Do Macroeconomic Policy Decisions Affect the Private Sector Ex Ante? — The EEC Experience with Crowding Out

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1. Introduction

The history of the European Economic Community (EEC) is replete with attempts to bring about fuller integration of Member States. The process has been slow; reversals have occurred. Nevertheless, the Community today is closer to achieving the goal of an integrated community than at its inception. Pessimists argue that the goal is unachievable because Member States will not relinquish the necessary power. Optimists, on the other hand, argue that the process is necessarily slow and painful.

The process of evolving into an economic union requires continuing concern about policy coordination and policy convergence. The establishment of fixed parities between currencies necessitates a convergence of monetary policies or, in the absence of such convergence, frequent realignment of parities. A convergence of monetary policies entails, in the long run, a convergence of budget policies. Convergent monetary policies probably are unsustainable if countries run widely differing budget deficits. That is, the larger a budget deficit is, the more likely it is to be monetized.

What are the potential costs and benefits to members of an economic union from the convergence of budget policies? One part of the answer depends upon each country's experience with crowding out. If increases in public demand largely crowd out private demand, then budget discipline only affects the division of existing output between the public and private sectors. If crowding out is small or nonexistent, then budget discipline has implications for a country's total output. In such a situation, a country might be reluctant to reduce the size of government expenditure and absorb

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the implied reduction in output growth.

This paper has two focuses. First, Section II examines some of the issues in, and the structure of, macroeconomic policy coordination in the EEC. Second, the paper explores the EEC experience with crowding out. Section III provides the theoretical background and Section IV presents and evaluates the empirical results. The findings of the empirical investigation provide some information relating to macroeconomic policy coordination. These issues are considered in the conclusion, Section V.

II. Macroeconomic Policy Coordination in the EEC

One of the most important economic, and political, events in the post-World War II European period has been the establishment and continued development of the EEC. This paper begins by examining the unique concern and the need within the EEC to establish policy coordination among the Member States. The basic rules of economic policy coordination are contained within the Treaty of Rome[1] and in certain subsequent decisions of the Council of Ministers.[2]

In a reaffirmation of the desire to move toward an economic union, the Council of Ministers in 1974 agreed to target on a "convergence of the economic policies" of Member States. To facilitate this policy convergence, the Council of Finance Ministers meets each month and three times a year takes positions on economic policy to be followed by the Community and each Member State; guidelines are proposed by the European Commission.

The most formal act of macroeconomic policy coordination occurs during the fourth quarter of each year, when the Council adopts an annual report on the economic situation within the Community and establishes the economic policy guidelines to be pursued by Member States during the ensuing year. The annual report is a proposal developed by the Commission with inputs from the Economic Policy Committee. The European Parliament and the Economic and Social Committee have to react with opinions before the Council adopts its text. This annual report contains policy recommendations for both the Community and Member States. The goal is to achieve greater stability, growth, and convergence within the Community.

At the spring meeting, the Council reviews the policy stance adopted in the annual report and, acting again upon Commission proposals, it decides whether the prior guidelines need to be changed.

At the summer meeting, the Council establishes budget guidelines for

[1]General coordination of economic policy is detailed in Articles 103 and 145. Monetary and exchange rate policy coordination receive special treatment in Articles 104, 105, and 107.

[2]For example, the Neumark Report published in 1963 recommended the harmonization of national tax programs (e.g., adoption of a value-added tax with uniform rates across Member States). Further, the Werner Report published in 1970 outlined the steps for achieving a monetary union by 1980.

Member States for the following year. They are based on short-term forecasts and include developments in government expenditure and revenue, the nature and extent of budget surpluses or deficits, and in the case of deficits, the method of financing.

Developments in Monetary Policy and the European Monetary System

The need to coordinate national monetary and exchange rate policy is linked to these policies' effects on the balance of payments. The Convergence Decision of 1974 reaffirmed the commitment to economic integration and monetary union. The vision of a monetary union contained in the Werner Report suffered various reversals as the world adjusted to the breakdown of the Bretton Woods System. Eventually, a regional European Monetary System (EMS) was created to establish some intra-European monetary organization in the floating world.

The EMS is the most recent and most ambitious scheme that aims to stabilize Member States' exchange rates. Its success is, of course, intimately tied to the degree of macroeconomic policy coordination.[3] It is generally agreed that during the first two years of EMS operation, nominal exchange rate variability was significantly reduced and needed central rate adjustments were infrequent and adopted smoothly.[4] Since 1981, the EMS has been passing through a hazardous phase. There have been three realignments of central rates between October 1981 and June 1982; this led to substantial changes in bilateral rates. As a result, a marked divergence has taken place in nominal exchange rate movements. Whatever the root cause of this instability, there is general agreement that the success of realignment and the restoration of greater EMS stability require domestic stabilization measures in the weak-currency countries.

The Commission submitted proposals for improving the EMS to the Council in March 1980. These proposals focused on the potential functions of the European Currency Unit (ECU), on the establishment of the European Monetary Fund (EMF), on the relationship of the EMS to the rest of the world, and on related institutional questions. The goal was to move from the existing scheme of policy coordination by Member States to Community level policy actions. The ECU has the potential for

(i) use as a reserve asset with which central banks can clear balance of payments imbalances and
(ii) use in private international capital markets and public bond issues by the Community and national authorities.

The establishment of the EMF with authority to execute market transactions in ECUs would enhance these uses of the ECU. Moreover, the EMF will be required to decide on a whole range of monetary questions (e.g.,

[3]For a discussion of the effects of the EMS on the Community, see Emerson (1981).

[4]Intra-EMS exchange rates were, on average, about as volatile as the dollar and pound sterling during 1974 to 1976. Moreover, during 1979 to 1980, the intra-EMS exchange rates were, on average, about one-third as volatile as the dollar and pound sterling.

exchange rates, external financing, and domestic monetary developments). While these proposals were not accepted by the Council, substantial progress has nevertheless been made in advancing the role of the ECU in private markets.

Developments in Budget Policy

The relative growth in government expenditure accelerated after the early 1970s, whereas the relative growth in tax receipts was less pronounced. For the Community, government expenditure as a percent of gross domestic product (GDP) rose from 32.1 percent in 1960 to 37.9 and 50.8 percent in 1970 and 1982, respectively; tax receipts as a percent of GDP were 32.7, 38.2, and 45.9 percent, respectively.

The budget was in surplus for the Community in both 1960 and 1970 (e.g., 0.6 and 0.3 percent of GDP) but reached a deficit equal to 5 percent of GDP in 1982. In addition, the deficit was 5.5 and 3.5 percent of GDP in 1975 and 1980, respectively. A group of countries (i.e., Belgium, Denmark, Greece, Ireland, and Italy) had deficits greater than 9 percent of GDP in 1982. Some of this shift to budget deficits during the 1970s is attributable to the general world-wide stop-go slowdown experienced since the first oil-price shock in 1973. It might also be suggested that some Member States have lost effective control of their budget policy.

