Public Policy Brief

Government Spending in a Growing Economy

Fiscal Policy and Growth Cycles

Jamee K. Moudud

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Preface

The importance of economic theory for economic policy is eloquently revealed in John Maynard Keynes's observation that practitioners pretending to be free of any theoretical bias are usually "slaves of some defunct economist." The practice of macroeconomic policy relies to a large degree on models of how the real economy functions. However, models are useful only when they *work*, as the mathematician von Neumann put it. It may be added that the operational criterion for models has to be supplemented by a normative criterion for the practice of policy to ensure that macroeconomic stabilization and growth do not involve socially undesirable costs.

In this brief, Resident Scholar Jamee K. Moudud offers a road map to current thinking on fiscal policy by comparing different theoretical perspectives and their policy implications. The perspective he favors is a model of cyclical growth driven by the dynamic interactions between the financial sector and the rest of the economy (business, household, and government sectors). This exercise is timely because policy in the United States and the structural adjustment programs recommended by the International Monetary Fund (and adopted in several developing nations) place heavy emphasis on fiscal austerity as a prerequisite to growth.

Fiscal austerity has been pursued in the United States since 1992; it was consciously embraced in the Omnibus Budget Reconciliation Act of 1993, the abolition of Aid to Families with Dependent Children (welfare reform) in 1996, and the Balanced Budget Act of 1997. Caps on discretionary spending, significant reductions in spending for the social safety net, and elimination of many entitlement programs have become, through such legislation, part of the new institutional setting in which future fiscal policy will be made. Advocates of fiscal restraint credit this policy approach with the attainment of a federal budget surplus in 1998 and the current economic expansion.

But is the indiscriminate pursuit of a balanced budget wise? Moudud's analysis challenges the theory underlying a policy of fiscal austerity. In his view only purist neoclassical models suggest that budget deficits unambiguously lead to reduced aggregate output and lower employment. Such models typically assume, quite unrealistically, that there is continuous full employment and full utilization of productive capacity. Because models in the Keynesian and classical traditions recognize that unemployment and unutilized capacity are recurrent phenomena in market economies over the business cycle, they suggest that budget deficits can have stabilizing effects on output and employment. Although proponents of balanced budgets and budget surpluses often pay lip service to this stabilizing role, it is not clear how fiscal policy can perform that role when strict limits are placed on spending.

What is the optimal spending policy over the long run, during which the economy may be operating at full productive capacity? Standard Keynesian models would appear to predict that full capacity is concomitant with full employment, hence leaving no effective role for fiscal policy. Moudud, however, argues that Keynesian-type policy measures have a role—even under conditions of full capacity utilization. For example, although conventional wisdom now holds that the most productive use of the budget surplus is "saving" Social Security, Moudud's analysis suggests that the surplus would be better spent on public investment that results in lower business costs, which would have an enduring effect on long-run growth. Policies aimed at increasing business retained earnings, such as accelerated depreciation allowances, can lead to higher output growth even if there is a budget deficit. Moudud's growth model holds that structural unemployment exists even when the economy is operating at full productive capacity because wages, unlike most other prices, are determined primarily by institutional factors rather than by purely market forces. Consequently, he advocates active labor market policies encouraging higher employment rates.

Moudud's analysis suggests that the government has a broad and active role to play in guiding the performance of a market economy that goes well beyond traditional demand management policies. I hope you find this analysis informative and, as always, I welcome your comments.

Dimitri B. Papadimitriou, *President*
July 1999

Government Spending in a Growing Economy

In the postwar period fiscal policy in the United States has gone through two broad phases: first, fiscal expansiveness and, second, fiscal restraint. During the long expansion of the 1960s it took a deliberately Keynesian approach to macroeconomic management. In the early 1960s President Kennedy's Council of Economic Advisers argued that the economy was being slowed by a large structural budget surplus; the surplus, caused by excessively high tax revenues, was slowing aggregate demand before the economy reached full employment, as conventionally defined. The tax cut proposed in 1962 and enacted in 1964 led to a lowering of the budget surplus throughout the 1960s. President Johnson's War on Poverty program and the war in Vietnam provided further boosts to government spending and contributed to further lowering of the surplus.

The large and growing budget deficits of the 1970s along with stagflation called into question the Keynesian demand management policies of the previous decade. The abandonment of these policies coincided with the implementation of "supply-side" policies during the Reagan years. Ironically, the combination of large tax cuts, reduced domestic spending, and massive defense spending produced huge budget deficits during the relatively long expansion of the 1980s. Thus, unwittingly, Reagan's policies resembled the Keynesian policies of an earlier generation.

The passage of the Omnibus Budget Reconciliation Act of 1993 and later the Balanced Budget Act of 1997 marked the entrance of fiscal policy into the second phase. These acts represent an important policy shift toward greater fiscal restraint, a shift that led to the first budget surplus since 1969 in fiscal year 1998. In both the United States and overseas the pursuit of

balanced budgets or fixed deficit targets is seen as one of the principal ways to increase long-run growth. Such restrictive fiscal policies are a common element in policy discussions in Washington and the European Union and in the International Monetary Fund's structural adjustment policies. In contrast to the Keynesian policies of the 1960s and the policies of the 1970s and 1980s, with their Keynesian-like effects, fiscal austerity has become the conventional wisdom of the 1990s.

That conventional wisdom is based on the neoclassical theory of output and employment, which has two variants. The extreme version assumes the economy to be continuously at the full employment level of output. An increase in government spending lowers the national saving rate and therefore the growth rate of investment and output. In this way, increased government consumption in the present is financed through decreased future consumption. Another way of making this argument is to say that government spending financed by borrowing lead to a rise in interest rates; the higher interest rates crowd out private investment, thereby lowering output growth.

The ISLM version of the neoclassical theory (see, for example, Blinder and Solow 1973) allows that unemployment may exist in the *short run* so that fiscal policy, specifically budget deficits, may have a positive impact on output. An increase in government expenditure, or a decrease in the taxation rate, creates a multiplier effect of spending that stimulates out-put and employment. However, at or beyond full employment, the "pumping" effect of the government deficit becomes inflationary.

From a policy standpoint, both variants of neoclassical theory imply that higher investment, output, and employment and lower interest rates and prices over the long run can be obtained only by lowering the budget deficit. The mantra of fiscal austerity as the principal means to increase long-run economic growth, which can be heard from authorities of diverse political persuasions, is rooted in this fundamental theoretical perspective. Yet, empirical reality has not substantiated the neoclassical perspective. Numerous World Institute for Development Economics Research studies have shown that the effect of fiscal policy on growth can be ambiguous: deficits can lower or raise output (Taylor 1985, 1988).

