# FISCAL POLICY, MONETARY POLICY AND CENTRAL BANK INDEPENDENCE

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ABSTRACT. Several recent monetary policy issues and puzzles can be understood more clearly if the traditional exclusion of the government budget constraint from macroeconomic models is relaxed. The existing literature in this area has mainly worked with multi-equation models that may seem forbidding or unrealistic. Here by discussing some specific policy issues less formally, we hope to bring the interaction of monetary and fiscal policy down to earth.

## I. INTRODUCTION

This is an essay about several related current policy issues. What is central bank independence in the current environment, and how can it be maintained? Are large central bank balance sheets benign, or not? Why has monetary policy been ineffective in bringing inflation up to target levels in the US, Europe and Japan? Can fiscal deficit finance replace ineffective monetary policy in these conditions? These issues have all been widely discussed. The reason for bringing them together here is that

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the fiscal theory of the price level can shed some light on them, providing insights that may be new to those not familiar with this approach.

The literature on the fiscal theory of the price level mostly works with multiple-equation dynamic models and assumes an economy populated by rational agents with accurate ideas about the probabilities of future events, including policy behavior. The multiple-equation aspect of it means that it has not been easy to popularize or to teach to undergraduates, and the rational-agent assumption leads some economists to dismiss the theory as unrealistic, reaching bizarre conclusions by leaning too hard on the assumption of rationality. But the basic insights of the theory do not in fact depend on assuming rational agents. They require only that people holding government paper of increasing real value will eventually spend some of it and that current and expected future taxes, even if expectations are not formed rationally, will depress spending. Perhaps by using the theory to discuss concrete policy issues we can make the theory more intuitively appealing as we shed light on the policy issues.

To motivate the reader to follow the arguments that follow, here are the conclusions.

I.1. **What is central bank independence in the current environment and how can it be maintained?** Central bank independence attempts to separate monetary and fiscal policy, but it is not a complete separation, because every monetary policy action has fiscal consequences. During rapid inflations or long periods of very low inflation and interest rates, coordination of fiscal and monetary policy is necessary.

Preserving independence requires forthrightly recognizing the need for coordination in these conditions.

I.2. **Are large central bank balance sheets benign, or not?** They are not. Large balance sheets go along with increases in interest-bearing liabilities and with increased mismatch between the risk characteristics of assets and liabilities. This creates the risk of large fluctuations in net worth at market value, possibly even into negative territory. This invites political second-guessing, and reflects an increased fiscal impact of central bank decisions, thereby threatening independence.

I.3. **Why has monetary policy been ineffective in bringing inflation up to target levels in the US, Europe and Japan?** Of course at one level the answer is that interest rates have been near zero for an extended period, so that standard monetary policy actions, which would be interest rate reductions, are severely constrained. But monetary policy effectiveness requires that at high inflation rates, interest rate rises generate fiscal contraction and that at low inflation rates interest rate declines generate fiscal expansion. The persistence of low inflation and low interest rates is not a surprise when, as has been true in fact, the low interest rates fail to generate substantial fiscal expansion.

I.4. **Can fiscal deficit finance replace ineffective monetary policy in these conditions?** Fiscal expansion can replace ineffective monetary policy at the zero lower bound, but fiscal expansion is not the same thing as deficit finance. It requires deficits aimed at, and conditioned on, generating inflation. The deficits must be seen as financed by future inflation, not future taxes or spending cuts.

## II. INFORMAL DESCRIPTION OF THE FISCAL THEORY OF THE PRICE LEVEL

The fiscal theory of the price level is based on a simple notion.[1] The price level is not only the rate at which currency trades for goods in the economy, it is also the rate at which dollar-denominated interest-bearing government liabilities trade for goods. Just as inflation reduces the value of a 20 dollar bill, it reduces the value of a ten thousand dollar mature treasury bill. In most wealthy economies, interest-bearing liabilities of the government are much greater in value than currency. In simple models that ignore the existence of interest-bearing government debt, the price level can be thought of as controlled by the quantity of money. People hold currency, since it pays no interest, only for its convenience value in facilitating transactions. The government can control the dollar amount of money, but has no direct control of what real value of money balances people want to hold for transactions purposes. Monetary policy controls the dollar amount of money, and the ratio between that amount and the real transactions balances people want to hold determines the price level.

