



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

AGRICULTURAL COMPETITIVENESS: MARKET FORCES AND POLICY CHOICE

PROCEEDINGS
OF THE
TWENTY-SECOND
INTERNATIONAL CONFERENCE
OF AGRICULTURAL ECONOMISTS

*Held at Harare, Zimbabwe
22–29 August 1994*

Edited by
G.H. Peters, International Development Centre,
Queen Elizabeth House, University of Oxford, England
and
Douglas D. Hedley, Agriculture and Agri-Food, Canada

INTERNATIONAL ASSOCIATION OF
AGRICULTURAL ECONOMISTS
QUEEN ELIZABETH HOUSE
UNIVERSITY OF OXFORD

1995

Dartmouth

*Trade, Foreign Direct Investment and
Competitiveness in the European Food Industries*

INTRODUCTION

A country's 'competitiveness' in a specific product is usually assessed on the basis of a trade-based measure such as revealed comparative advantage. However, in today's circumstances, 'foreign production' – by which is meant production outside the home country by subsidiaries of multinational enterprises (MNEs) – surpasses exports of food for many developed countries. Likewise, domestic production by the subsidiaries of foreign owned MNEs is often greater than imports. As trade becomes a less important avenue for international transactions, questions must be raised about the validity of 'trade alone'-based measures of competitiveness. An attempt is made in this paper to incorporate foreign production into traditional trade-based indices. None of the measures presented is perfect, but they are a useful addition to the tool box.

It has become commonplace for any article containing the word 'competitiveness' in the title to devote its first few pages to a discussion of what is meant by the concept (see, for example, the collection of papers in Bredahl, *et al.*, 1994). As Bullock (1994) says in that volume, 'I do not want to see another definition of competitiveness' and 'we may have created another term that generates as much confusion and unproductive discussion as the word 'sustainability''. Unfortunately, since the issue is still unresolved, it is necessary to continue the tendency.

Having set out some markers by which competitiveness can be assessed and having indicated how, and to what extent, it can be incorporated into or modifies more traditional economic theories of comparative advantage and international production, the paper proceeds to calculate some competitiveness measures for the food industry taken as an aggregate in European Union (EU) countries.

CONCEPTS OF COMPETITIVENESS

Much of the confusion over what is meant by the term 'competitiveness' derives from the level at which it is considered, which may be for a country (or region within a country), an industrial sector or a firm. Those interested in the

*The University of Reading, United Kingdom.

competitiveness of a nation, as for example in the recent Commission white paper (1993), focus on the trade deficit, or on national productivity growth and the sectoral composition of output and their determinants (McCorrison and Sheldon, 1994). Those interested in an industrial sector stress levels and changes in the balance of trade and/or the performance of the firms in the sector. Much of the interest here has been in high-technology sectors, where the role of research and development (R&D) and technology transfer is important (Metcalf and Georghiou, 1992), though in this paper, obviously, the focus will be on the food industries. Finally, those concerned with the competitiveness of an individual firm, or of groups of firms in an industry (for example, the position of small and medium enterprises relative to large firms) stress market share and its growth. In the latter case, one may conceive of competitiveness as being assessed solely within a country, though in the first two cases the comparison is always with other countries. Whatever the level of analysis, two common features are that competitiveness should be assessed *relative* to some yardstick and that the emphasis should be on *growth*, or dynamic performance.

While the interest in this paper is in competitiveness at the industrial sector level, we are aware of the criticism that encouraging the competitiveness of one sector might be harmful to the economy as a whole. We will justify our interest, albeit not in an entirely rigorous manner.

The criticism of the sector level approach derives from the problem of moving from the partial to the general. Economists have long been familiar with the truism that a country cannot have a comparative advantage in everything and neither, the argument goes, can it have a competitive advantage (still undefined) in all sectors. However, whereas comparative advantage is like manna from heaven, since it is based on exogenously given relative resource endowments, and is therefore a value-neutral concept, competitive advantage is seen as something that is 'created' (or potentially created) by governments who, by focusing on a particular sector and assessing how to enhance its competitiveness, run the risk of attracting resources away from other sectors whose competitiveness they could better have enhanced. Thus economists have no difficulty with the notion that governments should ensure that comparative advantage is 'made the most of', even if this means intervention to eliminate non-market distortions caused by externalities or other market imperfections, since the outcome is an efficient (static) allocation of resources. However, actions taken with a view to changing comparative advantage, for example, through selective R&D, the development of advanced specific factor infrastructures, or the encouragement of competitive industrial 'clusters' (Porter, 1990), do not fit nicely into resource allocation models and smack of 'picking winners'.

We certainly have some sympathy with the view that economists have little advice to give on how to pick winners, even if that is one of the important tasks politicians have to undertake, so our justification is made within a single sector. Just as it is sensible to ensure that a single sector is statically efficient (does not waste resources), so it is equally sensible to ensure that it is dynamically efficient, in that conditions are created which promote growth. If each sector individually attempts to promote growth, the market can be left to sort out the long-term balance between sectors. Thus, if one were to suggest actions

that might promote the competitiveness of one particular sector, this would not thereby imply that it should be favoured over others, but only that the actions would provide the conditions for growth within it.

This leaves one problem: if the measures that appear necessary to promote growth in a specific sector involve major public expenditures, how should government discriminate among sectors? This thorny problem is left for another day!

MOTIVATIONS FOR TRADE AND FOREIGN PRODUCTION

Probably the most difficult issue in the competitiveness debate is how to incorporate foreign production by MNEs. One estimate (Handy and Henderson, 1994) suggests that foreign production by US firms (sales by foreign affiliates) is four times greater than the value of the country's exports of manufactured food products. For the United Kingdom, Balasubramanyan (1991) estimates exports and foreign production to be of approximately equal value. These authors also suggest that both trade and foreign direct investment (FDI) are concentrated in the hands of very few firms (and the same ones). Given that a competitive industrial sector must be comprised of competitive firms, how should the activities of these MNEs be incorporated into measures of competitiveness? Porter (1990) suggests that 'home base' is the distinguishing characteristic, arguing that, 'As long as the local company remains the true home base by retaining effective strategic, creative, and technical control, the nation still reaps most of the benefits to its economy even if the firm is owned by foreign investors or by a foreign firm.' Dunning (1977), on the other hand, defines a country's competitiveness as 'the ability to supply its own and other country's markets through its own firms, wherever they are located'. In other words, ownership is the defining characteristic.

