From Giblin to Kalecki : The Export Multiplier And the Balance of Payments Constraint On Economic Growth, 1930-1933

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With the exception of one brief paragraph (Keynes 1936, p. 120), the analysis of the multiplier in chapter 10 of the *General Theory* assumes a closed economy. By 1941, however, there was enough of a literature on the export multiplier for Haberler to denote thirteen pages to it in the third edition of his *Prosperity and Depression*, all dating from 1936 or later (Haberler 1941, pp. 461-73).[1] In this paper I discuss the origins of the concept, between 1930 and 1933, in the writings of L.F. Giblin, R.F. Kahn, Roy Harrod, Michal Kalecki and Jens Warming. Of the five, I argue, Kalecki's treatment of the export multiplier is the most interesting, not least because he anticipated much more recent analyses of the balance of payments constraint on economic growth, while Warming's model has also been undeservedly neglected.

Almost certainly the first statement in English of an export multiplier came from an Australian, L.F. Giblin[2], who gave it a prominent place in his inaugural lecture as Ritchie Professor at the University of Melbourne, *Australia, 1930*; earlier, unpublished versions date from 1928-9 (Karmel 1960, pp. 164-5; Downing 1960, p. 43).[3] In his 1930 lecture Giblin was concerned with the effect on the national income of Australia of the recent, very sharp reduction in export demand:

> Assuming then, a direct loss of income from the fall in exports and the cessation of external loans of the order of £50m., what will be the effect on other income?
> Consider the following argument. A woolgrower receives £900 less income than his average. He has, therefore, £900 less to spend. He will reduce his expenditure in those goods and services he can best spare. One-third of total consumption is on imports or exportable goods, and we may assume that one-third of his reduction of expenditure, £300, will be for such goods, so that the balance of trade will be improved to that extent. The remainder will be for non-exportable goods and services. Let us suppose he puts off a fencer engaged in improving his property at a cost of £200 per annum; saves £200 on clothing, putting a tailor out of work; and saves another £200 in pleasure-traveling, putting a motor-mechanic or driver out of work who was previously earning that sum. There is no other income available for employing the fencer, tailor and motor-mechanic, and there is, therefore, a further loss of income of £600, two-thirds of the original £900. This £600 of income was also being spent by the fencer, tailor and motor-mechanic, one-third, or £200, in imports and exportable goods and two-thirds, or £400, on the landlord and butcher and boot-maker and other Australian workmen. So that there will be an improvement of the balance of trade by £200, and a further loss of Australian income of £400. And so on, until, in the end, there has been a reduction in the consumption of imports and exportable goods of £900 in all, and a reduction of Australian income of £2,700, or three times the direct shortage of income of the wool-grower. (Giblin 1930, pp. 10-11).

In an unpublished 1929 memorandum Giblin had estimated the multiplier at 10/3, using the convergent algebraic series already familiar to economists from the contemporary literature on fractional reserve banking (Downing, *op. cit.*). Giblin immediately subjected this conclusion to a very serious qualification:

> Is, then, this appalling result likely to happen, or is the whole argument affected by a fundamental error?
>
> The matter is obscure. I confess I do not see my way clearly through the tangle of price reactions that must follow the loss of income. I will only say that my somewhat muddled belief is that the tendency will be broadly to this result, to the extent that the Australian standard of living fails to adjust itself to the diminished income; but that if the loss is evenly spread through the community, it may be very nearly confined to the first direct loss of £50m., and there need be no serious addition to unemployment. (Giblin 1930, pp. 11-12).

