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DEFICIT SPENDING, EXPECTATIONS, AND  
FISCAL POLICY EFFECTIVENESS

by

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I. INTRODUCTION

Before the appearance of J. M. Keynes' *General Theory* [13], there was widespread belief that the central government budget should be kept in balance, i.e., that over a budgetary period, central government expenditures should be equal to its tax receipts. As Lerner [15, p. 38] notes, it was Keynes who "first put forward in substantially complete form...." the "new fiscal theory". This new fiscal theory was developed at length by Hansen [11], but as Leijonhufvud [16, p. 403], Burkhead [4, Section II] and others have observed, the development of Keynesian fiscal theory was culminated in Lerner's "Functional Finance" [see 14, Lerner, pp. 302-322 and 4, Burkhead]. Briefly, Lerner's Functional Finance "... rejects completely the traditional doctrines of 'sound finance' and the principle of trying to balance the budget over a solar year or any other arbitrary period" [4, p. 42]. Rather, it prescribes first, the adjustment of total spending (by everybody in the economy, including the government) in order to eliminate both unemployment and inflation, using government spending when total spending is too low and taxation when total spending is too high; second, the adjustment of public holdings of money and of government bonds, by government borrowing or debt repayment, in order to achieve the rate of interest which results in the most desirable level of investment; and, third, the printing, hoarding, or destruction of money as needed for carrying out the first two parts of the program [4, p. 42].

This idea is now accepted almost throughout the profession and has even crept into the macroeconomics textbooks. Siegel [23, p. 338], for example, speaks of the "Acceptance of functional finance ..." by "a majority of economists..". Similar statements are to be found in other texts [see, for instance, 1, Branson, 2, Brennan, 12, Herber, 19, Musgrave, or 25, Sirkin]. Nevertheless, as Ott and Ott [21, p. 377] state, even today there is continued concern "... over the size and growth of the

national debt....". They note that this concern "... is frequently reflected in actual or proposed congressional legislation" [21, p. 377]. This persistent concern is related to a number of issues, including (a) the possible burden of deficit financing and increases in the national debt on future generations in an unemployment setting and (b) the possible burden of deficit financing and increases in the national debt on future generations in a full employment setting. It is generally acknowledged among economists that case (a) is not a serious problem, i.e., that "... deficit financing and increases in the national debt do not impose a burden on future generations in an unemployment setting" [21, p. 282]. As for case (b), the issue remains unresolved. On the one hand, certain economists, such as Mishan [17, p. 540], dispute the argument that a greater burden is imposed on future generations by deficit financing and increases in the national debt rather than by taxing, even in a full employment setting. On the other hand, Ott and Ott [21, p. 385] and others assume the position that deficit financing and increasing the national debt in a full employment setting do *not necessarily* impose an absolute burden on future generations.

Aside from the above issues and issues closely related thereto, certain authors have verbally (and somewhat informally) argued that even though there may exist no danger of burdening future generations, the stimulative effects of raising the national debt may be totally negated or at least partially offset by public hostility (adverse expectations) to the debt increases. That is, as Ott and Ott [21, p. 387] note, irrational, unwarranted fear of such increases may reduce private spending (particularly investment), which will offset the stimulative effect of the fiscal action producing the deficit. They proceed to state that it is probably true that the overall image of an administration has an important psychological influence on business investment decisions. It is not clear what influence a deficit by itself has or how strong it may be [21, pp. 387-88].

Given the apparent *potential* impact (noted by Ott and Ott [21] above) that this hostility to debt increases may impose, the present paper addresses itself to the development of a formal model to examine these possible effects. In particular, this paper examines the way in which "hostility to debt increases" may influence fiscal policy effectiveness and the possible extent to which this hostility may constrain fiscal policy effectiveness.

## II. THE SYSTEM

We initially postulate the following system:

$$(1) Y = C + I + G$$

equilibrium income

(2) $C$	$= A + BY^*$	consumption function
(3) $I$	$= I_0 + FY - I_1 i$	investment function
(4) $G$	$= G_0$	exogenous government spending
(5) $T$	$= T_0 + T_1 Y$	tax function
(6) $Y^*$	$= Y - T$	disposable income
(7) $G - T$	$= \Delta B$	government budget constraint <sup>1</sup>
(8) $L$	$= L_0 + L_1 Y - L_2 i$	money demand function
(9) $M_s$	$= M_0$	exogenous money supply
(10) $M_s$	$= L$	money market equilibrium,

where

$C$	= consumption
$I$	= investment
$i$	= interest rate
$G$	= government spending
$B$	= bond sales
$Y$	= income
$T$	= tax collections
$L$	= money demand
$M_s$	= money supply

