HARROD, KALECKI AND THE FOREIGN TRADE MULITPLIER[1]

Simon Chapple

INTRODUCTION

The Harrod foreign trade multiplier, albeit in a dynamic form, has recently re-emerged as an item of controversy in modern theories of growth, mainly through Thirlwall's influence (see Thirlwall, 1979, for one example). He demonstrates that under certain restrictive assumptions the rate of growth of domestic income (y) is determined by a simple dynamic Harrod multiplier of the form:

$$y = x/(dM/dY)(Y/M) \qquad (1)$$

where x is the rate of growth of exports, dM/dY the marginal propensity to import and Y/M the reciprocal of the average propensity to import. If the marginal and average propensities to import are constant and government spending, investment, and other items of exogenous expenditure are given, then the rate of growth of output is fully determined by the rate of growth of exports.

This note commences an investigation of Harrod's static foreign trade multiplier, aiming to discover whether Kalecki simultaneously arrived at the same tool. The paper first investigates Harrod's formulation of the foreign trade multiplier in the 1933 first edition of his International Economics and then its revamping in the 1939 second edition of the same work. It then considers Kalecki's pre-1936 analysis of the relationship between foreign trade, profits and output. Finally it comes to some sort of tentative conclusion regarding the possibility of simultaneous discovery.

Joan Robinson appears to have been one of the few people to draw attention to Kalecki's pioneering analysis in the early nineteen thirties of effective demand in an open economy. In her foreword to a publication containing some of Kalecki's previously untranslated papers from this period she indicates that:

Keynes' General Theory was worked out in terms of a closed economic system. It was left to me to sketch its extension to the theory of foreign trade in slump

conditions. Here also Kalecki's work claims priority. (Robinson, 1966, xi).

Again, in a modified reprint of the same article, she claims that at:

> the same time [as Keynes was discovering the General Theory] he [Kalecki] was already exploring the implications of a country's balance of trade, along the same lines as I followed in drawing riders from the General Theory in essays published in 1937.(Robinson, 1978, 55).

Robinson is referring to her 1937 book, Essays in the Theory of Employment. Note that Robinson is drawing parallels between her 1937 work on extending the General Theory into an open economy, rather than between Kalecki and Harrod's early work on output and the balance of trade. It is this latter avenue which I wish to explore here. Clearly Robinson's comments indicate that there was something original about this aspect of Kalecki's work. Was it similar to Harrod's?

HARROD's 1933 FOREIGN TRADE MULTIPLIER

Harrod's International Economics was first published in May 1933 as a Cambridge Economic Handbook, a series of books "intended to convey to the ordinary reader and to the initiated student some conception of the general principles of thought which economists now apply to economic problems".[2] A second and revised edition was published in January of 1939.

Since I have so far been unable to obtain a copy of the first edition of Harrod (1939), in analysing his 1933 foreign trade multiplier I shall make use of Kennedy and Thirlwall's (1979, 305-306) discussion. Harrod assumes that domestic production consists of goods for domestic consumption (C), and goods for export (E). There is no investment or government spending, meaning that the only element of exogenous expenditure is exports. Let Y be income and M be imports, then:

$$Y = C + X - M \qquad (2)$$

Since Harrod assumes that capital flows are zero, trade must balance:

$$X = M \qquad (3)$$

which means:

$$Y = C \qquad (4)$$

If imports are a linear function (m) of income:

$$X = mY \qquad (5)$$

Therefore income is fully determined by exports:

$$Y = X/m \qquad (6)$$

Thus Harrod's foreign trade multiplier is:

$$dY/dX = 1/m \qquad (7)$$

A rise in exports raises income by a mulitplier determined by the size of the import prepensity (m).

This is obviously a highly simplified model, ignoring as it does other elements of expenditure, capital flows, exchange rate alterations and so on. Harrod (1939) developed this extremely crude model much further, drawing on elements of Keynes' (1936) work.

HARROD'S 1939 FOREIGN TRADE MULTIPLIER

In his notes on the second revised edition Harrod states that:

> Chapters VI-VIII ["The Balance of Trade", "The Trade Cycle" and "A Reformed World" respectively] have been completely rewritten. The theory of the balance of trade and the balance of payments has been treated more fully; and its relation to certain modern views regarding fluctuations in employment and the balance of saving and capital outlay at home expounded.

This indicates that after publication of the General Theory in 1936, or perhaps before, Harrod recognised the deficiencies of assuming that all income was consumed and investment was zero, and aimed to rectify these when publishing the second edition of his International Economics.

Harrod (1939) restates the conditions for balance of payments equilibrium under his simplified assumptions, considering only the trade balance and assuming away investment and capital flows, with an explicit assumption of an average and marginal propensity to consume of unity.