When we bring interest-bearing nominal debt into the picture, things are necessarily more complicated, because people hold interest-bearing debt mainly for its

[1] A reader who wants a more rigorous and formal discussion of the theory can consult Leeper (1991), Woodford (1995), Woodford (2001), Cochrane (2011), Sims (2011), Sims (1994), and Sims (2013). These all are based on rational expectations in general equilibrium models. I have an online note 2016 showing that similar results can be obtained in a very old-fashioned Keynesian model without rational expectations.

return, not its convenience.[2] Fiscal policy, by determining how much real resources will be available in the future to service and retire debt, affects how attractive nominal government debt is as an investment. An increase in expected future primary surpluses makes nominal debt a more attractive investment, hence reduces demand and creates deflationary pressure.[3] Declines in nominal interest rates, if they occur along with the rise in expected future surpluses, can postpone , but not eliminate, the deflationary pressure.

Increases in the quantity of nominal debt occur through government deficits, and, depending on the reasons for the deficit, the increase in nominal debt may change beliefs about the future fiscal backing for the debt at the same time that it affects the amount of debt outstanding. The deficit might also lead to interest rate changes through a monetary policy reaction. The fiscal theory of the price level does not, therefore, simply replace the notion that the quantity of money determines the price level with the idea that the quantity of government debt, or the sequence of nominal deficits, determines the price level. It implies that interest rate policy, tax policy, and expenditure policy, both now and as they are expected to evolve in the future, jointly determine the price level.

But laying out all the possibilities for interacting monetary and fiscal policy to produce good or bad outcomes is not our aim here. Instead, we will proceed to our list of specific policy issues to see what insights are available by stepping outside

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[2]Of course this is only approximately true. Short term government debt also has transactions value.

[3]This argument ignores the possibility of default, which is never necessary on nominal debt (because the government can print the money the debt promises), but does sometimes occur.

the framework of monetarist or New Keynesian models that ignore interest-bearing government debt.

## III. Central Bank Independence

One kind of fiscal-monetary interaction has long been recognized as possible, and damaging. Short-sighted politicians might find it attractive to vote for debt-financed expenditures and, to avoid this generating high interest rates, to require the central bank to purchase the debt. The high inflation such policies generate comes (at least at first) with a delay, perhaps after the next election. European episodes of hyperinflation and Latin American periods of very high inflation seemed to have this character, with large budget deficits accompanied by rapid growth of the money supply and high inflation.

Central bank independence takes on a variety of specific institutional forms, but its aim is to create an institution somewhat insulated from short-run political forces and charged with controlling inflation as a primary duty. This institution is meant not to be fiscal — it does not have direct taxing power and can spend only to implement its limited policy mandate. This means in practice that its policy instrument is open market operations, controlling the supply of currency and reserves by buying and selling securities.

In an attempt to insulate the central bank from fiscal policy considerations, many countries have placed legal barriers to such pressure, in the form of, for example, long-term appointments to central bank boards, bans on central bank purchases of

their own government's debt, or exclusion of elected officials from central bank policy positions. Dincer and Eichengreen (2014), extending previous work in this area, provide a list of such measures that they use to quantify the degree of independence of central banks from around the world.

But such formal institutional structures are a very crude measure of central bank independence. The restraints on fiscal policy required by independence can be widely understood and implemented even without formal institutional limits — as in the case of the US Federal Reserve and the Bank of England, which emerge as among the least "independent" central banks in the world in the Dincer and Eichengreen calclulations. Some kinds of fiscal policy actions can force the hand of a central bank, even though it gets no orders from fiscal authorities and continues to pursue its goal of price stability. And every monetary policy action has fiscal consequences; when those consequences become large enough, legislatures are likely to question or modify institutional structures meant to support independence.

