Transnational Corporations in Electrical Industry

TRANSNATIONAL CORPORATIONS (TNCs) are producing an ever greater share of the world’s output of electrical goods. They also account for a very large share of the international trade in such goods, much of which is on an inter-firm basis. A study prepared at the request of the UNCTAD Secretariat by Richard S Newfarmer examines how the behaviour of TNCs in the electrical industry affects the development and trade of developing countries. (*The International Market Power of Transnational Corporations: A Case Study of the Electrical Industry* by Richard S Newfarmer: UNCTAD/ST/MD/13.) Excerpts from the summary and conclusions of the study are reproduced below.

The general objective of this study has been to show how electrical transnational conglomerates mobilise and use economic power in international and foreign markets and to understand its effects upon developing countries. In particular, it has focused attention on formal and informal interdependent behaviour whereby concerted tactics and uneasy oligopolistic equilibriums replace vigorous price competition in many markets.

**International Organisation of the Industry**

The electrical industry encompasses a great variety of capital and consumer goods. Capital goods include equipment for the generation, transmission and distribution of electricity, as well as motors to drive machinery. Consumer products range from familiar household appliances to the newest electronic products.

The leading firms usually produce the full range of these diverse products. The companies are huge by any standards, and their sales and production activities straddle the globe. Because they produce in dozens of national markets, they can be termed transnational conglomerates.

The salient characteristic of the international electrical industry is its concentration. Although exact measurement is not possible, it is safe to conclude that the leading share of major TNCs generate the bulk of the industry’s sales and control much of its advanced and patented technology. The leading diversified firms meet each other in many national and product markets. Mergers and acquisitions, often encouraged by home governments wanting to restructure home industries, have accelerated concentration within the industry. Besides their multiple contact points in many markets, the electrical TNCs have several extra-market ties. These take the form of equity holdings of each other’s stock, joint ventures around the world, licensing arrangements to share the industry’s most advanced technology, and consortia and cartels.

**Historical Forms of Rivalry and Interdependence**

Foreign markets attracted the attention of the dominant firms very early in the development of the industry. After a brief period of expansive foreign investment and trade activity lasting roughly from 1880 to 1900, enterprises began to appreciate the advantages of restraining international competition. From about 1900 to 1930, the world’s major firms relied increasingly on restrictive clauses in cross-licences of patented technology for the purpose of dividing up the world market into territories among themselves. The companies attempted to imede the flow of technology and industry to non-producing areas in order to preserve their shared world monopoly.

When the Great Depression came and demand weakened, frantic competition for exports expanded. Such cooperation could only be curtailed by formal international cartels. Major firms entered into “notification and compensation” agreements that successfully cartelised much of the industry’s world trade. The cartels included most of the world’s dominant firms and lasted at full strength well into the 1940s.

**Pre-1945 Restrictive Practices**

The market allocation arrangements through licensing agreements after 1900 retarded development in many of the non-producing countries up to the early 1940s. The restrictive practices were a result of the cross-licensing contracts among the industry’s major raised barriers to entry that were virtually insurmountable to outside firms, including domestic firms in developing countries. First, even if entrepreneurs in developing countries had had favourable economic conditions and a comparative advantage in production, they would have had great difficulty in obtaining the necessary technology. The companies wanted to prevent the growth of independent firms in the non-producing countries which were their export markets. Agreements restricted the diffusion of technology and manufacturing operations. Furthermore, the agreements ensured that exports would not disturb their home markets — including possible future exports from developing countries. Second, if domestic firms in developing countries had been able to obtain the technology through licences, they would still have experienced an absolute cost advantage (ceteris paribus) by an amount equal to their royalty payments.

Third, even large firms in developed countries using licences of others were prevented from using the group’s technology to begin manufacturing in most of the developing world. In the case of the AEG licences and cartels, for example, only when markets were cut off by trade restrictions during the Depression and the Second World War did these two companies set each other to begin manufacturing in developing countries under their respective patents. Effectively, there appeared to be tacit recognition that developing countries should remain importers from the industrialised world.

It is clear that the dominant firms wanted to impede the spread of technology to the non-producing countries to preserve their shared monopolies. Consequently, growth in the domestic electrical industry of each country and most other domestic manufacturing industries in developing countries by 1930 and even in the 1940s.

