Regionalized Production Networks in Asia Pacific and Regional Economic Integration

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The accepted process of regional integration has been following a pre-set pattern. Countries first give each other preferential treatment regarding trade in some specific products. The pack then develops into broader and wider aspects and a more formal and comprehensive agreement is reached. The process continues along the path into the field of migration, financial flows, economic policy harmonization, and so on. Each successive stage makes its inroads on national sovereignty and policy independence. After long and drawn-out processes, the market segmentation is finally declared eradicated completely and a single market is formed. However, we may sometimes ask: is this what countries in Asia Pacific really want? Or rather: will this be the final result interaction among countries in the region come about?

We want to discuss in this paper that the Asia-Pacific region is undergoing a particular arena of regionalized production networks which may ultimately come up with a different and more agreeable regional integration. The integration of Malaysia, Thailand and coastal China with Northeast Asian production has been one of the most marked changes in economic area of East Asia. The structural change involves creation of regional production networks and dispersion of productive processes across national frontiers. The result would be regional, or even global, as opposed to national industries. Regional schemes are more likely to be welfare-enhancing if they result in economic integration based on cross-border production networks.

Section I delineates how production in East Asia were permeated across border and became regionalized. Section II uses electronics industry as example to illustrate how regionalized production networks were actualized. Section III discusses the welfare gains of regional integration through production networks. Section IV explores the role of government in harnessing production networks and the dilemmas thereof. Section V concludes.

I. Regionalization of Production in East Asia

Regionalization of production in East Asian could be traced back to the Japanese colonial period. The pre-war Japanese production in Taiwan, Korea and Manchuria had set foundations. And the postwar direct investment in Taiwan by Japanese firms in such industries as electronics and machinery manufacturing in the late 1950s had fastened the root. In response to local ownership and content regulation by Taiwanese government, Japanese firms pursued a series of alliances with local enterprises (Bernard and Ravenhill 1992). The same patterns were also repeated, to a lesser extent, in Korea after the signing of the Japan-Korea normalization treaty in 1965.

A major change of regionalization of production in East Asia occurred in the 1980s, especially after the Plaza Accord in 1985, when the Group of Five (France, Germany, Japan, U.K. and U.S.) agreed to push down the value of the U.S. dollar as against the Japanese yen (see, *e.g.*, Funabashi 1989). While the agreement initiated very large currency realignment, it caused a significant change in economic relations in the Pacific Asia. Taiwan and Korea quickly took advantage of the surging yen as their exports became more competitive against Japan. The resulting surge in the U.S. imports from these countries in 1986-88 led the Reagan administration to impose pressures on the latter to appreciate their currencies too and open their markets. After their export markets in the U.S. were severely restricted, both Korea and Taiwan were "graduated" in 1989 by the U.S. from its Generalized System of Preferences (GSP) (see papers in Sakong *et al.* 1995).

The magnitude of currency realignment in the years following the Plaza Accord brought huge change in the competitiveness of domestic manufacturing in Japan, Korea and Taiwan. The yen was revalued in 1985-87 by close to 40%, and the Taiwanese NT dollar by 28% in the same period, while the Korean won by 17% from 1986 to 1988. At the same time, when Japan and the little Asian dragons (including Singapore) were appreciating their currencies against the U.S. dollar, China and the Southeast Asian countries were depreciating their currencies. These not only made the latter

more attractive to foreign investment but also more competitive in exports.

Currency appreciation combined with rise in relative wages pressured Japan and the Northeast Asian newly industrialized countries (NICs) to move some of their domestic production abroad. The obvious destinations were none but China and the ASEAN countries, especially coastal area of China, Malaysia and Thailand. They were not only geographically close by but also intimately related to the investing countries. Taiwan has the advantage of "natural" link with China, while Malaysia and Thailand not only continued to benefit from the U.S. GSP but also offered huge overseas Chinese connections and/or English-speaking labor force.