It is beyond the scope of this paper to examine the relative merits of these two alternative views in depth; hence the empirical section presents indices based on both. However, a few words about the motives for firms to undertake trade and/or foreign production might be useful at this stage. Dunning (1977) groups the conditions that may lead a firm to engage in foreign production as:

- (1) Ownership (*O*) advantages specific to the firm. These include patent rights, the possession of superior managerial and marketing skills, advantages related to size that permit favourable access to inputs, global sourcing and distribution channels, and synergistic economies in finance, marketing or purchasing.
- (2) Locational (*L*) advantages that may favour the home or host country, such as resource endowments, input prices, investment incentives and advanced industry-specific factors.
- (3) Internalization (*I*) advantages that make transactions within a firm cheaper than relying on arms'-length markets, such as avoidance of search and negotiation costs, uncertainty about the quality and reliability of products, and the avoidance of government intervention, notably in the form of non-tariff barriers.

If one divides the main motives for foreign production of food MNEs according to whether they are natural resource-seeking (requiring such products as bananas or tropical beverages, or engaging in primary processing), market-seeking (selling final foods), efficiency-seeking (taking advantage of economies of scale and scope) or strategic asset-seeking (acquiring assets of long-run strategic value, either in enhancing the firm's own portfolio or preventing similar actions by a competitor), one can develop a matrix of the most important *O*, *L* and *I* advantages associated with each type of activity (Dunning, 1993). For example, the internalization advantage associated with control of foreign production involving reliance on natural resources may be stability of supplies at the right price. Ownership advantages that lead to foreign production of final foods may be associated with skills in new product development and the creation of brand loyalty (foreign production, rather than exports, permits more efficient adaptation of products to local demand conditions). Host country location advantages to efficiency seekers may be low labour costs or incentives and grants from governments.

While Dunning provides a framework which can clarify the issues that may lead a firm to export, undertake FDI or combine both, his analysis does not, in fact, take us close to understanding whether the performance of a firm's foreign subsidiaries should be considered as contributing to the host country's competitiveness, or whether the performance of domestic affiliates of foreign firms detracts from it. To approach that issue in static terms, the concept of retained value (RV) is useful (Jenkins, 1987). Here:

$$RV = W + L + P + (T - S)$$

where:

W = local wages,

L = local inputs (including rent and capital payments),

P = profits to local shareholders,

T = local taxes,

S = local subsidies.

From this it can be seen that the retained value associated with an affiliate of a foreign MNE is lower than for a domestic company to the extent that profits accrue to foreign shareholders and the affiliate obtains a larger share of its inputs (including labour) from abroad. The only benefits of production abroad by a domestic MNE are in the form of profits to domestic shareholders (plus returns to any inputs obtained from the home country that would otherwise be sourced from abroad), which in static terms is less desirable than domestic production associated with exports.

However, we began by arguing that competitiveness is a dynamic concept, so that, if firms gain dynamic advantages from overseas production, this may translate into growth in profits returned to domestic shareholders. It is, therefore, appropriate to conclude this part of the paper with brief comments about the growth of MNEs. The first thing to note is that internalization advantages are essentially static in nature. Changes in the external environment may result

in internal transactions replacing market transactions. The switch can result from the completion of the Single European Market, or from qualitative changes in consumer demand which have led to various forms of vertical coordination aimed at ensuring quality through the food chain. However, a new static equilibrium structure for the firm is the major result.

Ownership advantages, on the other hand, may well be associated with growth. In a dynamic (even if oligopolistic) market, 'the most innovative firms in an industry create a faster stream of more effective ownership advantages, and in so doing they increase their international production more rapidly and raise their world market share' (Cantwell, 1991). In other words, ownership advantages are necessary for a firm to innovate and raise its efficiency in comparison with its rivals (ability to manage growth is itself an ownership advantage) and the act of innovation and growth may in turn strengthen the firm's ownership advantages.

Such a dynamic view of firm growth complicates the analysis of the benefits to a country of its local firms compared with foreign MNE affiliates. Clearly a country will wish to strengthen its locational advantages in order to encourage domestic and foreign firms to locate within it. This implies that it should foster conditions suggested by a 'Porter Diamond' type of analysis (Porter, 1990). However, in a dynamic setting, in which some firms grow stronger and others weaker, a country will prefer its own firms to be the successful ones, even if their success implies an expansion of their foreign production at the expense of domestic production. In this sense, the measure of competitiveness that 'credits' a country with the foreign production of its firms may be more useful than simple trade-based measures.

INDICES OF COMPETITIVENESS

It has been argued that competitiveness should be measured in relative terms and that it is a dynamic concept. The indices presented below are not dynamic, but it is suggested that, in interpreting empirical observations, trends in the indices are more important than levels.

The first three indices described below are traditional trade-based measures of comparative advantage. Effectively, they are solely location-based measures that credit a country with all of the value of production located within its borders, whoever by, but none of the value of production by its firms abroad. The next three measures are the corresponding foreign production adjusted indices:

1 Export market share (XMS)

$$XMS_i = 100. (X_i/X_{iw})$$

where:

X_i is the value of national exports of industry i ;
 X_{iw} is the value of total world exports of industry i .

2 Balassa's (1987) index of revealed comparative advantage

$$XRCA_i = 100 \cdot (X_i/X_{iw})/(X/X_w)$$

where:

X is the value of national exports in all industries;
 X_w is the value of total world exports in all industries.

This index normalizes for the country's share in total world trade. A value greater than 100 implies a revealed comparative advantage in that product.