The potential crowding out of private demand by increasing government deficits is of increasing concern. The disincentive effects of high real interest rates are a serious problem in Belgium. In Ireland and Italy, the interest expense in the budget represents a large share of the total public sector deficit; thus, the real stimulatory value of rising deficits is questionable. The empirical results of this paper, however, present surprising implications for budget deficits' effect on the household consumption-saving decision.

There are a number of problems with budget policy—some common to all Member States and others specific to a subset of the Community. These are

(i) the steady growth of government expenditure relative to GDP,
(ii) the size of budget deficits,
(iii) the growth of government indebtedness, and
(iv) the rising burden of debt service.

As mentioned above, government expenditure is, on average, 50.8 percent of GDP and the public deficit is 5 percent of GDP. The government has become a massive part of Member States' economies. Moreover, budgetary policy in a number of Member States has escaped effective control. It was for these reasons that the Commission conveyed its concern to the Council in "Budget Discipline and Economic Convergence" in July 1982. The Commission believes that the achievement of sounder budget policies must be an objective throughout the Community. Though there might not be disagreement in principle over needed budgetary reforms, in practice, there

must be maximum political consensus for reforms to be implemented.

III. Ex-Ante Crowding Out: Theory

The efficacy of fiscal policy has been the subject of continous controversy over the last two decades. Expansionary fiscal actions may give rise to negative feedbacks that diminish the initial positive effect. Considerable research has been undertaken to investigate whether government spending financed by either debt or taxes has a permanent effect or whether it is merely crowded out. Fromm and Klein (1973) presented simulation results of 11 econometric models of the United States; their findings provide support for the crowding-out thesis. In most cases, the long-run impact multipliers in nominal terms were positive; but, in real terms, crowding out did occur usually with a substantial lag. The exception was the St. Louis model; crowding out occured in both nominal and real terms within one year. A recent examination of the St. Louis equation across six countries was performed by Batten and Hafer (1983). They concluded that fiscal policy was not crowded out in France and the United Kindom but was crowded out in Germany.[5] Moreover, monetary policy (and export growth) was significant in explaining nominal income growth in these three countries.[6]

Crowding-out effects can be classified as ex ante or ex post. They are ex post if the substitution of public for private spending is indirect and is induced by adjustments in economic variables caused by the initial fiscal impulse. For example, as the economy approaches full employment, a fiscal expansion results in rising prices and interest rates that crowd out private spending ex post. The crowding out is ex ante if the substitution of public for private spending is direct and autonomous. In this instance, fiscal expansion leaves prices and interest rates unaffected. This paper focuses on the ex ante variety of crowding out.

Bailey (1962, 1971, 1972) argued that if the household sector has perfect knowledge and perfect foresight, then both bond- and tax-financed government spending and retained-earnings- and debt-financed business investment are equivalent in the eyes of the household sector. Hence, if the

[5]For the other three countries (i.e., Canada, Japan, and the United States), fiscal policy was crowded out.

[6]Nguyen and Turnovsky (1983) have provided an alternative test of the effectiveness of monetary and fiscal policy. They simulate a dynamic theoretical macroeconomic model and examine the effects of fiscal and monetary policies. The dynamic macroeconomic model is in the tradition of Blinder and Solow (1973), Tobin and Buiter (1976), Pyle and Turnovsky (1976), and Turnovsky (1980). Nguyen and Turnovsky found that an increase in government spending leads to instability which ". . . takes the form of crowding out, whereby the initial expansion creates subsequent recessionary pressure." (1983, p. 69). In some instances, the instability was exhibited in an "explosive boom." The stability of these dynamic macroeconomic models has been of continuing interest. Smith (1982) has suggested that the instability in these models is a result of imposing "rigid" policy rules. Smith demonstrated that employing flexible policies (e.g., monetary authorities peg nominal interest rates and fiscal authorities peg real income) can ". . . stabilize an otherwise unstable economy." (1982, p. 177).

household sector has attained its desired level of saving and portfolio, then an increase in the government budget deficit (e.g., a tax cut) or a decrease in business retained earnings (e.g., higher dividend payments) are offset, in both cases, by an increase in household saving. Optimal consumption plans are unaffected. National saving is more stable than its individual components; that is, we observe perfect, direct substitutability between household, business, and government saving. There is no optimal mix between tax- and bond-financed government expenditure. Bailey recognized that perfect foreknowledge is an extreme situation; he considered the case where future foreknowledge is imperfect. Now, since the degree of substitutability between household and government saving is less than perfect, household consumption spending is affected by the fiscal policy mix. Here, the optimal policy mix is to tax-finance those government expenditures whose benefits and incidence are localized and known; those expenditures with diffused benefits and unknown incidence should be debt financed. Bailey (1962, p. 72; 1971, p. 155) also argued that if the household sector viewed its own and government's spending for consumption as equivalent, then consumption should be aggregated to the national level. That is, total consumption (including government consumption) would be a more stable aggregate than individual components.

David and Scadding (1974) argued, on the basis of empirical evidence for the United States, that private rather than national saving is the more stable aggregate.[7] This finding is not inconsistent with Bailey's general view of direct, ex ante substitutability but rather implies a different form which they called ultrarationality. Ultrarationality differs from perfect foreknowledge in that the household sector views both tax-financed government expenditure and consumption expenditure and debt-financed government expenditure and investment expenditure as perfect substitutes.[8] Consequently, ultrarationality implies that the saving and consumption aggregates should be household and business saving and consumption and tax-financed government expenditures, respectively. In support of their thesis, David and Scadding demonstrated that the gross private saving rate (GPSR) has been remarkably stable on a year-to-year basis as well as nearly constant in the long run. This stability was not affected by changes in government budget deficits nor by the notable sectoral shift from household to business saving over the sample period. The stability of the GPSR suggests that household and business saving are close (perfect) substitutes. Three implications of David and Scadding's analysis need to be mentioned.

First, an increase in business saving (e.g., reduced dividend payments) is offset on a one-to-one basis by a decrease in household saving. Second, a tax-

[7]David and Scadding were building upon the observation of Denison (1958) that the private savings ratio possesses remarkable stability in the United States. Modigliani (1970, p. 219–21) referring to Harrod (1948, Ch. 2) also argued for the use of private saving.

[8]In fact, ultrarationality is contained within Bailey's category of imperfect foreknowledge.

> financed increase in government expenditure is offset on a one-to-one basis by a reduction in household consumption expenditure. Third, an increase in debt-financed government spending crowds out dollar-for-dollar private investment expenditure. Ultrarational household behavior gives rise to ex ante crowding out. Fiscal policy is impotent in affecting aggregate demand in the short run and in the long run it, . . . begins to appear just as neutral as money in long-run growth. (1974, p. 247)

Miller (1982) developed a general model of household choice that allowed for differing degrees of substitutability between household decisions and business and/or government decisions. The household sector is asssumed to maximize

$$U = U\{C, S(H); S(B), S(G), T\} \quad (1)$$

subject to the budget constraint

$$Y \equiv C + S(H) + S(B) + T \quad (2)$$

where Y is net national product, C is household consumption expenditure, S(H) is household saving, S(B) is business saving, S(G) is government saving, and T is net taxes (i.e., tax receipts minus transfer payments).[9]

It is assumed that households do not control but rather react to adjustments in business and government decisions. Thus, the household utility maximization takes the variables determined by the business and government sectors as exogenous variables. Moreover, net taxes enter the utility function as a proxy for government consumption expenditures as suggested by ultrarationality.[10] The specification in equation (1) permits different degrees of substitutability between household saving and business and/or government saving, as well as between household consumption and tax-financed government expenditure. Perfect foreknowledge, ultrarationality, and no substitutability assumptions emerge as special cases of this more general specification.