The analysis developed in this brief provides an alternative theoretical perspective, one that is consistent with empirical reality and demonstrates that the impact of budget deficits is far more complex than is predicted by the neoclassical theory.[1] This new theoretical framework is called the classical growth cycles (CGC) model, given that certain of its crucial features have their theoretical antecedents in the works of classical economists such as François Quesnay and David Ricardo and in Roy Harrod's seminal work on growth cycles (Harrod 1970).[2]

The CGC model has five main features. First, unlike most traditional macroeconomic models, in which growth is strictly a long-run phenomenon, the investigation of budget deficits in the CGC model starts with the assumption that growth is a persistent feature of the economy, in the short run and in the long run when output fluctuates around normal capacity.[3] Second, growth occurs not as a result of exogenous changes in technology or population but as a result of investment decisions, which are rooted in profitability and carried out in a world characterized by uncertainty. Third, bank credit is endogenous and is injected into the economy whenever planned investment exceeds available saving. Fourth, full employment is not assumed, even over the long run. Fifth, the CGC framework is embedded in a social accounting matrix with fully articulated stocks and flows; unlike the ISLM framework, there are no "black holes" in the model.

In the CGC model the long-run growth path of output is regulated by the long-run or normal rate of profit, which, as in Ricardo and Sraffa, is determined by income distribution and technology. Any factor that has a positive effect on the rate of profit will raise the growth rate. For example, a rise in the profit margin would raise the long-run growth rate, whereas a rise in the ratio of budget deficit to output would lower it (if the private saving rate is constant). Moreover, if through some appropriate policies the share of business retained earnings in output were to rise faster than the budget deficit, so that the total saving rate increases, the long-run growth rate would rise.[4] Furthermore, since capacity utilization is an endogenous variable for varying lengths of time, an increase in the budget deficit would tend to accelerate output relative to the underlying growth path.

The discussion of "crowding-out" and "crowding-in" in this framework will also be carried out by emphasizing the differences between static and dynamic specifications of fiscal policies and by noting the implications for the long-run growth path of the difference between a change in the *level* of government spending and a change in its *composition*, that is, the analysis will distinguish between the consumption and investment expenditures of the government. It will exploit the empirically observed finding that infrastructure investment tends to lower business costs (Dalenberg and Eberts 1992; Morrison and Schwartz 1992; Nadiri and Mamuneas 1991). It will be shown that in contrast to standard discussions on budget deficits (Rock 1991) the ambiguity of the effects of fiscal policy, along with structural unemployment, allows for the possibility of some combination of fiscal, monetary, and industrial policies to raise the growth rate in the short run as well as in the long run. It is this combination of policies that allows an activist state to regulate, within limits, the growth of output and employment.

The discussion of fiscal policy in the CGC model has to be partitioned into an investigation of short-run and long-run effects of government spending and the distinctive long-run effects of different types of government spending. It will be shown that the composition of government spending is irrelevant for short-run business cycle dynamics, but becomes crucial in the long run. However, initially we set aside compositional issues so as to provide a comparison between the CGC model and the existing literature, most of which does not make a distinction between different types of spending and assumes only government consumption expenditures.

Fiscal Policy in the Short Run

Since planned investment spending on the basis of demand expectations (and planned additions to inventories) takes place under conditions of uncertainty, the model does not assume the short-run equilibrium between aggregate demand and supply that most other macroeconomic models assume. The confrontation of actual output with actual demand by customers is likely to generate an aggregate *excess demand* under general circumstances, which will bring about unplanned changes in the

inventories of firms. The discrepancy will also entail the revision of production plans (including the demand for inputs) and output targets in subsequent periods. This interplay between aggregate demand and supply is central to the short-run cyclical dynamics of the CGC model.[5] Thus, excess demand can be considered a variable that is a gauge of the market pressure that firms face. An injection of demand from an increase in the budget deficit raises excess demand (Figure 1). Firms increase their planned investment spending to satisfy the additional demand. This leads to an injection of bank credit as firms seek to finance their higher spending. Over time the accruing finance charges lower firms' cash flow and slow down the expansion. This eventually produces a fall in excess demand, business debt, and output growth.

Figure 1 **Effect on Excess Demand and Business Debt of a Rise in the Budget Deficit**
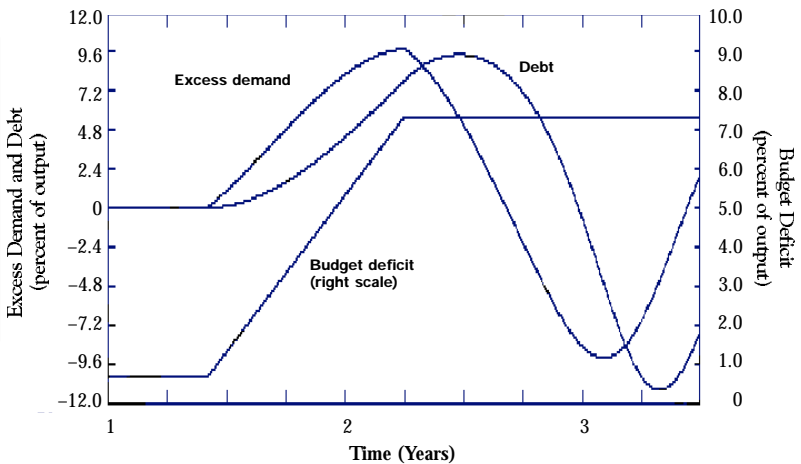
This dynamic has an important implication for monetary policy. In the ISLM model a rise in the budget deficit leads to a partial short-run crowding-out of private investment because it increases the interest rate and therefore retards the full expansionary effect of the deficit on investment and output (Arestis 1985). The upward-sloping LM curve that produces this result is based on the assumption that the money supply is vertical and exogenously determined and that the money demand curve is downward sloping and stable. On the other hand, the rise in the interest rate and output due to an increase in the deficit may be modulated in the

ISLM model by expansionary monetary policies, which shift the LM curve out (Buiter 1977). In contrast to the extreme neoclassical model, this flexibility exists in the ISLM model because of its assumption of short-run unemployment. Once the full employment level of output is reached, however, expansionary monetary policies cannot stimulate output and employment but can only raise prices.