3 Balassa and Bauwen's (1988) net export index¹

$$NX_i = 100 \cdot (X_i - M_i)/Y_i$$

where:

M_i is the value of national imports of industry i ;
 Y_i is the value of production of industry i .

This index, which is a measure of net trade to total output, can take on positive or negative values, so is not strictly comparable with (2).

4 The Porter-adapted export market share

$$PXMS_i = [(X_i + IPO_i)/(X_{iw} + IPO_{iw})]$$

where:

IPO_i is the value of output produced by the country's outbound FDI in industry i ;
 IPO_{iw} is the value of output produced by the total world FDI in industry i ;

5 The Porter-adapted index of revealed comparative advantage

$$PRCA_i = 100 \cdot [(X_i + IPO_i)/(X_{iw} + IPO_{iw})]/[(X + IPO)/(X_w + IPO_w)]$$

where:

IPO is the value of output produced by the country's total stock of outbound FDI in all industries;
 IPO_w is the value of output produced by the total world stock of FDI in all industries.

The Porter adaptations simply add foreign production to exports, giving it equal weight. Implicitly this assumes that all of a country's firms producing abroad retain their country of origin as home base.

6 The Dunning-adapted net competitive advantage index

$$DNCA_i = 100 \cdot [(X_i + IPO_i) - (M_i + IPI_i)] / (Y_i + IPO_i - IPI_i)$$

where:

IPI_i is the value of output produced by the country's inbound FDI in industry i .

This is an index of the balance of internationally transacted (or competitive) output by national firms relative to the total output of national firms. Like the Porter adaptations, this measure gives output from outward FDI equal weight to exports. However, the Dunning measure gives no value to domestic production by foreign firms, which is treated in the same way as imports.

EMPIRICAL ANALYSIS

In the empirical exercise that follows we analyse the evolution of 'international performance' of the food, drink and tobacco (FDT) sectors of a number of European countries. The main objective is to observe the extent to which the inclusion of information on foreign production modifies traditional estimates of revealed comparative advantage.

A major difficulty in any such work is the lack of data on foreign direct investment, or their poor quality. At the aggregate FDT level, information has been obtained direct from national governments, or central banks, for the United States, France, Germany, Italy, the Netherlands, Portugal and the United Kingdom. Some countries report only flows, others flows and stocks (though sometimes it is difficult to see the relationship between the two). Some also report the value of foreign production. In this paper, where necessary, flows have been transformed into stocks by the simple procedure of adding up net flows (a procedure also used by the United Nations Centre for Transnational Corporations, 1992, and the EC in Davies, 1992). These were converted into a value of output measure using the average of the inward and outward asset-sales ratios reported for the United States² (United States Department of Commerce, personal communications). More details are given in the Appendix.

In the Appendix, Table A.1 shows estimates of the value of output from inward and outward FDI for selected EU countries and the United States. The data are not entirely consistent with the statements of Handy and Henderson (1994), or Balasubramanian (1991). Comparing foreign production estimates with trade estimates reported in Table A.2, US foreign production in 1991 was around 2.5 times as large as exports (cf. Handy and Henderson's estimate of 4 times), while UK foreign production was around 2 times as large as exports (cf. Balasubramanian's estimate that they were equal). France and the Netherlands also rely heavily on foreign production, with output levels 1.5 to 2 times the level of exports.

The results are reported in Appendix Tables A.3 to A.6.³ For the sake of brevity, measures (1) and (4) are not reported. Graphs of the four indices are presented in Figures 1 to 4 for France, Germany, Italy and the UK.