$A, I_0, I_1, G_0, T_0, M_0, L_0, L_1, L_2$  = positive constants, and  $B, F$ , and  $T_1$  are constants such that

$$(11) \quad 1 > B + F > 0, 1 > T_1 > 0.$$

### III. THE ANALYSIS

The equilibrium level of  $Y$  in this system is given by

$$(12) \quad Y = \frac{A + I_0 + G_0 - BT_0 - \frac{I_0}{L_2} + \frac{I_1 M_0}{L_2}}{1 - B - F + BT_1 + \frac{I_1 L_1}{L_2}}$$

In this elementary system, a rise in government spending, say  $\Delta G$ , would unequivocally lead to a rise in the equilibrium level of  $Y$  (abstracting from the possibility of operating at full employment initially). Thus the new level of equilibrium income,  $Y + \Delta Y$ , is given by

$$(13) \quad Y + \Delta Y = \frac{A + I_0 + G_0 - BT_0 - \frac{I_1}{L_2} L_0 + \frac{I_1 M_0}{L_2} + \Delta G}{1 - B - F + BT_1 + \frac{I_1 L_1}{L_2}}$$

with

$$(14) \quad \Delta Y = \left( \frac{1}{1 - B - F + BT_1 + \frac{I_1 L_1}{L_2}} \right) \Delta G$$

If  $G_0 + \Delta G$  now exceeds  $T_0 + T_1 Y$ , a deficit is incurred. To finance this deficit, bonds must be sold. Assume for the moment that such sales are transacted without influencing the stock of money [see 7, Cebula and Klein, and/or 24, Silber].<sup>2</sup> Given  $\Delta B > 0$ , it is possible that public hostility and fear of such a deficit (acknowledged by Ott and Ott [21], Haley [10], and others) "... may reduce private spending (particularly investment) ..." [21, p. 387]. To account for this possibility, the investment function in equation (3) is rewritten as

$$(3)' \quad I = I_0 + FY - I_1 i + \alpha \Delta B, \text{ for } \Delta B > 0,$$

where it is clear from Ott and Ott [21] and Haley [10] that

$$(15) \quad \alpha < 0,$$

signifying that for  $\Delta B > 0$ , i.e., under conditions of a budget deficit, there exists an inverse relationship between investment and  $\Delta B$ .<sup>3</sup>

Consider now the impact of an increase in government spending which (a) creates a deficit ( $\Delta B > 0$ ) and (b) involves the investment function in (3)' rather than that in (3). The new equilibrium level of income is given by

$$(16) \quad Y = \frac{A - BT_0 + I_0 - \frac{I_1}{L_2} L_0 + \frac{I_1}{L_2} M_0 + G_0 + \Delta G + \alpha G_0 + \alpha \Delta G - \alpha T_0}{1 - B + BT_1 - F + \frac{I_1 L_1}{L_2} + \alpha T_1}$$

Clearly, the value of the spendings multiplier,  $\Delta Y / \Delta G$ , is given by

$$(17) \quad \frac{\Delta Y}{\Delta G} = \frac{1 + \alpha}{1 - B + BT_1 - F + \frac{I_1 L_1}{L_2} + \alpha T_1}$$

Since  $\alpha < 0$ , it follows that

$$(18) \quad \frac{\Delta Y}{\Delta G} \geq 0 \text{ as } 1 \geq |\alpha|.$$

In the case where  $|\alpha| < 1$  the public hostility and fear of the deficit has acted to partially offset the stimulative effect of the fiscal action producing the deficit. In the case where  $|\alpha| = 1$ , the effect has been to totally negate the stimulative effects of the fiscal action in question. These are the two cases mentioned in Ott and Ott [21, p. 387].<sup>4</sup> The final case, where  $|\alpha| > 1$ , produces a negative multiplier, a possibility referred to recently by several authors, including Cebula [5], Cebula and Gallaway [6], Cebula and Klein [7], Christ [8], Cumper [9], Silber [24], and Steindl [26]. *A priori*, it is not certain which case will prevail. Thus, the ultimate impact of the deficit-causing fiscal action is unknown. All that is certain, from comparison of results (14) and (17), is that the "hostility factor" (adverse business expectations) will impose at least some diminution in the effectiveness of the fiscal policy in question.