From the first-order conditions of the utility maximization, the household consumption and savings functions can be derived (implicitly) as reduced-form equations in the exogenous variables. These equations are as follows:

$$C = \alpha_1 + \alpha_2 S(B) + \alpha_3 S(G) + \alpha_4 T + \alpha_5 Y + \epsilon_c \quad \text{and} \quad (3)$$

$$S(H) = \beta_1 + \beta_2 S(B) + \beta_3 S(G) + \beta_4 T + \beta_5 Y + \epsilon_s$$

[9]The problems associated with constructing such a community utility function have been ignored.

[10]Miller (1982) had regressions with net taxes and government consumption expenditure used independently. Data restrictions did not allow us to consider government consumption expenditure directly.

where αs and βs are parameters to be estimated and ϵs are random errors. Equation (2) imposes the following cross-equation parameter restrictions:

$$\beta_1 = -\alpha_1,\ \beta_2 = -(1+\alpha_2),\ \beta_3 = -\alpha_3,\ \beta_4 = -(1+\alpha_4),\ \beta_5 = (1-\alpha_5). \tag{4}$$

Standard neo-Keynesian analysis assumes that the household sector makes its consumption-saving decision independent of business and/or government decisions. This no substitutability assumption implies that S(B), S(G), and T do not enter the utility function (or their marginal utilities are zero). Equation (1) becomes

$$U = U\{C, S(H)\}, \tag{5}$$

which is maximized subject to equation (2). This leads to the following standard consumption and saving functions:

$$C = a_1 + a_2\{Y - S(B) - T\} + \epsilon_c \quad \text{and} \tag{6}$$
$$S(H) = -a_1 + (1-a_2)\{Y - S(B) - T\} + \epsilon_s.$$

Comparing equations (6) with the unconstrained equations (3) yields the following parameter restrictions for no substitutability:[11]

$$\alpha_2 = -\alpha_5,\quad \alpha_3 = 0,\quad \alpha_4 = -\alpha_5,\quad \beta_2 = -\beta_5,\quad \beta_3 = 0,\quad \beta_4 = -\beta_5. \tag{7}$$

Similar arguments can be presented for different perfect substitutability assumptions. Suppose the household sector exhibited perfect substitutability between S(H) and S(B) and between C and T, but no substitutability between S(H) and S(G) (i.e., the ultrarationality specification). The household sector substitutes on a one-to-one basis both S(H) and S(B) and C and T. Consequently, the household utility function is

$$U = U\{C + T, S(H) + S(B)\}. \tag{8}$$

Utility maximization subject to the budget constraint leads to the following consumption and saving functions:[12]

$$C + T = b_1 + b_2 Y + \epsilon_c \quad \text{and} \tag{9}$$
$$S(H) + S(B) = -b_1 + (1-b_2)Y + \epsilon_s.$$

[11]For a more thorough development of the model as well as the explicit derivation of these and other restrictions, see Miller (1982). The presentation in the text presents an intuitive justification for the restrictions implied by different types of direct substitutability.

[12]Note from equation (2) that if the household sector chooses {C + T} and {S(H) + S(B)}, then the constraint on this choice is Y.

Comparing equations (9) with equations (3) yields the following parameter restrictions for ultrarationality

$$(10) \qquad \begin{array}{lll} \alpha_2 = 0, & \alpha_3 = 0, & \alpha_4 = -1, \\ \beta_2 = -1, & \beta_3 = 0, & \beta_4 = 0. \end{array}$$

Finally, suppose the household sector exhibited perfect substitutability between S(H) and both S(B) and S(G) but no substitutability between C and T (i.e., one of the perfect foreknowledge possibilities). Now, the household utility function is

$$(11) \qquad U = U\{C, S(H) + S(B) + S(G)\}.$$

Utility maximization subject to the budget constraint yields the following consumption and saving functions:[13]

$$(12) \qquad \begin{array}{rl} C = d_1 + d_2\{Y - G\} + \epsilon_c & \text{and} \\ S(H) + S(B) + S(G) = -d_1 + (1-d_2)\{Y - G\} + \epsilon_s. & \end{array}$$

Comparing equations (12) with equations (3) yields the following parameter restrictions:[14]

$$(13) \qquad \begin{array}{lll} \alpha_2 = 0, & \alpha_3 = -\alpha_4, & \alpha_4 = -\alpha_5, \\ \beta_2 = -1, & \beta_3 = -(1+\beta_4), & \beta_4 = -\beta_5. \end{array}$$

Table 1 provides a summary of the parameter restrictions implied by the various perfect substitutability assumptions.

IV. Ex-Ante Crowding Out: Empirical Evidence

The consumption and saving equations (3) were etimated for seven EEC countries—Belgium, France, Germany, Greece, Italy, the Netherlands, and the United Kingdom. The period of estimation was 1961 to 1979 except for Greece and Italy where the sample periods were 1961 to 1974 and 1961 to 1978, respectively. Data restrictions limited the sample to only seven EEC countries. The data employed were annual observations, measured in local currencies, and defined as follows:[15]

[13]Note that prior to maximizing one subtracts government expenditure (G) from both sides of equation (2).

[14]If, in this case, the household sector had also viewed C and T as perfect substitutes, then the restrictions on α_2 and β_2 are unchanged, the restrictions on α_4 and β_4 are as contained in (10), and the restrictions on α_3 and β_3 are $\alpha_3 = \alpha_5$ and $\beta_3 = -(1-\beta_5)$. Miller (1982) is unclear on this distinction.

[15]Data were obtained from *National Accounts of OECD Countries* 1961–1978 and 1962–1979. All variables are in millions of local currency units except Italy where variables are in billions.

Table 1:
Parameter Restrictions under Different Substitutability Assumptions

Substitutability between	S(H) and S(B)	S(H) and S(G)	C and T
No Substitutability	$\alpha_2 = -\alpha_5$ $\beta_2 = -\beta_5$	$\alpha_3 = 0$ $\beta_3 = 0$	$\alpha_4 = -\alpha_5$ $\beta_4 = -\beta_5$
Perfect Substitutability	$\alpha_2 = 0$ $\beta_2 = -1$	$\alpha_3 = -\alpha_4$ $\beta_3 = -(1+\beta_4)$	$\alpha_4 = -1$ $\beta_4 = 0$

Note: Tests of these hypotheses are reported in Tables 2, 3, 4, and 5. All tests are unaffected by whether or not there is perfect or no substitutability between other variables with the exception of perfect substitutability between S(H) and S(G). The test reported above is when there is no substitutability between C and T. If there is perfect substitutability between C and T, then the test for perfect substitutability between S(H) and S(G) becomes $\alpha_3 = \alpha_5$ and $\beta_3 = -(1-\beta_5)$. See (13) and footnote 14.

