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11. Is Absolute Advantage *Passé*? Towards a Post-Keynesian/Marxian Theory of International Trade

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INTRODUCTION

Despite the revolution in international trade theory of the past fifteen years, known as the new international economics (NIE), the law of comparative advantage is still considered generally valid by international trade economists. Marx and Keynes rejected the concept of comparative advantage, both in its positive and normative forms because of its assumptions of full employment and the existence of an automatic price adjustment sufficient to bring balanced trade in each period. Marx and Keynes insisted instead on the inherently monetary nature of production, the persistence of unemployment and excess capacity, and the denial of the primacy of resource scarcity in economic life. The Marxian and Keynesian views – and I argue that for the purposes of international trade theory the commonalities dominate the differences – provide building blocks for an alternative new international economics, based on technology and income gaps, demand scarcity and uncertainty, and in which export markets result from innovative effort, not natural endowment. While some progress has been made in the direction of such an alternative model, it remains surprisingly undeveloped. In this chapter I first consider some internal difficulties with the law of comparative advantage and its implied adjustment mechanism. I then discuss the implicit rejection of comparative advantage in the writings of Keynes and Marx. Finally, I turn to the question of the construction of an operational post-Keynesian/Marxian trade model, able to address specific policy questions related to innovation, adjustment and international competitiveness.

THE GENERAL VALIDITY OF THE LAW OF COMPARATIVE ADVANTAGE

The concept of comparative advantage has developed considerably since Ricardo's (1951) well-known presentation in Chapter 7 of the *Principles*. Still, it is Ricardo's basic insights into the basis for trade and the determination of its direction which continues to hold sway today, in spite of the NIE emphasis on exceptions. The positive and normative elements of Ricardo's treatment are not simple to delink from each other.[2] On the positive side, Ricardo argued that specialization and trade would be based on comparative advantage and be balanced in any period. In the event where one country has an absolute advantage or disadvantage in all sectors, the argument implies the functioning of an adjustment mechanism, to convert the across-the-economy absolute advantage/disadvantage into one where both countries have the ability to achieve balanced trade. That is, a situation of comparative cost differentials must automatically become one of absolute money cost and price differentials. In Ricardo's well-known example the existence of an absolute disadvantage in the production of all commodities for England will lead to a temporary trade deficit for England and a surplus for Portugal. This disequilibrium will invoke the price-specie-flow mechanism, whereby the trade imbalance brings a flow of gold from the deficit to the surplus country. The result is a rise in the price level in the surplus country and a fall in the deficit country. This price level movement continues until one commodity becomes cheaper in England. This will be the commodity which is produced with the smallest absolute disadvantage, that is, for which England has a comparative advantage. Once England is competitive in at least one commodity it will specialize in and export that commodity up to the point where trade is balanced.

The normative component of the Ricardian argument is that global production, and thus national consumption possibilities, are higher under the specialization pattern outlined above than in autarky.

With the work of Graham, McKenzie and Jones, the simple Ricardian model was generalized to the case of many countries and many commodities. Let a_i be the labour coefficient in sector i. In a two-country, two-good world, comparative advantage is determined by the following algorithm: the home country has a comparative advantage in (and thus for optimal world production should specialize in and export) good one and the foreign country has a comparative advantage in (and thus should specialize in and export) good 2 if and only if:

$$a_1/a_2 < a^*_1/a^*_2 \qquad (11.1)$$

where the asterisk denotes foreign country. This algorithm is easily extended to the case of two countries and many commodities as well as that of two commodities and many countries. But while these extensions are relatively simple (at least on the theoretical level), the move to an $n \times m$ formulation has proved much more difficult. The problem is that simple rankings of cost ratios are no longer sufficient (Ethier, 1984). The major step forward was made by Graham (1948) who used Mill's examples to show that in a world of three goods and three countries, simple bilateral comparisons do not lead to a consistent algorithm for welfare enhancing specialization and trade. McKenzie (1954, 1956) used activity analysis to derive a world production possibility locus for the case of many countries and many commodities. McKenzie failed to provide an algorithm for determining efficient specialization in such a world under free trade, instead proved the existence of a set of output bundles which is efficient, using the concept of 'substitution circuits'. The problem of determining comparative advantage is one of finding which point on the world PPF would be chosen, given demand conditions. This would allow determination of the commodity composition of trade.