#### IV. CONCLUSION

As is clear from the discussion regarding (18), the appearance of public hostility and fear of deficit spending (adverse expectations) can, in theory, profoundly interfere with the stimulative capacity of the fiscal action causing the deficit. At the extreme, a perverse result, i.e., a negative spendings multiplier (for  $\Delta Y/\Delta G$ ), might even be obtained.

In closing, a number of observations would seem in order. First, it should be mentioned that "... the announcement itself of stimulative federal fiscal actions may have quite the opposite effect ..." [21, Ott and Ott, p. 387] on many economic entities. Specifically, it may be that such fiscal actions actually in some cases encourage "... business optimism and thus stimulates investment" [21, p. 387].<sup>5</sup> This may be demonstrated by replacing (3)' with

$$(3)'' \quad I = I_0 + FY - I_1 i + \alpha \Delta B + \beta \Delta B, \text{ for } \Delta B > 0,$$

where all terms assume their previous meaning in (3)' and

$$(19) \quad \beta > 0 \text{ for } \Delta B > 0.^6$$

In this case, an increase in government spending which creates a deficit has the following impact:

$$(20) \quad \frac{\Delta Y}{\Delta G} = \frac{1 + \alpha + \beta}{1 - B + BT_1 - F + \frac{I_1 \bar{L}_1}{L_2} + \alpha T_1 + \beta T_1}$$

where

$$(21) \quad \frac{\Delta Y}{\Delta G} \geq 0 \text{ as } 1 + \beta \geq |\alpha|.$$

Where  $|\alpha| + \beta < |\alpha|$ , the fiscal action in question has acted to reduce the equilibrium income level. In the case where  $1 + \beta = |\alpha|$ , the two expectations have acted on balance to render the fiscal action totally ineffective ( $\Delta Y = 0$ ). For the situation where  $1 + \beta > |\alpha|$ , there are in fact three possible subcases: (1)  $\beta - |\alpha| > 0$ , so that the effect of expectations here has been to ascribe greater power to the multiplier than would be the case with no expectations explicitly accounted for; (2)  $\beta - |\alpha| = 0$ , so that the multiplier has precisely its conventional value, with the expectations variables exactly offsetting one another; and (3)  $\beta - |\alpha| < 0$ , so that the hostility to the deficit has managed to only partially offset the fiscal policy action in question. In any event, it is quite obvious that (once again) the expectations effect of the deficit has been to relegate the ultimate impact of fiscal policy *a priori* indeterminate.

Next, it should be noted that this paper has thus far ignored the possible monetary effects of the budget deficit. A government budget deficit could be financed by Treasury bonds sales to (a) the nonbank public, (b) commercial banks, or (c) the central bank. Actions (a) and (b) leave the money stock unchanged ( $\Delta M_s = 0$ ), while action (c) would lead to an increase in the money supply ( $\Delta M_s > 0$ ). Given these possibilities, it is obvious that the following obtains generally:

$$(22) \quad \Delta M_s = \phi \Delta B,$$

where

$$(23) \quad \phi \geq 0.$$

For cases (a) and (b),  $\phi = 0$ , whereas for case (c),  $\phi > 0$ .

Integrating (22) and (23) into the basic system (1), (2), (3)', (4) - (10), in order to account for the possible money stock changes resulting from the budget deficit, we obtain

$$(24) \quad \frac{\Delta Y}{\Delta G} = \frac{1 + \alpha + \phi I_1 L_2^{-1}}{1 + B + B T_1 - F + \frac{I_1 L_1}{L_2} + \alpha T_1}$$

From this, it clearly follows that

$$(25) \quad \frac{\Delta Y}{\Delta G} \begin{matrix} > \\ \equiv \\ < \end{matrix} O \text{ as } 1 + \phi I_1 L_2^{-1} \begin{matrix} > \\ \equiv \\ < \end{matrix} |\alpha|.$$

Had (3)'' been used in lieu of (3)', the following would have been obtained:

$$(26) \quad \frac{\Delta Y}{\Delta G} \begin{matrix} > \\ \equiv \\ < \end{matrix} O \text{ as } 1 + \phi I_1 L_2^{-1} + \beta \begin{matrix} > \\ \equiv \\ < \end{matrix} |\alpha|.$$

In any event, as both (25) and (26) indicate, the sign of  $\Delta Y / \Delta G$  is *a priori* indeterminate; therefore, the expectations factor has (as above) rendered fiscal policy of unknown impact. All that can be deduced from the introduction of (22) and (23) into the system, is that the probability that  $\Delta Y / \Delta G > 0$  (for  $\phi > 0$ ), is *ceteris paribus* an increasing function of  $\phi$ .<sup>7</sup>