These countries adopted several measures to attract foreign investors, especially during the second half of the 1980s, in response to burgeoning current account deficits and increasing debt problems in the mid-1980s because of declining commodity prices with slower world economic growth. Many inflows of capital were also declining, especially those of foreign development assistance. Many Southeast Asian governments removed restrictions to foreign investment by, for example, signing investment guarantee agreements, and adopted several investment encouragement measures such as tax holidays and accelerated depreciation.

The huge increase of overseas direct investment from Japan, Taiwan and Korea in the second half of the 1980s resulted in major changes *quantitatively* in the regionalization of production. By the end of the 1980s, Japan was the largest source of foreign direct investment in the world, with an average annual rate of above 50% during the period of 1986-89. The annual outflow of investment amounted to $48 billion at the end of the period as compared to $6.5 billion in 1985 (Urata 1993). These are significant increases in manufacturing investment, even though the share of Asian countries in Japanese total overseas investment declined because of her large outflows to North American and European countries. In fact, Japan's investment in manufacturing in Asian countries in the period of 1986-89 exceeded the cumulative amount for the

period of 1951-85 (Urata 1993).

Within Asia, the *pattern* of regionalization of production also changed dramatically, in terms of both location and sectors. By 1985, Japanese manufacturing investments in ASEAN countries already exceeded those to the NICs. The gap subsequently widened after 1986, as the destination of Japanese investment in consumer goods for the global market switched from the NICs to ASEAN. Japanese manufacturing investment in Taiwan and Korea was increasingly focused in production for their domestic markets and many other Japanese investments there were increasingly toward services (Takeuchi 1990). As for the ASEAN countries, Japanese investment changed swiftly from textiles and metals to the production of electrical machinery (see, *e.g.,* Tran 1997; Heinrich and Konan 2001).

The growth in Taiwanese and Korean investment in ASEAN was also significant and, in fact, even more dramatic. At the end of 1987, the total stock of Taiwanese investment in manufacturing in ASEAN was $78 million. A total of $850 million was invested in the following three years. Electronics was the single largest sector of Taiwanese investment in ASEAN, similar to Japanese investment (Chen and Chen 1998). Korean investment in ASEAN countries also surged from accumulation of $42 million in 1985 to $132 million in the year of 1989 alone. The share of the four East Asian NICs combined in foreign investment in all ASEAN countries except Thailand was comparable to that of Japan at the end of the 1980s (World Bank 1996).

In the years immediately following the Plaza Accord, Malaysia, Thailand and coastal China have all increasingly become so linked to production in Northeast Asia that we may speak of regionalization of production, especially in some manufacturing sectors. A significant feature of the regionalization of production is the locus of production activities in "networks" of firms coordinated with each other and other organizations in the network. In the following section, we discuss how these regionalized networks of production are operating in Northeast and Southeast Asia and how they

are distinguished from other production networks.

II. Regionalized Networks of Production

The integration of Malaysia, Thailand and parts of China with Northeast Asian production has resulted in remarkable changes in organizational structure of the East Asian economies. In this section, we use a case study from the electronics industry to examine the rise in regional production networks and discuss their implications for the region's development.

The most prominent change in regional production since the Plaza Accord has been the rapid shift of much of Northeast Asia's low-end consumer electronics production to Malaysia and, to a lesser extent, Thailand. Later they also shifted from the ASEAN region to China and even to Vietnam (World Bank 1996). In a mere five-year expanse, much of the low-end, export-oriented consumer electronics assembly industry were transferred to Southeast Asia and parts of China from Northeast Asia, where the industry had long been built up since the 1950s.

Foreign firms, for example, from the U.S. and Japan have played an important catalytic role for the development of Taiwan's electronics industry. And, starting from the 1980s, domestic firms accumulated a critical mass of technological and organizational capabilities that have transcended them beyond a role as junior partners of U.S. and Japanese firms (Guerrieri 1998). Taiwan has achieved an extreme trade specialization. Both its exports and imports are dominated by just one product group: electronic data processing was responsible for nearly 55% of exports, while nearly 60% of Taiwan's imports are electronic components in 1993. Over the years, Taiwan has established itself as a world-class supplier of a variety of electronic products and it has become the world's largest manufacturer of notebook PCs as well as a strong position in the semiconductor industry (Ernst and Guerrieri 1998).