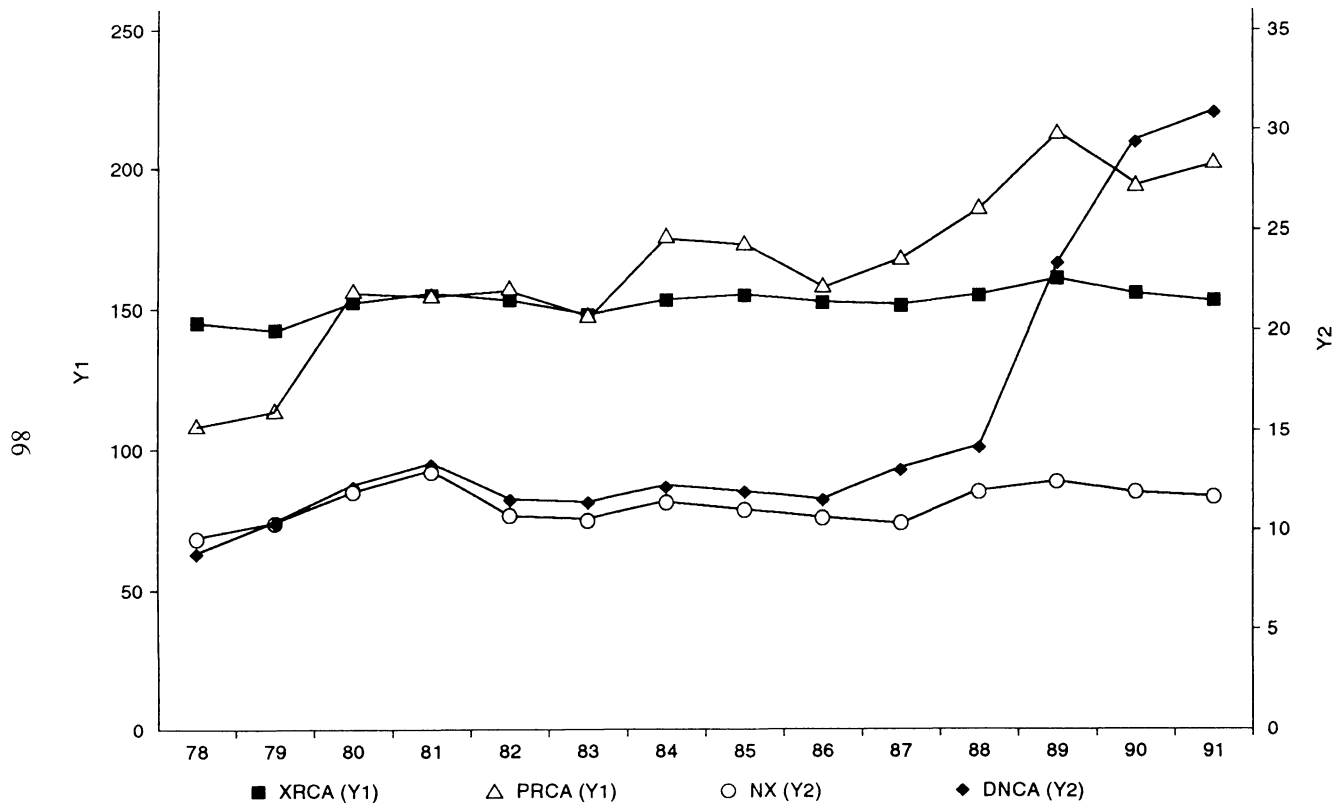


FIGURE 1 *France: trade & FDI adjusted indices*

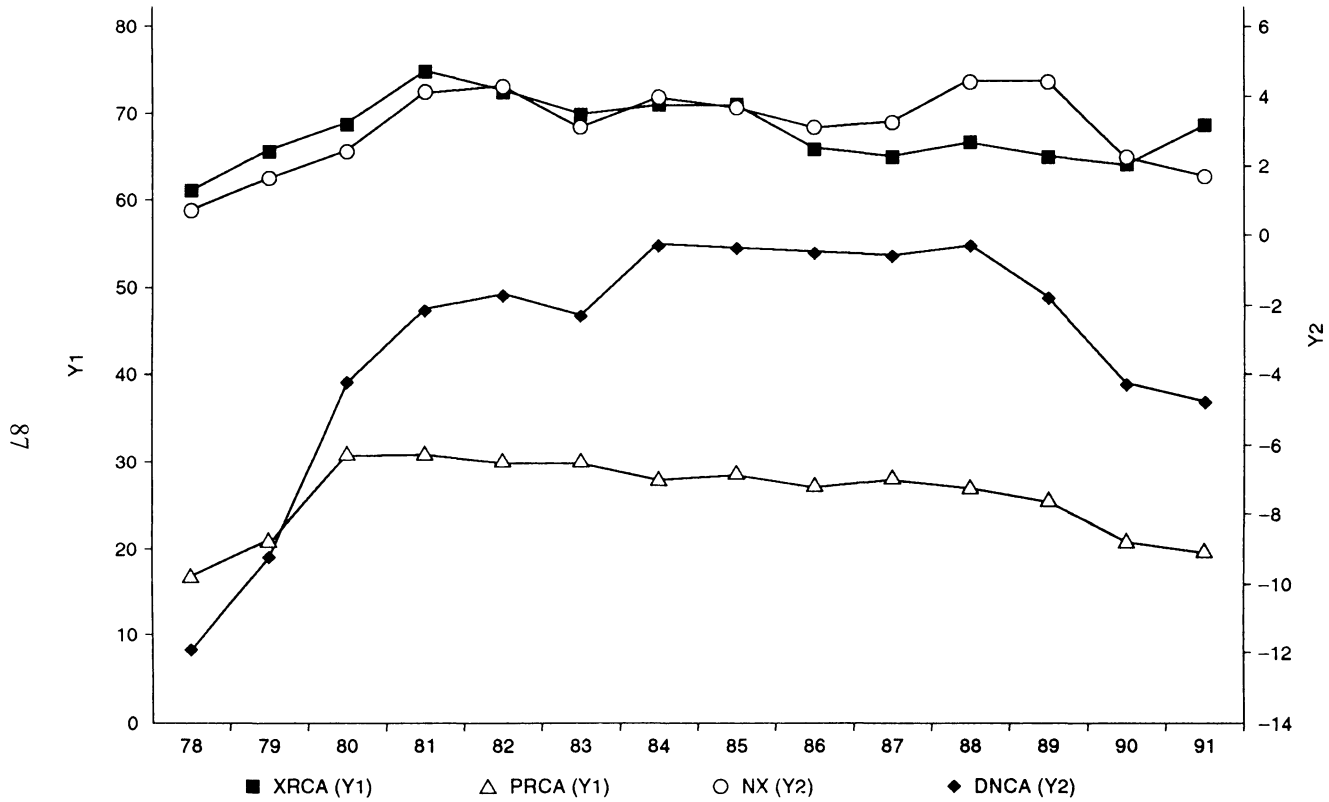


FIGURE 2 *Germany: trade & FDI adjusted indices*

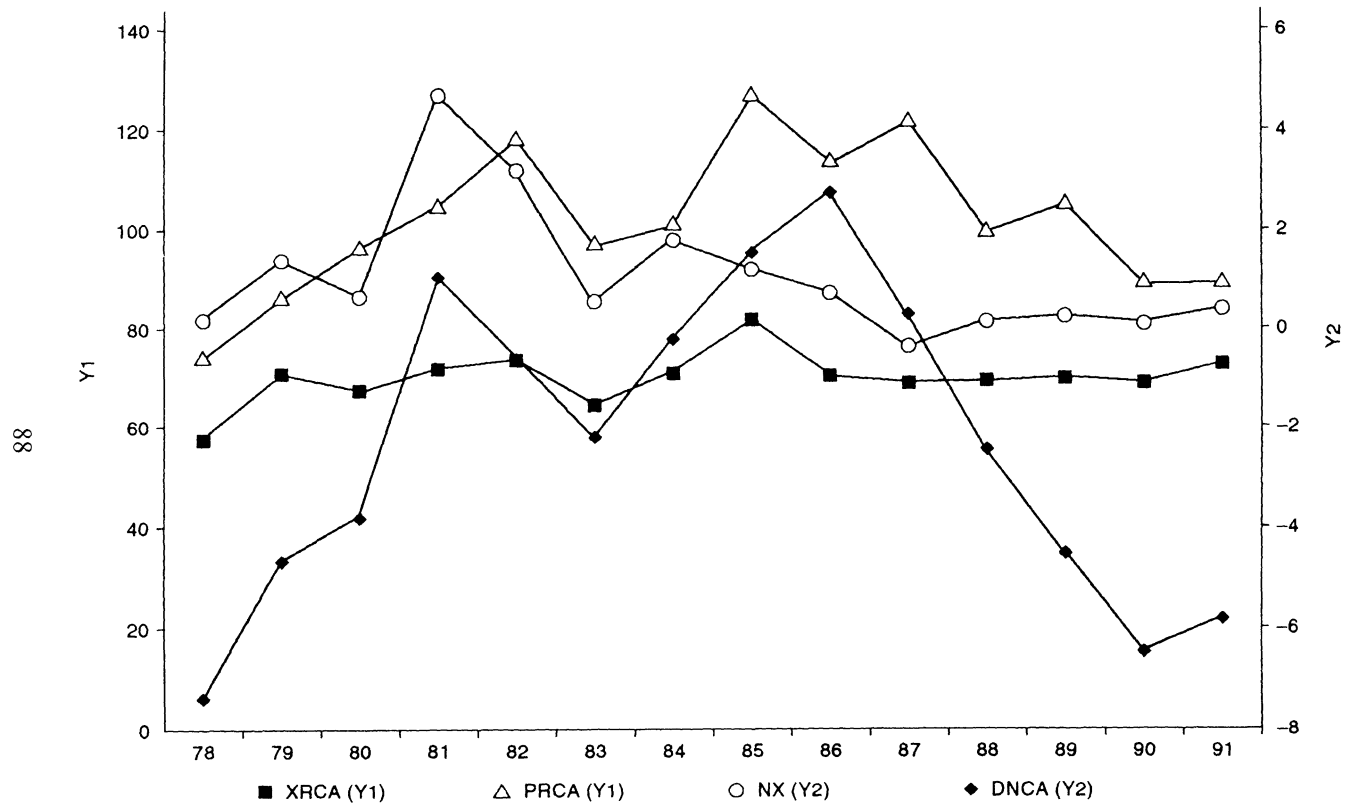


FIGURE 3 *Italy: trade & FDI adjusted indices*

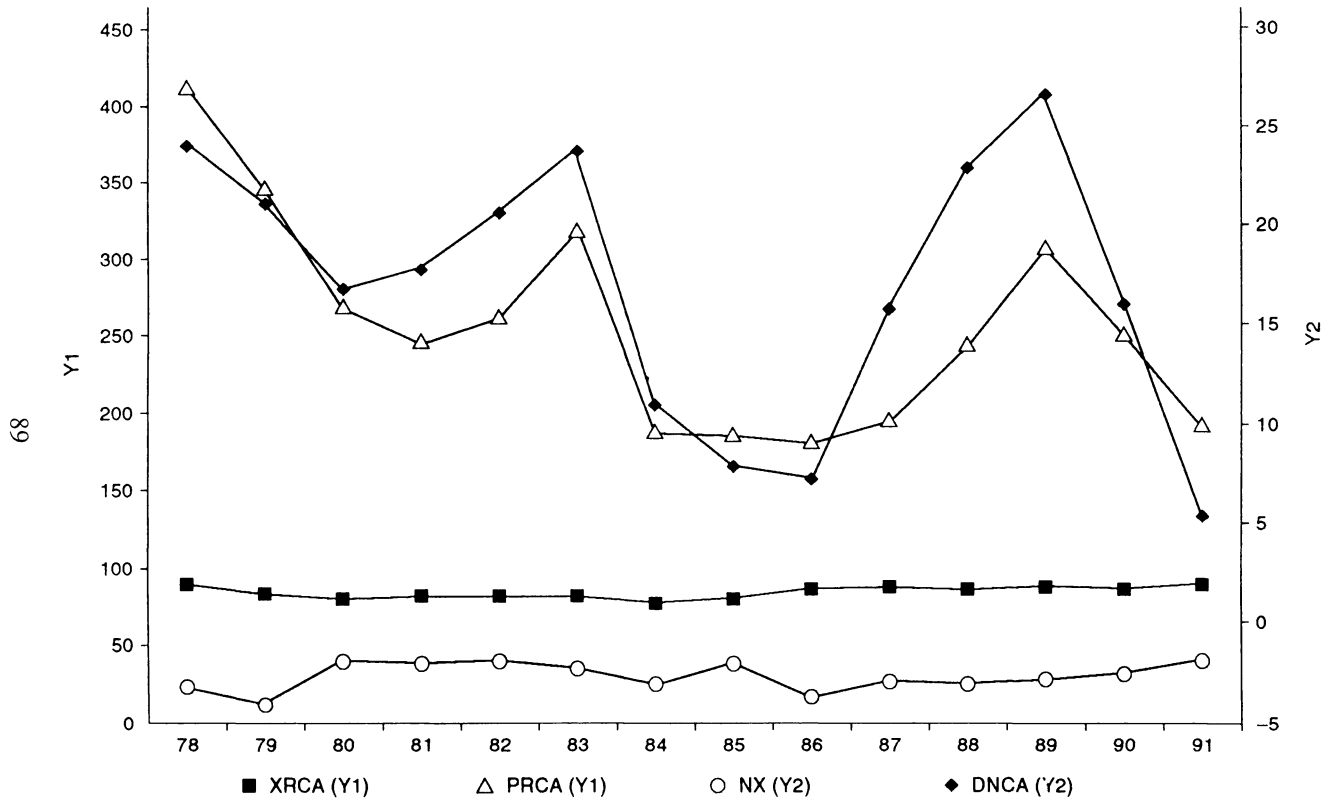


FIGURE 4 *UK: trade & FDI adjusted indices*

Assessment

For France (Figure 1), the indices which take foreign production into account are, since 1980, above the trade-based measures and are growing, while the trade-based measures are more or less stable. The most rapid growth is since 1986, a year after the EC's white paper launched the Internal Market (1992) project. It does not make much difference whether one looks at the Dunning or Porter adaptations. Clearly, France's firms are doing well internationally.