> Individuals and corporate bodies in their capacity of final consumers spend the whole of their incomes. There is no addition to the capital goods of the country. (Harrod, 1939, 119-120).

Harrod (120, 122) argues that (6) holds given the assumptions of constant money rates of return to domestic factors of production, constant productivity and a constant

world price level, which together set the volume of exports. From Harrod's discussion of his simplified model it would seem that its point was to pare down the "modern" theory (as Harrod describes it) of balance of payments equilibrium to its bare essentials in order to contrast it with the classical adjustment mechanism of the gold standard. Harrod continues to analyse the impact of a fall in exports on income and imports:

> total income will be reduced sufficiently to curtail expenditure on imports by the amount that exports have declined...the whole process is simultaneous so that the transition from one equilibrium to the other occurs without lapse of time. (Harrod, 1939, 126).

After discussing other current account items and domestic holdings of foreign wealth, Harrod moves on to deal with investment (I), assumed given, and capital flows. He assumes that savings are a linear proportion (s) of income. Given money rates of return, productivity and world prices, national income is determined by:

$$Y = \frac{I + X}{m + s} \qquad (8)$$

The foreign trade multiplier becomes:

$$dY/dX = 1/(m + s) \qquad (9)$$

KALECKI'S 1933 FOREIGN TRADE MULTIPLIER

Two of Kalecki's pre-1936 articles concerning the balance of trade, output and effective demand have been translated into English - "On Foreign Trade and 'Domestic Exports'" (1933) and "The Business Upswing and the Balance of Payments" (1935). In addition a number of untranslated articles exist.[3] Attention is focussed on Kalecki's 1933 paper, published in the journal of Polish economics, _Ekonomista_. One of the many remarkable aspects of this article is that it pays no reference to any other economist, living or dead.

Kalecki (1933) begins by stating the following identity, on the assumption that workers do not save. Let P be profits and Ca capitalists' consumption.

$$P = Ca + I + X - M \qquad (10)$$

Kalecki's implicit assumption is that Ca is a constant, unrelated to the level of profits. His literary analysis indicates that investment depends on decisions taken in a previous period based on that period's rate of profit. Thus current investment is given. Imports depend on the level of production: as production rises so does the demand for foreign commodities and thus imports:

> an increase in the balance of trade is followed by a rise in production. The latter, however, leads, _inter alia_ to a greater demand for foreign commodities, especially raw materials, which are an indispensable element of domestic production – and thus to an increase in imports. (Kalecki, 1933, 17).

Kalecki acknowledges that the rise in domestic production may raise domestic prices and so push up imports and reduce exports but:

> This factor plays a considerably lesser role than the increased demand for foreign goods resulting from the rise in production. Thus, for the sake of simplicity, we shall not take it into account here. (Kalecki, 1933, 17n).

So like Harrod, Kalecki assumes constant domestic prices. Kalecki goes on to analyse more rigorously the determinants of production. He assumes that the share of profits in output (k) is a constant, noting:

> This relative share changes in the course of the business cycle, increasing during the upswing and declining during the downswing. However, the changes are rather small, and for the sake of simplicity it will be treated as constant here. (Kalecki, 1933, 18n).

This means that Kalecki implicitly makes the assumption of constant money wages and productivity to go with his explicit assumption of constant prices. This can be demonstrated in the following manner. The profit share is one less the wage share (W/Y). The wage share is equal to the money wage (w) multiplied by the level of employment (L) all divided by production. So:

$$P/Y = 1 - w/(Y/L) \qquad (11)$$

Given constant prices, the profit share will only change if

money wages or productivity change. Obviously, for Kalecki's assumption of a constant profit share to hold, w and Y/L must be constant. These are precisely the assumptions that Harrod makes to determine exports.

From this Kalecki argues that if the export surplus (S = dX - dM) rises due to an initial increase in exports of dX, then production will increase by:

$$dY = S/k \qquad (12)$$

or:

$$dY/(dX - dM) = 1/k \qquad (13)$$

In this sense k represents not only the profit share but also the marginal propensity to save (dP/dY). Kalecki argues that the ratio of imports to production is b, which is implicitly both a marginal and an average propensity, so imports rise by bS/k, meaning that his simple open economy trade multiplier is:

$$dY = dX/(k + b) \qquad (14)$$

or:

$$dY/dX = 1/(k + b) \qquad (15)$$

A SUMMING UP

Thus Kalecki's analysis (equation 15) is the formal equivalent of Harrod's (equation 7), barring his use of a class-based savings function. Using similar assumptions to those made by Harrod to give exports, Kalecki determines the share of profits and total output. In a like manner to Harrod, Kalecki shows how a rise in exports leads to an increase in the equilibrium level of production. While Harrod and Kalecki make the same assumptions, in Kalecki's case sometimes implicitly, and achieve a formally identical result, there are differences of emphasis. There are a number of reasons for this.

