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Crowding out, deficits, and interest rates: Reply

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1. Introduction

The Comment by Spector and Van Cott addresses a very important issue, one that is relevant to both my paper and the entire literature dealing with the impact of federal budget deficits upon interest rates. Essentially, Spector and Van Cott argue that, within the IS-LM diagram, the '... amount of crowding out may be inversely related to the size of the interest rate change' (resulting from a deficit). Indeed, these authors go so far as to contend that '... the statistical significance of the relationship between interest rates and the deficit is irrelevant for the question of crowding out.'

This Reply endeavors to illustrate the relevance of the impact of the deficit upon the interest rate to the issue of crowding out. It is argued that empirical studies of the impact of deficits upon interest rates may be very useful in determining *whether* (and how) crowding out occurs, but that additional empirical analysis involving the interest sensitivity of commodity market demand is needed to then determine the *degree* of crowding out.

2. Analysis

According to Spector and Van Cott, there technically are three cases of the IS curve: the extreme case of the perfectly vertical IS curve; the extreme case of the perfectly horizontal IS curve; and the case of the 'conventional' negatively sloped IS curve. Since my paper, along with most of the other studies dealing with deficits and interest rates, assumes that the IS curve is negatively sloped, the two extreme (special) cases are ignored.

Within the context of a negatively sloped IS curve (and, of course, a positively sloped LM curve), to examine the relationship among deficits, interest rates, and crowding out, we first consider the following reduced-form equation:

$$\text{TBR}_t = a_0 + a_1 \text{STDEF}/Y_t + a_2 M/Y_t + a_3 G/Y_t + a_4 \text{TBR}_{t-1} + u_t \quad (1)$$

where a_0 = constant

term

TBR_t = the nominal interest rate yield on new issues of three-month Treasury bills in quarter t , expressed as a percent

STDEF/Y_t = the ratio of the seasonally adjusted real structural deficit in quarter t to the seasonally adjusted trend real GNP in quarter t , expressed as a percent (based on Holloway, 1986)

M/Y_t = the ratio of M_t , the average of the seasonally adjusted current and preceding quarters values of the net acquisition of credit market instruments by the Federal Reserve System (expressed in real terms), to the seasonally adjusted trend real GNP in quarter t , expressed as a percent

G/Y_t = the ratio of the seasonally adjusted real federal government purchases of goods and services in quarter t to the seasonally adjusted trend real GNP in quarter t , expressed as a percent

TBR_{t-1} = the three-month Treasury bill rate lagged one quarter

u_t = stochastic error term

The IS-LM based model is quarterly, and the time period examined runs from 1955:1 through 1973:3, thus yielding 75 observations over nearly two decades.

It is hypothesized here, as well as in my earlier paper, that on the basis of the IS-LM paradigm, the expected sign on coefficient a_1 is positive. Furthermore, it is hypothesized here that if a_1 is positive and statistically significant, then – in the case of the negatively sloped IS curve – crowding out *does* occur, with the interest rate being the transmission mechanism. Note that, unlike Jector and Van Cott's contention, I *nowhere* link a statistically significant impact of the deficit upon the rate of interest to the *degree* of crowding out. Going further, if on the basis of a given study, deficits are found empirically *not* significantly influence the rate of interest, then all we can reasonably infer is that the analysis in question reveals no clear evidence that crowding out occurs.¹ On the other hand, if deficits *are* found to exercise a statistically significant influence upon the rate of interest, as the IS-LM paradigm predicts, then the empirical results must be very carefully interpreted. In particular, the finding that deficits raise interest rates can reasonably be interpreted as indicating *only* that crowding out *does* occur. That is, the magnitude of the interest rate increase, of and in itself, does *not* indicate the actual *degree* of crowding out.

For example, consider the empirical results obtained when equation (1) is estimated by ordinary least squares:

$$\begin{aligned} \text{TBR}_t = & 1.10 + 0.15 \text{STDEF}/Y_t - 2.73 M/Y_t - 0.07 G/Y_t, \\ & (+2.25) \quad (-2.72) \quad (-1.00) \\ & + 0.95 \text{TBR}_{t-1} \quad \text{DF} = 70, R^2 = 0.89, R^2 = 0.88, \\ & (+19.04) \end{aligned} \quad (2)$$

where terms in parentheses are t-values. In this estimation, the coefficient on the deficit variable is positive and statistically significant at nearly the two percent level. Thus, we infer from this estimation that crowding out *does* occur, with the interest rate being the apparent transmission mechanism. However, this statistically significant positive coefficient on the deficit variable does *not* indicate the *degree* of crowding out. The determination of the *degree* of crowding out requires an additional major step: relating the interest rate increase to the interest sensitivity of private sector commodity demand. Clearly, if private sector commodity demand is highly interest sensitive, then a given interest rate increase will lead to more crowding out than would be the case if private sector commodity demand is only mildly interest sensitive. Indeed, a seemingly very modest rise in the interest rate could conceivably result in extensive crowding out. However, this entire second step of attempting to quantify the actual *degree* of crowding out is never reached unless the deficit is first shown to have a statistically significant impact on the interest rate.²

3. Conclusion

Spector and Van Cott argue that '... statistical significance of the relationship between interest rates and the deficit is irrelevant for the question of crowding out.' This Reply in turn argues that studies of the impact of deficits upon interest rates may be very useful in determining *whether* (and perhaps how) crowding out occurs and that additional empirical analysis involving the interest sensitivity of commodity demand is necessary to then quantify the actual *degree* of crowding out.

Notes

1. Of course, the failure of such a test to detect evidence of crowding out does not necessarily imply that crowding out does not in actuality occur.
2. Naturally, research *could* potentially reveal an alternative transmission mechanism for crowding out.

References

- Cebula, R.J. (1987). Federal deficits and the real rate of interest in the United States: A note. *Public Choice* 53 (January): 97-100.
- Holloway, T.M. (1986). The cyclically adjusted federal budget and federal debt: Revised and updated estimates. *Survey of Current Business* 66 (March): 11-17.