However, the rise in the interest rate due to a deficit increase is based on the interaction between narrow money demand, a fixed money supply, and the bond market. The interest rate changes via the demand for bonds, where the unique rate of interest is in fact the bond rate. In this scenario, the increased supply of bonds by the government to the public (because of an increase in the budget deficit) can take place only by a lowering of bond prices and a rise in the equilibrium bond interest rate. Moreover, the expansionary effect of the deficit raises consumption demand and therefore raises the demand for money. Given a fixed money supply, the interest rate rises.

The question is, How is the interest rate affected in the endogenous money perspective when the budget deficit rises? The first point to note is that, in the classical and post-Keynesian tradition, credit and interest rates are monetary variables and are not determined by loanable funds. This is a vital difference from the neoclassical framework in that it implies that there is no a priori reason why an increase in the budget deficit would raise interest rates. In fact, unlike the ISLM model, in the CGC model a higher degree of monetization of the deficit is not required to prevent an increase in the interest rate.

According to the endogenous money school (Minsky 1986; Wray 1990), banks are never reserve constrained in their credit supply operations. Since loans tend to be illiquid assets relative to reserves, the key operational variable for banks is their desired liquidity ratio, which can be thought of as their demand for illiquid assets relative to liquid ones. The desired liquidity ratio is a function of banks' profit expectations. Other things being equal, lowered profit expectations will raise the desired liquidity ratio relative to the actual liquidity ratio. This will make credit supply more restrictive and raise the interest rate charged

by banks. Thus the increased demand for bank credit created by a fiscal stimulus may or may not put any pressure on the interest rate if banks readily supply the needed credit.[6]

The point is that the supply of credit by banks expands endogenously and is not reserve constrained. Credit expansion may or may not put pressure on the interest rate. In contrast, nonfinancial firms and households can lend money only up to the extent of their savings. Therefore, whenever the government seeks to borrow additional funds from these nonbank private sector sources, it has to raise the interest rate on bonds to attract the fixed saving stock. Of course, if, following the money multiplier story, banks are "all loaned up" and do not engage in reserve-economizing activities through asset and liability management (Palley 1996), then banks will be like other firms and households, that is, any additional demand for loanable funds with a fixed supply of high-powered money will raise the interest rate. However, from the endogenous money perspective, banks are different in terms of the flexibility of their loan capacity. Thus the supply of credit is determined by circumstances that are peculiar to the banking sector.

Suppose we consider an increase in the budget deficit that is financed by both bonds and money creation. In this situation, the loan rate gets an upward push from two sources. The first one arises from firms' higher planned investment, which increases their demand for bank credit. The second one arises from the floating of the government bonds, which increases the government's demand for credit. We will call this the *credit demand-pull effect*. By itself this effect will tend to raise the interest rate (unless banks readily supply the credit on demand). On the other hand, the higher deficit also injects new high-powered money into the economy and expands the reserves of the banking system. This is the *liquidity effect*. If banks' actual liquidity ratio rises to exceed their desired liquidity ratio, the liquidity effect by itself will tend to lower the interest rate. This downward pressure will increase if a greater degree of the deficit is money-financed. Thus, the balance between the credit demand-pull effect and the liquidity effect determines whether the interest rate rises, falls, or remains unchanged.[7] Monetary policy can influence these movements by changing the actual stock of high-powered money in the economy, which, other things being equal, will alter the actual liquidity ratio.

Figure 2 **Effect on Excess Demand of Different Degrees of Monetization of the Budget Deficit**
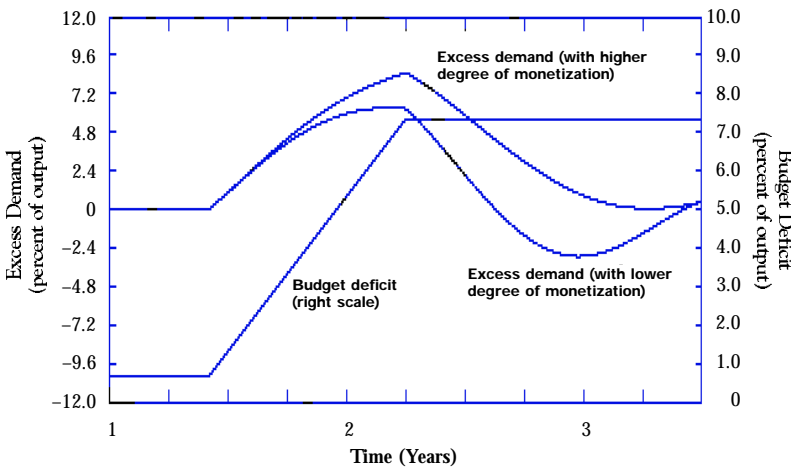

Figure 2 shows the effects of the combination of expansionary fiscal and monetary policies on the dynamics of excess demand. The contrast between a regime in which a lower proportion of the deficit is money financed (lower degree of monetization) and a regime in which a higher proportion of the deficit is money financed (higher degree of monetization) is shown. In the ISLM model the stimulus from an increase in the budget deficit has a greater positive effect if it is accompanied by expansionary monetary policies, which lower the interest rate. In the CGC model the interest rate need not fall since the increase in excess demand from the higher deficit has a direct effect on output growth. Expansionary monetary polices could conceivably have a greater stimulus if they do lead to a fall in the interest rate.

## Fiscal Policy in the Long Run

We next turn to the long-run effects of government spending when aggregate output fluctuates around normal capacity.[8] As noted above, the short-run adjustment process brings about a rough balance between aggregate demand and supply over a period of time. However, there is no reason to suppose that the balance attained over that time

will correspond to a level of capacity utilization that firms consider desirable. The long-run adjustment process refers to the process by which a rough balance is attained between actual and normal capacity utilization. If the level of demand is such that capacity utilization is more than (is less than) the normal rate, firms respond by increasing (decreasing) fixed capital investment, which expands (contracts) capacity. This ensures that over time actual output fluctuates around normal capacity (Shaikh 1989; Moudud 1998a). The first part of this section puts aside compositional issues and treats all government spending as consumption expenditures (expenditures on goods and services and on wages). The effects of public investments in infrastructure on private investment are considered in the second part.

