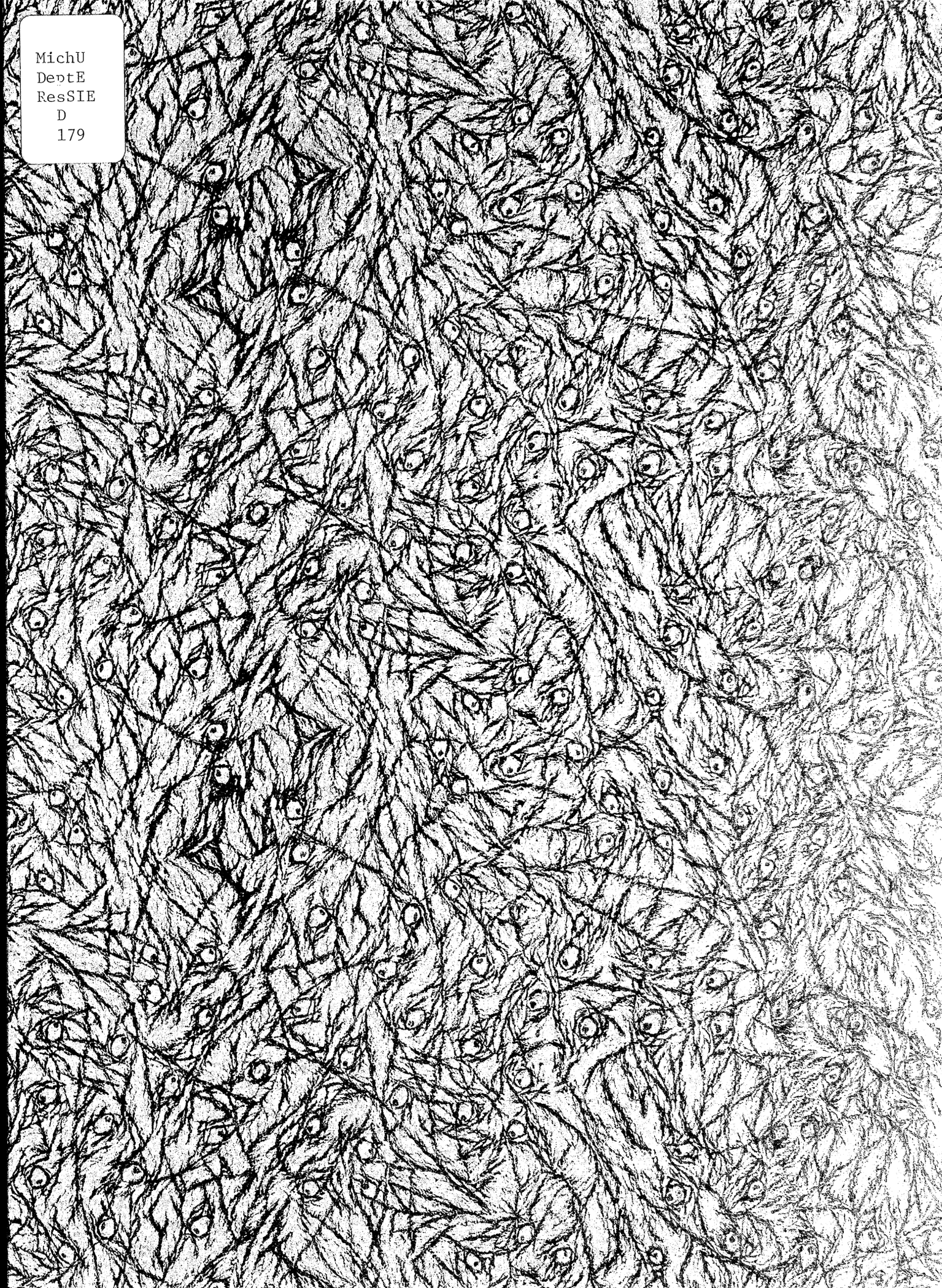

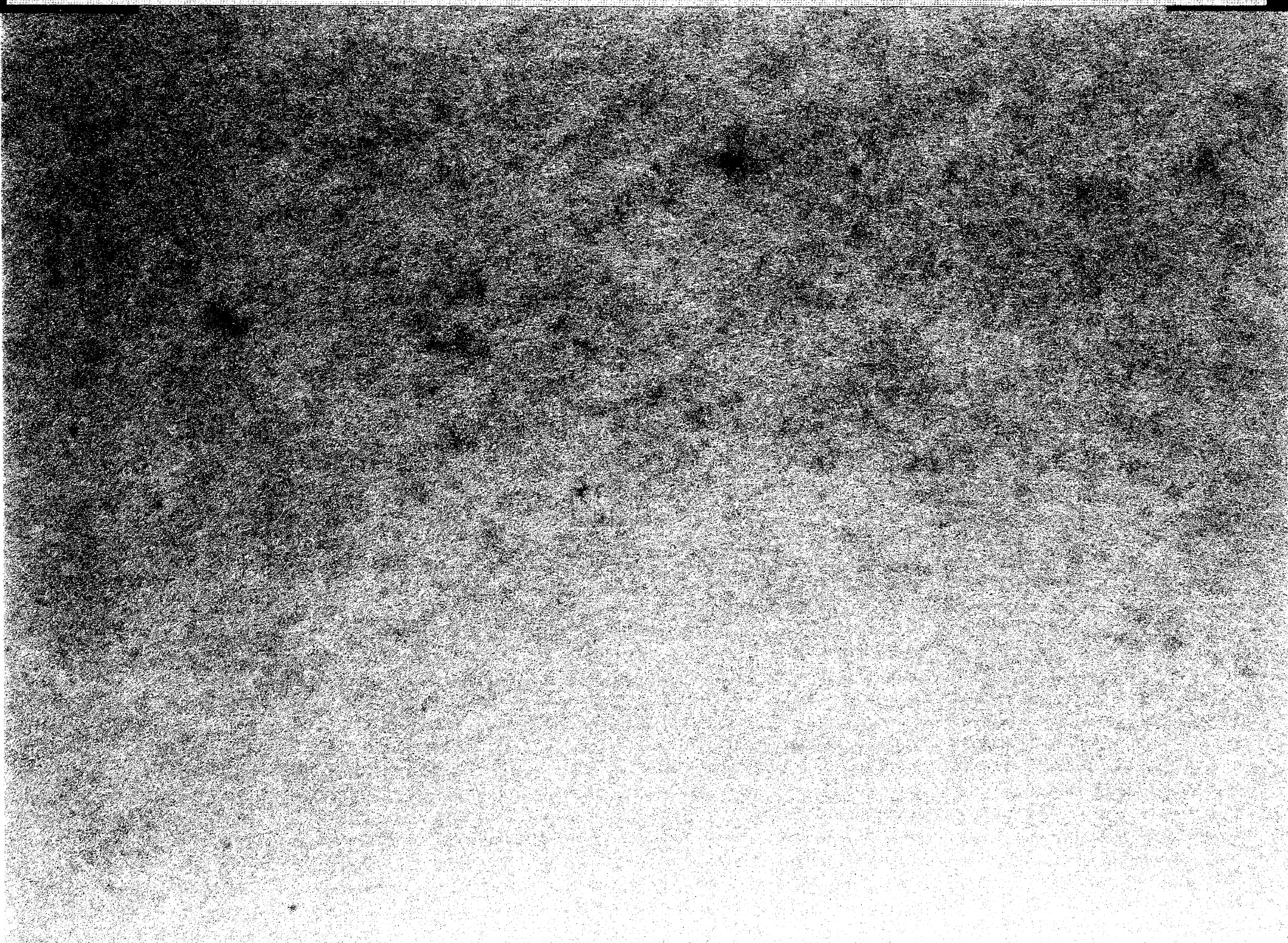

RESEARCH SEMINAR IN INTERNATIONAL ECONOMICS

Department of Economics
The University of Michigan
Ann Arbor, Michigan 48109-1220

SEMINAR DISCUSSION PAPER NO. 179

Discussion of "Taxation and International Competitiveness" by Lawrence H. Summers

By

Roger A. Gordon*
The University of Michigan and
National Bureau of Economic Research

January, 1986

Department of Economics
The University of Michigan
Ann Arbor, MI 48109-1220
(313) 764-6769

Discussion of
"Taxation and International Competitiveness"
by Lawrence H. Summers

Roger H. Gordon

The declining international competitiveness of the U.S. has been of much concern to policy makers. Summers, by analyzing the short and long run effects of various policies on international competitiveness, provides an important public service by making this policy debate more informed.[1]

The key question in his analysis is the degree to which the U.S. economy approximates a small open economy, where there is no direct link between domestic savings and investment. Summers reexamines the evidence presented originally by Feldstein and Horioka(1980) that domestic savings and investment rates are closely linked statistically, and argues that this close link is the result of policy decisions to keep them closely linked.

