

# Multinationals and World Trade

## Vertical Integration and the Division of Labour in World Industries

Mark Casson

in association with

David Barry   James Foreman-Peck  
Jean-Francois Hennart   Dennis Horner  
Robert A. Read   Bernard M. Wolf

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## Preface

This book reports the results of the Leverhulme Project on multi-nationals and intermediate product trade based at the University of Reading during the academic year 1982-3. The main results are summarized in Chapter 1. The remainder of the book is organized into two parts. Part I is theoretical, and comprises chapters on the division of labour and on vertical integration. Part II presents the results of a number of industry case studies specially commissioned for the project.

The project was directed by a committee of three, and I am grateful to my colleagues on the committee, John Dunning and George Norman, for their support and encouragement. We are indebted to the Leverhulme Trustees for their financial assistance. Special thanks are due to the Director and the Secretary for the helpful way in which the funds were administered. We are also grateful to the Economic and Social Research Council for the award of a project-linked studentship.

Robert Read was appointed Leverhulme Research Fellow and has proved exceptionally industrious. He has compressed about two-years research effort into a single year. The other authors listed on the title page acted as consultants to the project, and I am grateful to them for their co-operation. I hope they feel, like I do, that the project has worked well as a team effort.

Individual authors have made their acknowledgements in the notes to their chapters. It is appropriate at this stage, however, to recognize the valuable contribution of Jill Turner in administering the project on a day-to-day basis, and in typing drafts of most of the chapters. I am also grateful to my wife Janet for her help in the preparation of the final draft.

Mark Casson

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# 1 Introduction and Summary

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## 1.1 STRUCTURAL CHANGES IN THE WORLD ECONOMY

The last twenty years have witnessed some striking changes in the structure of world industry. The balance of economic power has shifted away from the United States and Western Europe towards the Middle East and South East Asia. Industrial employment in newly industrializing countries (NICs) such as Hong Kong, Singapore and the Republic of Korea has increased remarkably, whereas in the mature industrial economies it has remained static, or even declined.

There has been rapid growth in new industries such as electronics and pharmaceuticals, and relative stagnation in older industries, such as heavy engineering. Higher oil prices have adversely affected energy-intensive industries such as steel and petrochemicals.

The transition from old industries to new industries is only one part of the structural problem, however. Changes have been taking place within industries as well as between them. It is with changes of this kind that this book is mainly concerned. Within a given industry, each innovation of a new technology seems to advance the division of labour further than before. The activities which constitute the production process become more specialized, and the managerial problem of co-ordinating these separate activities becomes more complex. This aspect of technological advance has become particularly noticeable since the end of the Second World War. Within many industries, production processes have become split into a larger number of separate activities, and this has, in turn, increased the number and variety of intermediate products within the production system.

In some cases it is the development of a new kind of material that promotes the division of labour. In the first industrial revolution the replacement of wood by metal, and more recently the replacement of metal by plastics, has encouraged imaginative entrepreneurs to redesign their products to exploit the properties of the new materials. The redesign of a product on rational principles often leads to a design based upon interacting or interlocking components. To exploit economies of scale, each component is manufactured

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separately, and so enters as an intermediate product into the production process. There is intra-industry specialization between component production on the one hand, and the assembly of the final product on the other.

In other cases, it is the growth of the market for the product – due to changing tastes and social habits, or higher incomes – that encourages a switch from customized production to mass production. Mass production economies are often exploited best by redesigning the product so that production can be resolved into a series of routine operations carried out by specialized machines or specialist groups of workers. Each of these specialized operations generates a distinctive intermediate product.

The movement away from customization tends to reduce the range of consumer choice over the final product, but this can sometimes be offset by building flexibility into design of mass produced products. For example, while the components may be standardized, various permutations may be introduced into the way they are assembled, so that each permutation generates a new differentiation of the product.

This principle may be extended to render each differentiation of the mass produced product more flexible than its customized counterpart. For example, a switching system may be incorporated into the design, which allows different combinations of components to be activated at different times. This means that a single mass produced good with a switching system may substitute for an entire collection of different customized products. This is one reason why the mass produced product may be able to win a mass market among consumers.

The successful development of intermediate product trade depends upon the homogeneity of the intermediate products; failure to standardize individual units may create difficulties at later stages of production, or lead to break-downs in performance by the final product. Within manufacturing industry, therefore, the development of intermediate product trade goes hand in hand with emphasis on standardization and rigorous quality control. It is worth remarking that Japanese producers appear to have recognized the importance of this aspect more quickly than producers in other industrialized countries.