Jones (1961) went farthest in developing the $n \times m$ comparative advantage specialization algorithm. Jones defines an 'assignment' as a particular pattern of specialization in trade. A 'class of assignments' is a set of assignments which are all similar in that they 'assign' each country to completely specialize in the same number of commodities. In the Jones solution, an efficient specialization and trade pattern will be such that the product of labour requirements in the efficient assignment of commodities to countries must be less than the corresponding product in any other possible assignments in the same class.

In the $n \times n$ case Jones considers only the class of assignments in which each country is assigned a different commodity. If the optimal assignment is for country i to specialize in and export commodity i, then the following condition must hold for all other assignments in this class:

$$\pi a^i_i < \pi a^i_{j(i)} \text{ or, } a^i_i/a^i_{j(i)} < 1 \qquad (11.2)$$

where a^k_j = direct labour coefficient for commodity j, country k; and $j(i)$ is any other assignment in the class.

In an $n \times n$ world, with the class of assignments where each commodity is produced by one (and only one) country, country j has a 'multilateral comparative advantage' in commodity j relative to commodity k compared with 'the rest of the world' if and only if the sacrifice of one unit of

commodity k in country j yields a greater increase in the production of commodity j than (with reference to the optimal assignment) would a sacrifice of one unit of commodity k in the rest of the world. According to the Jones algorithm, a country should specialize in the production of a commodity if the opportunity cost of producing that commodity (in terms of any other commodity) is less than the opportunity cost of producing that good through any possible combination of resource reallocation in all countries in the rest of the world.[3]

The Jones algorithm gives the optimal assignment for a given class of assignments. But for a given number of countries and commodities there are many classes. The question is, can we determine the optimal assignment for all possible classes for n countries and m commodities? This Jones does not do, and it is impossible with the use of substitution circuits. Thus Jones's result is of a different nature than Ricardo's. Ricardo claims to show how specialization according to comparative advantage raises global output in a 2×2 case. Jones shows that there is an optimal assignment in each of the nm classes of assignments which are feasible in a world of n countries and m commodities. There is no unique optimal specialization pattern in a world of n countries and m commodities (much less with q factors of production).

A calculation of the efficient specialization pattern in a multi-country, multi-commodity context based on Jones' algorithm provides little support for the concept of comparative advantage. The results are presented in Table 11.1. Using the UN ECE input-output tables for 1970 and 1975 for Germany, Italy, Japan, Norway and Portugal, I aggregated the table to five sectors.[4] Based on these five sectors the Jones-efficient specialization pattern was calculated, following expression (11.2). The Jones algorithm assigns one sector to each country. This assignment is listed in column one of Table 11.1. Columns two and three give alternative views of the actual trading outcomes in the years 1970 and 1975. Column two gives the ranking of the Jones-efficient specializing country for net exports in that sector compared to net exports in that sector in the other four countries. Column three shows the ranking of the sectoral net exports for the Jones-efficient specialist compared to net exports in that country's other sectors. Support for the Jones algorithm would be indicated by high rankings (for instance, first or second) in either of these measures. The preponderance of fours and fives indicates little support for the Jones model. Table 11.1 results are based on the direct labour coefficients. In Table 11.3 we present the same exercise based on the total labour coefficients.[5] The results are even less impressive. No doubt the results would be better if all 14 sectors were included.

Table 11.1 Jones algorithm – direct labour coefficients

Sector	*Efficient specialist*	*Country rank in sector net exports*	*Sector rank in country net exports*
1970			
Agriculture, hunting, fishing and forestry	Norway	1	2
Metal ore and other mining	Germany	4	3
Textiles and clothing	Japan	2	2
Chemicals and rubber	Italy	5	4
Machinery, transport and other manufacturing	Portugal	4	5
1975			
Agriculture, hunting, fishing and forestry	Germany	5	5
Metal ore and other mining	Japan	5	5
Textiles and clothing	Italy	1	2
Chemicals and rubber	Norway	5	3
Machinery, transport and other manufacturing	Portugal	4	5

