Oil Price Cycles, Fiscal Dominance and Counter-cyclical Monetary Policy in Iran

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Abstract:

Impulse for business cycles in Iran are largely generated from oil price (terms of trade) shocks and propagated through fiscal policies. The classic mission of monetary policy is to conduct countercyclical policy, however, this is not a universal norm. Pro-cyclical fiscal and monetary policies during boom periods has been observed in a number of developing countries. Such policies tend to amplify the impact of positive oil price (terms of trade) shocks through aggregated demand expansion. The consequence has been strengthening of domestic inflationary pressures and appreciation of the real exchange rate.

This paper attempts to examine if monetary policy in Iran is countercyclical and what is the impact of fiscal policy in this regard. It will be argued that the stance of fiscal policy and how government expenditures are financed can have a significant effect on how monetary policy is conducted. Our empirical observations regarding the experience of the Iranian economy indicates that, in a fiscally dominated structure, fiscal and monetary policies are generally expansionary, particularly during economic booms. This entails subsequent very large managed depreciation of the exchange rate, higher inflation rates, and an economic downturn. Under fiscal dominance monetary policy will be ineffective and both targets and instruments of monetary policy making will not be under the control of monetary authority. The policy package of a structural balanced fiscal rule combined with smoothing of quasi-fiscal operations is the appropriate policy measure that enhances the ability of central bank to conduct more effective countercyclical monetary policies.

Key words: Pro-cyclicality, Fiscal Dominance, Monetary policy, Ricardian.

JEL: E52, E63.

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1-Introduction:

The classic mission of monetary policy is to provide price stability and to operate as an anti-cyclical stabilizing force over the business cycles by choosing an appropriate nominal anchor to conduct policy. What is the suitable nominal anchor for the economy? That depends on the structure of the economy and development of the financial markets. The older literature recognized the central bank's targeted growth rate of money supply as the nominal anchor and monetary policy as an exogenous process. In their joint work Friedman and Schwartz (1963) suggested that the cause of inflation is excessive growth of the money supply, and deceleration of nominal-GNP growth rate and the rate of inflation occurs subsequent to a prior money growth deceleration. Moreover, occurrence of a recession (depression) and deflation can be traced back to a prior contractionary monetary policy in a period of credit restriction (credit crunch). Empirical observations made by the above cited study led to a more general question of rules versus discretion as a way to conduct monetary policy. Friedman's k percent rule stipulated a long-run policy induced growth rate of monetary base. If, projected (average) GDP growth is θ percent and the (average) money supply is allowed to grow at k per cent, inflation rate on average will be k-θ per cent--if the income elasticity of demand for money is unity.3.

Several criticisms have been leveled against the K-percent rule. Obtsfeld and Rogoff (1983) argue that the desired amount of money a representative household keeps is subject to inflation expectations, in other words, the demand for money reacts to changes in expectations hence there are different equilibrium inflation trajectories. This line of argument questions whether control of the money supply is sufficient to determine the equilibrium inflation path. Blinder (1988) argues against a fixed rule by comparing it to fixing a rudder in a stormy sea. McCallum (1987) and Meltzer (1987) argue that the monetary policy rule should consider and adjust for financial disorders (and innovations), which allows for some flexibility while maintain a pre-commitment to the announced policy rule. Mc Cullum rule (1987) is an example of a money quantity rule which is more flexible than the k percent rule but adheres to a policy stance. Mc Cullum's rule can be differentiated with k percent rule in that it

[3] In a different setting, by assuming that the marginal social cost of creating money is zero so its opportunity cost should be equal to zero, Friedman (1969) attempts to answer the question: what is the optimum growth rate of the quantity of money? He argues that the optimum quantity of money should grow at a rate such that the nominal interest rate is set to zero.[3] The monetary authority can reach this milestone by ensuring that the average (expected) rate of inflation is equal to the negative of the rate of return on riskless assets such a short-term government bond (say μ per cent). In other words, engineering a deflation rate of at μ per cent. In the above two contexts, it is presumed that the monetary authority can control the rate of inflation through its control over the money supply.

is also a feed-back rule like the Taylor rule (1999).4 These feedback rules endogenise the monetary policy instrument--usually via a short-term interest rate--with respect to the state variables in the economy--the targets of monetary policy. The canonical New Keynesian model provides a suitable framework for optimal feedback rules. More specifically, this model yields a targeting rule—in contrast to simple instrument rules—as an optimal reaction function to the target variables specified in the loss function of the central bank.[5] In this context the central bank sets the policy rate as a function of inflation and output gap in line with their anti-cyclical or stabilization policy.[6]

The prevalent tradition in the New-Keynesian as well as the broader literature has been to model inflation and its trajectory over time by focusing on monetary policy and leave aside fiscal policy. The standard New-Keynesian inflation targeting models for monetary stabilization policy often do not contain the effect of government budget and the path of the public debt. In this setup, the consequence of monetary policy decisions on the fiscal side is omitted. This assumption might be harmless for an economy that can sufficiently raise non-distortive revenues to finance expenditures but it may not be suitable for those developing countries that have had to cope with high inflation mainly due to their protracted fiscal imbalances and wish to implement an inflation targeting framework. In the above mentioned dichotomized approach, monetary policy's mission is inflation stabilization and the task of fiscal policy is management of the stock of government debt. This implies a clear and transparent form of delegating and assigning the conduct of policy to monetary and fiscal policy institutions. However, in the actual practice the posture and also limitations of fiscal policy, as has been observed in the post 2007 financial-economic crisis, influences the stance of monetary policy.

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[4] Taylor rule is a well-known example of an instrument rule which is a formula for setting the policy rate as a given function of observable variables. A simple instrument rule makes the instrument rate a simple function of a few observable variables which happen to be monetary policy targets.

[5] The familiar quadratic loss function is based on Benigno and Woodford (2012) derivation of the loss function for the representative agent. For a closed economy, the usual loss function is $E_t \sum_{t=0}^{\infty} \beta^t \{(\pi_t - \pi^*)^2 + g_t^2\}$ where $\pi_t \; and \; \pi_t^*$ is the current and targeted inflation rates, respectively, and g is the output gap.

[6] Assuming that the structural equations describing the economy consists of a Phillips relationship: $\pi_t = \pi_{t-1} + \gamma \, g_{t-1} + \varepsilon_t$ and the aggregate demand (IS) equation: $g_t = \eta \, g_{t-1} - \phi(i_{t-1} - \pi_{t-1}) + \upsilon_t$, the instrument rule is obtained from the first order condition obtained from the Phillips equation as: $i_t = \pi_t + \varphi_1(\pi_t - \pi_t^*) + \varphi_2 g_t$

One distinct area where the ability of the central bank to control inflation through its monetary policy instrument has been subject to question and scrutiny is the influence of fiscal policy. The disposition of fiscal policy has significant implications for the conduct of monetary policy and vice versa. Given a path for fiscal policy, monetary policy via interest rates influences the intertemporal solvency of government debt. As a result, a change in monetary policy induces changes in fiscal policy. Moreover, fiscal policy changes can alter the trade-off between inflation and output. Sargent and Wallace (1984) show that while the central bank can control the targeted rate of inflation, in certain circumstances the target rate is dictated by fiscal policy. At the heart of the matter is the solvency condition for the government. Over the planning horizon, the real value of government debt is equal to (and must be financed by) the discounted sum of seigniorage and taxes collected by the central bank and the fiscal authority, respectively. However, this consolidated budget constraint is not viewed as binding by the monetary and fiscal authorities. Without a specific framework for cooperation it is not clear which department leads and which one follows in setting policy. If the central bank is able to lead and set the path for the targeted policy variable in its domain, (the trajectory for inflation and seigniorage), the central bank is able to choose and set its targeted inflation rate and determine the quantity of seigniorage through monetary policy. Given the transversality condition for the consolidated budget constraint, once the inflation target rate is determined, the central bank dictates it to the fiscal authority, and the fiscal authority would then determines the discounted value of the primary surplus. Thus, determination of the growth rate of the money supply by the monetary authority delivers both the nominal anchor and inflation control. In this setting, the monetarist explanation for price determination and control holds (Canzeroni, et al 2010).