The growth in the number of intermediate products has enhanced opportunities for international specialization according to comparative advantage. At the same time, improvements in transport and communications, coupled with tariff reductions, have reduced the impediments to trade. The factors promoting the extension of the division of labour, and the growth of international specialization in production, are examined in detail in Chapter 2; they are summarized briefly in Table 1.1.

**Table 1.1 Factors promoting the extension of the division of labour and the international specialization of production**

*Affecting the division of labour in general:*

- (1) Advances in product design, especially the redesign of products as multicomponent goods
- (2) Skills in promoting the division of labour through standardization and quality control
- (3) Changes in tastes, and higher incomes, promoting the demand for mass-produced consumer durables

*Affecting international specialization in particular:*

- (4) Rural-urban migration in NICs
- (5) Better management education in developed countries
- (6) Improved communications: jet travel for executives, satellite links in telecommunications, etc.
- (7) Development of skills in organizing commercial intelligence
- (8) Improved transport systems: motorways, enlarged ports, containers, roll on/roll off systems, etc.
- (9) Creation of customs areas, free trade areas, export processing zones, etc.; also tariff preferences for NICs, and 'value added' tariffs
- (10) Development of new greenfield production sites

*Source:* Chapter 2.

One of the most important of these factors has been the growth of a large well-disciplined labour force in many NICs. This has made it economical to locate 'export platform' investments in cheap-labour countries which are remote from both sources of raw materials and centres of final demand. Intermediate products are imported into NICs at an early stage of production, and re-exported at a later stage of production.

Labour in these countries may be cheap for various reasons. It may be surplus agricultural labour, transferred to the industrial sector at a subsistence wage. It may be nonunionized labour, simply undercutting union wage rates in developed countries. It may be docile labour, working under a politically repressive regime. Alternatively, it may be highly productive labour, willing to adopt working practices which workers in developed countries will not accept (Beenstock, 1984). This last interpretation is supported by the fact that countries such as Hong Kong and Singapore have remained competitive even though their wages have risen quite sharply. It should also be noted that working conditions have improved in these countries. Improvements in working conditions are unlikely to occur in labour surplus economies because employers have an incentive to 'sweat' their workers when replacements are easy to obtain.

Multinational enterprises (MNEs) have played an important role

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in export-platform investments in many countries (Dunning, 1983). In the US electronics industry, the first off-shore assembly plant was set up by Fairchild in Hong Kong in 1962. By 1981 multinationals from US, Japan and Western Europe had about 120 off-shore plants distributed over about eighteen countries (Samuelsson, 1982).

The growth of trade to and from export platforms can be gauged from the growth of imports which are subject to 'value added tariffs' (Finger, 1975, 1976, 1977). This refers to goods re-imported after foreign processing, and subject to tariff, not on their sale price, but only on the amount of value added abroad. Helleiner (1981, Chapter 2) notes that the dollar value of US imports under this provision grew at 26 per cent per annum during the 1970s, and that imports from developing countries grew even more rapidly at 29.5 per cent. The major countries exporting to the US were Mexico, Taiwan, Singapore, Hong Kong and Malaysia, and the major products involved were textiles and electronic components. Similar provisions are offered by the European Community (EC) and by the Multi-Fibre Agreement.

Many countries designate 'export processing zones' to encourage export-platform investments. These zones offer special infrastructure, such as port facilities and power supplies, often at subsidized rates. Production is normally free of the duties, income taxes and minimum wage requirements etc., that prevail in the rest of the host economy. Table 1.2 reports estimates of employment in export processing zones in 1978 for those developing countries for which data are available. The dominant role of Asian and Central and South American countries is very clear. It is important, however, not to overstate the importance of these zones. Helleiner (1984) quotes figures derived by Maex (1983) which show that the zones account for only 4 per cent of total manufactured exports from the Republic of Korea, 12 per cent in the Philippines, 26 per cent in Sri Lanka and 41 per cent in Malaysia.