Table 11.2 Jones algorithm – vertically integrated labour coefficients

Sector	*Efficient specialist*	*Country rank in sector net exports*	*Sector rank in country net exports*
1970			
Agriculture, hunting, fishing and forestry	Germany	5	5
Metal ore and other mining	Japan	5	4
Textiles and clothing	Norway	4	4
Chemicals and rubber	Italy	5	4
Machinery, transport and other manufacturing	Portugal	4	5
1975			
Agriculture, hunting, fishing and forestry	Germany	4	5
Metal ore and other mining	Japan	5	5
Textiles and clothing	Norway	4	4
Chemicals and rubber	Italy	3	4
Machinery, transport and other manufacturing	Portugal	4	5

Deardorff (1980) overcomes the limitations of the Jones result by placing the issue in a stochastic framework. He summarizes the result of his proof of 'The General Validity of the Law of Comparative Advantage', as follows: 'There must exist a negative correlation between any country's relative autarky prices and its pattern of net exports. Thus, on average, high autarky prices are associated with imports and low autarky prices are associated with exports' (Deardorff 1980, p. 942). Deardorff's result is modest, and he has not solved the problem of the restricted validity of the Jones algorithm. The stochastic approach puts the whole issue in a different framework.[6] Moreover, Deardorff's result relies on quite special assumptions – such as balanced trade and full employment.

ADJUSTMENT: MACRO AND MICRO ISSUES

In spite of the difficulty of generalizing the simple Ricardian model, the notion of comparative advantage continues to dominate thinking among economists.[7] Even NIE theorists embrace the view that comparative advantage reigns supreme in the determination of trade flows.[8] Paul Krugman, for example, argues that comparative advantage naturally and inevitably brings about balanced trade, but that 'competitiveness' of certain industries may be usefully enhanced by government policy, presumably affecting the composition of trade but not its overall balance:

> International competition does not put countries out of business. There are strong equilibrating forces that normally ensure that any country remains able to sell a range of goods in world markets, and to balance its trade on average over the long run, even if its productivity, technology, and product quality are inferior to those of other nations... Both in theory and in practice, countries with lagging productivity are still able to balance their international trade, because what drives trade is comparative rather than absolute advantage. (Krugman 1991, pp. 811, 814)

Krugman provides data showing that trade imbalances in some major industrialized countries have been insignificant as a percentage of GNP when measured over long periods of time. If comparative advantage indeed constitutes a law, then it should be valid for all countries, not just industrialized ones. But what constitutes a 'large' imbalance? Moreover, it is unclear just what the appropriate period is in which to expect adjustment. Krugman looked at a 29-year period beginning in 1960. But the period since 1980 has seen significant imbalances, even in the major industrialized countries. Figure 11.1 shows data for the well-known US and Japanese cases. Adjustment does appear fairly rapid prior to 1980, but almost non-existent thereafter.

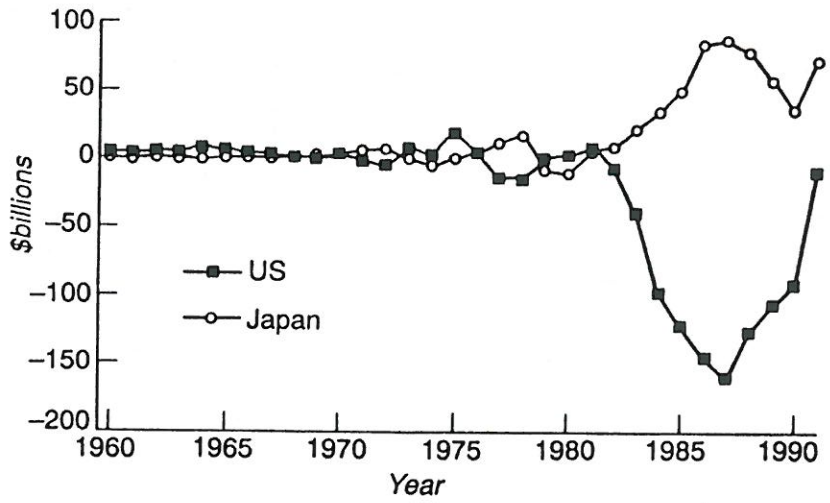

Figure 11.1 Current account balances, US and Japan, 1960–1991

Despite the continued embrace of comparative advantage by even the most sophisticated of NIE theorists, and the evidence of persistent unbalanced trade over the past 15 years, there is little theoretical treatment of the process of adjustment from a situation of only comparative cost differences to one of absolute money cost and price differences across countries. Such a process is assumed to occur automatically. As a result there is even less attention paid to the question of how long the adjustment process takes before balanced trade is restored.