If fiscal policy has the upper hand and leads the policy process hence determines the path for fiscal policy (the trajectory of government revenues minus expenditures or more specifically the discounted sum of primary surpluses), the target rate of inflation will be set by fiscal policy. In this case, the central bank only has control over the inflation target handed to them by the fiscal authority. In a somewhat similar but distinct ways, the Fiscal Theory of Price Level (FTPL) argues that the conduct of fiscal policy is a constraint for determining the optimal inflation path decided by the monetary authority and by itself does not deliver the nominal anchor for the economy (Leeper 1991, Woodford 1995, Kocherlakota and Phelan 1999, Chochran 2005). FTPL discusses the requisite forms of coordination (pairings) between the monetary and the fiscal policies to determine an equilibrium price level path. Not all

policy pairings can deliver stable prices. Other pairings may provide sunspot equilibria or explosive price paths (Canzeroni et al 2010).

The type of fiscal policies pursued has crucial consequences for formulating the optimal monetary policy. The problem of monetary stabilization would be more complex when different fiscal institutions and regimes are taken into account, and standard inflation targeting may no longer yield the optimal plan. None the less, for a closed-economy, "[O]ptimal monetary policy can be implemented through a commitment to use policy to guarantee fulfillment of a target criterion, which specifies the acceptable level of an output-gap-adjusted price level given the central bank's current projections of the economy's possible future evolution. A credible commitment to such a rule should serve to anchor inflation."[7] However, in a number of developing countries the institutional setup is not suited to handle such complex situations. In some countries the underlying institutions does not allow for clear demarcation between fiscal and monetary policies. In others, potential cooperative schemes are undermined by fiscal dominance. Even in the presence of such schemes, the existing monetary policy frameworks are not sufficiently complex as to handle different fiscal institutions and policy characters." In particular, for commodity-exporting countries fiscal policy has a pro-cyclical character that, in many instances, can induce co-movements in monetary operations or policies. This combination tend to exacerbates expansionary aggregate demand forces during booms and weakens them during an economic downturn (McGettigan et al 2013), and overwhelms the anti-cyclical nature of monetary policy.

In this paper we take up the question why the Iranian central bank has not been successful in conducting systematic anti-cyclical and anti-inflation policy. The paper focuses on the role of fiscal dominance as it relates to the question posed in the above. We argue that over the 1990-2016 period fiscal policy has been a major contributing factor that impinged on monetary policy conduct. In particular, fiscal operations influenced the time path of monetary policy instruments like monetary base, policy rates, and the exchange rate—as instances of fiscal dominance. We will argue that the nature of fiscal dominance has for the last four decades undergone changes, mainly due to the behavior of an exogenous variables, namely, oil revenues. State-dependency of government expenditures and its finance has presented

[7] Benigno and Woodford (2007), P. the authors warn that even if a constrained-optimal monetary policy regime can be formulated and the fiscal authorities know about it, that should not be an incentive for fiscal policy to be "profligate" and rely on the monetary authority to assist with modifications of its policy to "accommodate any degree of spending".

different policy trade-offs to the monetary authority and at times has shaped the time path of monetary policy instruments and targets and in this process has undermined the ability of the central bank to conduct stabilization policy.

In section (2) we discuss some fiscal characteristics of a commodity (oil) exporting country such as Iran. Section (3) provides a general accounting framework to show the connections between fiscal and monetary sector operations. In section (4) we provide evidence regarding the pro-cyclicality of fiscal and monetary policies. Section (5) discusses the basic reasons why fiscal and monetary policies tend to be pro-cyclical during a commodity boom. Section (6) we discuss the consequences of not adopting countercyclical policy. Section (7) discusses the role of monetary policy in the environment pictured in the previous sections. Section (8) presents the concluding remarks.

2-Composition of Fiscal Revenue and Expenditures

Figure (1) shows the composition of government revenue in Iran during the period 1989-2016. As in most commodity (oil) exporting economies, resource exports are a major part of government revenue and finance and portrays the same picture. As indicated by figure (1), the share of oil revenues (in current rials) in total government revenues (in current rials) has been larger than other components in most of the observation years. The share of oil revenues in total government revenues peaked in 1994 with 73.4 percent. Subsequently it followed a downward trend to a trough of 25.2 percent in 2009, followed by a partial increase during the subsequent years reaching 33 percent in 2016. Note that the share is dependent on the volume and price of oil exports and the rate at which oil revenues are converted into rials. Zarei and Najafi (2014), apply concordance measure on the relationship between fiscal variables and business cycles in Iran and shows that government oil revenues lead real GDP positively within two quarters. Tax income on the average comprises 42 percent of total revenues during 1989-2016. Zaeri and Najafi (2014) show that tax revenues are largely pro-cyclical in Iran and only in 31 percent of the boom and 25 percent of bust years were concurrent with countercyclical tax policies.

The overall budget (OB) balance was always in deficit except four years[8] during the 1989-2016 period. The OB deficit in Iran first peaked in 2008 owing to an oil price plunge. Following the recent oil price collapse during 2014, the level of deficits

[8] In 1995, 1996, 1997, and 2001 overall balance were in surplus.

again rose to a new peak in 2016. Note that the increase in the OB deficit since 2014 has been financed primarily through the accumulation of debt (figure 1). It must be noted that the share of oil revenues in terms of the domestic currency is a function of oil prices and the rate at which they are converted into the domestic currency (rials). Moreover, during the periods when oil revenue share declines significantly, accumulation of debt and selling of government owned assets increases.

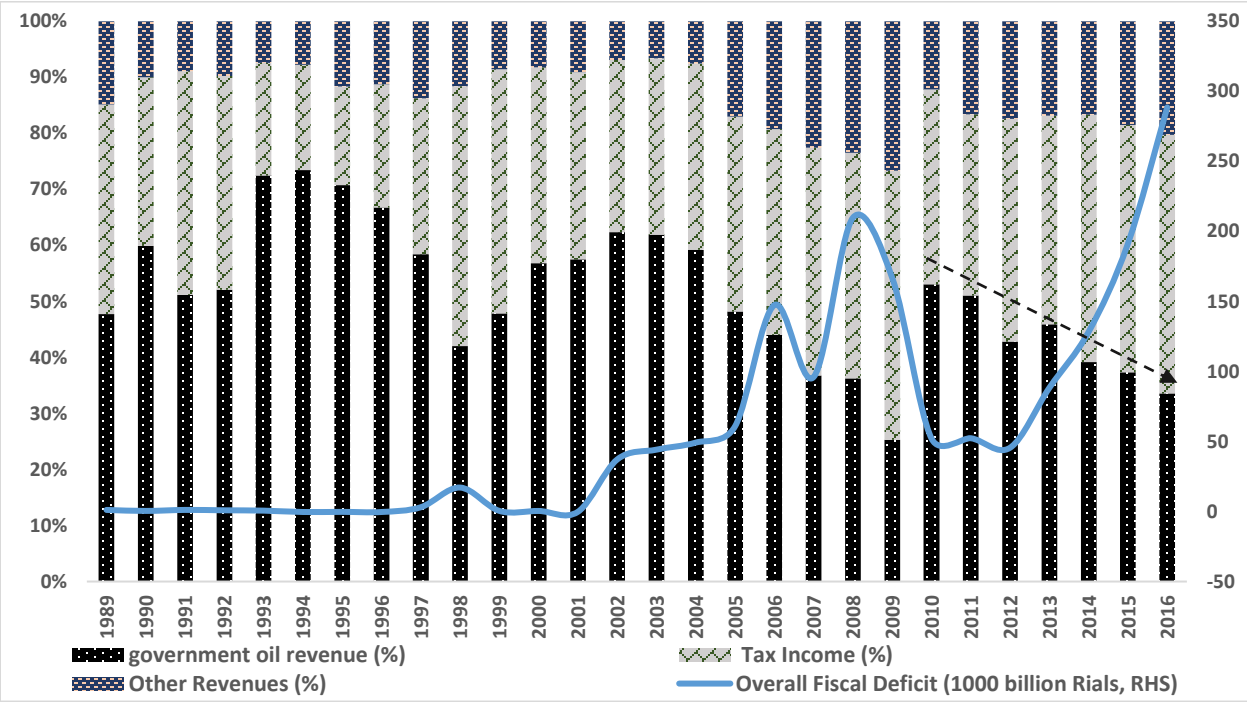

Figure (1): The composition of government revenues in Iran. Source, Bank Markazi Iran, (BMI), Economic Time Series Database, http://tsd.cbi.ir/, and Economic Trends.