To some extent, the growth of export platform investments is welcome on efficiency grounds. It provides developing countries with income and employment that is not dependent upon foreign aid, and therefore does not involve a risk of political interference by donor agencies. It encourages an 'outward looking' trade and development policy, by allowing industrialization to proceed without the distortion of incentives generated by excessive protection of import-substituting industries. In the Brazilian motor industry in the 1960s, for example, high minimum requirements for local value added led to the proliferation of small, inefficient component manufacturers. But under the Special Fiscal Benefits for Exports Programme, to which all the major foreign investors were committed by 1976, local value

Table 1.2 *Employment in export-processing zones, 1978*

<i>Country<sup>1</sup></i>	<i>Employment (,000)</i>
<i>Asia</i>	
Hong Kong <sup>2</sup>	59.6
India	3.2
Malaysia	56.0
Philippines	24.6
Republic of Korea	120.0
Singapore <sup>3</sup>	105.0
Sri Lanka	5.2
Other	77.4
Total	451.0
<i>Africa</i>	
Mauritius <sup>4</sup>	17.5
Senegal	0.6
Total	18.1
<i>Latin America and Caribbean</i>	
Brazil	27.3
Columbia	2.8
Dominican Republic	14.4
El Salvador	2.9
Haiti	40.0
Honduras	1.5
Jamaica	1.0
Mexico	70.0
Nicaragua	5.0
Panama	0.6
Total	165.5
<i>Middle East</i>	
Egypt	10.0
Jordan	0.6
Syria Arab Republic	0.6
Total	11.2
Grand Total	645.8

Source: UNCTC (1983a), Table IV.6, p. 156.

Notes: <sup>1</sup> The Table includes only those countries for which employment figures are available.

<sup>2</sup> Relates to 1975 and includes only employment in foreign-owned firms.

<sup>3</sup> Relates to 1974.

<sup>4</sup> Relates to 1977.

added requirements were relaxed and tax relief on export sales was given. This has revitalized an ailing industry by stimulating increased export-oriented foreign investment (Mericle, 1984).

On the other hand, the growth of export platform production has 'exported jobs' from mature industrial economies. This would be of little consequence if the redundant workers in the affected industries were fully mobile, for then they could transfer to other employments. Economic losses would be reflected in lower wages rather than unemployment. To the extent that workers in the mature economies are immobile, however, they may remain idle once they have become redundant. Their wage, which measures the private employer's labour costs, may seriously overstate their opportunity earnings. In this case, factory closures may be privately profitable although they incur serious social losses for the mature economy. A developing country with a nonunionized labour force, for example, may be able to undercut the union wage in the developed country even though its opportunity cost of labour is actually higher. In cases such as this, the benefits to the developing country are likely to be much smaller than the losses to the developed country.

It must be recognized, however, that in some cases the alternative to export-platform production is not the retention of production in the mature economy, but the transfer of the entire industry to NICs. In such cases, the international division of labour may conserve jobs in the mature economy by allowing just some of the stages of production – instead of all of them – to move abroad. Proximity to export-processing zones may therefore be a competitive advantage to a mature economy because it reduces its overall cost of production relative to those of other mature industrial economies. Access to export processing zones in South East Asia and Latin America, for example, seems to have improved the competitiveness of certain industries in the south and west of the US. This has obliged their European competitors to develop off-shore processing in some of the poorer Mediterranean countries, and especially North Africa.

As trade becomes centred around export platforms, the stability of international economic relations may be undermined. Theory suggests that the profitability of export platform production is very sensitive to productivity differentials, transport costs and tariffs on intermediate products. Social and political unrest induced by hasty industrialization can reduce productivity; the outbreak of war somewhere along a crucial shipping route may increase transport costs; and protectionism in employment-losing countries can lead to increased tariffs.

The classic nineteenth century example of an export platform was the Lancashire cotton textile industry, which imported raw cotton

from the United States and exported finished goods to India and the rest of the world. The industry enjoyed a sustained spell of prosperity. It is worth noting, however, that at the time, Britain had undisputed control of the seas, was notable for its political stability (in spite of rapid industrialization) and through its imperial power controlled tariff policy in its major export markets. At the outbreak of the First World War, however, transport costs rose because of a shortage of shipping and a loss of maritime control, and the interruption of British supplies encouraged import-substituting investments in traditional export markets. It also provided the opportunity for a Japanese export drive into Britain's Far Eastern markets (Utley, 1931). After the war, the infant textile industries sought protection from exchange rate instability and from British competition, and with its imperial power declining Britain had only limited success in negotiating reductions in these tariffs. During the 1920s, therefore, the Lancashire textile industry went into rapid decline.

This example suggests that modern export-platform investments are likely to be vulnerable to changing world conditions unless – or until – the NICs are able to transform their increasing economic power into political influence, and thereby consolidate their trading position.