Germany's position (Figure 2) is stronger in trade than foreign production. The revealed comparative advantage measures show a downward trend through the 1980s (and both indices are less than 100), indicating that Germany's food industry is losing export and international production competitiveness relative to other sectors of the economy. However, the Dunning-adapted measure indicates a continuous upward trend until the last two years, suggesting that, at least until 1989, German food companies were improving their performance relative to the rest of the world's food companies.

For Italy (Figure 3), the situation is similar to that of France, the level of the indices that take foreign production into account being generally higher than her trade-based indices, but the situation is not so clear-cut once trends are considered. The revealed comparative advantage measure (XRCA), based on exports alone, shows a slight upward trend, indicating that Italian-based firms are competing well in world markets, and relatively better than all Italian industries. However, the trend of the net export measure (NX) is slightly downwards, implying that foreign firms are competing well in Italy. The picture changes quite considerably when foreign production is taken into account. For both measures, an upward trend to the mid-1980s is followed by a sharp reversal since the launch of the 1992 project, which indicates that Italian firms are losing competitiveness to their foreign rivals.

The United Kingdom (Figure 4) has a persistent negative trade balance in food products, with no apparent trend, nor is there any trend in export performance relative to the rest of the economy. The inclusion of foreign production makes a substantial difference to the level of the indices, but trends remain weak. British firms are strong performers relative to the firms of other countries, but they are merely holding their positions, not improving them.

CONCLUSIONS

The paper has argued that international competitiveness is a dynamic concept, that it should not be seen in terms of trade alone, but should incorporate foreign production by multinational enterprises. Adaptations of traditional trade-based indices have been developed and these indicate substantial differences both in the level of the indices (the United Kingdom, for example, is often considered uncompetitive because of a food trade deficit, but appears competitive when the overall performance of its firms is considered) and sometimes, more importantly, in the trends, as in the case of France. To our knowledge only Cantwell (1987) has explicitly attempted any similar adjustment in the past.⁴

No single measure captures all of the information and, individually, the measures can be hard to interpret. The export and foreign production market shares, which have not been presented, provide additional information to the reported indices. Taken together, the indices do provide useful insights into countries' performance trends and hence should be considered jointly. In this conclusion, we are in agreement with Metcalf and Georghiou (1992).

It is recognized that interpretation of the indices is further complicated because FDI is affected by macroeconomic variables, including exchange rates, and because motives for FDI vary between firms. Sometimes FDI might increase exports (the purchase of a foreign company in order to gain access to distribution channels for the investing firm's exports is a case in point); sometimes FDI might reduce exports (with foreign production being used for supply of a foreign market); and sometimes FDI might increase imports (for example, rationalization of production at a location outside the home country which is subsequently supplied by foreign production). Thus the trade and foreign production components of the composite indices may be related in complex and unpredictable ways, demanding caution in interpretation.

Information is a major problem. The data used for aggregate FDI came directly from personal communications with central banks and government agencies. There is little consistency in definition, and reliability is questionable. Given the conglomerate nature of multinational food firms, data at a greater level of disaggregation are unobtainable. Nevertheless, given the relatively small number of firms engaging in multinational activities, it should be possible to identify the firms involved and obtain estimates of inward and outward foreign production which can be used in computing the Dunning-adapted competitiveness index. This would, however, require detailed industry knowledge, making cross-country comparisons difficult.

This paper has not dealt with sources of competitive advantage and could not make policy prescriptions for improving competitiveness. We would argue that appropriate measurement is a necessary prior step to the analysis of reasons for a country doing well or badly.

NOTES

¹Balassa and Bauwens (1988) actually normalize net exports by $(X_i + M_i)$.

²It is evident that the estimated output values are sensitive to the chosen asset-sales ratio. We have no obvious explanation why the US ratio increases towards the mid-1980s, then falls. Individual company data are likewise unstable (more so), but are not inconsistent with asset-sales ratios of 30–40 per cent.

³As usual in such analysis, the 'world' totals are taken to be sums of the country data included in the analysis.

⁴Others interested in MNEs have tended to examine the export propensities of subsidiaries relative to parent companies (Kravis and Lipsey, 1992).

REFERENCES

- Balassa, B. (1987), *Comparative Advantage, Trade Policy and Economic Development*, New York: Harvester Wheatsheaf.

- Balassa, B. and Bauwens, L. (1988), *Changing Trade Patterns in Manufactured Goods: An Econometric Investigation*, Amsterdam: North-Holland.
- Balabusramanyan, V. (1991), *Entrepreneurship and the growth of the firm: the case of the British food and drinks firms*, Lancaster University Discussion Paper EC8/91.
- Bredahl, M.E., Abbott, P.C. and Reed, M.R. (eds) (1994), *Competitiveness in International Food Markets*, Boulder: Westview Press.
- Bullock, B. (1994), 'Research Implications of the Concept of Competitiveness', in Bredahl *et al.* (eds) (1994).
- Cantwell, J. (1987), *Technological Advantage as a Determinant of the International Economic Activity of Firms*, University of Reading Discussion Papers in International Investment and Business Studies, No. 105.
- Cantwell, J. (1991), 'A Survey of Theories of International Production', in C.N. Pitelis and R. Sugden (eds), *The Nature of the Transnational Firm*, London: Routledge.
- Commission of the European Communities (1993), *Growth, Competitiveness, Employment* (white paper), *Bulletin of the European Communities Supplement*, 6/93.
- Davies, S. (1992), *European Community Direct Investment 1984-1989*, Luxembourg: EUROSTAT.
- Dunning, J.H. (1977), 'Trade, Location of Economic Activity and the MNE: A Search for an Eclectic Approach', in B. Ohlin, P.O. Hesselborn and P.M. Wijkman (eds), *The International Location of Economic Activity*, Basingstoke: Macmillan.
- Dunning, J.H. (1993), *Multinational Enterprises and the Global Economy*, Wokingham: Addison-Wesley.
- Handy, C.R. and Henderson, D.R. (1994), 'Assessing the Role of Foreign Direct Investment in the Food Manufacturing Industry', in Bredahl *et al.*, (eds) (1994).
- Jenkins, R.O. (1987), *Transnational Corporations and Uneven Development. The Internationalization of Capital and the Third World*, New York: Methuen.
- Kravis, I.B. and Lipsey, R.E. (1992), 'Sources of Competitiveness of the United States and its Multinational Firms', *The Review of Economics and Statistics*, LXXIV (2).
- Metcalf, J.S. and Georghiou, L. (1992), *Evaluation of the Impact of European Research Programmes Upon Competitiveness of European Industry - Concepts and Approaches*, Luxembourg: EUROSTAT.
- McCorriston, S. and Sheldon, I. (1994), 'International Competitiveness: Implications of New International Economics', in Bredahl *et al.*, (eds) (1994).
- Porter, M.E. (1990), *The Competitive Advantage of Nations*, London: Macmillan.
- United Nations Centre for Transnational Corporations (1992), *World Investment Directory, 1992 vol. 3*, Geneva: UN.