Figure (2) shows the upward trend in nominal government expenditures and the composition of government expenditures. Current expenditures on the average involves 74.9 percent of total government expenditures. Current government spending always grew during the 1989-2016 period. Total government expenditures experienced only two contractions in 2009 and 2012 as a result of sharp declines in development expenditures. On the average, current expenditures grew faster than development expenditures, implying growing need for revenue to keep the government running. Current expenditures were generally downward-sticky in this period due to contractual obligations, e.g. wage and salaries payments to public employees and commitments for direct cash transfer payments.

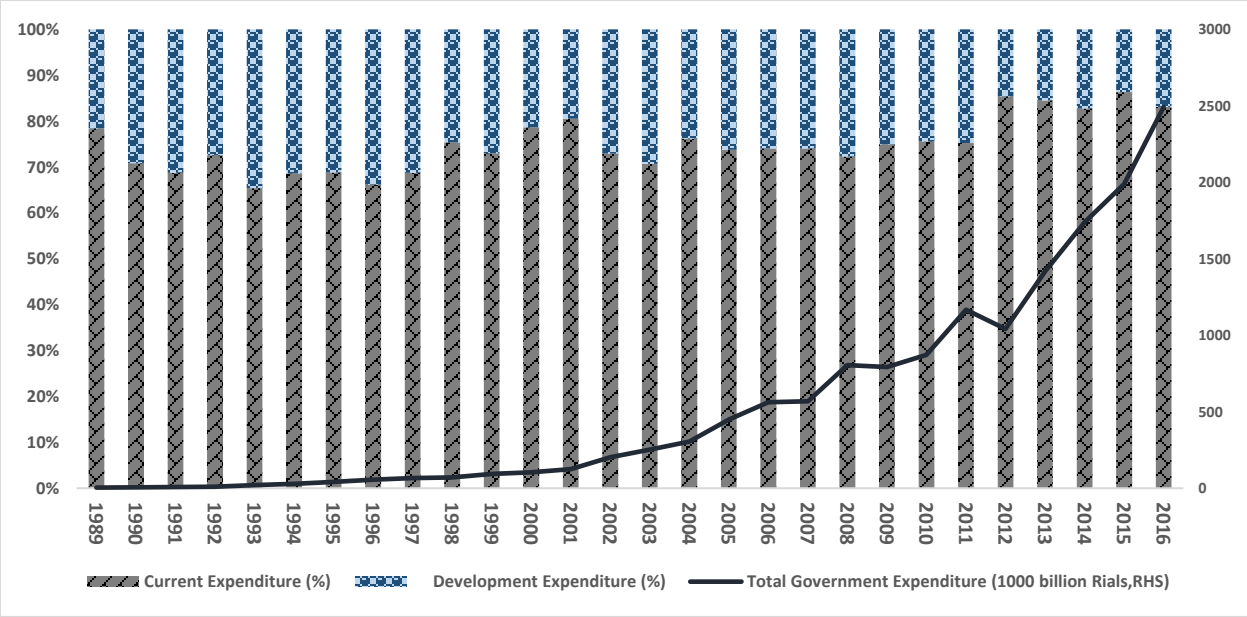

Figure (2): Trend of total government expenditures and expenditure shares. Source: BMI.

3-Interconnection between Fiscal, Monetary and Banking System Accounts

Financing of the overall fiscal deficit in an oil exporting economy such as Iran is executed mainly in three distinct ways: 1)-higher oil revenues (in dollars) and/or higher exchange rates; 2)- higher taxes; 3)-higher borrowings (from the domestic residents, foreign borrowings, and borrowing from the central bank). With the help of the following balance-sheet identities, we describe the relationship between sectoral financial accounts and the effect of changes in each account on monetary base growth (the policy instrument of the central bank). In the followings, changes in the balance-sheet of the main players, the government, the central bank, and the commercial banking system will be presented.

I-The government sector

Factors determining changes in government sector net worth:

$$\Delta NW_t^g = \Delta A_{NF,t}^{g,no} + \Delta A_{NF,t}^{g,o} + E_t\Delta\left(A_{F,t}^g - L_{F,t}^g\right) + \Delta\left(DP_{CB,t}^g - L_{CB,t}^g\right) + \Delta\left(DP_{ComB,t}^g - L_{ComB,t}^g\right) + \Delta\left(A_{np,t}^g - B_{np,t}^g\right) \quad (1)$$

Changes in government net worth from income statement is given by:

$$\Delta NW_t^g = T_t - G_t + i_t\left(DP_{CB,t}^g - L_{CB,t}^g\right) + i_t\left(DP_{ComB,t}^g - L_{ComB,t}^g\right) + i_t\left(A_{np,t}^g - B_{np,t}^g\right) + E_t i_t^*\left(A_{F,t}^g - B_{F,t}^g\right) \quad (2)$$

Operational fiscal balance: $T_t - G_t$ (3)

Government net interest receipt: $i_t\left(DP_{CB,t}^g - L_{CB,t}^g\right) + i_t\left(DP_{ComB,t}^g - L_{ComB,t}^g\right) + i_t\left(A_{np,t}^g - B_{np,t}^g\right) + E_t i_t^*\left(A_{F,t}^g - L_{F,t}^g\right)$ (4)

Substituting for ΔNW_t^g in (1) from (2) and definition of overall fiscal balance= Operational fiscal balance+ Government net interest payment = (2)+(3), then the overall fiscal deficit OFD, is obtained:

$$OFD_t = -\Delta A_{NF,t}^{g,no} - \Delta A_{NF,t}^{g,o} + E_t\Delta\left(L_{F,t}^g - A_{F,t}^g\right) + \Delta\left(L_{CB,t}^g - DP_{CB,t}^g\right) + \Delta\left(L_{ComB,t}^g - DP_{ComB,t}^g\right) + \Delta\left(B_{np,t}^g - A_{Priv,t}^g\right) \quad (5)$$

Financing of OFD can be done through the items on the right hand side of (5). Specifically, selling of non-financial non-oil assets ($A_{NF,t}^{g,no}$), selling of non-financial oil assets ($A_{NF,t}^{g,o}$), currency devaluation or managed depreciation (E_t), increasing net borrowing from abroad $\left(L_{F,t}^g - A_{F,t}^g\right)$, increasing net borrowing from the central bank $\left(L_{CB,t}^g - DP_{CB,t}^g\right)$, increasing net borrowing from the commercial banks $\left(L_{ComB,t}^g - DP_{ComB,t}^g\right)$, increasing net borrowing from non-financial private sector $\left(B_{np,t}^g - A_{np,t}^g\right)$.

II-The central Bank

Changes in the net worth for Central Bank is due to increased net claim on foreign sources or net foreign assets=NFA, $\left(A_{F,t}^{CB} - L_{F,t}^{CB}\right)$, currency devaluation or managed depreciation, or net claims on the government sector $\left(L_{CB,t}^g - DP_{CB,t}^g\right)$, net claims on commercial banks $\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right)$, minus changes in the monetary base (central bank liabilities)[9]. The first segment on the right hand side of (6) is equal to net interest income from central bank's net assets.

$$\Delta NW_t^{CB} = E_t\Delta\left(A_{F,t}^{CB} - L_{F,t}^{CB}\right) + \Delta\left(L_{CB,t}^g - DP_{CB,t}^g\right) + \Delta\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right) - \Delta MB_t \quad (6)$$

[9] For simplicity, it is assumed that the change in non-financial asset of the central bank is null.