An important factor left out of the discussion is the question of capital flows. By definition the current account in a given period equals the amount of net national saving, private and public. Thus to the extent that a country experiences a capital account surplus over time, it will run a persistent current account deficit. This is the reasoning used to argue that the persistent US current account deficit is simply the flip side of the budget deficit.[9] Krugman (1988), among others, acknowledges this argument but insists that the current account is to a considerable extent determined independently of capital flows. In this sense, it is the current account which drives the capital account and (automatic) relative price adjustments alone should be sufficient to bring trade flows into balance:

> [W]hile the trade deficit is indeed the difference between savings and investment, it is also the difference between what we buy and sell. No appeal to the amount of capital we need to import can explain why a tremendous cheapening of our

goods has not increased the demand for these goods... [A]ppeals to capital flows are a diversion from the central issue... I do not regard elasticity pessimism, the belief that prices don't matter in international trade, a sustainable position in the modern world. (Krugman, 1988, p. 153)

Krugman's explanation of the persistent US trade deficit in the face of a rapidly declining real exchange rate of the dollar is either (*a*) that there is a very long downsloping portion of the J-curve, i.e. that there are long lags in the response of exports to price changes or (*b*) that there has been a secular decline in the competitiveness of US products which has yet to be reflected in the real exchange rate.

The microeconomic adjustment problem can be seen clearly with the aid of a simple markup pricing equation, where the price of good *i* in country *j* be expressed as follows:

$$P_{ij} = (k_{ij}w_{ij}a_{ij})e_j \qquad (11.3)$$

where p = price; k = profit rate or mark-up; w = wage; a = unit labour requirements; and e = exchange rate (or gold price under a gold standard). Consider the two-country, two-commodity case were Country 2 has an absolute advantage in both sectors at the going exchange rate (i.e. in autarky, $p_{11}e > p_{12}$ and $p_{21}e > p_{22}$). Following Ricardo, we can say that the home country will specialize in and export good 1 if $p_{11}/p_{12} < p_{21}/p_{22}$. Of course the additional (and often unstated) condition for balanced trade is that with trade, either:

$$p_{11}e < p_{12} \text{ or } p_{21}e < p_{22}, \text{ but not both.} \qquad (11.4)$$

The transformation of differential comparative cost ratios into differences in absolute money costs and prices requires an adjustment process. The array of possible adjustment mechanisms can be seen by applying expression (11.3) to condition (11.4). For trade either:

$$[(k_{11}w_{11}a_{11})e] < [k_{12}w_{12}a_{12}] \text{ or } [(k_{21}w_{21}a_{21})e] < [k_{22}w_{22}a_{22}] \qquad (11.5)$$

For Ricardo, changes in the wage rate (w) are matched by equal and opposite changes in the profit rate (k), and adjustment must occur otherwise. Moreover, the real wage is considered fixed at the subsistence level and there is no international capital mobility.

In this case, adjustment occurs through the price of gold (e), which adjusts via the price-specie-flow mechanism. In the neo-classical approach, w and k are simply given by technology and market conditions, and adjustment

is assumed to take place in either w or e, now functioning as the exchange rate.[10] Krugman's argument (discussed above) is that increases in '*a*' (productivity declines) in the US have been unmatched by changes in the real exchange rate.

THE REJECTION OF COMPARATIVE ADVANTAGE IN KEYNES AND MARX

An alternative perspective on the adjustment issue is provided by Keynes and Marx. While neither Keynes nor Marx wrote much explicitly on the positive theory of international trade and its adjustment mechanism, a coherent critique of the mainstream view can be formulated based on their writings on commercial policy, international payments and microeconomic adjustment in general. For these two, the adjustment process is entirely different from that outlined above because of the persistence of unemployment, excess capacity and uncertainty. The effect of an initial trade imbalance is to alter interest rates and income, not relative prices. This raises the likelihood that a trade imbalance will persist over time, and puts into question the general validity of the law of comparative advantage.