This argument seems quite plausible. Concern with the current account deficit or surplus certainly affects policy decisions both here and abroad. The recent pressure in the U.S. to cut the deficit in order to alleviate this trade deficit is only a recent example. How much importance to assign to this factor is a more difficult question, however. Summers' statistical evidence must be interpreted with some care given the large differences between the deficit as actually measured and the size of public savings as it ought to be measured.[2] There is no reason to expect that the measurement errors will be uncorrelated with savings or investment rates.

Several questions remain, however, even if we accept Summer's argument. First, why have governments chosen so consistently to restrict any current account deficit or surplus? Since, given the normal vagaries of policy-making, it seems difficult to attribute the close association between savings and investment across many countries and over an extended period of time entirely to the use of policy, what else may be going on?

The model that Summers develops in the first part of the paper does not really help in answering these questions. As Summers argues, if savings increases in a country, "investment may rise or fall but it is unlikely to change a great deal." In the next section, he argues that if investment increases, then domestic savings should fall.[3] This model therefore cannot help in explaining the close association between savings and investment. In addition, within the model, since the country is a price taker in the international markets, it is easily shown that the government can not improve welfare by distorting decisions made by the private market, so would have no clear reason to seek to restrict current account deficits and surpluses – private decisions are Pareto optimal, given internationally set prices.

However, a simple alternative to this model, which I would like to present next, can imply not only a close association between savings and investment if there is no government intervention, even though goods flow freely across borders, but also the desirability on welfare grounds of government intervention to further restrict the current account deficit or surplus.

To keep the story simple, let there be two countries each of which produces a single commodity. The two commodities are not perfect substitutes, and consumers in each country consume both commodities. Each consumer has a relative preference for the locally produced good.

In order to explore savings and investment decisions in the home country, assume that the world lasts for two periods. Output in the foreign country in period i is assumed to be exogenous and to be denoted by Y_i. Domestic output in the first period is also assumed to be exogenous and denoted by X_i. This output can be consumed at home, consumed abroad, or invested at home. Only the locally produced good is suitable for investment. If S denotes first period investment in the home country, then second period resources are assumed to equal $S + f(S)$, where $f'(.) > 0$ and $f''(.) < 0$.

Let H_{ij} (F_{ij}) represent the amount of the domestic (foreign) good produced in period i which is consumed that period in country j. The government is assumed not to use any resources, so that the first period resource constraint implies that $S = X - H_{11} - H_{12}$.

Let $U(H_{11}, F_{11}, H_{21}, F_{21})$ represent the utility of the representative domestic consumer, where $U(.)$ satisfies the normal properties of a utility function. Let the market prices for these four goods be denoted by $(1+d), P_1(1+d), 1$, and P_2 respectively. If this individual maximizes utility subject to the given market prices for the four goods, then among other conditions it must be the case that:

$$U_1/U_3 = 1 + d, \quad \text{and} \tag{1a}$$

$$f' = d. \tag{1b}$$

Therefore, investment occurs until the marginal product of capital equals the market determined interest factor d, and the marginal time preference rate with respect to the domestic good must also reflect this interest factor.

Similarly, let $V^1(H_{12}, F_{12}) + \beta V^2(H_{22}, F_{22})$ represent the utility of the foreign consumer, where $V^i(.)$ also satisfies normal properties of a utility function.[4] This consumer is subject to the trade balance constraint, which requires that

$$(1+d)H_{12} + H_{22} = P_1(1+d)F_{11} + P_2F_{21}. \tag{2}$$

Given that $F_{12} = Y_1 - F_{11}$ and $F_{22} = Y_2 - F_{21}$, we can solve for utility maximizing behavior of the foreign consumer subject to the above budget constraint, and find for example that

$$V_2^1/V_1^1 = P_1, \tag{3a}$$

$$V_2^2/V_1^2 = P_2, \quad \text{and} \tag{3b}$$

$$V_2^1/V_2^2 = (1+d)P_1/P_2. \tag{3c}$$

It follows from equation (3a) that $P_1 = p^1(H_{12}, F_{11})$, and from (3b) that $P_2 = p^2(H_{22}, F_{21})$ for some functions $p^1(.)$ and $p^2(.)$. Given standard assumptions about the utility function, all the first derivatives of these functions p^i will be positive.