APPENDIX

Output measures of foreign direct investment for the food, drink and tobacco sectors were obtained from estimates of the stock of FDI in the sector for each of the countries involved. Such estimates were mainly obtained from the central banks in each country or, for the United Kingdom and the United States, from the Central Statistical Office and the Department of Economic Analysis of the Department of Commerce, respectively. The information available from those sources, however, was not enough for the purposes of the paper, either because only data on flows existed (for example, Portugal) or because data for stocks were only available for certain years (for example, the United Kingdom and France).

Hence, following the procedure followed by both the United Nations Centre for Transnational Corporations (UNCTC, 1992) and the EC (Davies, 1992), whenever stocks were not available flows have been added to (subtracted from) previous (subsequent) stocks. It is obvious that such procedures intro-

duce errors in the series, which is particularly relevant in comparing different country positions.

In the remainder of this Appendix we describe the procedures followed for each case, whenever it was necessary to transform the original data.

Portugal

Inbound stock: the whole series is estimated by adding (subtracting) flows from the stock value in 1983 (source: Instituto de Investimento Estrangeiro).

Outbound stock: the whole series is obtained by adding up flows from 1978 onwards (that is, it assumes that stock 78 is zero).

United Kingdom

Inbound stock: for the years 1979/80, 1982/83, 1985/86, stocks were obtained by adding the flows for those years to the stock of the previous year.

Outbound stock: for the same years the same procedure was followed as above. For 1989, because no total figure was available, the value was computed from the stock of FDI in the EC+US, assuming that represented 75 per cent of the total (the weight used is the average between 1988 and 1990 values, and the resulting peak in the series matches the flows series).

France

Inbound/outbound stock: the two series were estimated by adding (subtracting) flows figures to the 1982 stock values (source: UNCTC, 1992).

TABLE A.1 *Estimates of the output value of inward and outward foreign production in FDT (bn \$US)*

	Total		France		USA		Italy		Netherlands		Germany		UK		Portugal	
	IPIiw	IPOiw	IPIi	IPOi	IPIi	IPOi	IPIi	IPOi	IPIi	IPOi	IPIi	IPOi	IPIi	IPOi	IPIi	IPOi
1978	35.5	73.6	0.3	0.0	10.1	28.7	2.0	0.5	4.7	16.9	7.9	1.2	10.4	26.4	0.0	0.0
1979	40.3	84.4	0.7	0.7	11.6	33.0	2.1	0.5	5.6	18.8	8.4	1.8	11.9	29.6	0.1	0.0
1980	39.7	66.6	1.3	1.5	15.6	26.4	1.7	0.4	4.5	11.4	6.3	1.6	10.3	25.4	0.1	0.0
1981	42.1	69.9	1.5	1.7	17.8	28.5	1.3	0.3	3.8	10.5	5.0	1.3	12.7	27.6	0.1	0.0
1982	45.5	67.3	1.5	1.9	20.7	23.7	1.3	0.3	3.9	10.4	4.9	1.4	13.3	29.5	0.1	0.0
1983	48.3	69.6	1.6	2.0	22.7	23.3	1.2	0.3	3.9	9.9	4.6	1.5	14.4	32.5	0.1	0.0
1984	45.6	57.5	1.7	2.2	24.7	24.4	1.5	0.8	4.5	11.0	3.7	1.4	9.5	17.8	0.1	0.0
1985	46.2	50.7	1.7	2.1	26.8	23.2	1.0	1.1	4.1	8.4	3.2	1.1	9.3	14.9	0.1	0.0
1986	53.0	61.9	1.9	2.4	29.7	27.8	1.5	2.3	5.4	10.7	4.2	1.5	10.3	17.2	0.1	0.0
1987	60.5	69.3	2.5	5.1	33.3	27.2	2.0	2.3	6.7	11.8	4.9	1.6	11.0	21.4	0.1	0.0
1988	89.3	110.7	11.8	14.1	43.9	35.4	4.2	2.8	9.2	15.9	6.4	2.4	13.6	40.2	0.2	0.0
1989	124.2	131.1	13.1	25.0	65.3	32.9	5.4	2.9	12.3	15.8	7.2	2.1	20.6	52.4	0.4	0.0
1990	142.4	163.3	15.2	39.1	66.2	45.0	7.4	3.5	17.7	26.3	10.4	3.8	24.9	45.5	0.6	0.0
1991	150.6	165.3	16.6	44.2	67.3	48.1	7.2	3.4	17.8	29.2	10.6	3.2	30.3	37.2	0.8	0.1

Note: IPI is the value of inward foreign production; IPO is the value of outward foreign production.

Sources: UK: Central Banks, Central Statistical Office; USA: Department of Commerce.