For Keynes, a trade imbalance leads to a potential liquidity problem for the deficit country. While the surplus country accrues claims on foreign goods, services or assets, there is no guarantee that such claims will immediately be converted into foreign-produced goods or services. The conversion decision will affect the level of bank reserves and interest rates. Relative prices are not necessarily affected. Wages can be infinitely elastic and the imbalance will still not necessarily disappear. The result is that it is possible under free trade for a country to be 'undersold all around', that is, for a situation of comparative cost differences to be inconvertible to one of absolute money cost and price differences. Keynes made this clear in his discussion of the removal of the McKenna duties in 1930:

> The fundamental ground of the free trade argument is that we ought to take the McKenna Duties off in order that we should stop the making of cars and make something else for which we are better suited. And the logical link between one and the other is through this chain, and no other. Just like the Bank rate argument, it works beautifully in a fluid system. But supposing we get jammed at the point of full employment, the alternative for a time may be between producing motor cars or producing nothing. (Keynes, 1973, p. 114)

One sees here a rejection of the law of comparative advantage, since that law rules out the possibility of a country 'producing nothing'. Note that

the sticking point for Keynes is the persistence of unemployment. Keynes's well-known rejection of Say's Law is doubly relevant here. For one, in the absence of Say's Law and full employment, relative prices lose their allocative role so central to neo-classical general equilibrium theory of which the Heckscher–Ohlin trade model is an extension. Second, Keynes's rejection of Say's law holds *a fortiori* in an open economy context because of the potential for foreign saving. For Keynes, comparative advantage is the open economy equivalent of Say's Law.

For Marx, the classical dichotomy between real and monetary sectors underpins Ricardo's faulty theory of adjustment – the price specie flow mechanism. Instead of bringing a price level change, trade imbalances and gold flows lead to changes in the level of bank reserves and ultimately interest rates. A country in deficit on its current account will, *ceteris paribus*, continue to run a deficit:

> It is indeed an old humbug that changes in the existing quantity of gold in a particular country must raise or lower commodity prices within this country by increasing or decreasing the quantity of the medium of circulation ... in fact, a decrease in the quantity of gold raises only the interest rate, whereas an increase in the quantity of gold lowers the interest rate ; and if not for the fact that the fluctuations in the interest rate enter into the determination of cost-prices, or in the determination of demand and supply, commodity-prices would be wholly unaffected by them. (Marx, 1967, V, 3, p. 551)

There is a surprising similarity in the conception of the adjustment mechanism implied by Keynes and Marx. For both, the inherently monetary nature of capitalism means that its analysis cannot be undertaken in two separate spheres, one 'monetary' and one 'real'. And key to this insistence on the monetary production economy as the unit of analysis is the rejection of Say's law. The Keynesian 'flavour' of Shaikh's (1980) rendition of the Marxian adjustment process is less surprising than at first glance, once the similarities in the views of Marx and Keynes on questions of money, unemployment and Say's Law are brought out. The basic issue is that in an economy operating at less than full employment, trade deficits will not bring the appropriate relative price adjustments necessary to induce resource reallocation necessary to bring balanced trade. According to Kregel:

> For Marx the general result of the price system's operation is not as the classical theory predicts and the disproof is generally the same for both Marx and Keynes. The movements of relative prices will not act to produce full employment of all factors, the only condition under which scarcity or opportunity cost can be conceived as having any meaning at all (Kregel, 1980, p. 268).

For Marx the reserve army of the unemployed is a necessary feature of capitalism and for Keynes the tendency for effective demand failure renders unemployment equilibrium likely. Both Marx and Keynes rejected any theory relying on the assumption of full employment. Accordingly, the law of comparative advantage was implicitly rejected. Joan Robinson aptly summarized the Keynes and Marx view:

> The comforting doctrine that a country 'cannot be undersold all around' was derived from the postulate of universal full employment. The argument consists merely in assuming what it hopes to prove... There is no mechanism to make trade balance; it is merely assumed that the value of exports is equal to the value of imports (Robinson, 1968, pp. 17 and 19).