A 15% reduction in wages, he suggested, would reduce the price level by 10% and real wages by 5%, bringing significant benefits to import-competing industries, where production would expand. This 'would mean in effect spreading two-thirds of the shortage [income] over the whole community and leaving export industry to carry the balance' (*ibid.*, p.12). There was evidently a substantial classical component in Giblin's thinking in this period, as is confirmed by Karmel's 'rational reconstruction' of his (implicit) macroeconomic model. It helps to explain why his multiplier does not incorporate a leakage from savings: 'for Giblin savings are automatically invested' (Karmel 1960, p. 172).[4]

Neville Cain (1982) and, more recently, Robert Dimand (1997) have argued the case for seeing Ralph Hawtrey as a pioneer of the trade multiplier. Cain points to Hawtrey's analysis, in the 1928 edition of his book *Currency and Credit*, of the consequences of a harvest failure and the ensuing decline in exports. There is, however, no hint of a geometric series nor of an algebraic solution, and therefore no formal multiplier model, in Hawtrey's book. Dimand cites a 1928 Treasury memorandum, where Hawtrey has both a leakage into imports and a converging geometric series, but this is where the similarity with Giblin ends. Hawtrey's problem is quite different: he is concerned with the impact on domestic income of an increase in (lump-sum) taxation imposed in order to finance reparations payments to foreigners. Thus his solution does not amount to an export multiplier. Interestingly, subsequent elaborations of the models presented in Hawtrey's memorandum involve leakages from savings but not from imports (Dimand 1997, pp. 550-3). He can thus be credited with a very commendable 'near miss'.

Giblin's analysis 'vanished almost unremarked from the collective memory of the economics profession' (Dimand 1991, p.16), with the exception of some brief references to it in the work of another Australian, E. Ronald Walker. Although Walker was at St. John's College between 1931 and 1933, he seems to have failed to disseminate Giblin's ideas in Cambridge during his stay (*ibid.*, pp. 16-17). There is no reason to suppose that Richard Kahn was aware of Giblin's work when he formulated his own, rather different, version of the multiplier.[5] Strictly speaking, Kahn's is not an export multiplier at all, for it traces the effects of increased government expenditure on public works; moreover Kahn focuses on changes in the level of employment, not (like Giblin) on income. However, Kahn does integrate import leakages into his model, and for that reason it is relevant here. He denotes by W the wage received by each worker newly employed on public works, and by P the associated increase in profits. R is 'the value of the increase in imports of raw materials and unfinished goods that accompanies the employment of each additional man'. Kahn writes 'the *net increase* in the rate of expenditure on home-produced consumption-goods' out of wages as mW, and that out of profits as nP (Kahn 1931, p. 183; original stress). Thus in the first round of the multiplier process the total increase in domestic consumption expenditure is mW + nP, while the value of output rises by W+P+R. This induces 'a further addition to the volume of employment', in the second round, expressed as a proportion of the initial increase in employment, of

$$\frac{mW + nP}{W + P + R} = m\frac{W}{W + P + R} + n\frac{P}{W + P + R} = k$$

from which Kahn derives 'the ratio of secondary employment to primary employment' as $k + k^2 + k^3 + ... = k/1-k$ (*ibid.*, p. 183). The familiar 'Keynesian' multiplier (which includes 'primary employment') is of course 1/1-k. Subsequently Kahn adapts the formula to allow for the loss of unemployment benefit by the newly-employed workers.

As Dardi has noted, Kahn's multiplier analysis is more elaborate - and from a Post Keynesian or Kaleckian framework more fruitful - than Keynes's, since it recognises different savings propensities for capitalists and workers (Dardi 1990, p.11; cf. Goodwin 1994). Even more important for our present purposes, it deals with an open, not a closed economy. The consumption ratios m and n exclude imports of consumer goods by the two classes, while the ratio of R to (W + P) reflects business decisions to import raw materials and semi-manufactures. In his numerical example Kahn sets m = 5/6 and R(W+P+R) = 1/10, and explores the implications of a range of values for n, between 1/3 and 3/4. The ratio k/1-k ranges from 0.56 to 0.94, implying a 'Keynesian' multiplier of between 1.56 and 1.94 (*ibid.*, pp. 185-6). He continues by considering the possible inflationary effect of public works expenditures, which would further increase imports (and also reduce exports), thereby lowering foreign investment. 'The expenditure of £50 million per annum for three years might reduce our annual balance of trade by, say, £20 million per annum, resulting in a total diminution of our foreign investment of £60 million. The loss of interest from abroad on this £60 million represents, taken by itself, a real burden on posterity' (*ibid.*, p. 193), against which must be set the benefits of the public works themselves and of the total reduction in unemployment. This numerical example is purely illustrative. It is not derived in any direct way from Kahn's algebraic model, which is in any case rather cumbersome. There is no single expression corresponding to the marginal propensity to import, which is hidden within the parameters m, n, and R/(W+P+R); nor (to repeat) are exports explicitly taken into account.