C ≡ private final consumption expenditure;
S(H) ≡ net household saving, computed as the sum of household saving and saving of nonprofit institutions serving households;
S(B) ≡ net saving of corporate and quasi-corporate enterprises;
S(G) ≡ net saving of general government;
Y ≡ net domestic product in purchaser's values, calculated as the difference between gross domestic product in purchaser's values and consumption of fixed capital; and
T ≡ net tax receipts, computed by subtracting from tax receipts the difference between government disbursements and government final consumption expenditure.[16]

All data were deflated by population and the implicit price deflator for consumption expenditure.

As was mentioned in the previous section, the reduced-form regression equations (3) provide a general framework for investigating the household consumption-saving decision. The estimated coefficients will be examined to see whether no substitutability or perfect substitutability best describe household behavior. Of particular interest are the coefficients α_2, α_3, and α_4 (or β_2, β_3, and β_4). A discussion and interpretation of these coefficients will facilitate an understanding of the empirical results.

First, α_2 measures the effect of a one currency unit increase in S(B) on C holding S(G), T, and Y constant.[17]

—$\alpha_2 = 0$ ($\beta_2 = -1$) means that a change in business saving leaves consumption unaffected and household saving adjusts to offset exactly the change in business saving. S(H) and S(B) are perfect substitutes.

—$\alpha_2 < 0$ ($\beta_2 > -1$) means that household and business saving are less

[16]The difference between government disbursements and government final consumption expenditure (G) is transfer payments. Thus, net taxes are tax receipts minus transfer payments.

[17]Rather than continuing to use the phrase currency unit, we shall henceforth substitute lire. It is understood that lire represents all the currencies in the sample.

than perfect substitutes. A one lire increase in S(B) leads to a fall in S(H) by less than one lire.

—$\alpha_2 > 0$ ($\beta_2 < -1$) means that a one lire increase in business saving results in an increase in consumption. Moreover, household saving falls by more than one lire.[18]

Second, α_3 measures the effect of a one lire change in debt-financed government expenditure (G) on household consumption holding S(B), T, and Y constant.[19]

—$\alpha_3 = 0$ ($\beta_3 = 0$) means that any change in government expenditure causes no change in household consumption or saving. This is the no substitutability hypothesis.

—$\alpha_3 > 0$ ($\beta_3 < 0$) means that an increase (decrease) in government expenditure leads to a decrease (increase) in household consumption. G and C are substitutes. Deficit spending crowds out household consumption. If $\alpha_3 = 1$, then the crowding out is complete.

—$\alpha_3 < 0$ ($\beta_3 > 0$) means that G and C are complements. That is, a one lire increase in government expenditure crowds in household consumption.

Third, α_4 measures the effect of a change in net taxes on household consumption holding S(B), S(G), and Y constant. That is, α_4 examines the effect of a tax-financed change in government expenditure.[20]

—$\alpha_4 = 0$ ($\beta_4 = -1$) means that a change in net taxes is offset lire-for-lire by a change in household saving; household consumption is unchanged.

—$\alpha_4 < 0$ ($\beta_4 > -1$) means that tax-financed spending crowds out household consumption. No substitutability occurs if α_4 is equal to minus the marginal propensity to consume (i.e, α_5). Perfect substitutability occurs when α_4 equals minus one.

—$\alpha_4 > 0$ ($\beta_4 < -1$) implies that tax-financed government expenditure causes household consumption to rise. Tax-financed G crowds in C. This result indicates a strong crowding-in effect. That is, if α_4 is positive, then α_3 should be negative. Tax-financed government expenditure should be more likely to reduce consumption than debt-financed government expenditure.

The regression results for equations (3) are reported in Table 2.[21]

[18]A positive α_2 could occur if the ultrarational household sector believed that the business sector can earn a higher return on saving than is available to the household sector directly.

[19]Given that $S(G) \equiv T - G$, then an increase (decrease) in S(G) holding T constant implies a decrease (increase) in G. Moreover, this change in G must be debt-financed.

[20]An increase (decrease) in T holding S(G) constant implies an equal increase (decrease) in G (i.e., a tax-financed change in G).

[21]We employed ordinary least squares or the Cochrane-Orcutt procedure for autocorrelation adjustment. If equation (2) were an identity in the data base, then the cross-equation parameter restrictions (i.e., see (4)) would be automatically imposed using either of these regression methods. Equation (2) did not hold exactly in the data base; it was, however, quite close. Thus, we calculated S(B) as a residual so that equation (2) held exactly. Moreover, we also ran regressions using measured S(B). The cross-equation constraints were not exact; we usually could not reject the hypothesis that they did hold. Finally, the coefficient estimates using measured and constructed S(B) did not differ substantially.

Table 2:
Consumption and Saving Function Estimates

Country	α_1 β_1	α_2 β_2	α_3 β_3	α_4 β_4	α_5 β_5	ρ	$\bar{R}^2$	F	D-W
Belgium (C)	23.9100* (7.0500)	.1564 (.7400)	−1.0023* (−5.5800)	.1712 (.4500)	.5267* (6.2800)	—	.9991	4939	2.43
Belgium (S)	−23.9100* (−7.0500)	−1.1564* (−5.2300)	1.0023* (5.5800)	−1.1712* (−3.0800)	.4733* (5.6400)	—	.9893	419	2.43
France (C)	.4549* (5.2300)	−.3778* (−3.1400)	−1.2320* (−4.8700)	1.2084* (3.5500)	.4753* (7.8200)	—	.9994	7423	2.04
France (S)	−.4549* (−5.2300)	−.6222* (−5.1800)	1.2320* (4.8700)	−2.2084* (−6.4900)	.5247* (8.64)	—	.9848	293	2.04
Germany (C)	.3901** (2.1200)	.1522 (.5600)	−.5243* (−3.0400)	.0147 (.0500)	.5892* (7.32)	—	.9972	1589	1.44
Germany (S)	−.3901** (−2.1200)	−1.1522* (−4.2700)	.5243* (3.0400)	−1.0147* (−3.5800)	.4108* (5.11)	—	.9496	86	1.44
Greece (C)	4.1700* (24.7000)	.1324 (.9000)	−1.7489* (−8.6100)	1.6258* (6.2200)	.3884* (8.56)	—	.9991	3463	2.22
Greece (S)	−4.1700* (−24.7000)	−1.1324* (−7.6900)	1.7489* (−8.6100)	−2.6258* (−10.0400)	.6116* (13.48)	—	.9950	649	2.22
Italy (C)	−.0030 (−.0800)	−.5558** (−2.1700)	.5052 (1.4300)	−.9986** (−2.0500)	.8266* (10.40)	.465	.9967	1209	2.02
Italy (S)	.0030 (.0800)	−.4442 (−1.7300)	−.5052 (−1.4300)	−.0014 (−.0030)	.1734* (2.18)	.465	.9707	134	2.02
Netherlands (C)	.7880 (1.6200)	.0827 (.1700)	−1.2577* (−2.3900)	.2925 (.2900)	.5483* (2.11)	—	.9969	1456	1.64
Netherlands (S)	−.7880 (−1.6200)	−1.0827* (−2.2200)	1.2577* (2.3900)	−1.2925 (−1.2600)	.4517** (1.74)	—	.9083	46	1.64
United Kingdom (C)	.1323* (3.8100)	−.4889* (−7.1700)	.0732 (.7300)	−.6076* (−4.6600)	.7570* (17.7300)	.548	.9968	1318	1.42
United Kingdom (S)	−.1323* (−3.8100)	−.5111* (−7.4900)	−.0732 (−.7300)	−.3924* (−3.0100)	.2430* (5.6900)	.548	.9528	87	1.42

Note: Regression results were obtained using the Time Series Processor (TSP) 2.8B. The C and S in parentheses following each country refer to the consumption and saving regressions, respectively. Numbers under coefficient estimates in parentheses are t-statistics. The value for ρ is the autocorrelation parameter, if employed. Tests for $\alpha_5(\beta_5)$ are one-tailed; all other tests are two-tailed.