Unfortunately, with the exception of the papers by Shaikh and Brewer mentioned above, these fundamental insights have until very recently been ignored by international trade theorists.

TECHNOLOGY GAPS AND ABSOLUTE ADVANTAGE

Recently the technology-gap school of international trade theory has developed some of the ideas of the Marx/Keynes tradition, with an emphasis on the role of innovation and technical change.[11] According to this approach, a sector's competitiveness is a function of its technological edge over foreign rivals as well as its relative variable costs and market structure. The UN ECE input–output data set used above (pp. 222–3) allows a preliminary test of the significance of technology gaps as a factor in international competitiveness. Competitiveness is measured the sample export market share and the technology gap is proxied by the ratio of a country's vertically integrated labour coefficient to the high productivity sector in the sample. I also control for the wage gap between a given sector and the sample's high productivity sector, and add the comparative advantage factor, since this is understood as having a secondary effect on export competitiveness. The model and expected signs are as follows:

$$XSHA = f(TGAP, WGAP, CADUM) \qquad (11.7)$$
$$(-) \quad (-) \quad (+)$$

where $XSHA$ = share of sample exports, by sector; $TGAP$ = ratio of sector's vertically integrated labour coefficient to that of the high productivity producer; $WGAP$ = ratio of sector's wage to that of low wage

producer; and *CADUM* = dummy variable taking value of one if sector is to specialize according to the Jones algorithm, zero otherwise. Since the Jones algorithm was calculated only for the 5 × 5, I consider only the pooled sample of 25 observations. The OLS regression results were as follows for 1975:

$$XSHA = -0.19 - 0.083TGAP + 0.131WGAP - 0.070CADUM$$
$$(0.706)\quad (1.780)\quad (1.327)\quad (0.510)$$
$$\text{adj.}R^2 = 0.17,\ F = 1.62$$

and for 1970:

$$XSHA = 0.244 - 0.003TGAP - 0.002WGAP - 0.107CADUM$$
$$(2.7)\quad (1.110)\quad (0.76)\quad (0.514)$$
$$\text{adj.}R^2 = 0.10,\ F = 0.82$$

For the 1970 estimate the *F* is not significant. The *TGAP* and *WGAP* variables are of the correct sign, but insignificant. The *F* for the 1975 estimate is barely acceptable, with the *TGAP* variable significant at the 10 per cent level. The *WGAP* variable is of the wrong sign. In neither case is the comparative advantage dummy significant, but this again is not surprising given its performance above. While the results are not very promising, this can be attributed in part to the limited sectoral coverage. Also missing is a proxy for technological innovation as distinct from the technology gap. A variable along the lines of Pasinetti's (1981) sectoral rate of process innovation would be consistent with the vertically integrated approach proposed here. Data covering a longer time period would be required, however. Dosi et al. (1990) performed cross-sectional (17 countries) regressions for 40 industries, with the innovativeness variable proxied by patents per capita, variable costs by wages in value added and a market structure variable by investment per worker. They found that the relative effect of the three variables on sector net exports varied across sectors, as expected, and the overall results were quite supportive of the technology-gap model.

While recent criticisms of comparative advantage have pointed toward absolute advantage as a viable alternative theory, none of the models of absolute advantage has been generalized beyond the case of two regions.[12] The technology gap models have yet to be well integrated into a macro model.[13] Moreover, the models are not fully operationalized. We seek a model which lends itself to empirical testing, that is based on observable concepts of production and technical change. The model should capture sectoral interdependencies, which allows for a more comprehensive

measure of productivity and technical change, but also captures dynamic scale economies at the sectoral level.[14] The outline of such a model is sketched below.