TABLE A.2 *Trade in food, drink and tobacco industry's products (bn \$US)*

	Total		France		USA		Italy		Netherlands		Germany		UK		Portugal	
	Miw	Xiw	Mi	Xi	Mi	Xi	Mi	Xi	Mi	Xi	Mi	Xi	Mi	Xi	Mi	Xi
1978	26.9	38.1	3.7	7.8	6.9	8.9	2.3	2.3	2.6	8.4	5.7	6.1	5.6	4.2	0.1	0.3
1979	32.7	46.9	4.3	9.6	8.1	10.7	3.2	3.5	3.3	10.0	6.6	7.7	7.0	4.8	0.2	0.5
1980	35.5	54.0	4.7	11.6	8.8	12.4	3.3	3.5	3.8	11.0	7.3	9.1	7.3	5.9	0.2	0.5
1981	33.8	53.6	4.3	11.0	9.6	12.6	2.5	3.8	3.4	10.8	6.7	9.2	7.1	5.8	0.2	0.4
1982	32.1	50.0	4.2	9.8	8.5	11.3	2.9	3.7	3.3	10.5	6.4	8.8	6.6	5.4	0.2	0.4
1983	32.3	47.9	4.1	9.3	9.2	11.2	3.0	3.2	3.2	10.4	6.3	8.1	6.4	5.1	0.1	0.5
1984	34.2	48.9	4.3	9.6	11.0	11.9	2.9	3.5	3.3	10.4	6.0	8.1	6.5	4.8	0.1	0.5
1985	36.2	49.2	4.6	9.7	11.3	10.5	3.7	4.1	3.4	10.5	6.5	8.5	6.6	5.5	0.1	0.5
1986	41.8	59.2	5.5	12.1	11.2	12.3	4.5	4.8	3.9	13.0	8.4	10.7	8.0	5.9	0.1	0.5
1987	48.9	69.1	6.8	14.3	11.6	13.2	5.8	5.6	5.4	15.4	9.8	12.6	9.3	7.3	0.3	0.6
1988	53.7	80.6	7.9	17.5	12.1	17.1	5.8	5.9	6.3	16.8	10.7	14.5	10.4	8.1	0.4	0.7
1989	53.8	83.4	8.0	18.2	12.0	17.8	6.1	6.2	5.7	17.4	10.8	14.4	10.7	8.5	0.6	0.8
1990	64.8	98.2	9.8	21.6	13.6	20.5	7.6	7.6	6.2	20.6	14.3	16.7	12.6	10.2	0.6	0.9
1991	67.5	102.2	10.3	22.0	13.0	21.1	8.1	8.3	6.7	21.0	16.0	18.0	12.7	10.9	0.8	1.0

Note: M is imports, X is exports.

Source: UN, *International Trade Statistics Yearbook*, various issues.

TABLE A.3 *Index of revealed comparative advantage for FDT (XRCA = 100 [(Xi/Xiw)/(X/Xw)]*

	Fr	USA	It	NL	D	UK	P
1978	144	88	58	237	61	88	200
1979	142	85	71	227	65	81	184
1980	152	82	66	218	69	79	164
1981	155	77	72	223	74	80	151
1982	153	76	74	229	72	81	150
1983	148	81	64	230	70	81	153
1984	153	79	71	235	71	76	150
1985	154	75	81	237	71	78	132
1986	152	81	69	242	66	83	111
1987	152	79	68	250	65	85	103
1988	155	79	69	241	67	83	101
1989	163	76	70	249	65	87	93
1990	158	80	69	239	64	84	86
1991	154	75	73	235	69	88	91

TABLE A.4 *Porter-adapted index of revealed competitive advantage for FDT, PRCA = 100 {[(Xi + IPOi)/(Xiw + IPOiw)]/[(X+IPO)/(Xw+IPOw)]}*

	Fr	USA	It	NL	D	UK	P
1978	107	67	74	441	17	410	107
1979	114	65	86	343	21	346	114
1980	155	47	96	259	31	270	134
1981	152	46	106	250	31	247	130
1982	157	42	119	254	30	259	129
1983	148	44	97	286	30	321	109
1984	176	43	101	277	28	185	189
1985	173	43	127	231	29	184	160
1986	158	51	113	241	27	177	156
1987	171	42	122	246	28	197	139
1988	187	38	99	265	27	246	109
1989	213	29	106	268	26	309	77
1990	196	35	89	346	21	251	91
1991	203	36	89	350	20	193	133

TABLE A.5 *Net export index of revealed comparative advantage for FDT, $NX = 100 [(X_i - M_i)/Y_i]$*

	Fr	USA	It	NL	D	UK	P
1978	10		0	27	1	-3	10
1979	10	9	1	27	2	-4	10
1980	12	1	1	27	3	-2	10
1981	13	1	5	32	4	-2	7
1982	11	1	3	33	4	-2	8
1983	10	1	1	34	3	-2	12
1984	11	0	2	35	4	-3	13
1985	11	0	1	36	4	-2	12
1986	11	0	1	35	3	-4	10
1987	10	0	0	33	3	-3	7
1988	12	1	0	33	4	-3	7
1989	12	2	0	37	4	-3	3
1990	12	2	0	40	2	-3	4
1991	12		0	38	2	-2	2

TABLE A.6 *Dunning-adapted index of net competitive advantage for FDT, $DNCA = 100 [(X_i + IPO_i) - (M_i + IPI_i)] / (Y_i + IPO_i - IPI_i)$*

	Fr	USA	It	NL	D	UK	P
1978	9		-7	53	-12	24	7
1979	10		-5	52	-9	21	7
1980	12	5	-4	42	-4	17	8
1981	13	5	1	47	-2	18	5
1982	12	2	-1	49	-2	20	6
1983	11	1	-2	49	-2	24	11
1984	12	0	0	51	0	11	12
1985	11	-2	2	47	0	8	10
1986	11	0	3	46	-1	7	7
1987	13	-1	0	43	-1	11	5
1988	14	-1	-3	45	0	23	2
1989	24	-8	-5	44	-2	27	-4
1990	29	-4	-7	51	-4	16	-3
1991	31		-6	53	-5	5	-7