Effects of an Increase in Government Consumption Expenditures

Figure 3 shows that a rise in the budget deficit, with a fixed private saving rate, leads to an eventual crowding-out of output and employment. The mechanism at work here is fairly simple. In the classical tradition, the long-run growth rate is equal to the product of the social saving rate and the normal profit rate, which in turn is determined by technology

Figure 3 Long-Run Effect on Output of an Increase in the Budget Deficit
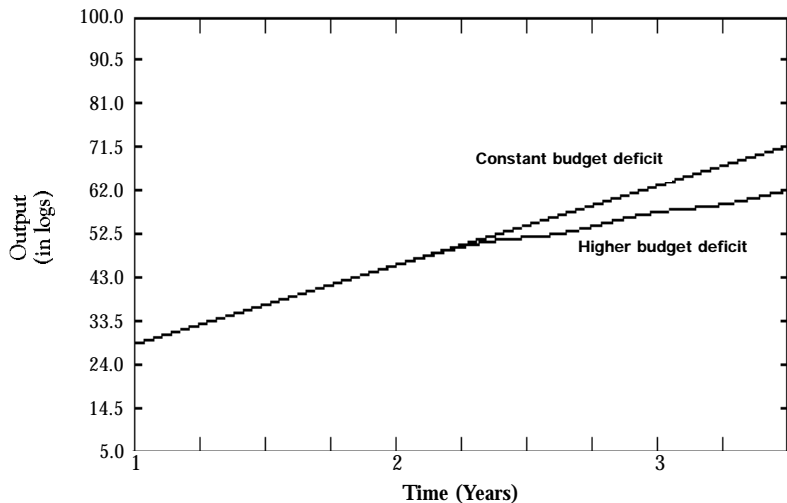
and income distribution. A rise in the budget deficit, given a fixed private saving rate, is equivalent to a decline in the social saving rate. With the profit rate remaining the same, output growth slows down, eventually leading to a lower level of output than would have prevailed in the absence of a rise in the budget deficit.

The role of saving in the CGC model is opposite to that in the Keynes-Kalecki tradition. Authors in this tradition have argued that investment is independent of saving because of bank credit. Although it is certainly true that bank credit partially liberates planned investment spending from available saving in the short run, in the classical tradition saving out of business profits constitutes a vital source of long-run investment.[9]

On the other hand, for several reasons the similarity between the neoclassical and the CGC models with respect to the role of saving should not lead one to conclude that the result in Figure 4 is a vindication of neoclassical economic policy. First, unlike in the neoclassical model, saving in the CGC model essentially refers to business retained earnings. Second, in the CGC model the long-run path of output is consistent with structural unemployment. In the classical and post-Keynesian tradition labor market equilibrium (equality between the planned demand for labor and its

Figure 4 **Long-Run Crowding-in of Output**
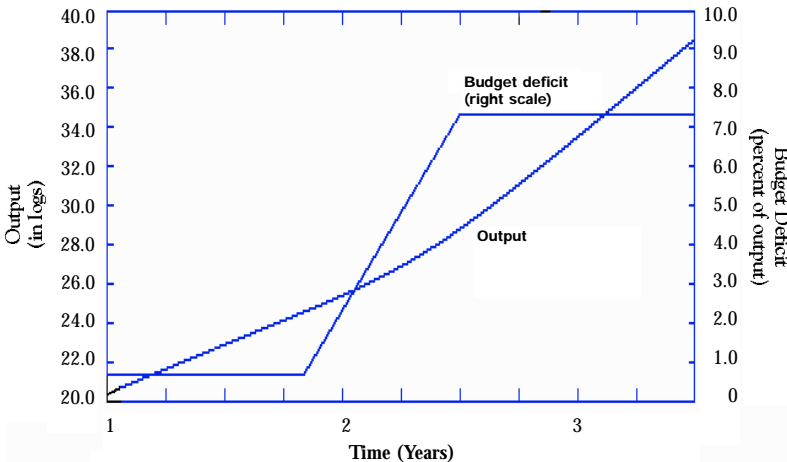
expected supply by workers) does not imply full employment since the expected supply of labor services will be different from the desired supply, which is of course the full employment level. This simultaneous coexistence of labor market equilibrium with unemployment, one of the most important conclusions of Keynes (1936), is determined by planned labor demand, which in turn is regulated by planned investment and thus profitability. In his famous growth cycles model Goodwin (1967) shows how this long-run structural unemployment is maintained through the interplay of investment, profits, and wages.

Third, the loanable funds theory of the rate of interest does not hold in the CGC model, an aspect it shares with the post-Keynesian tradition. In other words, it should not be inferred from the CGC model that crowding-out occurs because the rise in the budget deficit raises the interest rate. In fact, as discussed above, the interest rate could very well *fall* under certain circumstances when the deficit increases.

Fourth, as discussed below, with a rising saving rate or a rising rate of profit with a constant saving rate, the increase in the budget deficit could in fact be consistent with a crowding-in effect. Fifth, it should be noted that a fall in the budget deficit share is compatible with an *increase* in the level of the budget deficit, provided that this increase takes place at a growth rate that is less than the growth rate of the stock of capital.

Suppose now that a rise in the budget deficit is accompanied by an increase in the private saving rate, which could occur either endogenously or via appropriate policies (Fazzari 1993). The long-run growth rate would either remain the same (no crowding-out would occur) or increase (crowding-in would occur). The outcome would depend on whether the social saving rate is constant or rises.

Therefore, given the profit rate, the long-run growth rate could be raised by an increase in the budget deficit that is accompanied by a more than proportionate increase in business retained earnings so that the social saving rate rises (Figure 4). Alternatively, the budget deficit could be fixed at some socially desirable level while various policies are

used to increase the social saving rate by raising business retained earnings. This, too, would increase the long-run growth rate. In other words, if some combination of the business retained earnings rate and the profit rate were to rise, there would be room for the budget deficit to rise and to increase the long-run growth path. In fact, given that both the rate and mass of profits have risen since the early 1980s, this scenario could be the explanation of the so-called Reagan boom years in which the deficit share rose.

The above discussion thus suggests that the rate of profit and the phase of accumulation should provide the context within which fiscal policy should operate. A fixation on arbitrarily restrictive fiscal targets would not necessarily yield any long-run benefits and, in fact, would lead to a collapse of short-run demand. In sum, such policies would entail considerable social costs.

