation targeting can have perverse affects: an increase in the real interest rate to respond higher inflation will lead to real depreciation which sequentially in turn to a further increase in inflation. The result implied the solution to control inflation should be from the fiscal policy not solely from monetary policy.

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