The 1980's in Brazil provide an example of a situation where, without any direct interference from fiscal authorities, a central bank motivated by price stabilization could have decided not to raise interest rates despite high inflation. As Loyo (2000) points out, in that period interest rate increases *increased* inflation. How could this be? Interest payments were a large part of the government budget. The budget process was dysfunctional, so that increases in interest rates fed through to increased issuance of government debt, accelerating the rate of expansion of the debt. No

expectation of future fiscal stringency was generated by the debt expansion, so the debt expansion increased demand, and thereby inflation.[4]

The reason standard economic models imply that interest rate increases reduce inflation is that they assume, usually implicitly, that an increase in the interest expense component of the budget calls forth, at least eventually, an increased primary surplus — revenues minus non-interest expenditures. This is the most easily understood restraint on fiscal policy required for central bank independence, and one most economists find quite plausible. The European Monetary Union puts limits on debt-to-gdp ratios and deficits, probably with this sort of mechanism in mind. However, this point remains valid if we reverse all the signs, and this is not so widely recognized.

If in the face of low inflation the central bank lowers interest rates, demand increases and inflation rises only if the reduced interest expense component of the budget is expected eventually to flow through to a reduced primary surplus. A fiscal authority that, in the name of "fiscal responsibility", maintains its primary surplus as the central bank cuts interest rates, undermines the effectiveness of monetary policy to the same degree, and by the same mechanism, as in the case of 1980's Brazil.

[4] As both Loyo's paper and one of mine Sims (2011) show, sticky prices make the short and long run effects of policy-induced interest rate changes opposite-signed in these conditions. Raising interest rates temporarily reduces inflation, but leaves it higher in the long run. Also, these results assume that fiscal dysfunction leaves the primary surplus invariant to interest rate changes. The political economy of budget changes in response to interest rate changes could be more complicated than that.

With central bank independence seen as entailing acceptance by fiscal authorities of the need to support monetary policy, what are threats to independence and how can it be maintained? In (what at least used to be) "normal" times, when interest rates are comfortably positive central bank balance sheets are well hedged, and the ratio of government debt to GDP is modest, the fiscal impacts of monetary policy actions are not large or surprising and are likely to remain uncontroversial. Central banks can carry out their mission in these circumstances without any public discussion of fiscal policy. But when the required fiscal responses are large, or unexpected, threats to independence may well emerge. Central banks under these conditions need to explain the connections between monetary and fiscal policy and make clear the limits to their ability to control inflation without appropriate fiscal support.

In Brazil in the 1980's this might have meant the central bank stating that it could not play its assigned role so long as fiscal policy remained unresponsive. Today, in countries with near-zero interest rates and sluggish economies, central banks need to explain that fiscal, as well as monetary, policy should be aimed at meeting inflation targets. This means, specifically, stating that inflation will intentionally be at least part of the means for financing current debt and deficits. As this is written, the US, unlike the EMU and Japan, may be approaching its inflation target and nearing full employment. Nonetheless, so long as it is not widely understood that near-zero interest rates will trigger true fiscal expansion, the US could easily drift back again to low growth and low inflation. There is no automatic stabilizing mechanism to

bring the economy back to target inflation and stay there, unless the commitment to true fiscal expansion at very low interest rates is widely understood.[5]

In countries with large amounts of outstanding public debt and current low interest rates, another source of stress on central bank independence will arise if interest rates and inflation start to rise to what we used to think of as normal levels. In the US, for example, interest expense as a portion of the federal budget is well within the historical range since the mid-twentieth century. But this reflects a combination of quantities of debt far above the usual historical range and interest rates far below. A rise in interest rates to four per cent in the US would lead to interest expense at historically high levels as a proportion of the budget. Legislators who ordinarily pay little attention to the links between monetary policy and interest expense could easily turn to questioning monetary policy decisions because of their impact on the budget. The chance of this occurring is greater if the links between monetary and fiscal policy are discussed openly only after the pressure on fiscal authorities has become acute.