We now compare the effects of government spending in the CGC model with the Keynesian and general equilibrium models. It should be noted that the CGC is a dynamic model in that its starting point is a continuous growth of output. It is because of this dynamic specification that the discussion has been cast in terms of movements in the ratio of the budget deficit to output. Conventional static models in the Keynesian and neoclassical traditions analyze the effects of a one-time increase in the level of the budget deficit on an unchanging level of output. The crucial difference between static and dynamic specifications should warn us that these are not equivalent policies and, as illustrated below, their outcomes are not the same.

Consider now the traditional policy of a permanent increase in the level of government spending. In the CGC model such a policy is equivalent to a temporary increase in the ratio of government spending to output, as shown in Figure 5.[10] Figure 6 shows that the rise in spending level will have a stimulating effect on the short-run growth rate of output, a result that is a dynamic analogue of Keynesian models. In the long run, however, such a policy has no effect on output growth since the ratio of the budget deficit to output remains unchanged (Figure 7).

These results reveal an important difference between the CGC model and standard general equilibrium models, in which output is continuously at the full employment level. In standard models the policy of raising the level of spending will unambiguously lower both short-run and long-run investment and output.

Figure 5 Permanent Jump in the Level of Government Spending in the Static and Dynamic Cases

Permanent Jump in the Level
of Government Spending

Temporary Jump in the Ratio of
Government Spending to Output
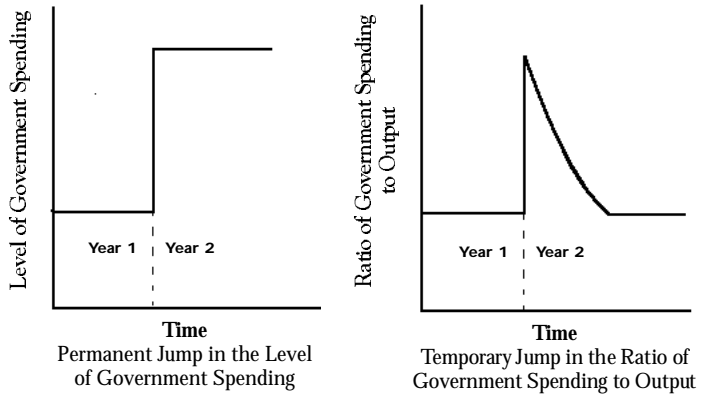
Figure 6 Effect on the Short-Run Growth Rate of Output of a Rise in the Level of Government Spending
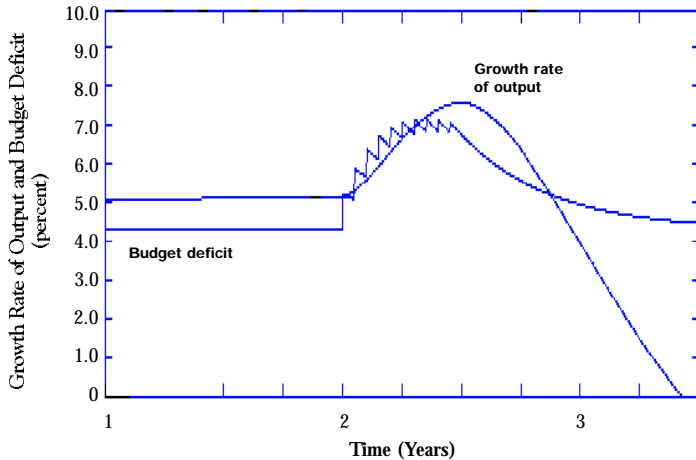
Figure 7   **Long-Run Effect on Output of a Rise in the Level of Government Spending**
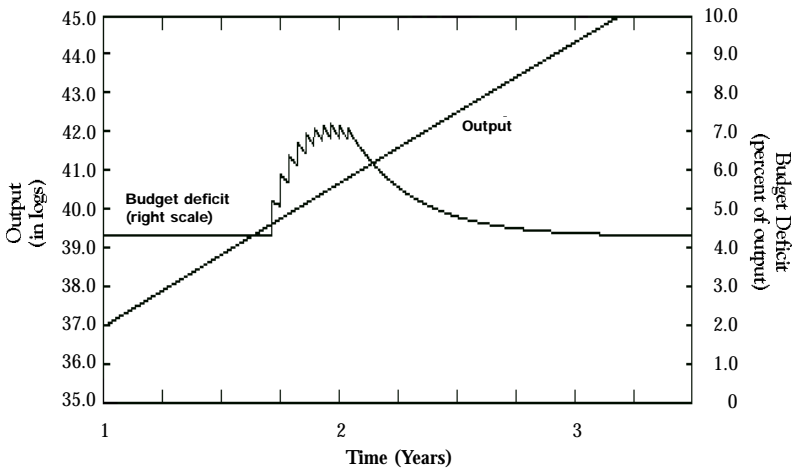

What would a permanent increase in the ratio of government spending to output correspond to in the traditional static models? Such a policy would be equivalent to the case of a continuously growing level of government spending (see Figure 8).[11] We already saw in the CGC model that with a fixed saving rate such a policy leads to short-run crowding-in and long-run crowding-out. Surprisingly, the same result occurs in Keynesian models: Employment and output reach the full employment level with a growing level of government spending; this in turn produces inflation and crowding-out of output in the long run. The same result also prevails in the general equilibrium model in the long run, but because of the assumption of continuous full employment, crowding-out occurs in the short run too.

Effects of an Increase in Government Investment Expenditures

The discussion so far has not included issues related to the composition of government spending and the effects of different types of public spending on the long-run growth path. Domar (1944) was one of the first to discuss the effects of unproductive versus productive government spending, defining productive spending as expenditures on

Figure 8 Permanent Jump in the Ratio of Government Spending to Output in the Static and Dynamic Cases