A formulation of the export multiplier which is both precise and concise was set out by Roy Harrod in chapter 6 of his Cambridge textbook, *International Economics*. Harrod would of course have been familiar with Kahn's work, but I know of no evidence that he had encountered that of Giblin. The great merit of Harrod's formulation is its simplicity, which permits a much sharper focus on the international dimension of the multiplier process. His analysis comes in his sixth chapter, which deals with the balance of trade. Harrod draws on a distinction made earlier in the book between three classes of goods. 'A goods' are homogeneous staple foodstuffs and raw materials, while 'B goods' are differentiated manufactures and semi-manufactures; both are tradeable. 'C goods', by contrast, cannot be relocated: houses, for example, public utilities, infrastructure and personal services are inherently non-tradeable. For our present purposes the crucial distinction is that between A and B goods, taken together, and C goods. 'The proportion of expenditure that is devoted to A and B purchases', Harrod argues, 'depends on (i) the tastes of consumers and (ii) the relation of the world price level to the C goods price level. The proportion of income derived from A and B sales is equal to the proportion of income devoted to their purchase' (Harrod 1933, p. 106). Thus he writes $I = 1/h \cdot (I_x)$, where I_x denotes exports, I is national income, and h is the (marginal = average) propensity to import, and concludes that 'The total income of the community will be larger, the more favourable the determining conditions are to a large income derived from the sale of A and B goods and the smaller the proportion of income devoted to the purchase of them' (*ibid.*, pp. 106-7). The trade multiplier is thus 1/h, though the term is not used in the 1933 edition of the book.[6] This very illuminating simplification does, however, come at a cost, since there are neither social classes nor government expenditures in Harrod's elementary model, and no leakage in the form of domestic savings.

Michal Kalecki has both. Some years ago Simon Chapple (1987) drew attention to the very similar construction contained in Kalecki's article, 'On Foreign Trade and "Domestic Exports"', which was published (in Polish) in the same year as Harrod's book and appeared in English in 1966 and again in 1990, in volume I of his *Collected Works* (Kalecki 1933).[7] The

similarity between the two analyses had been ignored by Feiwel (1975, pp. 119-21) in his discussion of the role of trade in Kalecki's generalised profit equation. This neglect was continued by Osiatynski (1990) in his editorial notes to Kalecki's article, and by Kriesler and McFarlane (1993) in their lengthy review article of the first two volumes of the *Collected Works*. No-one, I think, has yet given Kalecki the credit he deserves for his pioneering analysis of the balance of payments constraint on economic growth.[8]

His exposition is characteristically terse, his numerical examples are inadequately explained, and certain crucial assumption are not clearly stated. However, the core of his argument is by now very familiar. In a depression, output can be increased both by improvements in the trade balance and by growth in what Kalecki rather idiosyncratically terms 'domestic exports': that is to say, increases in government expenditure relatively to taxation. Both types of demand stimulus have multiplier effects on the level of output, though Kalecki does not use the term.[9] In the course of the ensuing expansion imports rise (Kalecki assumes proportionally) with output, adversely affecting the trade balance and thereby limiting the scope for further growth, for example via higher private investment.

