

**J'accuse! Mankiw and Taylor:  
Of conflating tautology with a behavioural relationship**

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It is not unusual to find an identity masquerading as a behavioural equation. In presenting a real model of international trade, Mankiw and Taylor (2014) use an identity (erstwhile termed the 'absorption approach') that originates in a seminal IMF paper:

*A starting point is the identity that the foreign balance,  $B$ , is equal to the difference between the total production of goods and services,  $Y$ , and the total absorption of goods and services,  $A$ :*

$$B = Y - A$$

*... It indicates that the change in the foreign balance equals the difference between the change in output and the change in absorption of goods and services. (Alexander, 1952, pp. 265-6)*

Initially, the Mankiw and Taylor presentation is sound (conventional notation):

*We can thus write the national income accounts as*

$$Y \equiv C + I + G + X - M$$

*... Defining net exports to be exports minus imports ( $NX \equiv EX - IM$ ), the identity becomes*

$$Y \equiv C + I + G + NX$$

*The national income accounts identity shows how domestic output, domestic spending and net exports are related. In particular*

$$NX \equiv Y - (C + I + G)$$

*Net exports  $\equiv$  output – domestic spending*

*This equation shows that in an open economy, domestic spending need not equal the output of goods and services. If output exceeds spending, we export the difference: net exports are positive. If output falls short of domestic spending, we import the difference: net exports are negative.*

*(Mankiw and Taylor, 2014, p. 157)*

In a section headed 'The Model' (Mankiw and Taylor, 2014, p. 165), three behavioural relationships are defined for the domestic economy. These determine the domestic absorption of income ( $Y$ ), which then leaves a residual volume for net exports:  $NX \equiv S - I(r^*)$ , where  $S = (Y - C + G)$  and  $r^*$  is an exogenous interest rate.

Respectively, the volume of net exports ( $NX$ ) and  $(S - I)$  are also referred to as 'the trade balance' and 'net capital outflow' (Mankiw and Taylor, 2014, p. 158). As above, this relationship is true by definition. There then follows: a summary statement that 'the trade balance depends upon those values that determine saving  $S$  and investment  $I$ ' (Mankiw and Taylor, 2014, p. 165); and a series of diagrams (figures 6.3 to 6.6) which (in setting the interest rate on the vertical axis and investment and saving on the horizontal axis) exercise the model by introducing a few exogenous shocks.

Following a nine page (case study) detour, 'The Model' is then re-presented in diagrams (figures 6.8 to 6.13) which set the real exchange rate on the vertical axis and  $NX$  on the horizontal axis. Here, the authors correctly state: that 'the real exchange rate is sometimes called the terms of trade'; and that

this might be described as *'the rate at which we can trade the goods of one country for the goods of another.'* (Mankiw and Taylor, 2014, p. 174)

If, at this point, the authors had written the terms of trade formally (as the volume of imports that can be traded for a given volume of exports,  $e \equiv M/X$ ), instead of describing the *'real exchange rate is nothing more than a relative price'* (Mankiw and Taylor, 2014, p. 175), they might have saved themselves from the error which then follows:

*We write this relationship between the real exchange rate and net exports as  $NX = NX(e)$ . This equation states that net exports are a function of the real exchange rate.* (Mankiw and Taylor, 2014, p. 176)

Net exports are no more *'a function of the real exchange rate'* than the real exchange rate is a function of net exports. Rather the two constructs are unambiguously interrelated by their respective definitions, *viz.*

$$\begin{array}{lll} e & \equiv & M/X \\ (1 - e) & \equiv & 1 - M/X \\ (1 - e) & \equiv & (X - M)/X \\ X - M & \equiv & (1 - e)X \\ NX & \equiv & (1 - e)X \end{array}$$

The root of the potential for confusion - among students who use this textbook - is two-fold. First: by the absence of money and/or a numeraire from the model, *'currency'* and *'prices'* ought not to be included in the discussion. Second: the behavioural equations are only those that determine the absorption of resources by the domestic economy, so that international trade is merely a residual element: *i.e., 'the foreign balance, B, is equal to the difference between the total production of goods and services, Y, and the total absorption of goods and services, A:  $B = Y - A$ '.* (Alexander, 1952, pp. 265-6)

## References

- Alexander, S. S. (1952) 'The effects of a devaluation on a trade balance', *International Monetary Fund Staff Papers*, vol. 2, pp. 263-78
- Mankiw, N.G. and M. P. Taylor (2014) *Macroeconomics*, Second European Edition, Worth Publishers. A Macmillan Higher Education Company