SOME PRELIMINARY EVIDENCE ON THE SHORT-RUN AGGREGATE DEMAND EFFECTS OF FISCAL POLICY

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The crowding out of private consumption by fiscal policy is examined using a short-run consumption function. There is evidence of a one-for-one crowding out of consumption by government purchases of goods and services. The effects of debt financing on consumption are mixed. Internal debt exerts a negative effect while external debt, a positive one.

1. Introduction

The economic recession experienced by the Philippines in 1984 seems to be persisting as leading indicators point to a further contraction of output in 1985. Given this prospect, those in charge of economic policy have announced that they would seek a relaxation of the conditional limit on the budget deficit under the standby arrangement with the International Monetary Fund.[1] The notion behind the government's request is that some "corrective" government spending is needed to get the economy out of its slump. In other words, there is a belief that fiscal measures, mainly in the form of an increase in government spending, must be carried out to stimulate aggregate demand and increase output.

Can a rise in government spending get the economy out of this recession? The answer to this question rests on whether or not fiscal spending has the capacity to raise aggregate demand. If it has and to the extent that the budgetary stimulus is not fully absorbed by a rise in interest rates, there will be an expansion in output and employment.

[1] Even at the same level of government spending, the government is not likely to meet the targeted budget deficit because of an expected shortfall in revenues.

This paper addresses the prior issue of government spending and its effects on private-sector consumption, the largest component of aggregate demand. To do this, I make use of a short-run consumption function, incorporating the notion that people perceive the benefits of government spending financed by current taxation in the same manner that they perceive the effects of taxes on their disposable income. It has been hypothesized that if the private sector perceives government spending to be a substitute, there will be a crowding out of aggregate consumer demand. If government spending is on investment which yields future goods and services perceived to be substitutes for future private consumption, the crowding-out effect will be relatively smaller.[2]

The paper also tries to explore the implications of debt financing of current government spending. Invoking the Ricardian equivalence theorem, Barro (1974) reopened the debate on the issue by questioning the assumption that government bonds have a net wealth effect. He pointed out that if future taxes implied by the government debt were fully perceived by finitely-lived private bondholders and given intergenerational transfers, the stream of taxes and interest payments would fully offset each other, thereby negating any net-wealth effect.

The short-run consumption function used in this paper has obvious limitations for testing the implications of debt financing. It seems clear that to adequately capture the wealth implications of the debt on private-sector consumption, an approach based on say the life cycle-permanent income hypothesis is more appropriate. The results should therefore be taken as first approximation to whether or not the public debt is perceived by its private holders to be a net addition to wealth.

The empirical evidence in this paper shows some amount of substitutability between private consumption and government spending. Public internal debt has the same effects as taxes but external debt shows some wealth effect.

The paper proceeds as follows: Section 2 discusses the model. The empirical results are presented in section 3. Section 4 makes concluding remarks.

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[2] A consolidated approach to private and government spending has been suggested by Bailey (1962). Kormendi (1983) implemented such an approach empirically and found support for the crowding-out effect. An earlier empirical work by Feldstein (1982) found only weak support for it.

2. A Model Formulation

To test the effects of government spending and taxes on private-sector consumption, I use as starting point a short-run consumption function of the form:

(1) $\quad TC_t = a_1 + a_2 Y_t^d$

where TC_t is total consumption expenditures at period t and Y_t^d is the t period's total disposable income.[3] This is a departure from earlier analyses where government spending and taxes are treated asymmetrically, that is, taxes are perceived by people through their effects on disposable income but the benefits from government spending are disregarded. Abandoning this asymmetric notion, total spending is consolidated into private spending, C_t, and government spending, GS_t:

(2) $\quad TC_t = C_t + GS_t$

The government is usually engaged in both investment and consumption activities. Some of its investments consist of outlays for social overhead capital that yield a future stream of goods and services. There is also investment in goods and services that support private-sector production. An example would be spending on the police and the courts for, say, contract enforcement. Another portion of government spending is on consumption goods and services that yield utility in the current period, such as, parks, school feeding programs, and health care. I formalize this breakdown of total government spending, GS_t into consumption, GC_t, and investment, GI_t, with the following:

(3) $\quad GS_t = GC_t + GI_t$

The total disposable income, Y_t^d, takes into account all currently observed income net of all tax collections.[4] That is,

(4) $\quad Y_t^d = Y_t - T_t$

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[3] The strategy pursued here follows Kormendi. The difference lies in his use of a permanent-income hypothesis to examine the private consumption effects of fiscal policy.