The article begins with a bold statement of Kalecki's theory of profits in an open economy. Abstracting from workers' savings, and on the further (unstated) assumption that there is no government economic activity, 'aggregate profits are equal to capitalist consumption *plus* investment *plus* the balance of foreign trade' (Kalecki 1933, p. 165). In modern notation,[10]

(I) $\quad P = Cc + I + (X-M)$

Thus a rise in exports will lead to an increase in profits, but only to the extent that it is not offset by higher imports as output grows. Denoting the initial increase in exports by e, the induced growth in imports by i, and the net improvement in the trade balance by s, Kalecki writes the definitional equation (ibid, p. 166):

(1) $\quad e = i + s$

Now it follows from equation (1) that any improvement in the trade balance raises profits by an equal amount. If the profit share in output is α (a constant), Kalecki continues, then output itself must rise by s/α. Furthermore, denoting 'the ratio of imports to the value of aggregate production' by β (a constant), imports will increase by $i = \beta\,(s/\alpha)$, from which he obtains his second equation (p. 167):

(2) $\quad \dfrac{s}{i} = \dfrac{e-i}{i} = \dfrac{\alpha}{\beta}$.

The reasoning here is as follows. Profits increase by an amount equal to the improvement in the trade balance, so that $s = \Delta P$. By definition, $i = \Delta M$. Thus $s/i = \Delta P/\Delta M$. Dividing both sides by ΔY, we have $\dfrac{s}{i} = \dfrac{\Delta P}{\Delta Y} \Big/ \dfrac{\Delta M}{\Delta Y} = \dfrac{\alpha}{\beta}$, where α is the (constant) profit share, $P/Y = \Delta P/\Delta Y$, and β is the (constant) propensity to import, $M/Y = \Delta M/\Delta Y$. In Kalecki's numerical example, an increase in exports of 70mn. zloty induces an increase in imports of 20mn. zloty, so that there is a net change in the trade balance of only 50mn. (Since s=50, $\alpha = 0.5$ and $\beta = 0.2$, it follows from equation (2) that i = 20).

Kalecki's argument can be expressed in modern notation without any great difficulty, but in order to do so it is necessary to make explicit an assumption which Kalecki does not state (and which his initial discussion appears to deny): the savings propensity of the

capitalists is equal to unity.[11] Then, with no government economic activity, the national income identity

(II) $Y = C + I + (X - M)$

can be rewritten as

(III) $Y = (1 - \alpha)\, Y + I + (X - \beta Y),$

where Kalecki's β is the average (= marginal) propensity to import. Since workers do not save and capitalists do not consume, consumption (C) is equal to the total wage bill, given by the product of income (Y) and the wage share $(1 - \alpha)$. Equation (III) simplifies to

(IV) $$Y = \frac{I + X}{\alpha + \beta}$$

which is the equation for equilibrium output in an open economy with no government economic activity (see, for example, Baumol, Blinder, Gunther and Hicks 1992, p. 197). The export multiplier (holding I constant) is thus

(V) $$\frac{\Delta Y}{\Delta X} = \frac{1}{\alpha + \beta}$$

where α is, on Kalecki's 'classical' savings assumption, the marginal propensity to save. Equation (V), which has been derived by manipulating Kalecki's equation (2), is in fact analogous to a sophisticated version of that implied by Harrod's equation, since it includes the marginal propensity to save (thinly disguised as the profit share) in addition to the marginal propensity to import (see also Chapple 1987, p.28).

Next Kalecki shows that a 70mn. zloty increase in government spending, unaccompanied by higher taxation, will raise imports by 20mn. zloty, and result in an equal deterioration in the trade balance. In this section of the article (pp. 169-70) the algebraic model is rather trite; equation (4) on p. 170 merely replaces the increase in exports (e) by e_1, the rise in government expenditure, and is otherwise identical with (2) above. Kalecki's conclusion is certainly correct. On the further (and unstated) assumption that the marginal tax rate is zero, equation (V) also gives the government expenditure multiplier, which in Kalecki's numerical example is $\frac{1}{0.5 + 0.2} = \frac{10}{7}$ so that output rises by 100mn. zloty and imports by 20mn.