From the income perspective, change in central bank net worth can be written as

$$\Delta NW_t^{CB} = i_t\left(L_{CB,t}^{g} - DP_{CB,t}^{g}\right) + i_t\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right) + i_t^{*}\left(A_{F,t}^{CB} - L_{F,t}^{CB}\right) \quad (7)$$

Viewed from sources and uses (6), (7) can be re-written as:

$$\Delta MB_t + i_t\left(L_{CB,t}^{g} - DP_{CB,t}^{g}\right) + i_t\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right) + i_t^{*}\left(DP_{F,t}^{CB} - L_{F,t}^{CB}\right) = E_t\Delta\left(DP_{F,t}^{CB} - L_{F,t}^{CB}\right) + \Delta\left(L_{CB,t}^{g} - DP_{CB,t}^{g}\right) + \Delta\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right) \quad (8)$$

For the sake of simplicity, we assume that net interest payment accrued to the central bank is negligible, $i_t\left(L_{CB,t}^{g} - DP_{CB,t}^{g}\right) + i_t\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right) + i_t^{*}\left(DP_{F,t}^{CB} - L_{F,t}^{CB}\right) = 0,$ therefore, from the sources side, monetary base change can be written in terms of changes in net foreign and domestic assets:

$$\begin{aligned}\Delta MB_t &= E_t\Delta\left(A_{F,t}^{CB} - L_{F,t}^{CB}\right) + \Delta\left(L_{CB,t}^{g} - DP_{CB,t}^{g}\right) + \Delta\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right)\\ &= \Delta NFA_t + \Delta NDA_t,\\ \Delta NDA_t &= \Delta\left(L_{CB,t}^{g} - DP_{CB,t}^{g}\right) + \Delta\left(L_{CB,t}^{ComB} - DP_{CB,t}^{ComB}\right) \quad (8.1)\end{aligned}$$

III-Commercial Banks:

Changes in the net worth of commercial banks is equal to the sum of : net foreign deposits, net lending to government, net claims of the central banks on the commercial banks, net loans to the private sector, and changes in the required reserves placed with the central bank.

$$\Delta NW_t^{ComB} = E_t\Delta\left(DP_{F,t}^{ComB} - L_{F,t}^{ComB}\right) + \Delta\left(L_{ComB,t}^{g} - DP_{ComB,t}^{g}\right) + \Delta\left(DP_{CB,t}^{ComB} - L_{CB,t}^{ComB}\right) + \Delta\left(L_{ComB,t}^{priv} - DP_{ComB,t}^{Priv}\right) + \Delta RR_t \quad (9)$$

From the income perspective, (9) can be written as

$$\Delta NW_t^{ComB} = i_t\left(L_{ComB,t}^{g} - DP_{ComB,t}^{g}\right) + i_t\left(DP_{CB,t}^{ComB} - L_{CB,t}^{ComB}\right) + i_t\left(L_{ComB,t}^{priv} - DP_{ComB,t}^{Priv}\right) + i_t^{*}\left(DP_{F,t}^{ComB} - L_{F,t}^{ComB}\right) \quad (10)$$

For the sake of simplification, we set commercial banks net interest payment equal zero:

$$i_t\left(L_{ComB,t}^{g} - DP_{ComB,t}^{g}\right) + i_t\left(DP_{CB,t}^{ComB} - L_{CB,t}^{ComB}\right) + i_t\left(L_{ComB,t}^{priv} - DP_{ComB,t}^{Priv}\right) + i_t^{*}\left(DP_{F,t}^{ComB} - L_{F,t}^{ComB}\right) = 0 \quad (11)$$

And the following identity can be derived for commercial banks:

$$E_t\Delta\left(DP_{F,t}^{ComB} - L_{F,t}^{ComB}\right) + \Delta\left(L_{ComB,t}^{g} - DP_{ComB,t}^{g}\right) + \Delta\left(DP_{CB,t}^{ComB} - L_{CB,t}^{ComB}\right) + \Delta\left(L_{ComB,t}^{priv} - DP_{ComB,t}^{Priv}\right) = -\Delta RR_t \quad (12)$$

Given identities (5), (8.1), and (12), it is possible to trace through the impact of a fiscal deficit on the monetary accounts. As indicated by identity (5), the government can resort to different means to finance its overall fiscal deficit. Selling non-financial oil or non-oil assets, devaluation of exchange rate, borrowing from central bank, borrowing from commercial banks, borrowing from non-financial private sector, and external borrowing from foreign countries or international institutions. These alternatives are trade-offs facing the fiscal authorities. For instance, if increased net borrowing from the central bank [$\Delta\left(L_{CB,t}^{g} - DP_{CB,t}^{g}\right)$] is the method of financing the over-all deficit, its impact would be reflected on the central bank balance sheet in (8.1) with consequences on the inflation rate. However, this can frustrate monetary policy targets set by the monetary authority. Alternatively, the government can resort to exchange rate devaluation or borrowing from the commercial banks. Their effects will be reflected on the composition and expansion of monetary base through (8.1) and via composition of the assets of the commercial banks (12) with indirect ramifications on the exchange rate or on interest rates (crowding-out effect), respectively. To the extent that the above financing methods impinge on the central bank targets and instruments, we have the presence of fiscal dominance.

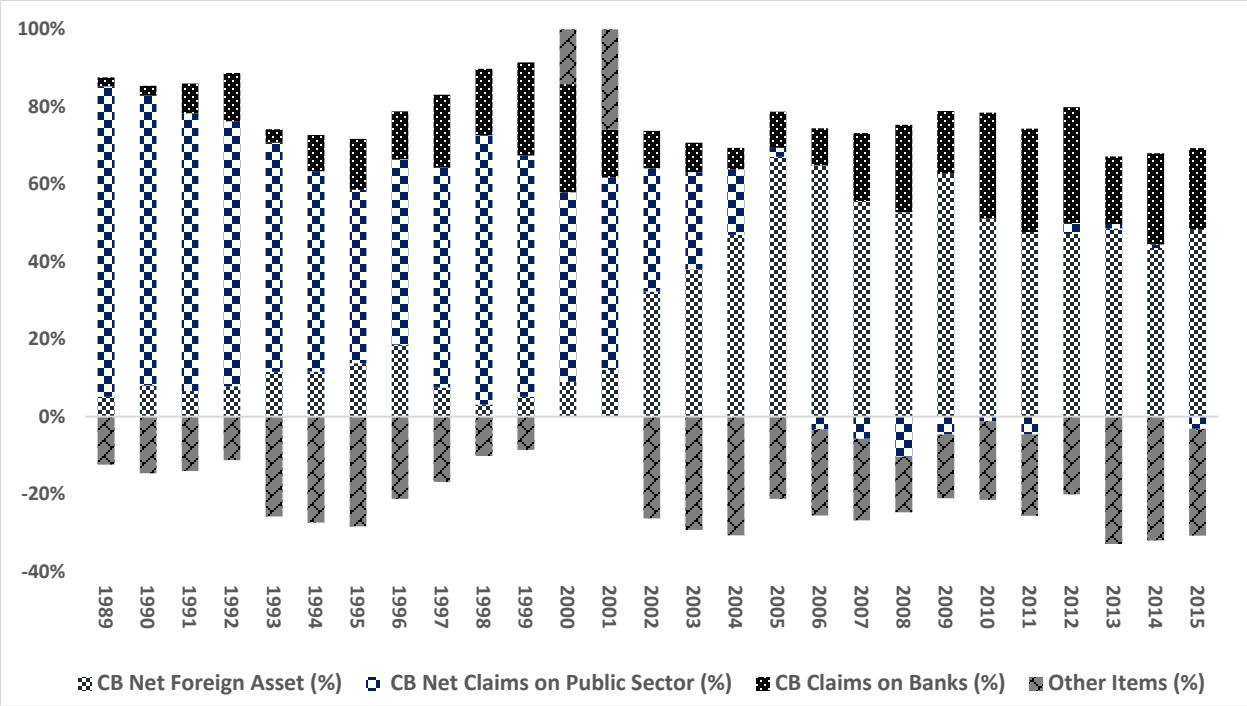

Figure (3): Sources of change in the Monetary Base. Source, BMI.

Figure (3) shows the trend of domestic and foreign asset components of the monetary base. Prior to the Third Five-Year Development Plan, net claims on the government was the main component of the monetary base since overall fiscal deficit was simply monetized by the central bank--reflecting the influence of debt dominance on monetary expansion. To control monetary expansion in this period, the central bank imposed credit limits on the banking system. The Third Plan law did not allow for automatic financing of fiscal deficit through monetary base expansion. The Third Plan allowed the government to finance fiscal deficits by selling more foreign exchange to the central bank hence growth of its net foreign assets, and/or devaluation of the domestic currency, particularly during low oil-price periods, to get more rial per dollar of oil revenues. Hence, the form of fiscal dominance changed to oil dominance, as net foreign assets became the largest components of the central bank's asset-side of the balance-sheet[10]. In the more recent years, the government

[10] In an oil exporting economy, where oil receipts in foreign currency are deposited in central bank, the reduction in central bank claim on government will be compensated with net foreign asset growth. Hence, monetary base do not change. However, when government uses the oil-related receipts to finance domestic expenditures, there will be an increase in central bank claim on government and simultaneous expansion of monetary base (Da Costa et al, 2008).

has opted to limit depreciation of rial and to maintain the rising trend of nominal government expenditures through borrowing (figure 1). While higher tax revenues has enhanced government revenue stream, borrowing from the public has expanded rapidly since 2014. The general observation is that, fiscal operations either in the form of government borrowing from the banking system (quasi-fiscal operations), debt monetization or foreign-exchange monetization (accumulation of net foreign assets) has been a major factor behind monetary growth, undermining the central bank ability to control its main policy instrument. In the recent years, the central bank claim on the banking system has increased, partly reflecting banking system claims on the government.