[5]More on this point below. A formal analysis of how an economy can end up fluctuating randomly around a very low level of inflation and interest rates appeared first in Benhabib, Schmitt-Grohé, and Uribe (2001). Their model makes a number of strong assumptions, including rational expectations, but the results would be robust in any model that retained the assumptions that true fiscal expansion would not occur at low interest rates, and monetary policy faces a lower bound on nominal interest rates.

## IV. Large central bank balance sheets

In the US before 2008 the liabilities of the Federal Reserve system were dominated by currency outstanding. Its assets were primarily interest-bearing treasury securities. Positive seigniorage was therefore almost guaranteed, and it fluctuated little with normal business-cycle fluctuations in the interest rate. The Fed's asset portfolio was simple, leaving little room to criticize it for taking on risk or for favoring one type of issuer over another. It might occasionally need to undertake lender of last resort operations, temporarily taking on risk, but its balance sheet was strong enough that such interventions did not create lasting balance sheet problems.

The Bank of England was even more strongly insulated from creating fiscal flows with its balance sheet.[6] It has two separate balance sheets, one for the issue department, which issues currency, and the other for the banking department, which provides reserve accounts for banks and carries out lender of last resort operations when necessary. Seigniorage goes directly from the issue department to the treasury. The banking department's balance sheet is small, so that when a lender of last resort operation is required, fiscal backing for it, acknowledging that the risk is a treasury responsibility, is needed in advance. During the recent crisis, a separate off-balance-sheet entity was set up to hold risky long bonds acquired in quantitative easing, financed by short-term loans from the banking department. All balance sheet risk was therefore on the books of this entity, not the Bank of England itself, and the risk was from the start acknowledged to be borne by the treasury.

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[6] I am grateful to Peter Stella for filling me in on the details of these Bank of England arrangements.

But as central banks (other than the Bank of England) have expanded their balance sheets since 2008, they have acquired large amounts of interest-bearing liabilities. Though currency is still a non-trivial component of their liabilities, it is no longer dominant. They have acquired assets of long duration (in the US and Japan particularly) whose values fluctuate relative to the value of their liabilities as interest rates fluctuate. In both the US and Europe, the assets are no longer perfectly aligned in risk with the liabilities. Especially in Europe, where decisions have to be made about how much support to give the debt issues of countries with varying levels of fiscal problems, central bank policy starts to involve the "picking of winners and losers" that ordinarily stays in the realm of fiscal policy.

The fiscal impact of central bank balance sheet gains and losses are, even with the current levels of expanded balance sheets, modest compared to the fiscal impact that will arise if interest rates rise to normal levels. But once they are large enough to generate public discussion, the balance sheet fluctuations are likely to be seen as more directly attributable to the central bank itself. Drastic drops in seigniorage flows, or even a requirement for substantial capital injections to the central bank from the treasury, could arise. They might mistakenly, or cynically, be portrayed as due to central bank mismanagement. And indeed they would represent the central bank's taking on risk and thereby making important fiscal decisions. A legislature that realizes belatedly that this has happened may legitimately question whether the central bank has exceeded its mandate.

