Fiscal Policy

Cyclical Budget Balance versus Fatal Crowding Out

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Over the business cycle as a whole,
aim for budget surpluses.

Paul A. Samuelson
William D. Nordhaus

Preface

Fiscal policy is the instrument by means of which the government attempts to fight unemployment. Unfortunately, however, fiscal policy entails public debt, thus threatening to ruin the economy in the long run.

Strictly speaking, it will be argued that an investment shock generates a cyclical process of adjustment. This in turn requires a cyclical path of fiscal policy. In spite of that, the budget does not balance over the cycle as a whole. As a fundamental result, the long-run equilibrium proves to be unstable. Ultimately, the economy must break down. The theoretical analysis will be illustrated by making use of diagrams and numerical simulations.

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1. Introduction

The present study is concerned with the short-run and long-run effects of fiscal policy on employment, output and prices. Suppose that an investment shock causes unemployment. Then it is the task of fiscal policy to restore full employment in the short run. This goes along with a budget deficit which adds to public debt. Here a number of questions arise: What are the long-run consequences of the fiscal expansion? Will public debt tend to explode? Will the stock of capital ultimately shrink back to zero? In other words, will there be fatal crowding out?

Fiscal policy induces various processes of adjustment which run at different speeds. This fact will be modelled here by distinguishing between the short-run equilibrium and the long long-run equilibrium. That is to say, in the short period only the fast variables accommodate, while in the long period the slow variables accommodate too. Properly speaking, in the short term money wages are rigid. The stock of capital and public debt are given exogenously. Technology is characterized by fixed coefficients since substitution is a slow process. In the long term, however, money wages are flexible. The stock of capital and public debt adapt themselves appropriately. The production function is smooth.

The analysis to be presented here starts from the seminal work done by Blinder and Solow (1973), Brunner and Meltzer (1976), Tobin and Buiter (1976) as well as Tobin (1986). Blinder and Solow (1973) reached the conclusion that the long-run effects of fiscal policy are even larger than the short-run effects. Brunner and Meltzer (1976) agreed that fiscal policy in the short period increases aggregate demand and hence output. In the long period, on the other hand, fiscal policy displaces private capital, thereby reducing output. As opposed to this, Tobin and Buiter (1976) insisted that the expansionary effect is permanent. Tobin (1986) investigated a lifecycle growth model, applying phase-diagram techniques. There the focus is on the long-run implications of the monetary-fiscal mix. Numerical simulations suggest that budget deficits may well end in catastrophes.

The basic exposition of the present monograph is as follows. To begin with, in chapters 2 and 3, we shall introduce the short-run equilibrium and the long-run equilibrium. Then, in chapter 4, the process of adjustment linking the short-run equilibrium and the long-run equilibrium will be sketched out briefly. What is more, in chapters 5 and 6, we shall argue that an investment shock generates a cyclical process of adjustment. This in turn requires a cyclical path of fiscal policy. As a result, the budget is balanced over the cycle. Finally, in chapter 7, the standard model will be extended in several directions.

For the remainder of the introduction, the approach to be taken will be set out in greater detail. At first, in chapter 2, we shall discuss the short-term impact of fiscal policy. The analysis will be carried out within the framework of an IS-LM model. Aggregate supply is perfectly elastic, so aggregate demand determines output.

Let us start with the goods market. The government purchases of goods and services are constant. In addition, the government levies a proportional tax on income. The budget deficit is defined as the excess of government purchases over tax revenue. Private consumption is an increasing function of disposable income, that is income net after tax. Private investment is a declining function of the rate of interest. Private consumption, private investment and government purchases sum up to aggregate demand. The goods market is in equilibrium, therefore output corresponds to aggregate demand.

Next we come to the money market. The central bank controls the nominal stock of money. The real demand for money is a declining function of the interest rate and an increasing function of income. The money market is in equilibrium, too, thus the real supply of money matches the real demand for money.

Now what are the short-run consequences of fiscal policy? Initially, there is full employment, and the budget is balanced. In this situation, an investment shock occurs. Sales expectations deteriorate, hence autonomous investment falls. Firms lower output and lay off workers, so unemployment develops. The reduction in income is accompanied by a reduction in tax proceeds, thus the budget gets into deficit. In order to reestablish full employment, the government buys more goods and services. As a response, firms raise output and engage additional workers. Moreover, the increase in government purchases enhances the budget deficit.

At this point we leave the short-run equilibrium and turn to the long-run equilibrium, see chapter 3. The investigation will be conducted within an overlapping generations model without bequests. This chapter offers the real analysis of a stationary economy.

Labour supply is assumed to be given exogenously. Money wages are flexible so as to clear the labour market. Put another way, full employment always prevails. In the long period, the production function is smooth. Output can be devoted to private consumption, private investment and public consumption. Firms maximize profits under perfect competition, therefore the interest rate equals the marginal product of capital. Analogously, the wage rate coincides with the marginal product of labour.

The government raises loans and collects an income tax to finance both public consumption and the interest payments on public debt. The government buys a constant amount of goods and services. Besides the government levies a proportional tax on factor income as well as on public interest. The budget

deficit is composed of public consumption plus public interest minus tax receipts. It is covered by borrowing from the private sector. The budget deficit augments public debt.

The individual lifecycle consists of two periods, of the working period and of the retirement period. During the working period, the individual receives labour income, which he partly consumes and partly saves. The savings are used to buy government bonds and private bonds. During the retirement period, the individual earns interest on the bonds and sells the bonds altogether. The proceeds are entirely consumed, no bequests are left.

The utility of the representative individual depends on private consumption per head in the working period and on private consumption per head in the retirement period. The individual chooses present and future consumption so as to maximize utility subject to its budget constraint. The private savings of the active generation serve to finance public debt and private capital of the subsequent period.

The long-run equilibrium shows the following properties. Employment, the stock of capital and production are invariant. That means, firms do not invest. Output is completely consumed by households and by the government. Public debt does not change, so the budget is balanced.

Now what are the long-run consequences of fiscal policy? Imagine that the government increases public consumption, thereby contributing to the expansion of public debt. This displaces private capital, hence output comes down. The reduction in income causes a fall in private savings which further lowers the stock of capital and output. As capital becomes scarce, the rate of interest moves up. Together with the growth of public debt this raises public interest. In order to cover this, the government must borrow even more. It turns out that public debt will explode in the long term. This explosion drives capital down to zero. In other words, there will be fatal crowding out, thus eventually the economy must break down.

Here the question arises whether this vicious circle can be cured. Three possible answers will be examined more closely. First, the government restores public consumption to its initial value. Second, the government stabilizes public debt at the current level. And third, the government retires public debt completely.

In the short run, a fiscal expansion increases output. In the long run, however, output shrinks back to zero. Accordingly, in chapter 4, the process of adjustment linking the short-term equilibrium and the long-term equilibrium will be sketched out briefly. To begin with, in section 4.1., the supply side will be incorporated into the short-period analysis. Technology is characterized by fixed coefficients, since substitution is a slow process. The stock of capital and labour supply are given exogenously. Firms set the price equal to normal unit cost, which is the short-run expectation of unit costs.