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TARIFFS AND THE CURRENT ACCOUNT WITH SHORT-RUN CAPITAL SPECIFICITY

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Permanent tariff reductions are shown to result in a deterioration of the current account, even under intertemporal optimising by consumers. This is due to the assumption of short-run fixity and long-run mobility of capital.

1. Introduction

The relationship between trade policy and the current account has recently been discussed, not only in the context of the U.S. trade deficit, but in the context of the liberalisation programs of the 1970's in Argentina, Chile and Uruguay. While these programs involved many policies a crucial part of all of them was a move towards free trade. The fact that all three countries eventually experienced a large increase in their external indebtedness leads one to suspect that tariff liberalisation may have had current account effects in these countries. The question is how this may be explained within a simple trade theoretic framework. [1]

Razin and Svensson (1983) find, in a multi-sector, multi-period framework, that both temporary and anticipated changes in trade policy (which involve changes in intertemporal relative prices) have more predictable effects on the current account than permanent changes; why should a permanent change in tariffs influence net savings one way or the other? The present note argues that when capital is sticky in the short run but mobile in the long run, income will increase by more in the long run than in the short run when a tariff is permanently reduced; thus a permanent tariff reduction leads to a current account deficit. [2]

2. The model

We are considering a small open economy facing given world prices and a given world interest rate r. There are two goods, H and F, produced in each of two periods according to the equations

$$H = H(K_H, L_H), \qquad F = F(K_F, L_F), \tag{1}$$

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[1] There is an extensive literature on the effects of economic liberalisation in the Southern Cone. See for example Corbo, de Melo and Tybout (1986).

[2] O'Rourke (1987) extends the analysis to consider permanent quota reductions. The results of this note have been independently derived by Gavin (1988) within a continuous time framework; Gavin also considers import and export subsidies, export taxes, and the possibility of hysteresis.

where

$$H_K,\ H_L > 0, \quad H_{KK},\ H_{LL} < 0, \quad H_{KL} > 0, \quad H_{KK}H_{LL} - (H_{KL})^2 = 0, \quad i = 1, 2 \tag{2}$$

(with similar conditions applying to the function F).

(Throughout the note primes will be used to refer to second-period variables; thus H' refers to second-period production of good H.) Good H is the numeraire good, and the country's export good. The world price of good F, the country's import good, is equal to p in both periods. A specific tariff t is levied on imports in both periods. We will be interested in the economy's initial response to changing t. The Government redistributes tariff revenues to consumers in a lump sum fashion.

Consumers choose first period consumption (C_H, C_F) and second period consumption (C_H', C_F') to maximise their intertemporal utility function

$$\left(C_H^a C_F^{1-a}\right)^{1-b}/(1-b) + \left(C_H'^a C_F'^{1-a}\right)^{1-b}/(1-b)(1+d), \tag{3}$$

where d is the consumer's rate of time discount, subject to the intertemporal budget constraint

$$\begin{aligned}&\left[C_H + (p+t)C_F\right] + \left[C_H' + (p+t)C_F'\right]/(1+r)\\ &\quad = \left[H + (p+t)F + tM\right] + \left[H' + (p+t)F' + tM'\right]/(1+r).\end{aligned} \tag{4}$$

M and M' are first and second-period imports, respectively. It is of course the case that

$$M = C_F - F, \qquad M' = C_F' - F'. \tag{5}$$

The net current account surplus in the first period is defined as

$$B = H - C_H + p(F - C_F). \tag{6}$$

3. Tariffs and the current account

The current account in this model is derived from the optimal savings decisions of consumers. It is a standard result that the effect on the current account of changing tariffs (when $r = d$) is given by

$$\frac{\mathrm{d}B}{\mathrm{d}t} = \frac{1}{2+d}\left(\frac{\mathrm{d}Y}{\mathrm{d}t} - \frac{\mathrm{d}Y'}{\mathrm{d}t}\right), \tag{7}$$

where

$$\frac{\mathrm{d}Y}{\mathrm{d}t} = \frac{\mathrm{d}H}{\mathrm{d}t} + \frac{p\,\mathrm{d}F}{\mathrm{d}t}, \qquad \frac{\mathrm{d}Y'}{\mathrm{d}t} = \frac{\mathrm{d}H'}{\mathrm{d}t} + \frac{p\,\mathrm{d}F'}{\mathrm{d}t}. \tag{8}$$

It remains to be seen how production adjusts to the permanent change in tariffs.

We assume that prior to the change in government policy, production was efficient in the sense that wages and rents were equalised between sectors. Thus at the start of period 1

$$H_L(K_H, L_H) = (p+t)F_L(K_F, L_F), \tag{9}$$

$$H_K(K_H, L_H) = (p+t)F_K(K_F, L_F). \tag{10}$$

We assume that in the first period capital is fixed where it was, but that when the tariff is changed labour will move between sectors so as to eliminate any incipient wage differential. Taking the total derivative of (9), and remembering that $dL_H = -dL_F$, we obtain the following expression relating the labour employed in the first sector in the first period to the tariff on good 2:

$$dL_H/dt = F_L/(H_{LL} + (p+t)F_{LL}). \tag{11}$$

By the start of the second period, capital has had time to move between sectors. To relate changes in capital and labour employed in the first sector in the second period to changes in t, it is necessary to totally differentiate (9) and (10), again remembering that $dL'_H = -dL'_F$ and $dK'_H = -dK'_F$, and to solve the two resulting simultaneous equations in dL'_H and dK'_H. After simple manipulation we obtain

$$\begin{vmatrix} dK'_H \\ dL'_H \end{vmatrix} = \frac{1}{D} \begin{vmatrix} H_{LL} + (p+t)F_{LL} & -(H_{KL} + (p+t)F_{KL}) \\ -(H_{KL} + (p+t)F_{KL}) & H_{KK} + (p+t)F_{KK} \end{vmatrix} \begin{vmatrix} F_K\, dt \\ F_L\, dt \end{vmatrix}, \tag{12}$$

where

$$D = (H_{KK} + (p+t)F_{KK})(H_{LL} + (p+t)F_{LL}) - (H_{KL} + (p+t)F_{KL})^2$$

and $D > 0$ from (2).

It is now easy to calculate dY/dt and dY'/dt. The former is given by

$$dY/dt = (H_L - pF_L)\, dL_H/dt,$$

and since $H_L = w$, $F_L = w/(p+t)$ (from profit maximisation), we obtain

$$dY/dt = tw\ (dL_H/dt)/(p+t). \tag{13}$$

Similarly,

$$dY'/dt = tw\ (dL'_H/dt)/(p+t) + tr\ (dK'_H/dt)/(p+t). \tag{14}$$

Thus,

$$dB/dt = tw(dL_H/dt - dL'_H/dt)/(p+t) - tr\ (dK'_H/dt)/(p+t). \tag{15}$$

From eqs. (12) and (2) $dK'_H/dt < 0$. To sign dB/dt unambiguously we need only determine the sign of $(dL_H/dt - dL'_H/dt)$. From eqs. (11) and (12) we obtain, after some manipulation,

$$dL_H/dt - dL'_H/dt = \left[F_K(H_{LL} + (p+t)F_{LL}) - (H_{KK} + (p+t)F_{KK})^2\right]$$
$$\times (H_{KL} + (p+t)F_{KL})/D(H_{LL} + (p+t)F_{LL}),$$

which from eq. (2) is positive. Thus we have proved that dB/dt is unambiguously positive; a permanent decrease in tariffs always worsens the current account. Q.E.D.

References

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