Continuous Rise in the Level of Government Spending

Permanent Jump in the Ratio of Government Spending to Output
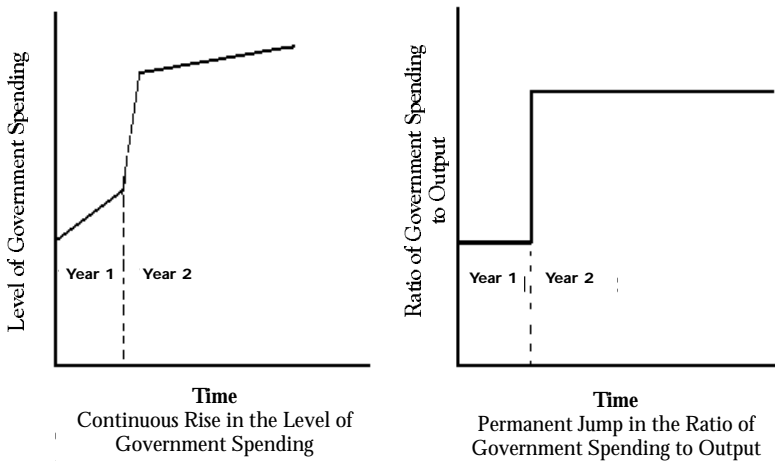
infrastructure, education, public health, research and development, and all other expenditures that are conducive in raising business productivity. There is now a large and growing literature that seeks to model the impact of productive government investment and finds a positive relationship between public capital accumulation and private investment. Much of this work involves the neoclassical and rational expectations frameworks and is an extension of the endogenous growth models of Romer (1986), Lucas (1988), and Barro (1990).[12] Some authors in this literature utilize the production function methodology in which government investment is incorporated into the aggregate production function and others have attempted to estimate cost functions.[13] The latter approach finds that public investment significantly reduces business production costs.

The empirical link between public investment and business costs is a particularly important one from the standpoint of the CGC model. As discussed above, the long-run growth rate in the CGC model depends crucially on business profitability. Thus, if a rise in public investment reduces business costs and raises the profit margin, the long-run growth rate will increase (see Figure 9). Moreover, the increase in the growth rate is obtained by raising the share of public investment spending in

Figure 9 **Long-Run Effect on Output of Public Investment**
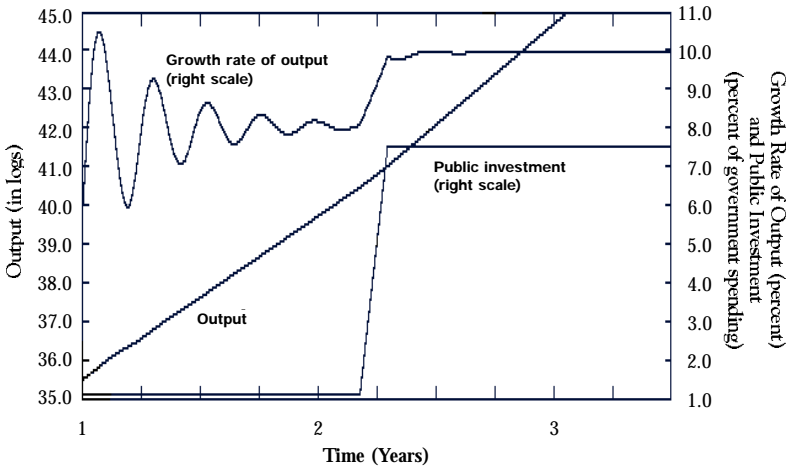
total government expenditure relative to consumption spending while leaving the budget deficit constant.

This effect is, however, due to a *supply-side* policy rather than a policy of autonomous demand injection. In other words, if the budget deficit is given, then a rise in the share of public investment in total government spending will enhance the profit-stimulus effect and raise the long-run path of accumulation. From a policy standpoint, efforts to slash government spending to raise the long-run growth rate might have the exact opposite effect if these cutbacks also involve cuts in government investment in infrastructure.[14]

Thus, the pursuit of balanced budgets through cuts in government investment *may* lower the secular growth path of the system and have negative long-term effects on employment. To the extent that cuts in the budget deficit entail a fall in business profitability that is *greater* than the concomitant increase in the social saving rate, output growth is bound to suffer.[15] Moreover, cutbacks in productive public investment might have deleterious effects on the budget deficit itself if the consequent job losses force the government to raise outlays on welfare payments. The pursuit of balanced budgets by cutting government investment may be a self-defeating process.[16]

Conclusion

The investigation of fiscal policy presented above highlights the complexities and perhaps the ambiguities of the impact of government spending. In this respect, the CGC model is similar to those of Taylor (1985, 1991), Tobin (1980), and Tobin and Buiter (1980), which use a variety of mechanisms to derive crowding-in and crowding-out, although the CGC model differs in the mechanisms used and the context in which fiscal policy is analyzed. These vital differences aside, the complexities in the broad heterodox tradition contrast with neoclassical analyses in which budget deficits are at best neutral (Barro 1974, 1991) or harmful in both the short and long runs (McCafferty 1990). Table 1 summarizes the impact of fiscal policy in the neoclassical, Keynes-Kalecki, and CGC models.

A key feature of the CGC model is that the rate of profit and therefore business retained earnings are a vital source of long-run accumulation. Other things being equal, the higher the saving rate from profits, the higher will be the long-run growth rate.[17] From a policy standpoint, efforts to raise the rate of profit by lowering costs or attempts to boost business retained earnings will have positive effects on the long-run growth rate. Policies to raise business retained earnings include investment tax credits, lower rates of corporate taxation, and accelerated deductions for capital depreciation (Fazzari 1993). Combined with appropriate taxes on capital gains and "luxury" consumption, these policies could allow a rise in the social saving rate along with a fixed or modestly rising budget deficit.[18] The consequence would be an increase in the long-run growth rate.

This emphasis on business profitability, which is common to the classical and the post-Keynesian traditions, should be contrasted with the neoclassical macroeconomic model (McCafferty 1990) in which all business net income is distributed to households; the neoclassical model rests on zero net profits. Thus in the basic neoclassical model, given households' intertemporal consumption decisions, no policy other than austerity can be used to reverse the negative effect of a budget deficit. Apart from exhortations to households to lower their alleged "consumption

binge" (Blecker 1990), the only policy is to lower the deficit to raise investment. Thus austerity is trumpeted as the only means to achieve prosperity.