More interesting is his discussion of the implications for the trade balance of a boom in private domestic investment. As before, Kalecki assumes that recovery is initiated by an expansion of s in exports. 'Let us suppose' he continues, rather obscurely, 'that in the next phase of the upswing investment increased by k, and the previous increase in the balance of trade got "lost" owing to the increase in imports, i.e. it dropped by s, thus returning to its original level' (pp. 172-3). Now profits have increased by (k-s), as is confirmed by equation (I); output has risen by $(k-s)/\alpha$, and imports by $\beta(k-s)/\alpha$. But the increase in imports is by definition equal to the deterioration in the trade balance, so that $\beta(k-s)/\alpha = s$, and

(5) $$k = s\left[1 + \frac{\alpha}{\beta}\right]$$

With the same numerical values for α and β, it follows that $k = 3.5s$, from which Kalecki concludes that 'tension in the balance of payments ... arises only at the point when investment has reached a level several times greater than this surplus, i.e. at an advanced stage of the boom' (p. 173). The analysis is summarised in Table 1.

Table 1 : KALECKI'S NUMERICAL EXAMPLE

	Increase in exports (e)	Increase in Imports (i)	Improvement in Trade Balance (s = e-i)	Increase in Investment (k)	Increase in profits (s+k)	Increase in Income [(s+k)/α]
Stage I	70	20	50	0	50	100
Stage II	0	50	-50	175	125	250
Stage III	70	70	0	175	175	350

Source: adapted from Kalecki (1933).

Here Kalecki has posed, and answered, a remarkably modern question: how large an increase in investment can be supported by a given increase in exports before the economy encounters balance of payments difficulties? What are the determinants - in other words - of the balance of payments constraint on economic growth? A detailed analysis of this constraint is given by McCombie and Thirlwall (1994, especially chapter 3). Kalecki would have agreed with much of their argument, and would certainly have opposed the Cordon-Pitchford thesis according to which a current account deficit resulting from private sector expenditure decisions is of no importance (see Pitchford 1990 and, for a contrasting view of the Australian experience, McCombie and Thirlwall 1994, pp. 534-51).

Kalecki's algebra can be adapted to bring out the gist of his argument. Since workers do not save, capitalists do not consume, and the marginal rate of taxation is zero, we can use the multiplier expression in equation (V) to write:

$$\text{(VI)} \quad \frac{\beta \Delta I}{\alpha + \beta} = \Delta X,$$

where the right hand side is the initial increase in exports and the left-hand side the corresponding increase in imports. Thus ΔI is the maximum by which investment can rise without a deterioration of the trade balance. Simple manipulation of (VI) yields:

$$\text{(VII)} \quad \frac{\Delta I}{\Delta X} = \frac{\alpha}{\beta} + 1,$$

which is equivalent to Kalecki's equation (5) and of course has the same numerical solution. Equation (VII) is the cousin of Thirlwall's condition for balance-of-payments-constrained growth. Thirlwall's equation (10.9) is $y_{BT} = \frac{X_1}{\pi}$, where y_{BT} is the rate of growth consistent

with balance of payments equilibrium, x_t the rate of growth of exports, and π is the income elasticity of demand for imports (Thirlwall 1986, pp. 225-6). In Kalecki's equation (5) β is a constant, so that Thirlwall's $\pi = 1$; s denotes a numerical quantity (ΔX) rather than Thirlwall's rate of growth ($\Delta X/X$); and the term α ($P/Y = S/Y$, the savings ratio) is related to the rate of growth of output, Thirlwall's y_{BT} ($\Delta Y/Y$), since in a (non-neoclassical) Harrod-Domar growth model the rate of growth of output depends on the savings ratio and the capital-output ratio. Thirlwall's equation was itself derived from the Harrod trade multiplier, and Kalecki's equation (5) is a second cousin, not at all far removed.

Something can be said (very tentatively) about the sources on which Kalecki might have drawn. A circumstantial case can be made[12] that Kalecki had at least some second-hand knowledge of Kahn's article (and perhaps also of Keynes's *Treatise on Money*, with its banana and widow's cruse parables). From late 1929 he was working at the Institute for Business Cycle Research in Warsaw. As historians like Norman Davies (1996) have quite rightly insisted, Poland is closer to France than to the Urals, and Warsaw has been a centre of European culture, on a par with Prague and Budapest, for centuries. Kalecki's institute must have possessed a library, and it is difficult to believe that it would not have subscribed to the *Economic Journal*, in the 1930s still the most important serial in the world for professional economists. It is reasonable to suppose that someone in the institute would have been given the responsibility of scanning the *Economic Journal* and other English-language sources for the latest material on business fluctuations and related policy issues. Equally, it is unlikely that anyone with Kalecki's intellectual curiosity would not have taken pains to acquaint himself with the latest ideas from abroad. He certainly knew of Keynes's work, publishing an article on 'Mr. Keynes's Predictions' in 1932 (Kalecki (1932) and, in the following year, sending him a copy of his article on the business cycle (Osiatynski 1990, p. 444).