Besides implanting an industrial organisation that set the stage for post-1945 control of foreign markets by TNCs, the early restrictive practices allowed these corporations to receive the bulk of historical gains from trade. Territorial divisions of world markets reduced competition and undoubtedly resulted in above normal profits. Collusive pricing for cables, lamps and heavy equipments had the same effects. The absence of vigorous price competition transferred income from consuming groups in developing countries to the owners of capital and their managers. In other words, the concentrated structure of international production and concomitant restrictive practices served to shift investible surplus from the developing periphery to the industrialised centre.

**Era of Transnational Conglomerates**

In the late 1940s and early 1950s, the major TNCs of Germany and the US began to invest heavily in the developing world, following the course of other oligopolistic technology-intensive industries. Much of this investment was made defensively to maintain a share of markets newly protected by tariffs. Manufacturing abroad replaced trade in some final products. Thus the organisation of the post-war industry soon came to revolve around production units in several countries under the centralised direction of a score of industrial giants. Parents often supplied subsidiaries with intermediate products to be manufactured into final products locally as well as with the latest final products from home to be sold locally. Foreign investment became “the handmaiden of trade”.

**Strategies of Transnational Corporations**

Trade expanded rapidly after 1945, pari passu with foreign investment. An increasing proportion of exports from developed to developing countries, however, consisted of sales by
parent TNCs to their world network of subsidiaries. By 1970, about 20 per cent of all electrical exports from the United States were intrafirm transactions of TNCs. As a result, corporate planners enjoyed considerable flexibility in expanding sales around the world through non-market prices. A second change in the organisation of world trade in electricity was the importance of the growing markets of the developing countries. Nearly one-quarter of electrical exports from home countries went to developing countries by 1973.

Competition in ‘exports to developing countries’ continues to be characterised by varying forms of inter-country cartels and preferences. Despite a more hostile legal environment for cartels, the home countries’ tolerance continues to permit the cartelisation of exports. Electrical export cartels are officially registered in industrialised countries such as the Federal Republic of Germany, Japan and the United States. Many of the registered European cartels are international in scope and appear to be closely tied to the International Electrical Association (IEA).

Although secrecy surrounds most cartel arrangements, reports and cartel contracts of the IEA reveal extensive collusion in at least nine major product groups of the heavy equipment industry and include at least 37 producers. The cartel is organised into ‘Product Sections’, including Steam Turbines to Drive Generators (Section A), Steam Turbine Driven Alternators (Section B), Water Turbine Driven AC Generators (Section B), Synchronous Condensers (Section F), Circuit Breakers (Section G), Transformers (Section H), Rectifiers (Section K), Rolling Mill Equipment (Section L) and Water Turbine Generators (Section W). The most common provision is a notification clause. Under this clause producers agree to notify each other of any Secretaries learned upon learning of a tender, so that the prospective bidders may collectively set prices and determine which producer will submit the lowest bid. In addition, five of nine agreements contain provisions setting common minimum prices or reference prices. Three agreements contain provisions for the pooling of profits among cartel members. These contain formal allocation procedures and quotas for the apportionment of bids.

Other cartels covering electrical products exist outside the IEA. The most notable are the electrical cable cartel, called the International Cable Development Corporation (ICDC), and the paper and print cartel, called the International Telephone Cable Association. Reports on these industries indicate that the cartels set prices, allocate orders and set quotas for members as well as engage in predatory practices against outsiders. One of the most recent developments appears to be the collective review and approval of new investments in foreign countries undertaken in the ICDC. In this case at least the export cartel plays the part of an ‘investment cartel’.

Explicit forms of market regulation often are combined with informal understandings. Trade patterns show definite spheres of influence, especially evident in the case of cables and transformers. These understandings eliminate any chances of effective competition in the international market and represent the perpetuation of a virtually shared world monopoly.

Economic Consequences for Developing Regions

From the viewpoint of developing countries, market co-ordination tactics are perhaps more harmful because they are most prevalent in products crucial to industrialisation and the heavy equipment side of the industry. Allowing for intrafirm trade, international and national export cartels and informal concerted behaviour, it is estimated conservatively that at least 34-40 per cent of the international market in electrical products was subject to some form of market power exercised by TNCs.

This market power and trade restrictions affect industrialisation in developing countries through both the prices and the national economic structure. Competition-inhibiting behaviour permits TNCs to raise prices of exports above competitive price levels. Prices of imports into developing countries are therefore less than those that would be charged in the absence of the restrictive practices.