Table 1 **Summary of the Impact of Fiscal Policy in the Three Theoretical Traditions**

	Neoclassical	Keynes-Kalecki	CGC
Rise in the ratio of government spending to output	Short-run crowding-in of output in ISLM	Short-run crowding-in of output level	Short-run crowding-in of output growth
	Both short-run and long-run crowding-out in general equilibrium (extreme version)	Long-run crowding-out at full capacity/full employment	Greater stimulus with expansionary monetary policies
			If private saving rate is *fixed,* then long-run crowding-out at normal capacity with structural unemployment
			If private saving rate *rises* fast enough, so that social saving rate increases, long-run crowding-in
One-time rise in level of government spending	Crowding-out	Short-run crowding-in of output level	Short-run crowding-in of output growth
		No long-run crowding-out unless full capacity/full employment barrier reached	No long-run crowding-out since ratio of government spending to output remains unchanged
Change in composition of government expenditures (rise in share of public investment)	Rise in growth rate because of an increase in the marginal product of capital (crowding-in)	Rise in growth rate because of an increase in profitability (crowding-in)	Rise in growth rate because of an increase in profitability (crowding-in)

The common denominator of profitability in the classical and post-Keynesian tradition, however, conceals two important differences between these two heterodox traditions. First, as with the post-Keynesian approach, in the CGC model the short-run rate of profit is determined by demand via changes in the rate of capacity utilization. In the long-run, however, the normal rate of profit in the classical tradition is determined by income distribution and technology, whereas presumably in the Keynes-Kalecki tradition the rate of profit is still determined by demand if the system is stuck with excess capacity (Taylor 1985). However, from the classical standpoint the eventual gravitation of actual capacity utilization toward the normal level is not an immediate process but itself has a cyclical path that depends on the responsiveness of fixed capital investment to discrepancies between actual and normal capacity utilization. In other words, capacity utilization may remain different from the normal level for considerable periods of time during which the economy would be susceptible to demand stimuli in the Keynesian fashion. On the other hand, once it reaches the normal rate of capacity utilization, only factors that lower business costs or increase retained earnings will have a positive effect on the long-run growth path.

Second, unlike the Keynes-Kalecki tradition, underpinning the CGC model is classical political economy's distinction between productive and nonproductive activities (Eltis 1993; Shaikh and Tonak 1994), that is, between those activities that generate a surplus and those that consume it. This distinction is vital to an understanding of the short-run and long-run dynamics of the model as well as its crowding-in and crowding-out results. While demand plays a role in the short run, over the long run if the share of nonproductive activities (government consumption spending) increases and the private saving rate is fixed, a smaller portion of the surplus will remain to be reinvested and investment will fall.[19] On the other hand, if the private saving rate rises, then the impact of the deficit becomes more ambiguous and might also be consistent with the crowding-in of output.

Aside from the differences in the mechanisms involved, the output responses in the CGC model are in some sense the dynamic analogues of those of the Keynes-Kalecki tradition. The dynamic specification shows that a permanent jump in the share of government spending in the CGC

model is equivalent to a gradually growing level of government spending in static models. On the other hand, the standard Keynesian exercise of a permanent increase in the level of government spending is equivalent to a temporary increase in the ratio of government spending to output, whose magnitude and degree of impact on output growth increases as the degree of monetization increases. In neither groups of models are there any long-run negative effects of this one-time increase in the government spending level. Thus, unlike in the general equilibrium model, in which the system is at continuous full employment, in both groups of heterodox models this type of fiscal policy can have substantial positive effects on output and employment over the course of the cycle. Injections of demand through permanent increases from time to time in the level of government spending would produce positive short-run effects with no long-run negative ones; these positive effects can be amplified through expansionary monetary policies.

Given the role of debt dynamics throughout the cycle in the CGC model, monetary policy can be used to maintain a low rate of interest by, for example, providing reserves on demand to banks when banks require them to bolster their balance sheet liquidities. Such measures would increase the effectiveness of fiscal stimuli. These outcomes indicate that rather than targeting inflation or monetary aggregates, the purpose of monetary policy should be to stimulate growth and employment (Papadimitriou and Wray 1994).

Both the broad Keynesian tradition (including the ISLM model) and the classical one conclude that only over the longer run does the system hit some structural barriers, although the nature of these barriers is somewhat different in the two groups of models. However, it is these structural barriers that lead to long-run crowding-out when government spending rises persistently. As Keynes himself recognized (Keynes 1936; Arestis 1985), the continuous growth of government spending eventually leads to full employment and then to inflation and crowding-out. The difference in the CGC model is that a one-time rise in the government spending share (equivalent to a continuous increase in the level of government spending in a static model), with a fixed private saving rate, leads to crowding-out not because the economy reaches full employment but because the social saving rate falls.

Long-run crowding-in in the CGC model occurs under two conditions.[20] First, the empirical finding that public investment lowers business costs, along with the fact that the rate of profit is a crucial determinant of long-run growth, enables us to demonstrate that a shift in the composition of government spending from consumption to investment raises the profit margin and therefore the economy's long-run growth.[21] Provided that the growth of wages does not exceed productivity growth, this policy will also allow a decrease in the long-run rate of unemployment.[22]

The second mechanism is based on increasing the social saving rate. While an implication of the CGC model is that, other things being equal, a rise in the social saving rate will raise the long-run growth rate, this does not automatically lead to the policy of indiscriminate deficit slashing. Since one component of the social saving rate is the share of business retained earnings, the budget deficit can be maintained or even increased somewhat as long as appropriate measures are implemented to increase the retained earnings rate sufficiently and to increase the rate of profit.

For example, a combination of lower corporate taxation, which raises profitability, and higher deficits can be beneficial for long-run growth. Some optimal policy can be designed with a stable or slowly rising deficit while the composition of government spending is changed to increase investment in infrastructure (Sterman 1992). This will raise business profit margins by lowering business costs and thus increase the profit rate. The result would be an increase in the long-run growth rate.

Moreover, the presence of long-run structural unemployment in the CGC model opens up the need for active labor market policies designed to achieve a higher rate of employment, a point that echoes the policy recommendations of a number of authors such as Minsky (1986). The policy results of the CGC model provide a macroeconomic basis for the industrial competitiveness literature, which has emphasized the various beneficial supply-side effects of government policy. Thus as Arestis and Sawyer (1998) argue, an effective way to increase investment, growth, and employment is to integrate macroeconomic policy with an appropriate industrial strategy. As they point out, the path to high employment needs to take into account both demand-side and supply-side factors. Provided that wage growth from the lower unemployment rate does not

exceed productivity growth, there is clearly scope for both industrial policies and labor market policies.