3-Procyclicality of Fiscal and Monetary Policies: Some Evidence

As discussed by McGettigan (2013), generally, advanced market economies run countercyclical policy and the majority of emerging economies' monetary stance is pro-cyclical. However, largely through adoption of inflation targeting, a large number of emerging market economies have over the years moved on to countercyclical monetary policy**.** While the same general observation can be extend to fiscal policy, Guerguil et al (2016) argue that different fiscal rules have not been equally effective and have had different outcomes and that the design of counter-cyclical fiscal rule is an important issue in this regard.

Pro-cyclicality of policies is more manifest in oil (resource) exporting countries where income from the oil sector is significantly large and tend to exert significant influence on the business cycle. The oil price (terms of trade) shocks are the main impulses of the business cycles and expenditure of oil windfalls through fiscal and monetary channels are the propagation mechanism. Note that, while the oil price (terms of trade) shocks are external and exogenous, conduct of fiscal and monetary policies (operations)--channels that propagates the original shock into the economy—are internal decisions. Moreover, the nature of the propagation mechanism is a function of the particular forms that the fiscal and monetary package assumes. A type of propagation mechanism often observed in the oil (commodity) exporting countries results in pro-cyclical fiscal and monetary policies (Frankel 2011) and strong positive correlation between the terms of trade (as well as real oil price) and the real exchange rate during expansionary cycles.

Pro-cyclicality of policy has been an issue of economic planners in Iran. There has been two different formats through which the government has tried to control pro-cyclicality of fiscal policy: Oil Stabilization Fund and the National Development Fund of Iran (NDFI). However, their effectiveness has been limited. Due to its ineffectiveness, the Oil Stabilization Fund that was introduced with the Third Five-Year Development Act, was revoked and replaced with NDFI in the Fifth Development Plan in 2011.

One way to account for and evaluate the degree of pro-cyclicality of policies (or lack thereof) is to examine their co-movement during economic booms and recessions. To this end, the first step is to identify boom-bust cycles of economic activities for the Iranian economy with the HP filter and the business-cycle dating algorithm developed by Harding and Pagan (2002, 2006)[11]. Based on this method, expansionary (boom) and contractionary (bust) phases of the economic activity are determined by cyclical turning points, peaks and troughs, in the time series data. An expansionary phase is defined as trough-to-peak, while a contractionary phase is defined and measured from peak-to-trough. However, the weakness of this approach is that it does not measure peaks and troughs relative to a trend (potential) output. We utilized the HP method to identify the boom and bust cycle for quarterly real non-oil GDP and the ratio of nominal government expenditure to non-oil GDP, and the ratio of nominal money base to nominal non-oil GDP.[12] Then by specifying a series of "if" statements we check for the cyclical relationship between fiscal and monetary policies over the economic cycles. Final results for eight categories are shown in Table (1).

[11] For more details on the Harding and Pagan business cycle dating method see (Male, 2010). The R-package called "BCDating" developed by Einian (2013) is used for dating business cycles on quarterly non-oil real GDP growth during 1990-2014. The results obtained by using this method is highly similar to the results reported in table (1).

[12] Given a tax rate structure, tax revenues are largely a function of the level of economic activity (i.e. it is endogenous) hence we focus on the pro-cyclicality of the growth rate of nominal government expenditures as the proxy for fiscal policy.

Table 1: Test of fiscal and monetary pro-cyclicality and co-movement: 1990-2014.

Economic Cycles	quarters	Fiscal Categories	quarters	Monetary Categories	quarters	Inflation Share (%)	Currency Devaluation Share (%)
Positive Gap	46	FE	24	ME	15	20.5	0.49
				MC	5	4.97	0.14
		FC	22	ME	9	1.57	-0.13
				MC	17	18.2	14.16
Negative Gap	53	FE	32	ME	24	22.4	83.46
				MC	8	6.14	0.43
		FC	21	ME	6	8.52	0.39
				MC	15	17.7	1.02

FE/FC: Expansionary/Contractionary fiscal policy, ME/MC: Expansionary/Contractionary monetary policy, Source: Author Calculations.

The results show that fiscal policy, represented by the ratio of nominal government expenditures to real non-oil GDP, is asymmetric during the economic cycles; it is predominantly pro-cyclical during the boom phase (52 percent) and predominantly countercyclical (expansionary in a downturn) during a recessionary period (60 percent).

Application of the same method for gauging the stance of monetary policy is more difficult because monetary policy instrument is dependent on the existing exchange rate regime and there could be a mix of policy variables. Clean float has never been practiced as a policy, however, managed float has been the general policy approach except when the central bank could not limit currency movements. Since rial is not a perfect substitute for major currencies, policy rates can be a proxy for monetary policy for periods where the exchange rate is fairly stable, partly due to the influence of fiscal operations, and when the rates are allowed to fluctuate more widely. Note that, since interest rate movements within the formal banking system is constrained, policy rates are at best a gross proxy.[13]The central bank also observes growth rate of the base money and for many years, it had targets on the growth of monetary

[13] We do not have sufficiently long time series on the interbank overnight rates to use it as proxy for policy.

aggregates. The behavior of the variable representing monetary policy is similar to fiscal policy. It is procyclical during boom periods and countercyclical over recessions.

When fiscal policy is expansionary during the boom periods, monetary base is also expansionary 62.5 per cent of the time (15 out of 24 quarters), reflecting a fairly strong co-movement during boom cycles. This pattern can also be observed during the recessionary periods. When fiscal policy is expansionary, monetary policy co-moves in more than 75 percent of the observation points (24 out of 32 quarter). This behavior can not only be understood as simultaneous shift of both the IS and LM curves that tend to amplify the impact of external shocks, but it can also be an evidence for the existence of fiscal dominance[14].

We also tried to find out in which categories the share of inflation and currency devaluation in their total variation is higher. The results are shown in the last two columns of the table (1). Nearly 43 percent of the total change in the CPI index over the 1990-2014 periods is associated with periods during which we observe expansionary monetary and fiscal policies. The greater part of variation in the CPI index occurred in those periods when the economy was in recession (due to a negative aggregate supply shock) but fiscal and monetary policies remained expansionary (22.4 percent). Interestingly, during the same observation category, currency devaluation is most frequent and accounts for 83 percent of currency devaluation during the 1990-2014 period. Likewise, the bulk of currency devaluations took place during the 2nd quarter of 1992 and the 3rd quarter of 2013. Currency devaluation in these bust phases were a source of fiscal revenue to fill the gap in the budget. This can be perceived as an indication for utilizing currency devaluation to finance budget deficit.[15] The empirical observations support that policy makers follow expansionary fiscal and monetary policies irrespective of boom-bust cycles in a fiscally dominated environment.

The average quarterly growth rate of nominal fiscal expenditures during boom periods is 7.54 percent and slightly larger than the average growth rate of 7.09

[14] Concurrence of countercyclical monetary policy with expansionary fiscal policy in boom periods is the least frequent observation (5 out of 22 quarters).

[15] Currency devaluation in connection with the implementation of exchange rate unification policy occurred during the boom period of the 2nd quarter 2002. Expansionary fiscal policy coincided in this period with contractionary monetary policy.

percent during recessionary periods. Note that as discussed in sections (2) and (3), the method of financing during busts is different from the boom periods and the government resorts to managed currency depreciation, quasi-fiscal operations, and borrowings to finance its expenditures. Inflationary pressures and managed currency depreciations are the by-products of this macroeconomic environment. Our observations also indicate that accumulated fiscal expansion, misalignment of the real exchange rate and inflationary pressure resolve themselves in a jump of the rate of inflation and large policy managed depreciations when the negative strong terms of trade shock (and international payment disruptions) hit the domestic economy.

Banking "profit rates" have been another policy instrument of central bank of Iran. Figure (4) shows the trend of inflation-adjusted policy (loan and deposit) rates in Iran during the period. Aside from the period after 2015, real policy rates for both deposits and bank facilities have been negative most of the time, indicating that policy rates did not follow an anti-cycle pattern and did not react to higher inflation rates. The standard deviation for the rate of inflation is three times that for the policy rates, indicating limited reaction of policy rates to fluctuations of the rate of inflation. During above HP trend period annual non-oil-GDP, the average policy-facility rate is -1.87 per cent while during below trend (recession) periods it is -5.12. On the face of it, this indicates strong pro-cyclical behavior of the policy loan rates. However, the important point to note is that, inflation rates on the average are significantly higher during recessionary periods (22.5 percent) compared to boom periods (18.05). Since nominal policy rates changes are limited and do not react sufficiently to movements in the inflation rate—see figure 4--inflation rate variations dominate real policy rates.