[4] The analysis abstracts from government transfers, noting their relatively small magnitude in the Philippines.

where Y_t and T_t are gross output and taxes in period t, respectively.

By imposing the restrictions given in equations (2), (3), and (4), on equation (1), the following regression model is suggested:

$$(5) \quad C_t = b_1 + b_2 Y_t + b_3 T_t + b_4 GC_t + b_5 GI_t + u_t$$

where u is a standard normal error term.

The coefficient b_2 captures the marginal propensity to consume out of current income or output. The expectation is for this number to be between 0 and 1. The coefficient b_3 is expected to be less than zero: with an increase in taxes, the short-run impact is to reduce current disposable income.

The effect of government spending on aggregate consumer demand depends on the perception of the private sector. If the government spending is on goods and services that are perceived to be substitutes for private consumption, a crowding-out effect or reduction in private consumption will be observed. However, the effect is expected to be relatively smaller, if the government spending takes the form of investment yielding future goods and services that are perceived to be substitutes for privately provided furture goods and services. Under this hypothesis, b_4 is expected to be less than zero, while b_5 entails a relatively smaller reduction in private consumption with a zero effect not an impossibility.

To summarize, the following signs for the coefficients of equation (5) are expected: $0 < b_2 < 1$, $b_3 < 0$, $b_4 < 0$, and $b_5 \leqslant 0$.

To incorporate the possible effects of debt financing, we augment equation (5) by including the stock of public external debt, XD_t, and internal debt, ND_t, as regressors.[5] The augmented regression model takes the form:

$$(6) \quad C_t = b_1 + b_2 Y_t + b_3 T_t + b_4 GC_t + b_5 GI_t + b_6 XD_t + b_7 ND_t + v_t$$

where v is the standard normal error term.

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[5] In early discussions on the burden of the debt, Lerner (1984) and Meade (1958) found it useful to distinguish between internal and external debt. The latter, it was held, involves a transfer of resources from debtor to creditor the burden of which was similar to private debt among persons. Internal debt, according to Lerner, was something "we owed to ourselves," and imposed no real burden.

Under the notion that the public debt is regarded as an addition to net wealth by private bondholders, then private consumption rises with the debt.[6] The stream of interest payments from bondholdings is seen to augment total disposable income perceived to be equal to $Y_t - T_t + r D_t$ where r is the real interest rate on the debt. However if private holders of the debt fully perceive the future taxes implied by the debt, then the interest earnings are fully offset, leaving disposable income unchanged. This has been termed fiscal neutrality, an absence of any effect on private consumption.

Under imperfect capital markets, some borrowers may face a lower rate for borrowed funds. As a result they tend to use a higher discount rate for the future taxes implied by the debt which raises the present value of the implied taxes relative to the current tax cut that created the deficit.[7] Alternatively, one can think of these borrowers as being well informed about the excess burden generated by tax collections in the future, such as, hiring accountants to design tax reducing schemes.[8] Their subjective rate of discount tends to be high, creating a high present value for future taxes which can exceed the present value of the interest earnings from bonds. To pay for the cost of the excess burden, they raise their current saving. To these borrowers, debt financing of a deficit induces a negative wealth effect on consumption.

3. Empirical Results

Time-series data for the period 1950-1983 are used in the estimation of equations (5) and (6). Data on private consumption, government consumption and investment, gross domestic product are taken from IMF *International Financial Statistics*. Private consumption includes spending on both durables and nondurables. The figures for taxes from all sources and the public debt are drawn from various issues of the Philippine Central Bank *Statistical Bulletin*. The population figures are taken from *World Population* published by the U.S. Department of Commerce. All variables used in the regressions are expressed in real and per capita terms. Ordinary least squares estimation is used all throughout. The variables used are summarized below:

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[6] See, for example, Modigliani (1961).

[7] The opposite case where some borrowers face a higher cost of borrowing than others is treated in Barro (1974).

[8] For a public-finance approach to the allocative effects of the public debt, see Barro (1980).

C_t ≡ real per capita personal consumption expenditures, in pesos

GC_t ≡ real per capita government consumption expenditures, in pesos

GI_t ≡ real per capita government investment expenditures, in pesos

ND_t ≡ real per capita stock of oustanding internal debt of the government, in pesos

T_t ≡ real per capita taxes from all sources, in pesos

XD_t ≡ real per capita stock of outstanding external debt of the government, in pesos

Y_t ≡ real per capita gross domestic product, in pesos.