To conclude, the blind pursuit of indiscriminate deficit cutting and tight monetary policies is not to be recommended. In the event of a growth cycle downturn, such policies will do more harm in the short run without remedying the long-run structural causes of the downturn. They will deepen the recession by slashing demand, and cuts in public investment may reduce future private investment and thereby lower long-run growth. Since it is the rate of profit that is the wellspring of the level of profits, a narrow policy of balanced budgets will be totally off the mark if the system is in the midst of a long-wave decline characterized by a fall in profitability.[23] Cutting the budget deficit will not lead to a rise in the long-run rate of profit. These arguments imply that indiscriminate budget deficit cutting may exacerbate poverty and inequality in both the short and the long run. They also imply that fiscal policy has a variable margin of maneuver that is defined by the rate of accumulation; fixed fiscal targets make no sense in such a context. These issues are of particular significance for the current world crisis with its growing mass unemployment and the draconian austerity measures that are now at the core of mainstream macropolicies.

Acknowledgments

Notes

1. This said, there is now a growing literature in the mainstream (Aschauer 1989a, 1989b, 1998) that uses marginal productivity theory and rational expectations models to highlight the possible positive effects of various types of government expenditures even at full employment. This literature focuses specifically on the composition of government spending and demonstrates the positive feedback effects on growth of government investment in infrastructure. These rational

expectations models, however, exhibit saddle point instability problems and assume that money is exogenous and superneutral.

2. These roots and the theoretical underpinnings of the CGC model are discussed in Moudud (1998a, 1998b) and Shaikh (1989, 1991). This model is distinct from the Levy Institute macroeconomic model, although it shares some of the latter's features.

3. The normal capacity is the economically feasible capacity and is defined as the level that is determined by the normal intensity and length of the working day, the number of shifts, costs, and so forth. It in fact corresponds to the profit maximization point desired by firms. It should be distinguished from the engineering capacity (Winston 1974). Note that for the classical economists long-run capacity utilization was consistent with unemployment.

4. Unless stated otherwise, the term budget deficit will refer to the ratio of budget deficit to output. Similarly, all other variables are normalized with respect to output. Furthermore, movements in the saving rate are determined by variations in the share of business retained earnings. The household saving rate is not relevant in this analysis.

5. See Abramovitz (1950) and Blinder and Holtz-Eakin (1986) for empirical analysis of inventory cycles.

6. The monetary mechanism linking the fiscal stimulus to the interest rate is explained in the CGC model via a relatively simple mechanism, as discussed in Moudud (1998a). This mechanism ignores the complexities of multiple asset demand functions.

7. Taylor (1985) derives such an ambiguous link between the budget deficit and interest rate using a different set of mechanisms. This ambiguous link is confirmed empirically (Arora and Dua 1993).

8. In classical economics competitive pressures between the different industries produce a general rate of profit over the long run that establishes what Smith called "natural prices" and Ricardo called "prices of production" in each industry. This long-run rate of profit corresponds to a normal degree of capacity utilization in each industry.

9. This was demonstrated in the schemes of expanded reproduction in which, given the rate of profit, higher rates of accumulation required a higher saving rate to finance the additional investment. As Eltis (1993) argues, this is a feature of the classical tradition that has its roots on Quesnay's *Tableau Economique.*

10. Suppose that output is $1,000 and government spending is $100 in year 1. At the beginning of year 2 government spending is raised by $20. If the normal growth rate of output is 10 percent, in year 2 the ratio of government spending to output will be ($120/$1,100), or 11 percent, as compared to 10 percent in year 1. In subsequent years the level of government spending will remain at $120 and output will be growing at the normal rate of 10 percent. The fixed level of government spending with a constant growth rate of output will make the ratio of government spending to output revert to its original value of 10 percent. In other words, with a fixed level of spending, the increase in the ratio is temporary.

11. Suppose that output grows at 10 percent in year 1 and the ratio of government spending to output is 10 percent. The level of government spending will grow by 1 percent (10 percent x 10 percent). Now suppose that the ratio of government spending to output becomes 11 percent in year 2. With an unchanged growth in output, the level of government spending will rise by 1.1 percent (11 percent x 10 percent).

12. See, for example, the models of Aschauer (1989a, 1989b, 1998) and Greiner and Semmler (1995).

13. Authors using production functions include Holtz-Eakin (1988), Aschauer (1989a), Munnell (1990a, 1990b), Eisner (1991), and Greiner and Semmler (1995). Those who have used cost functions include Dalenberg and Eberts (1992), Morrison and Schwartz (1992), and Nadiri and Mamuneas (1991).

14. The importance of infrastructure was stressed by Joseph P. Quinlan in a *Wall Street Journal* editorial about the difficulties faced by U.S. companies when seeking to invest in Southeast Asia: "To tap these burgeoning markets, U.S. companies should carefully assess the following strategic variables: . . . Infrastructure. Severe infrastructure limitations have *raised the cost of operating* in Asia, prompting some multinationals to invest elsewhere. Following five years of strong growth, the physical infrastructure of the region is straining at the seams—the roads are crowded, the ports are clogged and the airports are jammed. Pollution and environmental degradation compound matters. The upshot is infrastructure gridlock, which threatens not only to strangle growth and trade, but also to curtail new foreign investment" (Quinlan 1993, as cited in Erenburg 1993; emphasis added).

15. The net result will depend on the responsiveness of private investment to public investment. A paper by Erenburg (1993) on the complementarities between public and private investment is an important empirical investigation of this issue for the U.S. economy.

16. This is an important point made by Argyrous (1998) with respect to the Australian economy.

17. These theoretical results are consistent with the empirical findings of Fazzari (1993) and Fazzari, Hubbard, and Petersen (1988), who show that business retained earnings are important for financing investment.

18. As Fazzari and Herzon (1996) argue, capital gains taxes have a negligible effect on long-run investment and growth.

19. This is a feature implicit to the von Neumann growth model and is also consistent with Walter Eltis's seminal work, which used the insights of the classical tradition, especially those of the Physiocrats, to investigate the effects of government expenditure.

20. Tobin (1980) and Taylor (1985) use a variety of mechanisms to derive crowding-in and crowding-out. The CGC model does not employ any of these mechanisms.

21. Following Currie (1978), Keynesian authors such as Arestis (1985) argue that even at long-run full employment a growing public sector might have a positive effect on profitability and investment and therefore shift the economy

onto a higher growth path. In the CGC model, long-run crowding-in occurs under conditions of unemployment.

22. Authors such as Barro (1990), Greiner and Semmler (1995), and Aschauer (1989a, 1989b, 1997a, 1997b, 1998) use the rational expectations framework to study the positive effects of public investment. These models observe monetary neutrality and full employment at the NAIRU level. Structural unemployment in the CGC model is not the NAIRU and money is endogenous.

23. See also van Duijn (1983) and Freeman (1996).

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