Additionally, Jalali-Naini and Hematy (2013) and Hematy-Jalali-Naini (2015) estimated several version of the Taylor and McCullum rules[16] to test for reaction of the central bank to output gap, inflation gap, and exchange rate misalignment. The findings showed no systematic reaction of monetary authority to the above macroeconomic variables. Overall, the empirical observations cited here indicate that monetary policy is predominantly pro-cyclical during boom periods but that cannot be clearly extended to recessionary periods. It is weakly counter-cyclical during recessionary periods. It should be emphasized that as far as policy rates are

[16] Estimation methods included OLS, GMM, and time varying parameter (TVP) methods.

concerned, lower real rates during recessions is not a policy outcome but the result of inflationary conditions which tend to be stronger during economic slacks.

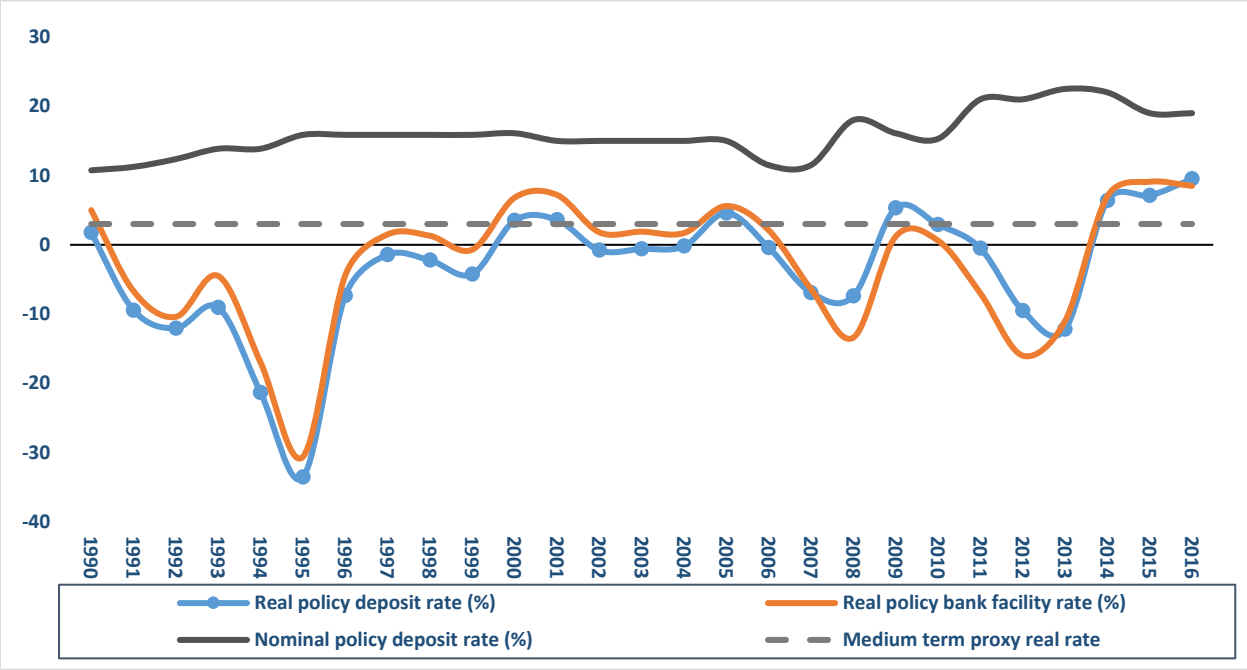

Figure 4. Nominal and Real Policy rates. Source BMI, Annual Reports and Trends.

4-Factors that tend to Generate Pro-cyclical Fiscal and Monetary Policies

The main factors that contribute to creating pro-cyclicality in boom periods are two broad categories: political economy motivations and structural factors.

a) Political-economy of pro-cyclical budgetary operations and the "veracity effect". Availability of more resources induces pressure by the public at large for higher welfare spending and subsidies. Moreover, lobbying by influential groups to be the beneficiary of more public projects granted by the government and the political benefits of larger spending by the government are the main drivers for oil-induced fiscal expansions. Measures to control this correlation through creation of Stabilization Funds (SF) or sovereign wealth funds (SWF), have been introduced by governments of resource exporting countries including Iran to counter above tendencies. However, the experience has been mixed.

b) Asymmetry of access to global financial markets. Developing economies (and a small number of developed economies) do not have the capacity to issue debt in their

own currencies the global capital markets (Eichengreen et al 2007). During resource booms, resource (oil) exporting countries have strong balance of payment positions and have a better access to world capital markets. During these periods, country-risk evaluation and the real exchange rate tend to be on the low side, hence borrowing by firms to finance imports of intermediate and capital goods is less costly. In an oil-exporting country like Iran, the impact oil-financed expansion in fiscal expenditures often filters through the central bank balance sheet.[17] In particular selling of foreign currency receipts from oil exports to the central bank expands its net foreign assets which can further expand the lending capacity of the banking system and hence the money supply. In a sense, higher government expenditures that shifts IS to the right also shifts LM to the right, making it a potent combination.

5-Consequences of not adopting counter-cyclical policies

What are the complications associated with pro-cyclical fiscal and monetary policies? Pro-cyclical fiscal policy combined with accommodating monetary operations tend to strengthen an initial commodity boom on the up-cycle. Expansion of aggregate demand, higher inflation rate for non-traded goods combined with relative stability of the nominal exchange rate—due to greater availability of foreign currency during oil booms—lowers the level of real exchange rate. Figure (5) shows a positive relationship between the terms of trade (real oil price) and the real exchange rate during boom periods[18]. Persistent decline in the real exchange rate propels the economy onto an unsustainable expansion path—particularly, if the boom is not accompanied by rising productivity and/or is tainted with rent-seeking behavior and corruption. In the absence of internal dynamism in the economy—e.g. a productivity pickup or benefits from economies of scale—the oil windfall upcycles tend to fizzle out with maturing of the commodity boom, and increased severity of the Dutch disease, and also as a consequence of deleterious effects of budgetary rent seeking.

[17] In fact a significant contributor to changes in the monetary base issues from such fiscal operations and the consequent variations in the monetary base. For more details see Jalali-Naini et al (2015).

[18] Following our result from Table (1), monetary and fiscal policies are disproportionately pro-cyclical in expansionary phases resulting in strong positive correlation between real exchange rate and terms of trade. However, since fiscal and monetary policies are frequently counter-cyclical during contractionary periods, the above-mentioned positive correlation weakens very significantly.