## **1.2 INTRA-FIRM TRADE IN INTERMEDIATE PRODUCTS**

This book examines the causes and consequences of the growth of intermediate product trade within industries. It is this type of trade that is most closely associated with export platform production. The book is particularly concerned with the role of intra-firm trade controlled by MNEs. By examining differences between industries, it is possible to identify some of the key determinants of the level and structure of intra-firm trade. It is shown that in certain types of industry the potential gains from intra-firm trade are relatively high. It is also shown that when the costs of intra-firm trade are high as well, firms have been able to improvise contractual arrangements which give them some of the benefits of intra-firm trade without all of the costs.

This section and the next introduce the basic analytical concepts and summarize the theory of intra-firm trade. Sections 1.4 – 1.6 provide a statistical profile of intra-firm trade and illustrate some of the pitfalls in the interpretation of the statistical evidence. Readers interested in the main results of the book may prefer to proceed directly to Section 1.7, which describes the advantages of the case

study method pursued in Part II of the book. Sections 1.8 – 1.14 summarize the results of the case studies, and interpret them in the light of the theory. The main conclusions are briefly set forth in Section 1.15. It is suggested that intra-firm trade has hitherto played an important role in stimulating intermediate product trade, but that in the future intra-firm trade may possibly have a more restrictive role.

An intermediate product may be defined as a product which is an output of one production process and an input to another. In other words, it is a product which flows within rather than across the boundaries of the production sector of the economy. For the purposes of this book, the bounds of the production sector are assumed to coincide with the conventional limits of corporate organization. With one exception, the discussion is confined to intermediate products which flow between processes within the same industry. Chapter 4, for example, focuses upon the use of motor components in the assembly of new cars rather than upon their supply to repair shops in the service sector. Shipping services are the main exception: Chapter 10 examines the role of shipping services as an intermediate input to other industries. The justification for this exceptional treatment is that shipping services play a crucial role in the transport of intermediate products within other industries.

Given the scope of this study, as described above, it is appropriate to distinguish three main types of intermediate product: raw materials, e.g. newly mined minerals, newly harvested crops, etc.; semi-processed materials, e.g. partly refined minerals, manufactured components, etc.; and finished products awaiting distribution, i.e. products ready to leave the factory for wholesaling and retailing.

Opportunities for intermediate product trade differ considerably between industries. From an historical point of view, trade between town and country has always been important. Raw materials and agricultural products are exported from country areas with low population densities to urban areas, where they are processed, and either consumed by the urban population or re-exported as finished goods back to the country. International trade in resource-based industries still conforms very much to this pattern.

The basis for such trade is a very simple division of labour between the growing or extraction of a product and its subsequent processing. This division of labour is often enforced by the geographical distribution of resources. For example, metal ores are exported to the towns because energy supplies for smelting are not available close to the mines.

In manufacturing industry the division of labour is much more sophisticated: it is a matter of policy rather than an accident of



geography. Writers like Babbage (1832) regard the systematic exploitation of the division of labour as the major feature of the manufacturing system. The division of labour is likely to be pursued furthest in industries where the different stages of production involve different technologies and call for different skills, and where the intermediate products are fairly cheap to transport. The medieval textile industries of Italy and South Germany exploited the division of labour to mass produce clothing (Mazzaoui, 1981). The Lancashire textile industry pursued the division of labour even further using mechanization, and the South East Asian textile industry of today pursues it further still. Precision engineering is another industry well suited to the division of labour because of the special skills required at each stage, and because the high value per unit weight of the typical precision component makes it relatively cheap to transport. It seems, therefore, that the industries in which the international division of labour is most vigorously pursued today are very much the same type of industry in which the division of labour was pursued in earlier times. The main difference is that today the division of labour is more sophisticated than ever before: it involves even greater specialization, and has spread further around the world.

Intermediate product trade is organized in different ways in different industries. Within industries, it may be organized differently at each stage of production.

Some agricultural products, and metals, are easily standardized and graded, and are traded on commodities markets. The markets are located in major commercial centres such as London, New York, Chicago and Hong Kong, where futures trading facilitates large scale speculation. Arm's length trade is normally intermediated by brokers, who enter into forward contracts but cover their positions.

In some industries, international price stabilization schemes operate side by side with commodities markets, though in many cases the schemes are ineffective. In the tin industry, for example, the official buffer stock is much smaller than the US government's strategic stockpile. The extension of these schemes is one of the aims of the UNCTAD Integrated Programme for Commodities. The typical scheme allocates funds to a jointly-managed board which intervenes in the market either by purchasing and then storing the commodity, or by taking a forward position in the market in the hope of influencing transactors' expectations.

In other cases, there is an attempt to channel all transactions through the same intermediary, such as an export cartel. Schemes of this kind were a feature of the inter-war period, and there has been renewed interest in them following the early success of the OPEC cartel.