Northeast Asian investment in ASEAN has brought a number of changes to the structure of production in the electronics industry. One prominent example is the in-

vestment by the Taiwanese firm Kinpo Electronics in Thailand. The Taipei-based Kinpo Electronics manufactures calculators, facsimile machines, and other office automation equipment. It exported 88% of its total sales in 1990, with almost all of its exports going to the U.S. and Canada (Bernard and Ravenhill 1995, 186). Kinpo is one of the largest Taiwanese electronics firms, but its export pattern and the nature of its foreign investment is quite typical.

Kinpo opened a factory in Thailand in April 1990 to manufacture low-end calculators that could no longer be produced and exported from Taiwan at a profit. Kinpo has been assembling on an original-equipment-manufacturing (OEM) basis, a majority of its calculators for Japanese companies as Casio and Canon. Since the appreciation of the yen it has been working closely with Sharp Corporation in Osaka and it undertook investment in Thailand after consulting with Sharp. It was Sharp who decided to rely on a supply from Kinpo rather than open a factory in Thailand itself. The innovation of the product, the brand name and the marketing were all by Japanese. Key components for the calculators, such as liquid crystal displays (LCDs), and production equipment in the Thai factory, such as insertion equipment, were imported from Japan. On the other hand, procurement and administration were controlled from Taipei, and managers of the plant were Taiwanese. The labor was Thai. Output from the plant was exclusively for export. Kinpo's production was recorded, in international trade data, as exports of electronic products from Thailand, while the products appeared as Japanese to purchasers. Nevertheless, in direct investment statistics, it appeared as a Taiwanese investment.

It is evident from the above discussion that the emergence of regional production networks in the electronics industry transcends the notion of state-specific production. The supply of components and final product is linked to specific skills from different places. It is not merely a Taiwanese investment or exported final product from Thailand that was in fact designed in Japan. They constitute a complex network that transcends the sum of the individual transactions recorded in investment or trade sta-

tistics. The Japanese consumer electronics industry has transformed itself based on innovation at home, and created a linkage between hardware and software through acquisition of production companies in the U.S. The Taiwanese industry, in contrast, has been unsuccessful in replicating the innovation capacity or the component production capability of the Japanese industry. Its producers still depend on Japanese suppliers for key components and increasingly import Japanese products. They gradually ceased exporting from their Taiwanese operations, and, with liberalization of trade, have resulted in imports of new generations of Japanese consumer electronics (Bernard 1991, as cited in Bernard and Ravenhill 1995, 188).

Thus, despite all its achievements, it is fair to say that Taiwan's electronics industry is still vulnerable, based on a weak foundation. Its heavy dependence on component imports from Japan has been the root cause for Taiwan's exploding electronics trade deficit with Japan. As Taiwan intertwined continuously with Japan's Asian production network, it is interesting to note that there are two important developments. On one hand, Japanese electronics companies have drastically increased their OEM purchase from Taiwanese firms since 1994, and, on the other hand, Taiwan is now becoming a critical supply base for a variety of electronics components.

As to Southeast Asian countries, there existed a much more extreme form of technological dependence than that of Korean and Taiwanese high-technology production. As Kunio Yoshihara (1988) commented, the ASEAN region has experienced "technologyless" industrialization (p. 111). In contrast to the Northeast Asian NICs, the latter region is heavily dependent on subsidiaries of transnational corporations for manufactured exports. The dominance of Japanese subsidiaries in production networks in Southeast Asia provided ASEAN countries with an advantage over those of Korea and Taiwan. Some of the fall in imports of consumer electronic products from Korea and Taiwan in the Japanese market in the late 1980s was the result of their replacement by imports of Japanese subsidiaries in Southeast Asia. Since Japanese companies maintained control over the use of technology in their Southeast Asian

subsidiaries, the companies in these production networks were more likely to obtain the latest production technologies than their locally owned counterparts in Korea and Taiwan. The major barrier preventing increase in inputs from domestic firms in Southeast Asia is the inability of local companies to produce goods of the desired quality and required reliability by the Japanese.