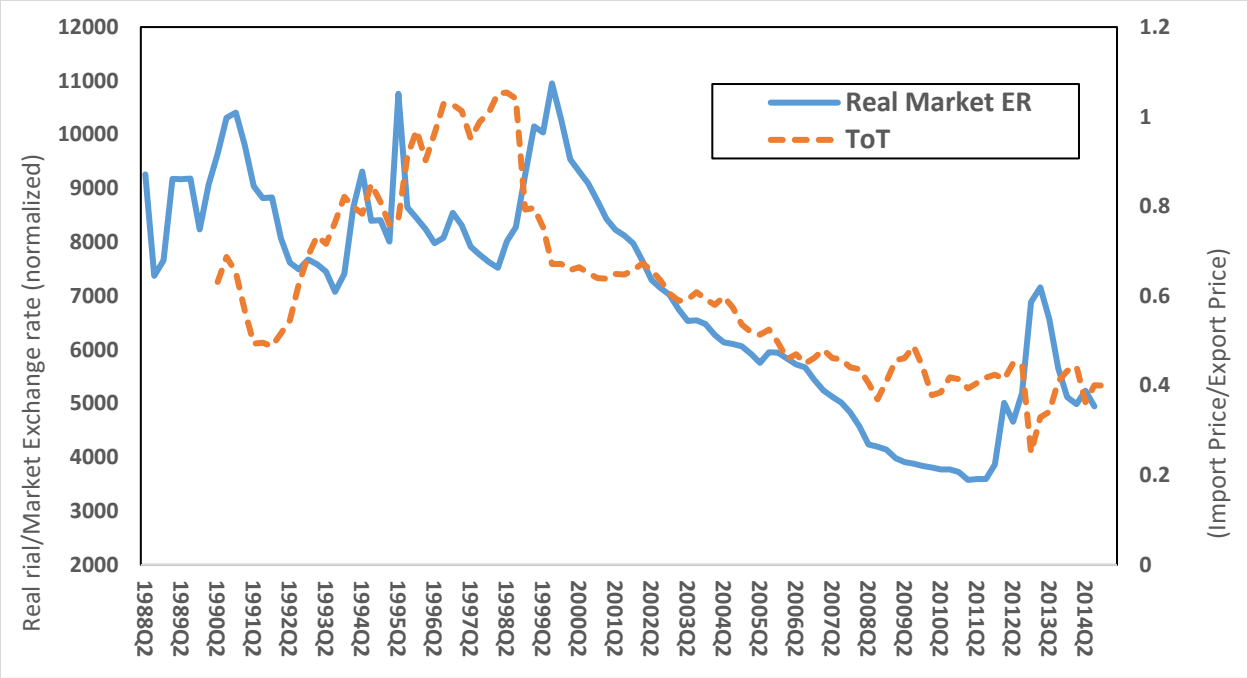

Figure (5): Terms of Trade and Real Exchange Rate Trends.

There is an asymmetry in the propagation mechanism during low-oil-price periods. Three different channels propagate the effects of an adverse terms of trade shock. The impact of a commodity-bust is channeled through a decline of the real aggregate demand. During an oil price bust, the fiscal authority besets with a large revenue fall and given the domestic tax/financing constrains, fiscal authorities cannot effectively expand or maintain the level of real government expenditures in the downturn phase of the economic cycle to offset aggregate demand fall. Attempts to offset declines in nominal government revenues with higher exchange rates and borrowings often does not translate into higher real government expenditures due to higher inflation rates—reflecting shrinkage of the aggregate supply.

The second (exchange rate) channel has two distinct effects; an expansionary and a contractionary effect. An increase in the nominal exchange rate, due to deterioration of the currency reserve (balance of payments) can through Marshall-Lerner effect boost net exports and ameliorate the decline in aggregate demand due to decline of real government expenditures. However, this channel has a downside effect too. Since the balance of payment constraints are tighter, and access by domestic firms to foreign capital is more limited. Domestic banks are also less willing to expand lending under such conditions even if monetary policy becomes more

accommodative. If adjustments in the exchange rate are large and are followed by speculative attacks on the domestic currency, risk-premiums in the currency markets get larger and the economy is exposed to "the balance sheet effect" which under certain conditions overwhelm the Marshall-Lerner effect and generate a case of "contractionary devaluation". This situation can further deteriorate if the access to global capital markets are reduced due to higher currency risks.[19]Financing the deficit through devaluation, when oil revenues are below trend, thus can be potentially hazardous.

This latter, depends on the magnitude of price change in the currency market and the ratio of the value of foreign liabilities to the sum of the value of foreign and domestic assets in the household and corporate sector, and the size of foreign liabilities in the banking system's balance sheet. Worldwide experience reveals that pace of economic recovery after a financial crisis have been more timid than recovery from other recessions (Reinhart and Rogoff 2010). The slow pace of economic recovery in Iran after the recession of 2012, also is partly due to the presence of balance-sheet effects and constriction in credit flows and international payments.

Once the speculative attacks begins to strengthen and access to global markets becomes limited, the central bank has limited ability to maneuver in the currency market and to limit price movements in this market to control the exchange risk-premium. If the central bank has huge currency reserves and is willing to spend it to defend the exchange rate or limit its depreciation and is willing to raise domestic interest rates, the extent of depreciation can be reduced. However, raising interest rates in a recessionary environment implies withdrawing accommodation for demand and output in exchange for a lower nominal exchange rate.

Economic expansions stimulated by positive oil price (terms of trade) movements and pro-cyclical macroeconomic policies have short-to-medium life span if not accompanied by positive productivity shocks. They tend to fizzle out due to the emergence of the Dutch Disease and expiration of the oil boom. Occurrence of oil price (terms of trade) shocks and imposition of an economic/international payment sanction (that in certain respects works similar to a sudden stop) in Iran, as shown in figure 5, have resulted in simultaneous large depreciation of the domestic currency,

[19] Basically, those countries that are disposed to the "original sin" are prone to reduced access to global credit markets during lean times.

large jumps in the rate of inflation, and contraction of economic activity—as corroborated by the results in Table (1). The evidence indicates that pro-cyclical policies during boom tend to result in economic volatility and instability during bust periods.

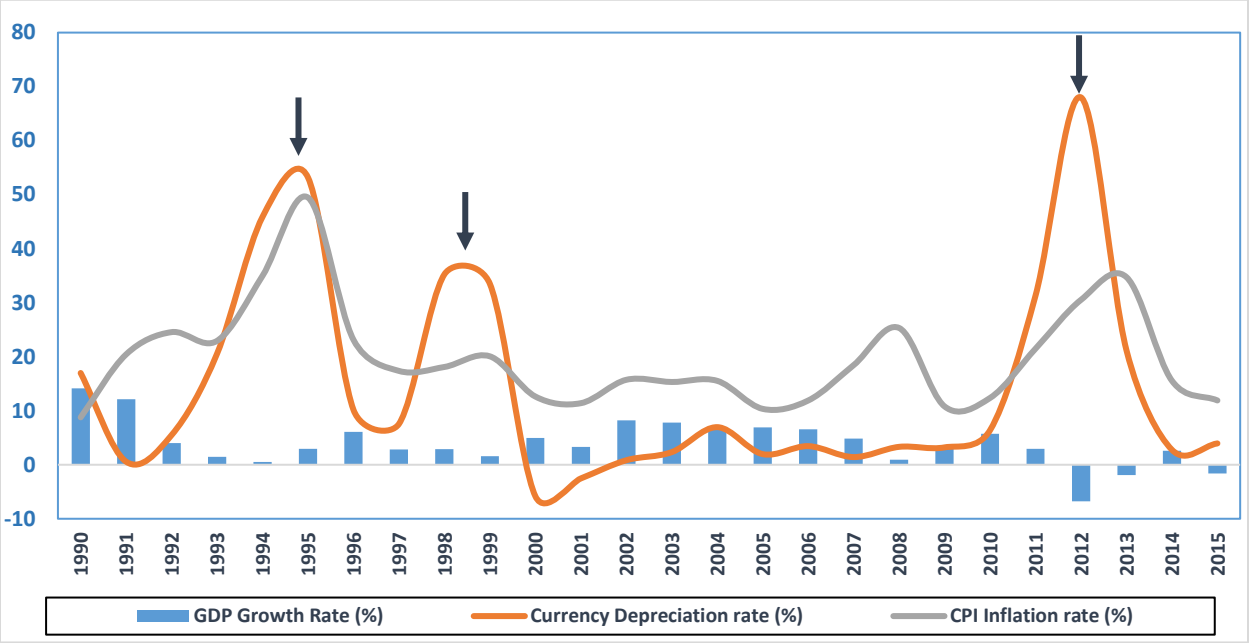

Figure (6). Macroeconomic variable Performance during Economic Cycles.

5-The role of Monetary Policy: Some Policy Perspectives

Greater independence has been given to central banks and their role in stabilization policy has been enhanced over the last quarter of century. Popularity of flexible inflation targeting and shift from quantity to price (interest) based instruments and the compatibility of this policy framework with New Keynesian models led into formulation of a handful of widely held policy rules that describe under what conditions the monetary authority can achieve simultaneous internal and external stabilization. Assuming that fiscal policy is in balance and the stock of public debt stable, the canonical form argues that in small open economies with price stickiness in the goods market, under the presence of purchasing power parity (producer country pricing=PCP), and existence of deep and internationally integrated financial markets, optimal monetary policy stabilization is done via interest rates. Correct policy interest rates and floating exchange rates provide internal and external

stabilization (Corsetti et al 2011). When the domestic financial markets are not integrated, Local Currency Pricing (LCP) is the norm for price setting by the firms, and home consumption bias exists, the canonical form does not yield the optimal policy. Under these conditions, the monetary authority should also consider reacting to exchange rate misalignments (Engel 2011, 2014).

