Are International Growth Rates Constrained by the Balance of Payments? A Comment on Professor Thirlwall *

In a recent issue of this Review, Professor Thirlwall (1979) derived what he termed a "fundamental law" which he argued explains the disparate post-war growth rates of the advanced countries. Thirlwall contends that "the model and empirical evidence lends strong support to the advocates of export led growth" (p.52). In other words, it is argued that the law supports the view that the long term growth rates of the advanced countries are fundamentally demand constrained. The most important determinant of the growth of demand is the impact of the growth of exports operating through Harrod's foreign trade multiplier. This position stands in marked contrast to the supply orientated approach which sees export growth as being determined by the growth of output which in its turn is limited by the maximum growth of factor inputs.

In this note, we take issue with Thirlwall and show that the model together with the empirical evidence adduced by him is not capable of discriminating between the two hypotheses. This is due to a circularity in the argument and the problem of the direction of causality.

The law is derived from two equations that describe the growth of exports (x_t) and imports (m_t), namely

$$x_t = \varepsilon z_t \qquad \text{(1a)}$$

and

$$m_t = \pi y_t \qquad \text{(1b)}$$

where z_t and y_t are the growth of world and domestic incomes, respectively. ε and π are the relevant world and domestic income elasticities of demand. Since, in the long run, no country is able to run a permanent balance of payments surplus or deficit that is large compared with the total volume of

* I am grateful to Maureen Pike and John Treble for their helpful advice. I should also like to acknowledge the helpful comments of Professor Thirlwall although, naturally, differences in opinion remain.

exports or imports, x_t equals m_t. Consequently, from equations (1a) and (1b) the fundamental law is obtained, namely

$$y_{Bt} = x_t/\pi \tag{2}$$

where y_{Bt} is the growth of output consistent with balance of payments equilibrium.

Thirlwall attempts to test the export led growth theory by calculating y_{Bt} for each of the advanced countries over the period 1950-1973 using equation (2), the observed values of the growth of exports and the estimates of π obtained by Houthakker and Magee (1969). The latter were obtained by using annual time-series data. The close correspondence that is found between y_{Bt} and y_t (the actual growth of output) leads Thirlwall to conclude that the application of equation (2) to "the international data gives a remarkable approximation to the growth experience over the last twenty years, and *ipso facto* provides an explanation of why growth rates differ" (p. 50).

However, this close fit is hardly surprising. The exponential growth rates y_t, x_t and m_t are approximately equal to $\frac{dY}{dt}/Y$, $\frac{dX}{dt}/X$ and $\frac{dM}{dt}/M$ (where the upper case denotes the level of the relevant variable). We may, therefore, define the income elasticity of demand for imports as

$$\eta_M = \frac{m_t}{y_t}, \text{ and, given } x_t = m_t, \ \eta_M = \frac{x_t}{y_t} \tag{3}$$

Values of η_M may thus be simply obtained for each country by the use of equation (3) and the observed growth rates of domestic income and exports.

Equivalently, we may obtain estimates for η_M by time-series regression analysis, namely, by estimating

$$\ln M_t = C + \pi \ln Y_t + \mu_t \tag{4}$$

where $\hat{\pi}$ will be approximately equal to η_M. (This is, of course, the procedure adopted by Houthakker and Magee.)[1]

[1] Houthakker and Magee, in fact, specify the import elasticity function as

$$\ln M_t = C + \pi \ln Y_t + \gamma \ln(PM_t/WPI_t) + \Theta_t \tag{4a}$$

where PM_t and WPI_t are the price index of imports into a particular country and the country's wholesale price index respectively.They found that for many countries γ was statistically insignificant. In this case, the only difference between equation (4) and (4a) is that the introduction of the relative price term decomposes the error term μ_t in equation (4). The estimates of π in the two specifications will of course be similar. An implication of the unimportance of relative prices is also that x_t equals m_t when they are measured in real terms. But the important point to note is that this is by no means incompatible with a supply dominated explanation of economic growth.

If changes in relative prices are significant then the observed and the estimated output growth rates will diverge in a predictable manner. However, once again this has no implications as to whether growth is supply or demand constrained. For reasons of space we shall not pursue this last point further but following Thirlwall (1979, p. 59) confine our discussion to the case where relative prices are unimportant.

The only reason why there may be a divergence between $\hat{\pi}$ and η_M is statistical, being due to the fact that in our case we are using regression analysis. There may be bias due to specification error or the use of annual data may result in the estimates being biased by the short run cyclical relationship between the variables. Thus, if we follow Thirlwall and use $\hat{\pi} = x_t/y_{Bt}$ to calculate y_{Bt}, it is not surprising that y_{Bt} closely approximates to y_t since the analysis borders on circular reasoning. The crucial point is that our argument has been simply in terms of elasticities and no mention of the determinants of growth has been introduced. The only condition needed is that x_t equals m_t. It is here that an economic model is needed to explain this equality and Thirlwall advances the neo-Keynesian approach in which output adjusts to bring the balance of payments into approximate equilibrium. But equally, even if all the advanced countries were supply, and not demand constrained it would be unlikely that there could exist any prolonged differences between x_t and m_t, although the adjustment process would, of course, be entirely different.

There is, therefore, a problem in determining the direction of causality and this is epitomised by the well known relationship (similar to Thirlwall's law) between the growth of output and exports. When the former is regressed on the latter using cross-country data for the advanced countries over the post-war period the following relationship is found, with a coefficient of determination of over 0.8,

$$y_t = a + 0.6x_t \tag{5}$$

However, is this to be interpreted as providing evidence that the growth of output is determined by the growth of exports or is the converse the case? Indeed, both y_t and x_t may be jointly determined and regression analysis, *per se*, can shed no light on the issue of causality.

To conclude, the above argument by no means implies that Professor Thirlwall is necessarily mistaken in his emphasis on the role of exports as the prime determinant of the growth of total output, but rather that the law provides no independent evidence concerning this question. Nevertheless, the law is certainly a remarkable empirical relationship and, for instance, confirms that relative prices are unimportant in relaxing the balance of payments constraint (if it is accepted that the balance of payments does in fact constrain growth rates). This contradicts the conclusions of the neoclassical equilibrium theory of international trade. The neoclassical theory is a supply orientated explanation but there are of course other non-neoclassical supply explanations and the refutation of the former, of course, has no implications for the latter. While the law makes it intuitively plausible that, in the context of long run growth,

'demand creates its own supply', the conclusion must be that further empirical evidence is needed to try to resolve the issue.

Hull

J.S.L. McCOMBIE.

REFERENCES

HOUTHAKKER, H.S. & MAGEE, S.P. (1969): "Income and Price Elasticities in World Trade", *Review of Economics and Statistics*.

THIRLWALL, A.P. (1979): "The Balance of Payments Constraint as an Explanation of International Growth Rate Differences", in this *Review*, No. 128, March 1979.