* means the coefficient is significantly different from zero at the 5 percent level.

Table 3:
Additional Parameter Tests for Table 2

Country	$(\alpha_2 + \alpha_5) = -(\beta_2 + \beta_5)$	$(\alpha_3 + \alpha_4) = (-\beta_3 + \beta_4 + 1)$	$(\alpha_4 + \alpha_5) = -(\beta_4 + \beta_5)$
Belgium	.6831*	−.8311*	.6979*
	(3.79)	(−3.54)	(2.35)
France	.0975	−.0235	1.6837*
	(1.13)	(−.17)	(6.02)
Germany	.7414*	−.5096*	.6038*
	(3.30)	(−3.39)	(2.97)
Greece	.5208*	−.1230	2.0142*
	(3.18)	(−.51)	(9.22)
Italy	.2708	−.4934*	−.1720
	(1.16)	(−2.33)	(−.41)
Netherlands	.6309	−.9653**	.8407
	(1.68)	(−1.83)	(1.10)
United Kingdom	.2680*	−.5344*	.1494
	(4.40)	(−6.48)	(1.58)

Note: See Table 2. All tests are two-tailed.

Additional parameter tests are in Table 3. In general, we find some support for perfect substitutability between household saving and both business and government saving. We do not find much support for perfect substitutability between tax-financed government expenditure and household consumption. In fact, the results provide strong support for complementarity between debt-financed (and sometimes, tax-financed) government expenditure and household consumption.

Perfect versus No Substitutability between S(H) and S(B)

($\alpha_2 = 0$, $\beta_2 = -1$ and $\alpha_2 + \alpha_5 = 0$, $\beta_2 + \beta_5 = 0$, respectively)

The results suggest that household and business saving are perfect substitutes in Belgium, Germany, and Greece. The hypothesis of perfect substitutability cannot be rejected at the 5 percent level. In these countries, a one lire increase in business saving is offset by a one lire decrease in household saving; household consumption is left unaffected. The results suggest that household and business saving are not substitutable in France and Italy. Here, the hypothesis of no substitutability cannot be rejected at the 5 or 10 percent levels, respectively. For these countries, an increase (decrease) in business saving causes a decrease (increase) in household consumption and saving in accordance with the marginal propensities to consume and save, respectively. For the United Kingdom, the coefficients fall between the values implied by perfect and no substitutability; this indicates some, but not perfect, substitutability between household and business saving. Feldstein and Fane (1973) had similar results for the United Kingdom using a 1947 to 1969 sample. Finally, for the Netherlands, we are unable to reject either perfect or no substitutability at the 5- or 10-percent levels.

Auerbach (1982) argued that households in the United States do not view business saving as perfectly substituable with household saving because of the "classical" corporate income tax (i.e., corporations and stockholders are taxed independently). David and Scadding (1974) addressed this issue and attempted to argue that ultrarationality was not inconsistent with a tax-avoidance explanation of the composition shift in private saving. Miller (1982) found evidence of less than perfect substitutability between household and business saving when total consumption expenditure was used in the regressions; but, when adjustments for the consumption of consumer durables were introduced, he could not reject the hypothesis of no substitutability. Auerbach noted that many European countries had ". . . partially or perfectly integrated tax systems (imputation systems)." (1982, p.87). More specifically, Belgium, France, and Germany have integrated systems; Greece, Italy, and the Netherlands have classical systems; and the United Kingdom had a classical system from 1965 to 1973 and an implicit imputation system for the other years in the sample.[22] If Auerbach's assertion is correct, then we should find perfect substitutability for those countries with imputation systems. We do find such a pattern. Both Belgium and Germany exhibit perfect substitutability and have imputation systems. Italy and the Netherlands exhibit no substitutability and have classical systems.[23] In addition, the United Kingdom had a mixed tax-system experience and exhibits partial substitutability between household and business saving. The exceptions to this categorization are France and Greece.

Perfect versus No Substitutability between S(H) and S(G):

($\alpha_3 + \alpha_4 = 0$, $\beta_3 + \beta_4 = -1$ and $\alpha_3 = 0$, $\beta_3 = 0$, respectively)

Perfect substitutability between household and government saving is supported in France and Greece and no substitutability in Italy and the United Kingdom, all at the 5 percent level. The results for the remaining countries fail to support either hypothesis. Note, however, that with the exception of Italy and the United Kingdom, α_3 was significantly negative in all cases. A negative α_3 indicates that debt-financed government expenditure and household consumption are complements. Thus, debt-financed government expenditure is highly expansionary. There are two effects; government expenditure raises aggregate demand directly and indirectly through the increase in consumption expenditure. It is possible that these results are due to a wealth effect. That is, rising government debt causes consumption to rise because wealth expands. We shall consider this possibility below.

Miller (1982) generally found for the United States that α_3 was not

[22]See Adams and Whalley (1977, Ch. 2) for details.

[23]The statement concerning the Netherlands is based on the results in Table 4 where a wealth variable has been added to the regression equation. See below for details.

significantly different from zero.[24] In the one case where α_3 was significant, it was positive. Thus, the finding for Belgium, France, Germany, Greece, and the Netherlands that debt-financed government expenditure and household consumption are complements is quite surprising. What might be the explanation? One, highly speculative answer relates to the "social-safety net" provided by these countries. If rising government expenditure is a signal to households that the government is, and will be, providing for more and more of their future needs, then rising government expenditure should depress household saving.[25]

The results reported in Table 2 do not distinguish between bond-financed and money-financed changes in government expenditure. Economists have typically differentiated bond-financed and money-financed increases in government expenditure in their effect on the money, and not the goods, market. Differential effects in the goods market would result if the household sector had different perceptions about government bonds and money as wealth.[26] Chiang and Miller (1983) found differential effects for the United States; Kochin (1974), on the other hand, did not. Consequently, we included in equations (3) as an additional variable the change in base money to approximate the money-financed portion of the government deficit.[27] Regression results in all cases had coefficients of the change in base money that were not significantly different from zero. Moreover, the other coefficient estimates were not affected. We have not reported these results. Thus, the mode of financing does not influence the effect of debt-financed government expenditure on consumption.