The OLS estimate of equation (5) is given below:

$$7) \quad C_t = 178.4 + 0.78\,Y_t - 1.12\,GC_t + 0.74\,GI_t - 0.98\,T_t$$
$$\quad\quad (4.03) \quad (10.6) \quad\quad (-2.48) \quad\quad (0.283) \quad\quad (-3.60)$$

$$\bar{R}^2 = 0.98 \quad\quad s.e.e. = 23.5 \quad\quad F = 433.1 \quad\quad D\text{-}W = 1.51$$

here $\bar{R}^2$ is the coefficient of determination adjusted for the number f degrees of freedom, s.e.e. is the standard error of the estimate, F the statistic for the analysis-of-variance test, and D-W is the Durin-Watson statistic.

According to the estimate in (7), government consumption xerts a negative and significant effect on private consumption. he coefficient is −2.48 standard errors away from zero. The coefícient:, −1.12, shows almost a one-for-one crowding-out effect by overnment consumption. Government investment has an effect rhich is not significantly different from zero. It is only .28 standard rrors away from zero. The reduction in private consumption due to rise in taxes is −.98 and it is significantly different from zero.

To investigate the effects on private consumption of debt inancing of a deficit, the estimate of equation (6) is shown below:

$$8) \quad C_t = 209.5 + 0.74\,Y_t - .573\,GC_t - .10\,GI_t - .892\,T_t$$
$$\quad\quad (3.73) \quad (8.10) \quad (-1.24) \quad\quad (-.432) \quad (-3.86)$$

$$\quad\quad -.339\,ND_t + .096\,XD_t$$
$$\quad\quad (-1.54) \quad\quad (2.76)$$

$$\bar{R}^2 = 0.99 \quad\quad s.e.e. = 19.8 \quad\quad F = 410 \quad\quad D\text{-}W = 1.78$$

The above results indicate that private consumption decrease with an increase in internal debt and increases with a rise in the ex ternal debt. Both coefficients are significantly different from zero The crowding-out effect is however relatively larger than the wealtl effect of the external debt. It is observed that there is a declin in the effect of government consumption once debt is included in the analysis. It might be that people perceive an increase in the interna debt to be accompanied by a stepping up of government spending creating some multicollinearity between government consumptior and internal debt. The external debt is usually for capital spending with relatively longer gestation period, yielding goods and services farther into the future, and causing a relatively smaller effect on current consumption.

4. Summary and Conclusion

The results are supportive of the hypothesis that people take government consumption into consideration, counting it as part of their overall consumption. An increase in government consumption spending tends to crowd out private consumption. There is also some evidence that net internal debt substitutes for private consumption but external debt exerts some wealth effects.

These results cast some doubts on the desirability of using government spending as a response to the aggregate demand disturbance that placed the economy in a recession. In view of the crowding out of private consumption, the effect on output of government spending is less than the magnitude typically suggested by a naive multiplier approach.

REFERENCES

Bailey, Martin J. (1962), *National Income and the Price Level*, First edition. New York: McGraw-Hill.

Barro, Robert J. (1974), "Are Government Bonds Net Wealth?" *Journal of Political Economy*, 82 (November/December): 1095-117.

Barro, Robert J. (1980), "Federal Deficit Policy and the Effects of Public Debt Shocks," *Journal of Money, Credit, and Banking*, 12 (November): 745-62.

Feldstein, Martin S. (1982), "Government Deficits and Aggregate Demand," *Journal of Monetary Economics*, 9 (January): 1-20.

Kormendi, Roger C. (1983), "Government Debt, Government Spending, and Private Sector Behavior," *American Economic Review*, 73 (December): 994-1010.

Lerner, Abba P. (1948), "The Burden of the National Debt," In L.A. Metzler and others, *Income, Employment, and Public Policy: Essays in Honor of Alvin H. Hansen*, New York: W.W. Norton and Co., Inc. Also reprinted in J.M. Ferguson (ed.), *Public Debt and Future Generations*, Chapel Hill: University of North Carolina Press, 1964.

Meade, James E. (1958), "Is the National Debt A Burden?" *Oxford Economic Papers* 10 (June). Also reprinted in J.M. Ferguson (ed.).

Modigliani, Franco (1961), "Long-Run Implications of Alternative Fiscal Policies and the Burden of the National Debt," *Economic Journal* 71 (December). Also reprinted in J.M. Ferguson (ed.).