The structural consequences of formal and informal market agreements are perhaps more deleterious to developing economies than the short-run consequences of higher prices. As did the cases of indigenisation and licensing of technology, today’s cartels raise barriers to the entry of outsiders in particular markets. They are especially effective against the indigenous commercial interests in developing countries. The financial base of domestic firms is far smaller than that of cartel members, and because they are less diversified they cannot cross-subsidise losses for prolonged periods. Moreover, cartels often stifle entry by providing predatory practices against outsiders. Clauses containing rules for predation were reported in the transformer agreement of the IEA, in the cable agreements in the ICDC, and in the local cartel in Brazil. Finally, notification, compensation and allocation of bids among cartel members give them a competitive advantage over newcomers.

Besides making formal and informal agreements, leading TNCs protect their spheres of influence when neces-
sary with aggressive price-cutting. If the threat of potential entry is ever present, leaders may price their goods below entry-inducing level, but at high above marginal costs as possible. If the threat is especially severe, pricing tactics may include selling below cost for a period of time. Their subsidiaries may use the same tactics in overseas markets. The overall effect is to delay or to prevent the entry of domestically-owned firms in developing countries into the world market in electrical products. In these ways, restrictive practices stunt the growth of an independent, nationally controlled industry in developing countries.

Foreign Investment and International Market Power

The expansion of world trade has been accompanied by a dramatic increase in local production, giving TNCs access to local markets with varying forms of direct control. This study reviewed briefly four related aspects of international-market power associated with the foreign investment process: creation of spheres of influence, takeovers of local firms, the impact of concentration and product differentiation upon the profits of firms, and the consequences of denationalisation for vertical integration and exports.

Creation of Spheres of Influence.

Spheres of influence in the markets in which transnational firms operate are the logical extension of market allocation arrangements governing trade. The production cycle usually links exports to foreign investment as transnational corporations begin to manufacture locally products they had formerly exported to the domestic market. Consequently, trade restrictions on international trade, particularly formal market allocation arrangements, are likely to influence the decision on where to invest.

The few data that exist are consistent with this interpretation, though they do not exclude other explanations. The interdependent electrical major firms have established only tentative beachheads in each other’s traditional home territories, and have expanded aggressively. (The most recent exception is the Japanese entry into the overseas markets for consumer electronics.) In the developing world, United States electrical firms have established an above-average number of their subsidiaries in their traditional spheres, while Western European firms have done the same in their own territories. In the cable cartel, members have reportedly gone so far as to decide which countries are to become cable producers through their foreign investment, and where they would permit new capacity to be installed.

By recognising spheres of operational and the transnational corporations are able to exploit the oligopolistic structure of their home markets to markets overseas. By formally or informally limiting entry into certain overseas areas, transnational conglomerates can reduce the number of potential entrants in such markets and maintain high levels of concentration that would be reduced in the absence of investment forbearance. This forbearance reduces the number of potential entrants into a market, usually the most powerful being excluded. As a consequence, existing producers are able to maintain reduced monopoly levels with less fear of provoking new entry. Mutual invest-
ment forbearance should be added to the list of market-distorting factors that explain why transnational corporations tend to recreate the same concentrated market structures in developing countries that are found in the home countries.

Takeovers and denationalisation in developing countries. Related to the decision where to invest is the decision whether to acquire or by building a new plant. Acquisitions by TNCs in developing countries increasingly are reorganising the ownership of social resources in the electrical industry. This is especially true as development advances and domestic firms come into the market. In Latin America, for example, 42 per cent of United States electrical transnational corporations established their subsidiary operations by acquiring existing domestic firms in the 1958-1968 period. In Mexico, 60 per cent of the United States electrical TNCs established their operations by takeover. In Brazil, TNC takeovers accounted for nearly one third as large an increase in the foreign share of Brazil's electrical industry in the 1970s as the four major merger movements - Chile, Peru, Venezuela, Brazil - have developed in the electric equipment industry. More recently, a few of the largest TNCs in Brazil had considerable anti-competitive effects. These examples can probably be paralleled in other developing countries at similar stages of development.

Concentration and product differentiation. Once TNCs have established operations in the protected markets of developing countries, they often capture a large market share and advertise heavily to create an image for their trademarked products. The power of TNCs to extract above-normal profits is closely related to the level of concentration and industry advertising. Evidence for developing countries such as Pakistan, Mexico and Brazil shows that the higher the level of market concentration, the higher are a firm's profits, other things being equal. Product differentiation through advertising is also a powerful factor in raising and maintaining returns. Data for Brazil's electrical industry by itself demonstrate that as the degree of concentration and product differentiation rises so do profits generally increase.