Against this, it must be noted that in the early 1930s Polish economists were more heavily influenced by German, Austrian and French ideas than by Anglo-Saxon thinking, and that Kalecki's colleagues at the Institute were concerned with practical questions directly relevant to economic policy rather than with theoretical issues. Kalecki himself had a good understanding of German and Russian from his youth, but learned English only after receiving his Rockefeller Fellowship in 1935. His knowledge of Keynes cannot therefore have been at first hand (and the copy of the business cycle paper that was sent to Cambridge was in German). Jerzy Osiatynski believes that Kalecki was not familiar with any book by Keynes before the *General Theory*,[13] and it is certainly true that his powerful review of Keynes's work was highly critical (Kalecki 1936). Jan Toporowski suggests,[14] in fact, that Kalecki's antipathy extended to the concept of the multiplier itself, which he regarded as an equilibrium concept inappropriate to a dynamic analysis of the business cycle.

It is conceivable (but in Osiatynski's opinion unlikely) that Kalecki was aware of Jens Warming's paper, which was published in the June 1932 issue of the *Economic Journal*. This is an intriguing possibility, since Warming's article dealt with questions closely related to those discussed in Kalecki's 'Domestic Exports'. He began by reporting Fr. Johannsen's early work on the trade multiplier, which he had estimated (for Denmark) at 2.5 on the assumption of a propensity to import of 0.4 but with no savings leakage. Warming then corrected Johannsen by introducing domestic savings, and suggested a numerical value of 1.67 for the Danish (and British) multiplier. He concluded, however, that 'for most other countries' a multiplier of 2 would be more appropriate, since 'England as well as Denmark has a very one-sided production' (Warming 1932, p. 218) - by which he seems to have meant an unusually high propensity to import.

In the more general case, with both the savings and import propensities equal to 0.25, an increase in domestic investment of 200 million units would be required to raise domestic income by 400 million, the amount Warming assumes to be necessary to restore full

employment.[15] Imports will rise by 100 million, and the trade balance will deteriorate by the same amount. In the rest of the world exports will rise by 100 million, generating increased income of 400 million and increased saving of 100 million. The trade balance of the rest of the world will improve by 100 million, since Warming implicitly assumes a negligible propensity in the rest of the world to import from the - small - country that has raised its investment expenditure. He concludes that 'international difficulties' will prevent the expansion of employment by public works programmes unless (i) they are internationally coordinated; (ii) an individual country is able and willing to increase its overseas debt; or (iii) increased tariffs are used by such a country to prevent the increase in imports that would otherwise occur (Warming 1932, pp. 22-3).

Table 2: WARMING'S NUMERICAL EXAMPLE

	Individual Country	**World**	**Rest of World (World *Minus* Individual Country)**
Increase in Investment (ΔI)	200	200	0
Increase in Income (ΔY)	400	800	400
Increase in Saving (ΔS)	100	200	100
Increase in Imports (ΔM)	100	n.a.	0
Increase in Exports (ΔX)	0	n.a.	100
Change in Trade Balance ($\Delta X - \Delta M$)	-100	n.a.	+100
Equilibrium Condition	$\Delta(I+X)=\Delta(S+M)$ $\Delta M-\Delta X=\Delta I-\Delta S$	$\Delta I=\Delta S$	$\Delta(I+X)=\Delta(S+M)$ $\Delta X-\Delta M=\Delta S-\Delta I$

Source: derived from Warming (1932, pp. 218-19).