[24]Feldstein (1982a) also found for the United States that a debt-financed increase in government expenditure did not affect consumption. He was countering the results of Kochin (1974) and Tanner (1979a, 1979b). They found that government saving affected consumption *positively* and concluded that this was consistent with perfect tax discounting (i.e., the same as perfect substitutability between household and government saving). Although not directly comparable, our results imply that government saving affects consumption negatively (i.e., crowding in rather than crowding out).

[25]A small part of this issue has received considerable attention; do increases in social security benefits reduce household saving? Feldstein has offered evidence for the United States (1974, 1982b) and internationally (1977, 1980). Each of these studies concluded that increases in social security benefits reduced household saving. Others have countered Feldstein's work—Leimer and Lesnoy (1982) for the United States evidence and Barro and McDonald (1979) for the international evidence. In 1980, Belgium, France, Germany, Italy, and the Netherlands had social security contributions greater than 10 percent of GDP ranging from about 11 percent for Italy to about 17.5 percent for France and the Netherlands. Of these countries, four had significant increases in this percentage since 1960 ranging from 48 percent increase for Germany and France to a 134 percent increase for the Netherlands. Italy was the exception with a constant social security contribution as a percent of GDP. See OECD Studies in Taxation (1981). This evidence is consistent with the speculation explanation offered in the text.

[26]See Chiang and Miller (1983) for the theoretical arguments.

[27]Data were collected from *International Financial Statistics,* line 14.

Perfect or No Substitutability between C and T

($\alpha_4 = -1$, $\beta_4 = 0$ and $\alpha_4 + \alpha_5 = 0$, $\beta_4 + \beta_5 = 0$, respectively)

The results support no substitutability between tax-financed government expenditure and household consumption for Italy, the Netherlands, and the United Kingdom, all at the 5 percent level. In the case of Italy, we are unable to reject the perfect-substitutability hypothesis. The data in Italy do not allow us to differentiate perfect and no substitutability.

The most interesting, and surprising, result is that α_4 is positive for the same five countries that had α_3 negative; but α_4 is significantly positive only for France and Greece.[28] For Belgium, Germany, and the Netherlands, a tax-financed increase in government expenditure leaves household consumption unaffected and leads to an offsetting decrease in household saving. For France and Greece, a tax-financed increase in government expenditure leads to a rise in household consumption. Household saving is affected twice; it must fall because of the rise in taxes and because of the rise in household consumption. Thus, tax-financed government expenditure and household consumption are complements. Fiscal policy (i.e., a balanced-budget increase in spending) is very powerful in affecting aggregate demand but at the expense of significantly depressing household saving.

Net Wealth as a Factor in the Household Consumption-Saving Decision

The reduced-form equations estimated in Table 2 were deduced from a model that neglects the role of net wealth. Theory and empirical evidence, however, suggest that net wealth is a significant determinant of the household consumption-saving decision. Earlier, we found that debt-financed government expenditure increased household consumption in certain countries. We speculated that this result might be due to a wealth effect. Thus, in this section, we include a wealth measure, which contains government debt, to examine if it captures the observed complementarity between government expenditure and household consumption.

We define wealth as

$$W \equiv K + B + H \tag{14}$$

where W is wealth, K is the capital stock, B is government bonds, and H is government money. Thus, the rate of change in private wealth is given by

$$S(H) + S(B) \equiv \dot{W} \equiv \dot{K} + \dot{B} + \dot{H} \equiv I - S(G). \tag{15}$$

We have data on S(H) and S(B). If we had a benchmark figure for W, then we could construct a wealth series as the benchmark plus S(H) and S(B) each year (note that the saving data are net and not gross). We do not have a benchmark figure. Nevertheless, we arbitrarily choose a "reasonable"

[28]Miller (1982) found that α_4 was significantly negative in all regressions.

benchmark and construct a "pseudo-wealth" series. The constructed series will differ from the "true" series by a constant. Consequently, when we include this pseudo-wealth variable in equations (3), the constant term incorporates the measurement error of wealth; other coefficient estimates are unaffected. We construct the wealth series using nominal values; the resulting series is then deflated by population and the price level. Thus, the measure of real, per-capita wealth captures changes due to changes in nominal wealth as well as changes in population and the price level (i.e., induced-price wealth changes).[29]

After reestimating equations (3) with the wealth series incorporated, the coefficients of wealth in Belgium, France, Italy, and the United Kingdom are not significantly different from zero. In addition, the other coefficients, excluding the constant, are not affected significantly. Thus, we report only the results for Germany, Greece, and the Netherlands for which the coefficient of wealth is significantly different from zero (see Tables 4 and 5).

Several points stand out. First, in all cases, the coefficient of wealth is significantly positive in the consumption equation. The size of the coefficient is of the same order of magnitude for similar studies of U.S. data. Second, the changes in results for the Netherlands are that there is now evidence of no substitutability between S(H) and S(B) and that $(\alpha_4 + \alpha_5)$ is now significantly negative although only at the 10 percent level. We are able to reject the perfect substitutability hypothesis between S(H) and S(B). Third, the changes for Greece are that α_2 is now significantly positive rather than not significantly different from zero and that $(\alpha_3 + \alpha_4)$ is now significantly negative although only at the 10 percent level. The former result indicates that household saving increases (decreases) by more than the decrease (increase) in business saving (See footnote 18). Finally, the only change for Germany is that $(\alpha_3 + \alpha_4)$ is now not significantly different from zero; this result is consistent with perfect substitutability between household and government saving.

In sum, the inclusion of the wealth variable does not alter many of the conclusions derived in the earlier specification. Only three countries have coefficients of wealth significantly different from zero and, in these countries, most of the coefficients are unaltered from the previous specification.

V. Conclusion

Macroeconomic policy coordination among the Member States in the EEC requires an understanding of the structure of each Member State's economy. If economic structures are similar across Member States, then one problem of policy coordination is removed. This paper has examined one small part of this question—the household consumption-saving decision.

[29]The measure of wealth does not capture interest rate induced wealth changes.

Table 4:
Consumption and Saving Function Estimates with a Wealth Variable

Country	α_1 β_1	α_2 β_2	α_3 β_3	α_4 β_4	α_5 β_5	α_6 β_6	ρ	$\bar{R}^2$	F	D-W
Germany (C)	.6031*	.3449	−.6494*	.4488	.3346*	.0755*	—	.9978	1627	1.59
	(3.19)	(1.36)	(−3.99)	(1.41)	(2.47)	(2.21)				
Germany (S)	−.6031*	−1.3449*	.6494*	−1.4488*	.6654*	−.0755*	—	.9605	89	1.59
	(−3.19)	(−5.29)	(3.99)	(−4.56)	(4.92)	(−2.21)				
Greece (C)	−1.03	.2949*	−2.5403*	1.7076*	.4576*	.0343*	−.553	.9992	2926	2.06
	(−.41)	(2.45)	(−6.63)	(8.21)	(9.36)	(2.08)				
Greece (S)	1.03	−1.2949*	2.5403*	−2.7076*	.5424*	−.0343*	−.553	.9959	580	2.06
	(.41)	(−10.78)	(6.63)	(−13.02)	(11.10)	(−2.08)				
Netherlands (C)	−4.28*	−.8580**	−1.6334*	.4267	.8096*	.0185*	—	.9982	2003	2.08
	(−2.73)	(−1.83)	(−3.92)	(.55)	(3.80)	(3.32)				
Netherlands (S)	4.28*	−.1420	1.6334*	−1.4267**	.1904	−.0185*	—	.9466	65	2.08
	(2.73)	(−.30)	(3.92)	(−1.82)	(.89)	(−3.32)				

Note: See Table 2. The coefficients of wealth are α_6 and β_6. Also, test for $\alpha_6(\beta_6)$ are one-tailed.