Finally, it should be explicitly pointed out that this analysis and its results were obtained in a fashion quite different from Brunner and Meltzer [3], Cebula and Klein [7], Timberlake [27], and Tobin [28]. In particular, these analyses basically argued that a deficit financed by bond sales to the public could have a contractionary effect through the effect of the increased bond supply on the demand for money.<sup>8</sup> The analysis and results of this paper were clearly independently of such considerations.<sup>9</sup>

#### NOTES

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<sup>1</sup>Related to a government constraint, see [6, Cebula and Gallaway; 8, Christ; 18, Musgrave; 22, Patinkin, or 24, Silber].

<sup>2</sup>This assumption that  $\Delta B > 0 \rightarrow \Delta M_s = 0$  will be dropped in the subsequent section of this paper.

<sup>3</sup>These relationships presumably do not pertain to the case where  $\Delta B > 0$  (budget surplus) [see 21, Ott and Ott, or 10, Haley].

<sup>4</sup>Related to this, see also Haley [10].



<sup>5</sup>This differs perceptibly from Haley [10, p. 71] who noted the "... failure of businessmen to alter their ... expectations ..." in response to the argued stimulative advantages of the deficit-financed fiscal action.

<sup>6</sup>Again, these relationships do not pertain to the case where  $\Delta B < 0$  [see, for example, 10, Haley, or 21, Ott and Ott].

<sup>7</sup>Thus,  $(d [ P ( \frac{\Delta Y}{\Delta G} > 0 ) ] / d \phi) > 0$ .

<sup>8</sup>The increased bond supply would shift the economy's *LM* locus to the left.

<sup>9</sup>It might be observed that, in contrast to the "conventional wisdom" [see, for example, 1, Branson, 2, Brennan, 12, Herber, 19, Musgrave; 23, Siegel; 24, Silber; and 25, Sirkin], there does not exist a symmetry among the algebraic values for the common spendings multipliers. That

$$\frac{\Delta Y}{\Delta A} = \frac{\Delta Y}{\Delta I_0}, \quad \text{it also is true that} \quad \frac{\Delta Y}{\Delta G} \neq \frac{\Delta Y}{\Delta I_0} = \frac{\Delta Y}{\Delta A}$$

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**S u m m a r y:** *Deficit Spending, Expectations, and Fiscal Policy Effectiveness.* — This paper develops a formal model within which it investigates the policy effects of adverse business expectations resulting from deficit financing. It is found that hostility to deficit financing will always diminish the effectiveness of fiscal policy and render the ultimate impact of fiscal policy indeterminate. Potentially, a fiscal policy aimed at economic expansion may lead to a perverse result: a decline in economic activity. The model constructed allows deficit financing to influence the money supply.

**R é s u m é:** *Déficit budgétaire, anticipations et efficacité d'une politique fiscale.* — Cette étude présente un modèle formel qui permet d'étudier les effets d'une politique sur les anticipations défavorables du monde des affaires en cas de déficit budgétaire. On voit que l'hostilité au financement du déficit aura toujours pour conséquence de diminuer l'efficacité d'une politique fiscale et de rendre incertain l'effet final de la dite politique. A la limite, une politique fiscale destinée à favoriser l'expansion économique peut conduire à un résultat inverse: un déclin de l'activité économique. Le modèle élaboré admet que le financement du déficit influence l'offre de monnaie.

**Z u s a m m e n f a s s u n g:** *Defizitfinanzierung, Erwartungen und Effektivität der Fiskalpolitik.* — In dem Artikel wird ein formales Modell entwickelt, mit dem die Wirkungen untersucht werden, die bei entgegengerichteten Erwartungen in der Wirtschaft aus einer Politik der Defizitfinanzierung resultieren. Dabei wird gezeigt, daß die Abneigung gegenüber der Defizitfinanzierung die Wirksamkeit der Fiskalpolitik mindert und sich letztlich die Wirkung der Fiskalpolitik als indeterminiert erweist. Es ist möglich, daß eine Fiskalpolitik mit dem Ziel der konjunkturellen Expansion zu einem perversen Ergebnis führt: nämlich zu einem Rückgang der ökonomischen Aktivität. Das entwickelte Modell berücksichtigt den Einfluß der Defizitfinanzierung auf das Geldangebot.