As Boserup remarked, 'Warming's way of expressing himself was notoriously bizarre' (Boserup 1969, p. 669), but the above seems to be the gist of his argument. It is summarised in Table 2, which bears more than a passing resemblance to Kalecki's numerical example in Table 1. The similarity is not surprising, for the two writers are dealing with the same question: what determines the balance of payments constraint on domestic demand creation? And Warming, it must be remembered, got there first.

To conclude: Giblin's pioneering formulation of the foreign trade multiplier is both the easiest to understand and the least satisfactory, from a theoretical point of view. Kahn's variant represents a significant analytical advance, since it includes a domestic savings leakage, but is expressed in rather clumsy algebra which fails clearly to isolate the role of the marginal propensity to import in the process of income determination. The Harrod trade multiplier is both clear and simple; but it is too simple, since it too neglects domestic savings. While they are immune from this criticism, the models of Kalecki and Warming need considerable reconstruction to overcome the obscurity with which they are presented. Once this is done, the similarity between their analyses and those of modern theorists of balance-of-payments-constrained growth is very striking.

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Notes

1. There is no index reference to the export multiplier, nor indeed - with two trivial exceptions - to the multiplier more generally, in the first (1937) edition of Haberler's book.
2. Craufurd Goodwin (1962) claimed to have discovered an international trade multiplier in an 1898 work by another Australian, Alfred de Lissa. This, however, was denied by H. W. Arndt (1966), who concluded that de Lissa did not understand the multiplier process and that his model contained no leakages of any sort.
3. The pioneering work of the Danes, Wulff, Fr. Johannsen and Warming was unknown, outside Denmark, until Warming's *Economic Journal* article in 1932 (Warming 1932).
4. See, however, the ambivalence on this question that is revealed in the unpublished 1929 memorandum quoted by Downing (1960, p. 43).
5. There was some correspondence between Giblin and Keynes on the multiplier, but not until September - October 1933 (Keynes 1973, pp. 414-17).
6. In the substantially rewritten second edition, however, Harrod does explicitly refer to 'the "multiplier method"', and writes his formula in the now familiar way as the sum of a convergent geometric series (Harrod 1939, pp. 122-3).
7. There is a brief allusion to Kalecki's 'trade multiplier' in Chapple (1995, p.51), but Chapple's most extensive discussion of the 1933 article, which argues that Kalecki had by then anticipated the principal theoretical achievements of the *General Theory*, adds nothing on this question (Chapple 1991, pp. 250-5).
8. Joseph Halevi informs me that Kalecki's trade multiplier *was* well-known to students of Paolo Sylos-Labini at the University of Rome in the 1970s; an Italian translation of Kalecki's 1966 book, in which 'Domestic Exports' first appeared in English, came out in 1975.
9. Nor does he refer to Kahn (or for that matter to anyone else).
10. Kalecki's equations have been given their original Arabic numerals; Roman numerals refer to my equations.
11. This is recognized, albeit rather obscurely, by Chapple (1987, p.30) in his discussion of his own equation (13).
12. In the following two paragraphs I have drawn heavily on the comments of Jerzy Osiatynski and Jan Toporowski, neither of whom, however, agrees with the speculative comments in the first paragraph.
13. Personal communication, 31 March 1998. See the detailed discussion of the background to Kalecki's cycle model in Osiatynski (1990, pp. 436-46).
14. Personal communication, 1 April 1998.
15. This is the example used by Warming on p.218; on p.222, however, he seems suddenly to switch to an (implied) propensity to import equal to 0.5.

References

Arndt, H. W. (1966) 'De Lissa's Multiplier: a Second Look', *Economic Record* 42 (100), December, pp. 596-8.

Baumol, W.J., Blinder, A.S., Gunther, A.W. and Hicks, J.R.L. (1992) *Economics: Principles and Policy*; second Australian edition, Sydney: Harcourt, Brace, Jovanovich.

Boserup, M. (1969) 'A note on the prehistory of the Kahn multiplier', *Economic Journal* 79 (315), September, pp. 667-9.