Table 5:
Additional Parameter Tests for Table 4

Country	$(\alpha_2 + \alpha_5) = -(\beta_2 + \beta_5)$	$(\alpha_3 + \alpha_4) = -(\beta_3 + \beta_4 + 1)$	$(\alpha_4 + \alpha_5) = -(\beta_4 + \beta_5)$
Germany	.6795*	−.2006	.7834*
	(3.3800)	(−1.0400)	(3.9700)
Greece	.7525*	−.8327**	2.1652*
	(7.3500)	(−2.3100)	(11.9400)
Netherlands	−.0484	−1.2068*	1.2362**
	(−.1400)	(−2.9500)	(2.0700)

Note: See Tables 2 and 3.

The empirical work needs to be viewed as preliminary and tentative. Nevertheless, some of the results provide a consistent pattern that is highly suggestive. We find structural differences across the countries in the sample with respect to the household consumption-saving decision. First, the countries can be divided into two groups as to whether personal or private saving is the appropriate level of aggregation. Belgium, Germany, and Greece exhibit a pattern consistent with perfect substitutability between household and business saving. The other countries exhibit no substitutability (partial substitutability for the United Kingdom). In addition, these results are generally in line with whether a country had a classical or an integrated tax system (i.e., Are stockholders and corporations taxed separately?). Second, we find strong evidence of complementarity between debt-financed government expenditure and household consumption in five countries (in France and Greece, we also find complementarity between tax-financed government expenditure and household consumption). We do not find that the method of financing the government deficit affects the household decision. Third, for France, Germany, and Greece, the evidence is consistent with perfect substitutability between household and government saving. This suggests that saving is appropriately aggregated to the national level (at least for Germany and Greece). Fourth, although it is highly speculative to classify countries based on our results, Italy and the United Kingdom appear to have significant structural differences from the other countries. Moreover, these two countries are closest to the standard neo-Keynesian specification of the household consumption-saving decision.

The most surprising result is that government expenditure has such a stimulative effect on household consumption in five of the seven countries. This stimulative effect, however, is a short-run phenomenon; it is at the expense of long-run growth. Expanding government deficits have two depressing effects. First, rising deficits absorb a larger share of private saving and, thus, crowd out investment (see equation 15). But, second, rising deficits also cause a decline in private saving (i.e., household saving falls, holding business saving constant). This further reduces investment. Conse-

quently, in five of the seven countries, the empirical evidence is consistent with significant crowding out of investment by government budget deficits. These findings magnify the importance of the Commission's concern to adopt sounder budget policies within the Community. The crowding out of investment runs counter to the Community's growth objective. If Member States are more concerned about the short-run benefits of rising government deficits, then a significant barrier to long-run growth exists. Moreover, this short-run perspective becomes more seductive as the domestic economy experiences larger and larger unemployment.

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Discussion

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After I accepted the invitation to discuss this paper on crowding out, I had second thoughts. After all no one willingly enters these seemingly endless discussions that teeter between unmeasurable concepts (credibility, expectations) and highly abstract theory, discussions that threaten to topple at any moment into the depths of metaphysics. After receiving the paper, I found I owed the authors an apology. They deserve our respect for writing a lucid paper, and I applaud their effort to combine a well-defined model with the data for seven nations to explore the EEC experience with crowding out. This is tangible, down-to-earth stuff.

Unfortunately, their work shows us why empirical work on crowding out is not more abundant. In proposing their model and sifting the evidence from the data, the authors have had to expose their analyses and techniques to specific criticisms. There can be no retreat into nebulous polemics or theory here. As we read this paper, or any empirical paper in economics, we often find that we would have done things differently, perhaps arriving at different conclusions. Perhaps then we cannot agree on a definitive tangible test for crowding out, but we surely cannot fault the authors for trying.

The paper distinguishes *ex ante* from *ex post* crowding out and considers only *ex ante* crowding out. I don't know how this limitation will be received by the European financial community but I know that when Wall Street inveighs against government deficits, it is *ex post* crowding out that the financiers fear. This limitation also undermines the paper's subsequent empirical work because *ex post* crowding out influences and may dominate any statistical evidence despite the authors' disclaimers that they are looking for *ex ante* crowding out only. (I will return to this issue presently.)

I am surprised that the national income accounting behind the paper's empirical work imposes the identities:

$$Y \equiv C + I + G \qquad \text{and} \tag{1}$$

$$Y \equiv C + S(H) + S(B) + T \tag{2}$$

where Y is net national product, C is household consumption, I is business investment, and G is government spending. Net exports and foreign capital flows are missing. This omission is especially curious for the seven EEC countries studied in the paper whose current account balances can be volatile.

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The paper's only empirical equations are the consumption and savings functions (3). The authors estimate both these equations for each country in the study, assuming S(B), S(G), T, and Y are exogenous. Because S(G) and T are exogenous, G must be exogenous also. Therefore, because Y and G are exogenous in (1) above, the function that determines C also determines I. Because Y, S(B) and T are exogenous in (2) above, the function that determines C also determines S(H). In other words, once consumption is known, both investment and savings are known.

The savings function is determined right down to its error by the consumption function (or vice versa). The same accounting identities that constrain the coefficients of the consumption and savings equations also constrain the "errors" in these two equations to be additive inverses. So the authors do not need to estimate two equations because there is only one behavioral function in this model.

The investment function, like the household saving function, is specified completely, right down to its error term, once the consumption function is estimated. In a sense, there is only one degree of freedom in the model. This "equivalence" between the investment and consumption functions poses a problem: the investment equation implied by the authors' consumption function does not appear to depend on the productivity of capital, the economy's production possibilities, or the cost of capital. Investment, of course, does depend on these influences; so the coefficients in the correctly specified "consumption" function must represent both the parameters of utility functions and production functions. If the authors' equation (3) is specified correctly, then its coefficients represent the elasticities of substitution embedded in the utility and production functions. Therefore the complex coefficients of this equation tell us little about the parameters of S(B), S(G) or T in the utility function alone.

This reinterpretation of the coefficients of the "consumption" equation is not fatal. Perhaps a more general concept of substitution can be justified by appealing to both taste and technology instead of taste alone. To see what these coefficients stand for, utility should be maximized subject to income being constrained by the production functions and necessary accounting identities. I say "production functions," because in a one-good model government capital, the government consumption good, business capital, and the household consumption good are all the same thing; and government capital must produce the same output as business capital. Perhaps this strong form of substitution should not be assumed from the beginning.