Exports are a function of both technology gaps and excess demand conditions, as follows:

$$e_{ij} = \min\{(x_{ij} - y_{ij}),\ (\Sigma_k(y_{ik} - x_{ik})\} \qquad (11.8a)$$
$$\Sigma_j e_{ij} = \Sigma_j m_{ij} \qquad (11.8b)$$
$$P_j = l_j(I - A_j - D_j)^{-1}w_j r_j \qquad (11.8c)$$

where e_{ij} = exports of sector *i*, country *j*; m_{ij} = imports of sector *i*, country *j*; x_{ij} = output of sector *i*, country *j*; y_{ij} = final demand for sector *i*, country *j*; *k* is an index of countries for whom $p_{ij} < pi_k$; P_j is a vector of sectoral prices, p_{ij}; l_j is a vector of direct labour coefficients, country *j*; A_j is a matrix of technical coefficients; D_j is a matrix of replacement capital coefficients; w_j is a vector of wages, country *j*, and r_j is the exchange rate of country *j* currency.

Expressions (11.8a)–(11.8c) provide the foundation of an input–output, vent-for-surplus model in which the scarcity of demand – not resources – is the key component. Trade is based on absolute differences in money costs. Expression (11.8b) indicates that for the world as a whole trade is balanced. Expression (11.8c) also forms the basis for an exchange rate model, based on the relative underlying productivity conditions.[15]

A more general model of absolute advantage would take input prices, demand conditions and exchange rates as endogenous. In this case, world prices with trade must take into account imported inputs and capacity, demand and world money prices determined simultaneously. Autarky prices would be derived from given technology and factor prices and, in turn, 'notional' trade directions determined by ranking commodity prices by country. These could be used to determine demands for imported inputs, which provide the basis to recalculate the direction of trade. Once autarky prices are measured, countries could be ranked in terms of them, giving *m* rankings, one for each commodity. Applying the demand conditions would give (*a*) the cut-off line for export and imports and (*b*) the world price of each commodity, based on the marginal exporter. To account for trade in intermediate goods the prices must be recalculated based on world prices of inputs (that is, taking into account rents earned, and adjusting wages).

The model could be further developed to introduce innovation and labour intensity into the productivity (and thus price) equation. Allowing for a richer conception of the capitalist firm would provide a significant addition

to much work in the post-Keynesian/Marxian tradition. Income considerations can be brought in more explicitly by inverting Thirlwall's law of balance of payments constrained growth. This gives the growth-constrained balance of payments for nation *i*:

$$CA_i \lesseqgtr 0 \text{ as } y_i \gtreqless (a/b)y^* \qquad (11.9)$$

where *CA* is the current account, *y* is national income (* = rest-of-world) and *a* and *b* are the income elasticity of import and export demand respectively. The model should also account explicitly for the slow adjustment of wages, exchange rates and interest rates, and the positive feedback resulting from a particular specialization pattern. Capital mobility must be introduced, making the location decision part of the trade model, a function of international profit rate differentials and other factors. These modifications could draw on recent work by neo-Schumpeterians, post-Keynesians and neo-Marxists.[16]

CONCLUSION

With the exception of the Marxian literature on imperialism and the work in the Sraffian tradition putting into question the theoretical foundations of neoclassical theory, the post-Keynesian and Marxian traditions have had little impact on contemporary thinking on international trade. One reason for this may be that both traditions reject the classical dichotomy between a 'real' and a 'monetary' side of the economy, each lending itself to a separate sphere of analysis. And 'pure trade theory' requires such a dichotomy. A second, and related reason for the lack of influence of Keynes and Marx in international economics is their implicit refutation of the core concept of international trade theory: comparative advantage.

But the insights of these economists have been insufficiently developed. Such extensions may be of more than mere historical curiosity. The potential applications of a multi-country, multi-commodity absolute advantage trade model rooted in the post-Keynesian/Marxian tradition are numerous. Regional applications are obvious: the persistence of the US current account deficit and Japanese surplus continues to perplex trade economists (see, for example, Bergsten, 1991), but is not anomolous within an absolute advantage framework. Another straightforward application is to the transition in Central and Eastern Europe. This region has moved rapidly from a situation of relatively extensive internal and little external trade to the exact opposite position. A policy of rapid trade liberalization has been promoted on the premiss that the 'forces of comparative advantage' will lead to specialization and balanced trade. The absolute advantage approach provides no guarantee of competitiveness. Moreover, even if such competitiveness is established, there is no guarantee that the resulting specialization pattern will spur catch-up with the advanced industrialized countries (Elmslie and Milberg, 1993). The process of competing internationally on the basis of low wages (for a given skill-level), may be the best possible outcome for a country which fails to understand the role of policy in developing international competitiveness.