Cain, N. (1982) 'Hawtrey and multiplier theory', *Australian Economic History Review* 22(1), March, pp. 68-78.

Chapple, S. (1987) 'Harrod, Kalecki and the Foreign Trade Multiplier', *HETSA Bulletin* 8, Summer 1987, pp. 25-33.

Chapple, S. (1991) 'Did Kalecki Get There First? The Race for the General Theory', *History*

of Political Economy 23(2), Summer, 243-61.
Chapple, S. (1995) 'Effective Demand in Kalecki's Early Macroeconomics', *History of Economics Review* 24, Summer, pp. 43-54.
Dardi, M. (1990) 'Richard Kahn', *Studi Economici* 45 (41), pp. 3-86.
Davies, N. (1996) *Europe: a History* Oxford: Oxford University Press.
Dimand, R.W. (1991) 'The origins of the multiplier: Clark, Giblin, Hawtrey, Kahn and Warming dehomogenized', Brock University, mimeo.
Dimand, R.W. (1997) 'Hawtrey and the multiplier', *History of Political Economy* 29(3), Fall, pp. 549-56.
Downing, R. I. (1960) 'Giblin as Ritchie Professor', in D. Copland (ed.), *Giblin: the Scholar and the Man*, Melbourne: Cheshire, pp. 39-48.
Feiwel, G. (1975) *The Intellectual Capital of Michael Kalecki*, Knoxville: University of Tennessee Press.
Giblin, L.F. (1930) *Australia, 1930: an Inaugural Lecture*, Melbourne: Melbourne University Press and Macmillan.
Goodwin, C. D. (1962) 'Alfred de Lissa and the Birth of a Multiplier', *Economic Record* 38 (81), March, pp. 74-93.
Goodwin, R. (1994) 'Kahn and Economic Dynamics', *Cambridge Journal of Economics* 18(1), February, pp. 73-6.
Haberler, G. (1941) *Prosperity and Depression: a Theoretical Analysis of Cyclical Movements*, Geneva: League of Nations, third edition.
Harrod, R.F. (1933) *International Economics*, London: Nisbet and Cambridge: Cambridge University Press.
Harrod, R.F. (1939) *International Economics*, second edition, London: Nisbet and Cambridge: Cambridge University Press.
Kahn, R.F. (1931) 'The Relation of Home Investment to Unemployment', *Economic Journal* 41(162), June, pp. 173-98.
Kalecki, M. (1932) 'Mr. Keynes's Predictions', pp. 45-7 of Kalecki (1990).
Kalecki, M. (1933) 'On Foreign Trade and "Domestic Exports"', pp. 165-73 of Kalecki (1990).
Kalecki, M. (1936) 'Some Remarks on Keynes's Theory', pp. 223-32 of Kalecki (1990).
Kalecki, M. (1990) *Collected Works of Michal Kalecki, Volume I: Capitalism: Business Cycles and Full Employment*, Oxford: Clarendon Press.
Karmel, P.H. (1960) 'Giblin and the Multiplier', in D. Copland (ed.), *Giblin: the Scholar and the Man*, Melbourne: Cheshire, pp. 164-74.
Keynes, J.M. (1973) *The Collected Writings of John Maynard Keynes, Volume XIII: The General Theory and After. Part I: Preparation*, London: Macmillan and Cambridge University Press for the Royal Economic Society.
Kriesler, P. and McFarlane, B. (1993) 'Michael Kalecki on Capitalism', *Cambridge Journal of Economics* 17(2), June, pp. 215-34.
McCombie, J.C.L. and Thirlwall, A.P. (1994) *Economic Growth and the Balance-of-Payments Constraint*, London: Macmillan.
Osiatynski, J. (1990) 'Editorial Notes and Annexes', pp. 421-594 of Kalecki (1990).
Pitchford, J. (1990) *Australia's Foreign Debt: Myths and Realities*, Sydney: Allen and Unwin.
Warming, J. (1932) 'International Difficulties Arising Out of the Financing of Public Works During Depression', *Economic Journal* 42(166), June, pp. 211-24.