One interesting case to explore is when the home country is sufficiently small relative to the foreign country that the foreign interest rate can be taken to be exogenous. Denote this rate by r. It then follows from equation (3c) that $(1+d)P_1/P_2 = 1+r$, implying that $1+d = P_2(1+r)/P_1$. Since d represents the home interest rate, this result tells us how the amounts traded affect the home interest rate.

For example, in the context of Summers' argument, given currently high U.S. deficits, current demand for U.S. goods is relatively high and the model, for plausible parameter values, would imply a low value of P_1.[5] Conversely, in the second period, when the U.S. debt is repaid, demand for U.S. goods is low and so P_2 should be high. Together these imply that the U.S. interest rate will exceed the foreign interest rate r. Since investors will invest in any project at home earning at least the domestic interest rate, we find that the deficit should cause a drop in domestic investment, and also, given equation (1a), an increased incentive to save. Therefore, this model describes how market forces can push domestic savings and domestic investment together.

Assume now that through its tax policy the government can determine the consumer's consumption bundle. What government policy will maximize the consumer's utility, taking account of the effect of the policy on market prices?

The objective of the government is to maximize $U(H_{11}, F_{11}, H_{21}, F_{21})$ subject to the domestic resource and the trade balance constraints:

$$H_{22} + H_{21} = f(X - H_{11} - H_{12}) + X - H_{11} - H_{12}, \text{and} \tag{4a}$$

$$P_2(1+r)H_{12}/P_1 + H_{22} = P_2[(1+r)F_{11} + F_{21}]. \tag{4b}$$

The first-order conditions with respect to H_{12} and H_{22} together imply that

$$1+f' = (1+d)[\frac{1-(H_{12}/P_1)(\partial P_1/\partial H_{12})}{1-(H_{22}/P_2)(\partial P_2/\partial H_{22})}], \text{and} \tag{5}$$

$$U_1/U_3 = 1+f'. \tag{6}$$

Recall that without government intervention, $f' = d$. The extra expression in equation (5), to the extent it differs from one, represents the desired intervention by the government. The numerator and denominator each take the form of $(1-1/\epsilon)$, where ϵ is a price elasticity of demand abroad for the domestic output. But this is just the standard form for the ratio of the marginal revenue to the price when a monopolist sells in a given market. To the extent that the price elasticities differ in the two periods, the government should push sales towards that period where the price elasticity is greater.

To explore the implications of equation (5) let us examine two examples. Consider first the situation where the foreign consumer's utility function can be expressed as

$$V(H_{i2}, F_{i2}) = (H_{i2}+A)^{\alpha} F_{i2}^{(1-\alpha)}. \tag{7}$$

One way to rationalize the extra term A is to argue that there are really fewer goods than countries, so that the home country is not the only supplier of its particular output. The home country takes as given the supply of its good produced elsewhere, denoted by A, when making its own decisions.[6] The smaller the home country's share of the market for its output, the larger is A relative to H_{i2}.

Given this utility function, equation (5) can be reexpressed as

$$1+f' = (1+d)\frac{1-H_{12}/(H_{12}+A)}{1-H_{22}/(H_{22}+A)}. \tag{5a}$$

If current deficits cause current exports of the domestic good to be a relatively small share of the foreign supply of this good, then equation (5a) indicates that the marginal product of capital should be raised above what would occur without intervention. In other words, given the low current rate of savings, there is an incentive for the government to raise the domestic interest rate so as to restrict investment and encourage savings, pushing the savings and investment rates together.[7] This is just the type of government behavior that Summers argues does occur.