It is sometimes claimed that central banks, because they can create money, need not be concerned with their balance sheets. They cannot become bankrupt in the usual sense of being unable to pay their obligations, even if they have negative net worth at market value. However, creating money can have inflationary consequences. A central bank can survive indefinitely with negative net worth at market value, so long as the interest income from its assets exceeds its payment obligations on interest-bearing liabilities. But a central bank with long-duration assets and short-duration liabilities (e.g. interest-baring reserves) will usually reduce its net worth by raising interest rates. And if it reaches the point where assets fall in value below the value of interest-bearing liabilities, it may require a capital injection to maintain its inflation target. It can almost always avoid the capital injection by creating seigniorage, but doing so will generally require accepting high inflation. It is the combination of severe negative net worth and an objective of keeping inflation low that creates the need for capital injection.[7]

Large central bank balance sheets, with imperfectly matched earning assets and interest-bearing liabilities, may arise as necessary temporary side effects of lender of last resort operations. But, because they amplify the fiscal impacts of central bank monetary policy actions and can push discussion of fiscal-monetary policy intereaction on to the political stage, such balance sheet expansions should eventually be reversed.

[7]Del Negro and Sims (2015) works out the details of this potential need for fiscal support in a general equilibrium model.

## V. Why has monetary policy been ineffective in the US, Europe and Japan?

The general explanation for the low interest rates, large central bank balance sheets, and low inflation in these countries is the failure of effective fiscal expansion to take over from monetary policy as the zero lower bound was approached. Of course in these countries deficits have been large and debt-to-gdp ratios have increased. But the increased deficits have been accompanied by hand-wringing about their long-term effects on taxes and popular spending programs. In Europe, the emphasis on austerity has been explicit and widespread. The idea that the increases in debt were meant to create inflation that would partially pay for them is not part of the public discussion. In Japan, after an initial apparent move toward coordinated fiscal and monetary expansion, a substantial increase in the consumption tax was introduced before the inflation target was reached. In the US it has been less clear what philosophy guides fiscal policy, which perhaps explains its relative success in approaching its inflation target. Nonetheless it is clear that the American public is aware of the country's long term fiscal problems and their potential impact on their own access to retirement support and medical care. The Gallup poll reports that roughly half of non-retired Americans think that its social security system will not be able to provide them with any retirement income.[8] In this context it seems likely that many people

[8]See `http://www.gallup.com/poll/1693/social-security.aspx` for a display of historical poll results concerning social security. Answers on the question about whether Social Security "will be able to pay you a benefit when you retire" contrast with answers to a question that asks whether Social Security will be a "Major" or "Minor" source of retirement income "when you retire",

interpret deficits as a sign of fiscal dysfunction that portends higher future taxes or reduced benefits. Changing that perception would require that policy-makers make clear that future fiscal contraction is conditional on reaching and maintaining inflation targets.

## VI. Can deficits replace ineffective monetary policy at the zero lower bound?

The answer to this question should be mostly clear from the previous section's discussion. Reductions in interest rates can stimulate demand only if they are accompanied by effective fiscal expansion. For example, if interest rates are pushed into negative territory, and the resources extracted from the banking system and savers by the negative rates are simply allowed to feed through the budget into reduced nominal deficits, with no anticipated tax cuts or expenditure increases, the negative rates create deflationary, not inflationary, pressure.

What is required is that fiscal policy be seen as aimed at increasing the inflation rate, with monetary and fiscal policy coordinated on this objective. In Japan, this might be achieved by explicitly linking planned future increases in the consumption tax to hitting and maintaining the inflation target. In Europe it is harder to see how

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or instead "Not a source" of income. Most say it will be a major or minor source of income. Possibly this reflects people conditioning on the existence of Social Security when they retire when answering this question, despite great uncertainty about whether the system will actually still exist.

the necessary fiscal policy commitment could be arranged, because of the many fiscal authorities in the region. A Eurozone-wide moratorium on the Maastricht budgetary rules, to be kept in place until area-wide inflation reaches and sustains the target level, would be effective. Of course it is difficult to see how, in the Eurozone institutional framework, this could be arranged.

## VII. Conclusion

Inflation is the outcome of interplay between decisions about taxation, government spending, and central bank open market operations. Thinking about it in this more complex, but more realistic framework can give us clearer policy guidance than is available from outdated monetarist, one-dimensional approaches.

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