The proposed heterodox approach thus broadens our understanding of the role of the state in developing international competitiveness. International trade policy is no longer simply a question of free trade versus protectionism. In a world where resource scarcity and relative price changes play a secondary role in the determination of the dynamics of the international division of labour, the state is in the crucial position of providing organizational, skill-development and innovation incentives to promote growth and competitiveness. While the class interests of the state cannot be ignored in the analysis of such 'policy options', the issue is beyond the scope of this chapter.

NOTES

1. I am grateful to Faye Duchin, Bruce Elmslie, David Gordon, Hyman Minsky, Anwar Shaikh and participants in the Post Keynesian/Marxian conference at the University of Utah for comments and suggestions. The usual caveat applies.
2. Moreover, Maneschi (1992) argues that the static Ricardian model should be seen only as part of a larger, economic growth, framework.
3. Paradoxically, the Jones algorithm applied to even the 3×3 case is not consistent with all bilateral comparisons from the same group of countries (see the example in Jones, 1961).
4. For a complete description of the data base, see the appendix in Elmslie and Milberg (1992).
5. The total, or vertically integrated, labour coefficient is the element of the vector $\mathbf{v} = \mathbf{l}(I-A)^{-1}$, where $\mathbf{l}$ is the vector of unit labour requirements and A is the matrix of technical coefficients.
6. This is an example of Mirowski's (1988) theory that the translation of deterministic theories to a stochastic version has been important for salvaging their scientific status.
7. This is not to downplay the importance of two expressions of doubt about the general validity of the concept of comparative advantage. Markusen and MacDonald (1985) argue that the existence of certain non-convexities and institutional rigidities render comparative advantage inoperable at times. Brewer (1985) shows that the introduction of capital flows and rigid wages leads to a rejection of comparative advantage, even in the 2×2 context. Note also the neo-Ricardian contribution, which accepts the positive notion of comparative advantage but questions its normative implications once produced means of commodities are introduced (Steedman, 1979a, 1979b, and Mainwaring, 1990). Pasinetti's (1981) dynamic Ricardian model puts into question the *laissez-faire* policy implications of the static Ricardian model. Shaikh's (1980) Marxian critique is discussed below.

8. This has created a tension in the work of some NIE writers, whose theoretical modelling leads them to downplay the importance of comparative advantage, but whose training compels them to assert its primacy, mirroring the ambivalence of policy prescription in the NIE. See Milberg (1994).
9. This is just one of many possible effects of a persistent government deficit, and in fact a scenario based on the strict assumptions of perfect international capital mobility, flexible exchange rates, and a constant money supply. See Blecker (1990, pp. 174–6).
10. Brewer's (1985) results (see note 7) show the tenuousness of this assumption. A recent explanation of the failure of the trade balance to adjust in light of large changes in e is that changes in k apparently offset movements in e. This is the case of 'limited exchange rate pass-through' (Arestis and Milberg, 1993–4).
11. See Fagerberg (1988) and Dosi, et al. (1990).
12. This may explain why none of these critics of comparative advantage has pointed to the lack of generality of the concept, as discussed above (pp. 220–24).
13. Even the Dosi et al. (1990) model, the most fully developed to date, assumes comparative advantage and balanced trade once placed in a macro framework. Moreover, Dosi et al. are incorrect in citing Pasinetti's (1981) model as supporting their absolute advantage approach. Pasinetti's model as applied to trade is entirely driven by comparative advantage (see pp. 268 and 270). Income differentials are assumed to have no impact on world export market shares. For an empirical test of this model, see Milberg (1991).
14. Milberg and Elmslie (1992) argue that the vertically integrated approach has such features.
15. Such a model of exchange rate determination is developed by Shaikh (1992).
16. See Weisskopf (1987) and Gordon (1989) on labour intensity, Dosi et al. (1988) and Lazonick (1992) on firm organization, Thirlwall (1979) and Davidson (1990–91) on balance of payments constrained growth and Koechlin (1990) on the determinants of foreign investment.

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