Note in equation (5a) that if A equals zero, so that the foreign utility function is Cobb-Douglas, the equation breaks down. In this case, the optimal policy is to sell virtually nothing abroad in each period – given the Cobb-Douglas specification, foreigners will spend a fixed fraction of their income buying the domestic good, regardless of the available supply, so that the optimal supply from the home country's viewpoint is zero. Assuming the foreign consumer's utility function to be Cobb-Douglas is *not* an innocuous assumption.

Equation (5c) also implies that when A is larger, perhaps due to the home country being smaller, there is less incentive for government intervention. This is consistent with the evidence in Summers which shows that savings and investment are less closely related in a sample of smaller countries than they are in the OECD countries.[8] Even if there were no important government intervention, if A is larger then the behavior of the home country should have less effect on the size of P_1 relative to P_2 given this utility function, implying that the home country's domestic interest rate would be less affected by the time pattern of its trade balance. This further helps explain the above evidence.

As a second example, assume that the empirical evidence indicates that $\ln H_{i2} = aP_i + Z\beta$ for some set of coefficients a and β, and for some set of other explanatory variables Z. Given this empirical evidence, equation (5) can be reexpressed as

$$1 + f' = (1 + d)\frac{(1 - 1/aP_1)}{(1 - 1/aP_2)}. \tag{5c}$$

In this example, a current deficit should lead to a strong dollar, so a relatively small value of P_1. Therefore, equation (5c) implies that the government should lower the domestic interest rate, stimulating investment and discouraging savings. This specification implies government behavior contrary to Summer's argument.

At least with the first example, this model helps explain why governments may in fact have acted so as to restrict the trade deficit or surplus. Given the large budget and trade deficit currently in the U.S., the model can be used to argue for increased savings incentives and perhaps for a cut in the budget deficit. These policies, by raising the price of goods produced abroad, would improve the competitive position of domestic firms. However, the model would argue against enacting investment incentives, given the budget deficit, and in fact would support raising the required rate of return on domestic investment in line with the increase in the return to savings, contrary to what is advocated by those concerned with international competitiveness. The motivation behind these policies in the model is to prevent the price of U.S. produced goods from being driven down too far when the debt is eventually repaid and the market is flooded with U.S. goods. Policies which reduce the build-up in the debt, by increasing savings and reducing investment, look attractive within the model.

This model therefore seems to provide a framework that can rationalize not only the evidence in Feldstein and Horioka(1980) that current account deficits and surpluses never become very large but also the argument by Summers that governments seem to set policy to further restrict these deficits and surpluses. How important government policy is relative to market forces in pushing savings and investment rates in a country together remains an open question, however.

FOOTNOTES

* The author is an associate professor of economics at the University of Michigan in Ann Arbor and a research associate of the N.B.E.R.

[1] However, why policy should be concerned with the size of the tradable goods sector of the economy per se on efficiency or welfare grounds is not clear.

[2] Probably the two largest problems in the measure of the deficit are first the omission of the change in the implicit debt of the Social Security and other transfer programs, and second the lack of correction for the effects of inflation on the real value of outstanding debt. See Kotlikoff(1984) for further discussion.

[3] This argument ignores any tax increase necessary to finance the investment incentives. It is not clear what happens to savings due to this tax change if a balanced budget is required.

[4] The superscripts are used primarily to make clear what the arguments of V are in any given context and not necessarily to describe differences in tastes between the periods.

[5] Examples certainty exist, however, with the opposite implication, e.g. when the deficit results primarily from an increased demand for the foreign good.

[6] It would be interesting but more complicated to explore more sophisticated interactions of the policies in different countries.

[7] Given equation (6) however, we see that there is no incentive to cause the value of the marginal product of capital to differ from the marginal time preference rate.

[8] Similar evidence on a weaker association between savings and investment in smaller countries is found in Obstfeld(1985).

REFERENCES

Feldstein, Martin S. and Charles Horioka. 1980. Domestic Savings and International Capital Flows. *The Economic Journal* 1980: 314-329.

Gordon, Roger H. Taxation of Investment and Savings in a World Economy: The Certainty Case. N.B.E.R. Working Paper No. 1723, October, 1985.

Kotlikoff, Laurence J. 1984. Taxation and Savings: A Neoclassical Perspective. *Journal of Economic Literature* 22: 1576-1629.

Obstfeld, Maurice. Capital Mobility in the World Economy: Theory and Measurement. N.B.E.R. Working Paper No. 1692, August, 1985.