As argued by McGettigan et al (2013), only those emerging market economies with deep financial markets and flexible exchange rates have been able to run countercyclical monetary policies. Monetary Policy in a developing economy exposed to oil price (terms of trade) shocks is somewhat more complicated. In an economy with incompletely integrated financial markets, a balanced fiscal policy, and beset by a fall in oil prices (negative terms of trade shock), achieving optimal internal and external stabilization by setting the policy rate or the money supply is not possible. In this case, the above dual stabilization also requires adjusting the exchange rate, that is, simultaneous stabilization of two distinct targets requires two instruments (Jalali-Naini and Naderian 2016, Ostry et al 2012). In the following sections, we discuss the appropriate monetary policy under different external conditions.

5.1. Positive Oil Price Shocks.

What is the appropriate policy reaction in economy with incompletely integrated markets (incomplete risk sharing) and LCP pricing and also subject to fiscal dominance, such as Iran? Starting from an initial equilibrium position, we discuss the question of appropriate policy responses under two different set of exogenous shocks; a positive and a negative-oil price shocks. In the case of the former, the appropriate policy response is a counter-cyclical policy that limits expansion of aggregate demand, checks inflation rate on domestically produced goods, and does not allow for significant depreciation of the real exchange rate. A positive oil price (terms of trade) shock increases the volume of oil revenues in foreign currency units which the government sells them to the central bank to obtain local currency to finance its expenditures. To limit expansion of the monetary base, the central bank increases the amount of foreign exchange it sells to the public, thus keeping a lid on the nominal exchange rate. At the same, pro-cyclical fiscal and credit policy expands aggregate demand, pushing the domestic inflation rates. As explained by (Jalali-Naini and Naderian, 2017), to manage the real exchange rate, the central bank needs

assistance from the fiscal side so as to limit, at the origin, variation of the quantity of foreign exchange injection into the system. Establishing an oil stabilization fund along with a balanced fiscal rule, along the lines instituted in Desormeaux (2010), is a mechanism to absorb foreign exchange flow variations brought about by oil price variations. Iran had an Oil Stabilization Fund and currently has a Sovereign Wealth Fund but it has not been able to implement a structural fiscal rule. With such a rule, government expenditures will be based on intertemporal (long term) forecasts of revenue. During periods of high oil revenues, excess receipts go into the fund and during low-oil-price periods money is withdrawn from the fund to finance government expenditures. In this fashion, pro-cyclicality of government expenditures is controlled at the origin, variation of the quantity of foreign exchange flows through the central bank is reduced, and countervailing policies to offset fiscal pressure on aggregate demand by the central bank becomes unnecessary. As shown by Jalali-Naini and Naderian (2016), implementation of this policy results in lower aggregate economic fluctuations and real exchange rate variations. In this more stable environment, brought about by limiting fiscal pro-cyclicality, the central bank can commit itself to a policy framework such as inflation targeting, utilize the policy rate for internal and external stabilization and allow the exchange rate to float. With the structural fiscal rule, the central bank need not frequently react to misalignment in the real exchange rate as by-product of unbalanced fiscal policy.

5.2. Negative Oil Price Shocks

Stabilization policy is much more complicated in an economy with unintegrated financial markets, LCP, sticky nominal government expenditures, fiscal dominance, and beset by a negative oil price (terms trade) shock. Under these conditions the central bank cannot manage simultaneous internal and external stabilization of the economy with interest rates and intervention in the currency market due to the swarming (crowding) effect of fiscal policy requirements on monetary policy instruments. If the fiscal deficit is financed through a managed depreciation of the domestic currency via higher nominal oil revenues in units of the domestic currency, as opposed to higher taxes, the consequences could be depreciation of the exchange rate, higher currency risk premium, possible currency mismatch and balance sheet effects, and higher inflation. In this case, revenue requirement swarms the exchange rate, and undermines utilization of the exchange rate as a monetary policy instrument, thus its ability to conduct stabilization policy. Choosing the exchange

rate instrument to balance the budget is similar to use of tax policy for the same purpose to avoid running high deficits and piling up debt.[20] In this case, lowering of the policy rate is consistent with measures to devalue the exchange rate to achieve internal and external balance.

What are the consequences if the government is on a non-Ricardian fiscal path? As supported by findings of Table (1), even during below trend oil revenues, the government is on a path of higher nominal government expenditures.[21] If under these conditions, the government does not resort to managed depreciation of the domestic currency and tax revenues are not elastic, borrowing, as have been resorted to during the last few years, will be an option. However, selling large volumes of government debt can result in crowding-out effect and higher domestic interest rates, thus over-shadowing countercyclical monetary measures to boost the economy via lower rates.

The above are instances where running an unbalanced fiscal policy has swarming effect on monetary policy instruments and target. The exchange rate, the monetary base, and the policy rates may become subject to the requirements of fiscal policy, hence monetary policy will be a sideshow.

6. Concluding Remarks

Fiscal and monetary policies in Iran are state-dependent, i.e. dependent on an externally and exogenously determined oil revenue stream. They are pro-cyclical during economic upturns and higher than trend oil revenues time-periods and continue to be expansionary during lean times. Thus, those policies do not behave symmetrically during economic cycles and propagation mechanism of exogenous oil price shocks is also asymmetric. Moreover, monetary policy has not been counter-cyclical because of fiscal dominance in boom periods. Insufficient fiscal discipline and its spill-over effect tend to undermine potential counter-cyclical monetary policy efforts to stabilize the economy.[22]

[20] We are assuming away distortions that are associated with these policies.

[21] Although due to the fundamental imbalance between real resources and the nominal scale of the economy, higher inflation thwarts achieving higher real government expenditures.

[22] Since the focus in this paper is on the effect of fiscal dominance on monetary policy, we abstract from the shortcomings within the monetary authority to formulate and implement policy. So our discussions abstracts from insufficient (instrument) independence to conduct policy, deficiency of a clear policy

Without a balanced fiscal rule and under the presence of fiscal dominance, monetary policy becomes highly state-dependent and ineffective when the fiscal path is non-Ricardian. While, the general prescription is to conduct countercyclical monetary policy during a commodity-bust, in practice such a stance may not deliver the intended outcome and the result is dependent on how the deficit is financed. During low-oil revenue periods, fiscal deficits in Iran is mainly financed through managed currency depreciations and/or quasi-fiscal operations—more recently, issuance of Islamic bonds (sukuk). In the case of large managed depreciation, often followed by speculative activities and a higher risk premium in the currency market, the downfall is the emergence of balance sheet effect that can result in a contractionary devaluation. This outcome tend to exacerbate the recessionary conditions along with inflationary pressures. In case the deficit is financed through quasi-fiscal operations and issuance of sukuks, the result could be higher borrowing rates and crowding-out of the private sector. If quasi-fiscal operations force the hand of the central bank into expansion of the monetary base, it can result in frustrating its inflationary objectives. As argued in Desormeaux (2010), Jalali-Naini and Naderian (2016), creation of a structural balanced fiscal rule where pro-forma government expenditures are set based on government revenue stream over medium horizon, is the appropriate policy measure that enhances the ability of the central bank to conduct counter-cyclical monetary policy through policy rates and floating exchange rates. Note that a structural balanced rule can be augmented to directly or indirectly stipulate a cap on borrowings from the public and the banking system. During above-trend periods, excess oil revenues will be deposited in a stabilization fund and during below-trend periods, money will be withdrawn from the fund to enhance government revenues to finance its planned expenditures. Effective management of the fund helps to reduce fluctuations of the stream of fiscal revenues at the source. Once this measure is combined with smoothing of quasi-fiscal operations, the policy package creates more conducive conditions for the central bank to pursue its domestic stabilization objectives. Note that, as argued by (McGettigan et al 2013), more countercyclical policy is accompanied with less volatile output. Moreover, not only fluctuations of aggregate demand is controlled in this manner but it also contributes to real exchange rate and currency-risk stability by limiting the volume of currency injection during

framework and effective policy instruments, and absence of deep financial markets that undermines the ability of the central bank to pursue its objectives.

high oil-revenue periods and maintain the flow of currency during low-oil revenue periods—through withdrawals from the fund. Under this conditions, the balance sheet effect is not a policy risk. Under the conditions mentioned in the above, counter-cyclical (accommodating) monetary policy during an oil-induced recession has limited downside risks.

Note that, if fiscal spending is profligate and non-Ricardian, public funds are inefficiently allocated to competing ends due to rent-seeking with little control on project cost, monetary policy at best will be ineffective, and with fiscal dominance both the targets and instruments of monetary authority will not be under the control of the monetary authority.

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