Industrial performance in developing areas is adversely affected by the same distortions that market power commonly carries in any market economy. Market power reduces the efficiency of the economy by distorting the allocation of production through the price mechanism. Moreover, market power shifts income from consumers to managers and stockholders of firms, usually reducing income. In addition, administered prices appear to exacerbate inflation, especially cost-push inflation.

Although high market concentration and product differentiation are associated with high denationalisation (or foreign control), market power leads to additional distortions in industrial performance. Producers who receive the above-competitive levels of earnings are foreign-based and the flow of domestic resources come under the TNCs remit. When TNCs remit their earnings abroad, then market distortions consume valuable foreign exchange. On the other hand, if TNCs reinvest their profits, they strengthen their position in the market. Increased concentration has consequences for industrial performance because foreign firms behave differently from domestic firms.

Vertical integration and exports. One area in which foreign firms behave differently from domestic firms is that of vertical integration. Electrical transnational corporations generally have less economic incentive to integrate forward or backward than do domestic firms.

The case of the copper exporting countries appears to bear out the view that the internationally integrated foreign-owned industry has no incentive to establish a domestic industry making cables for export. None of the major copper exporters - Chile, Peru, Venezuela, Brazil - has developed a cable industry, in spite of their privileged access to the raw material. In fact, the four are all net cable importers. Vertical integration from refined copper to cables has not proceeded. Another form of local vertical integration, the cable backward, is import substitution. Data for Mexico and Brazil show that transnational corporations generally have a lower ratio of vertical linkages than do domestic firms in the industry. Likewise, subsidiaries of TNCs in Peru and Brazil have a much higher ratio of imports to total sales than have domestic firms. As transnational corporations strive to maintain open access to markets of developing countries, foreign investment is a vital means of increasing the home country's exports along with local sales.

Foreign ownership and international market power may affect export behaviour as well. First, an increasing portion of sales by subsidiaries of TNCs appears to be a result of the same parent organisation. As a result, host countries are vulnerable to abusive transfer pricing. Companies may under-price exported components in order to accumulate earnings in the home countries, diminishing the foreign exchange earnings of the host country.

Second, "export platforms" or "offshore assembly operations" may be only a temporary blessing - vulnerable to the move of a pin on the world map of a home office planner when wages rise. More importantly offshore assembly operations benefit only a few host countries and do not augur well for increases in electrical exports for the vast majority of developing countries.

Finally foreign ownership may influence the direction of the exports of subsidiaries. Although evidence is not abundant on this point, it is arguable that parents may steer a subsidiary's output away from their own markets and in some cases away from markets of their principal rivals to avoid unleashing competition.

Enlightening Case of Lamps

The lamp industry illustrates how a handful of producers use trade and foreign investment to control the world market in one product group. The lamp business set the initial pattern of interdependent behaviour among large electrical concerns, dating with the early Phoebe cartel in 1924. The upheavals of the early 1940s brought to an end its complex system of international pricing, and market regulation. It appears to have been replaced with an informal and perhaps less stable equilibrium among producers.

After the demise of the lamp cartel, market concentration increased and new price competition did not ensue in many of the developed countries. Data for the United States, Britain, France, the Federal Republic of Germany and other EEC countries indicate that the leading producers have established dominant positions in these markets. Moreover, the price, rigidity and paralllel pricing was evident in the 1950s and 1960s in markets of the EEC countries. Because of the defined areas of production established by producers in the EEC, price discrimination is still evident, despite the absence of tariffs. Besides the informal consensus of forbearance, quantity and loyalty rebates bind purchasers to domestic suppliers. These are often agreed upon in manufacturers' associations. They also make it difficult, if not impossible, for independent lamp producers in developing countries to capture market shares in the developed countries.

Foreign direct investment has been an important element of market control in the lamp industry. General Electric, Osram, Philips and GEC are renowned for their global and privileged position in Commonwealth (or former Commonwealth) countries.

Joint ventures and other co-ordinat ed production and pricing strategies in developing countries raise returns to transnational corporations. Evidence from India and Brazil indicates that producers use joint ventures and manufacturing associations in order to control output and prices. In the case of India, agreements among the principal suppliers effectively tied purchases of imports to certain producers, undoubtedly raising their cost to India. At the same time, the leading subsidiaries were debarred from exporting to the main industrialised markets of the world. Thus, in the case of lamps, foreign investment and trade activities have buttressed the control of the world market held by the interna tional oligopoly, and not threatened it.

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