In any case, for two reasons I cannot agree that the coefficients in the so-called consumption function measure the effect of government or business decisions on consumption. First, even though the authors claim they are considering only *ex ante* crowding out, other macroeconomic variables may be influencing current consumption—by means of *ex post* crowding out or through business cycles, for example. If these other macroeconomic influences—including monetary policy—cannot be ignored, the interpreta-

tion of the coefficients in the consumption function is very complex because the explanatory variables appearing in the equation are correlated with omitted variables that should have been included as well. A more complete specification of the model would allow us to distinguish *ex ante* crowding out from the other elements—prices, interest rates, exchange rates, etc.—that influence current consumption, savings, government saving, and business saving.

Second, I must ask: why is Y exogenous? Given that Y is constant, consider two cases: (i) the change in S(G) is matched by an equal but opposite change in disposable income only; (ii) the change in S(G) is also matched by an equal but opposite change in investment spending. Suppose S(G) rises, then consumption would fall in case (i) or not change in case (ii). By allowing net exports to change or by allowing even larger changes in investment spending, I could even concoct a third case wherein consumption would rise. Which case applies will depend on *ex post* crowding out, monetary policy, the trade balance, the stage of the business cycle, etc. Because none of these "side conditions" are constant for any country over time, the estimates of the coefficients in the authors' "consumption" function depend on the shifting blends of "side conditions" that prevailed during the 1960s and 1970s for each country. Seen this way, the estimated "consumption" equation also suffers from simultaneous equations problems because the model has omitted relevant equations as well as relevant variables, equations that jointly determine household, business, government, and foreign saving.

I can understand why this paper avoids a full-blown simultaneous model, but this one-equation model exacts its price. Holding income constant (exogenous Y) not only creates estimation problems, it also guarantees that the paper must come to the conclusion that: "rising deficits absorb a larger share of private saving and, thus, crowd out investment . . . [and] rising deficits also cause a decline in private saving (i.e., household saving falls holding business saving constant). This further reduces investment." No other conclusion is possible because income, business savings, tax receipts, and government spending are exogenous.

The authors estimate their "consumption" equation for seven EEC countries to see if S(B) or S(G) can substitute for S(H) or if C can substitute for T. Six hypotheses are tested and each hypothesis imposes three constraints on the coefficients of the "consumption" function. The separate tabulation of the test statistics for these constraints suggests that the three constraints for each hypothesis were examined separately. I would advise tabulating a single all-inclusive test statistic for each hypothesis. The statistical properties of the tests are not controlled well if the constraints are studied piecemeal because the test statistics for each constraint are not mutually independent. The authors should also explain more clearly how they test their *three* competing hypotheses against one another: "perfect substitution" vs. "no substitution" vs. "partial substitution." Here too piecemeal testing compromises the statistical properties of the inves-

tigation.

Given the importance of the tests, I wish the authors would discuss their test criteria. For example, the authors conclude that for the Netherlands "the results support no substitutability between tax-financed government expenditure and household consumption." This hypothesis requires in part that the sum of two specific coefficients in the "consumption" function be zero ($\alpha_4 + \alpha_5$). The reported estimate of this sum for the Netherlands exceeds the estimates of this sum for all other countries except one, but the estimate of this sum for the Netherlands also has a large standard error. Apparently the authors did not control for Type II errors (falsely accepting the null hypothesis) in their tests. For example, if the true value of this sum were .6 for the Netherlands (about the same as Belgium and Germany), then the paper's t-test would falsely accept the hypothesis of no substitutability with a probability greater than 20 percent; but the probability of falsely rejecting the null hypothesis with their test would be only 5 percent if the true value of this sum were zero. For the Netherlands, the test was biased.

To be "large," must ($\alpha_4 + \alpha_5$) be as great as 0.6? α_5 is similar to the marginal propensity to consume out of net national product; it could be 0.6 for example. α_4 is a component of the marginal propensity to consume out of taxes; it could be -0.3 or -0.4 (depending on what is assumed about α_3). The sum of these coefficients is 0.3 or 0.2. Perhaps then Type I and Type II errors should be equal when testing $\alpha_4 + \alpha_5 = 0$ versus $\alpha_4 + \alpha_5 = .25$. If so, such an "unbiased" test would reject $\alpha_4 + \alpha_5 = 0$ for all countries. But this is a "piecemeal" test; the hypotheses for α_2, α_3, α_4 and α_5 should be examined together in an "unbiased" fashion.

Judging from the tabulated statistics, the power of the other tests may be low, suggesting that the tests, by construction, favor the null hypotheses. The authors should structure their tests so that the probability of Type II error does not greatly exceed the probability of Type I error for worthy alternative hypotheses.

Incidentally, the very high values for ($\alpha_4 + \alpha_5$) shown in Table 2 suggest the model may indeed suffer from specification errors. What sense is to be made of $\alpha_4 + \alpha_5 = 2.0$ for Greece? What sense is to be made of many of the values for the "consumption" equation coefficients reported in Table 2? What sense is to be made of the seemingly random pattern of "substitution effects" across and within countries?

The paper concludes by noting that its analysis and empirical work are a preliminary and tentative examination of household consumption-savings decisions for selected EEC countries. The authors claim their findings are "highly suggestive;" perhaps they should have said only "suggestive." I am not familiar enough with the history or economic structure of the countries studied to quibble with the authors' detailed findings, but my faith in their approach is shaken no further when they report that fiscal policy is highly stimulative in these countries.

The authors offer us this paper as a first step for coordinating the

economic policies among the members of the EEC. This first step may be tricky, but the last step is a lulu. As Duesenberry contended in his conference paper, the coordination of policies means one thing to technicians who do not stand for election, who bear only benign ideologies, or who collaborate only with academic special interest groups; this coordination of policies means quite another thing to anyone else. The political pitfalls of "simply" coordinating monetary and fiscal policies in the United States are many and are apparently fatal. The prospects of a more complex concord within the EEC are far more remote. How much power over domestic policy are Thatcher, Kohl, Mitterand, and the next Prime Minister of Italy willing to surrender to one another? It is common knowledge that EEC economies cannot go their separate ways, but I am sure that many governments, voters, and interest groups see no need to aggravate this unfortunate condition by surrendering their few remaining political degrees of freedom without substantial tangible compensation. Perhaps the EEC has come to a point where the apparent marginal costs of further coordination exceed the marginal benefits. Indeed the recent popularity of money growth targets can be interpreted as an attempt to "manage" domestic economies without drawing explicit attention to implications for GNP growth, interest rates, trade balances, and exchange rates—to buy an extra political degree of freedom.

The authors have tried to answer difficult questions about crowding out in a very down-to-earth fashion. They could have lobbed their conclusions at us while taking cover in abstract concepts laden with undefined terms and untestable hypotheses. Instead they have come out in the open with their model. Had I undertaken their mission, I would like to believe I would have been so forthright. This approach takes courage. Because the profession has never embraced a universal model for anything, anyone taking this "high road" is vulnerable. For this the authors deserve our respect; for this they have elevated the level of the debate and taken our understanding a step forward.