Harrod's textbook is intended to explain the new Keynesian theory of the balance of trade and output determination to an introductory audience. On the other hand Kalecki's work is a journal article aimed at a professional audience. The

difference in the mode of communication means that Kalecki avoids the meticulous step by step detailing of "modern" balance of trade theory which occupies Harrod. Besides this, as an autodidact Kalecki did not feel the need to continually compare and contrast his analysis with classical balance of trade theory. Both the mode of communication and Kalecki's lack of a formal economics education also help to explain the number of implicit assumptions in his work. Apart from these "environmental" factors other differences are also apparent.

While in 1933 Harrod had dealt with exports and consumption as expenditure and only included investment in 1939, in 1933 Kalecki had dealt not only with the impact of an export increase on the trade balance but also with balance of trade and output implications of a rise in both government spending and private investment. Unlike Harrod, Kalecki was less concerned with how exports equal imports *per se*, and more concerned with what determines the actual trade balance and output, allowing for compensatory capital flows.

In conclusion the results achieved by Harrod (1939) and Kalecki (1933) are formally identical. Of the two 1933 analyses Kalecki's work appears to be more sophisticated, allowing for savings leakages, net investment and trade imbalances. Additionally Harrod's aims differ from Kalecki's. So while it is fair to argue that discovery of the foreign trade multiplier in 1933 by Kalecki and Harrod was an example of simultaneous discovery, differences in emphasis and sophistication should also be acknowledged. Clearly there is still much to be gained in studying the Harrod/Kalecki approach to output determination in an open economy, as is evidenced in recent work by Thirlwall.

FOOTNOTES

1. This article is an extension of part of Chapter Four of my Master of Commerce thesis, "The Development of Kaleckian Macrodynamics", University of Auckland, New Zealand, March 1987. I wish to thank my supervisor, Dr Tony Endres, for his advice and encouragement.

2. Keynes, editor of the first series of Handbooks, quoted by Guillebaud, the editor of the second, in the series' introduction.

3. In particular "On Activating the Balance of Trade" (1929)
    and "The Consequences of Dumping" (1931). Due to my lack
    of Polish I am unable to detail the contents of these two
    articles. However they both make extensive use of
    national income magnitudes (Kalecki worked on constructing
    the Polish national accounts – see Studenski, 1958) and
    simple algebraic relationships.

REFERENCE

Harrod, R. 1939. _International Economics_. Cambridge University Press, Cambridge.

Kalecki, M. 1929. "W sprawie aktywizacji bilansu handlwego" (On Activating the Balance of Trade), _Przemysl i Handel_, 30: 295-297. As reprinted in Kalecki 1979, 39-44.

_____ 1931. "Konsekwenge dumpingu" (Consequences of Dumping), _Koniuntura Gospodarcza_, 4: 108-112. As reprinted in Kalecki 1979, 51-60.

_____ 1933. "On Foreign Trade and 'Domestic Exports'". In M. Kalecki, _Studies in the Theory of Business Cycles, 1933-1939_, Basil Blackwell, Oxford, 1966.

_____ 1935. "The Mechanism of the Business Upswing". In M.Kalecki, _Studies in the Theory of Business Cycles, 1933-1939_, Basil Blackwell, Oxford, 1966.

_____ 1935. "The Business Upswing and the Balance of Payments." In M. Kalecki, _Studies in the Theory of Business Cycles, 1933-1939_. Oxford, Basil Blackwell, 1966.

_____ 1979. _Kapitalizm: Koniuntura i zatrudnienie, Dziela, tom I_. Edited by J. Osiatynski, Polska Akademie Nauk, Warsaw.

Kennedy, C. and Thirlwall, A. 1979. "Import Penetration, Export Performance and Harrod's Trade Multiplier", _Oxford Economic Papers_, 31: 303-323.

Keynes, J. 1936. _The General Theory of Employment Interest and Money_, Macmillan, London.

Robinson, J. 1937. _Essays in the Theory of Employment_, Macmillan, London.

_____ 1978. _Contributions to Modern Economics_, Basil Blackwell, Oxford.

Studenski, P. 1958. _The Income of Nations_, New York University Press, New York.

Thirlwall, A. 1979. "The Balance of Payments Constraint as an Explanation of International Growth Rate Differences", _Banca Nazionale Del Lavoro Quarterly Review_, 128: 44-53.