As we noted above, the emergence of regional production networks in the electronics industry transcends the notion of state-specific production. The hierarchical nature of regional production, that is dependent on supply of Japanese components and machinery, did not reveal the demise of the domestic consumer electronics industry in Japan. Furthermore, Korea and Taiwan did not replicate Japan's experience in consumer electronics so successfully as they moved into higher value-added sectors vacated by Japanese producers. Japanese investment in regionalized production of consumer electronics was accompanied by continued innovation at home. This contrasts prominently with the Taiwanese experience, where its investment in Southeast Asian electronics assembly has been accompanied by stark disappearance of consumer electronics production at home.

III. The Role of Production Networks in Regional Economic Integration

Economic integration is defined here as a process that increases economic exchanges beyond national boundaries. A formal integration is facilitated by regional integrative organizations and comprehensive legal agreements which cover a dominant portion of international exchanges among several economies, such as a free trade agreement. On the other hand, economies could be integrated implicitly by private sectors without any explicit agreement or other organization.

East Asia is a region where formal integration is rare compared to other places. It is much more heterogeneous than Europe or North America. It has long been recognized that heterogeneity is a major barrier to regional integration (see, *e.g.*, Frankel, Stein and Wei 1996). There are generally three kinds of political system in the Asian members of Asia Pacific Economic Cooperation (APEC): a communist system (China

and Vietnam), an authoritarian capitalist system (typical of most East Asian economies), and a democratic capitalist system (Japan, Korea, Taiwan and some newly democratized countries). In contrast, all members of European Union (EU) and North American Free Trade Area (NAFTA) are democratic. The levels of economic development of Asian countries are so diverse that per capita income in one country could be over 100 times of the other (like Japan and Vietnam), while income differences in EU and NAFTA are at most 3.5 times (Sweden and Greece) and 7.1 times (the U.S. and Mexico) respectively (Peng 2000). Cultural and social diversity is also very huge in Asia Pacific. The three main ethnic groups—Japanese, Chinese and Muslim—could hardly communicate with each other smoothly or get along comfortably.

In the Asia Pacific region, despite highly complementary economies, various barriers have made intra-regional economic exchanges difficult. The above-mentioned regional production networks are very helpful in overcoming those barriers. Even though it is hardly a match with Europe, the increase in the ratio of intra-regional trade in Asia is still impressive. The ratio increased to over 50% in 1995 as compared to around 40% for many years before 1980 (Anderson and Francois 1997, Table 2). Some people tend to attribute this increasing intra-regional trade to the lowering of trade barriers. But since trade barriers were also lowered in comparable scale in other places of the world, it is hard to imagine why countries in the region would tilt trade relations to other members of the regions simply because trade barriers of the whole world were lowered! Therefore, there must be some other explanations.

The answer could be partly found in the regional production networks of the Asia Pacific. It has been shown in a variety of context that offshore sourcing or cross-border production of components can be strongly welfare-enhancing. It has been further shown that such foreign procurement creates jobs and expands output in the industries which it occurs and that it frequently raises wages (see, *e.g.,* Arndt 2001; Deardorff 2001). The basic idea is to think of the region rather than the nation as the production base and to spread component production around the region in accordance

with comparative advantage. The object is to raise efficiency, reduce production costs, and increase competitiveness, and thereby to gain market share for all the region's players.

From the viewpoint of standard trade theory, in a trade preference arrangement, the relative commodity price will lie somewhere between the world price and the initial tariff-inclusive domestic price. If the resulting price approaches (higher) domestic price and moves away from the (lower) world price, the arrangement is more likely to be trade-diverting, in which trade is diverted from lower-cost producers to higher-cost ones (Johnson 1965). The countries of ASEAN are well aware of the problem. Even though, as they also recognize, a variety of dynamic effects, including scale economies, FDI, and endogenous growth, can more than compensate for the above static effects, the dynamic effects will often be limited by the small scale of national markets and the geographic area encompassed by the regional arrangement. The countries of the Asia Pacific are quite aware of this constraint inherent in the traditional model of regional integration. They have reacted by exploring alternative approaches, which may contain the forces of trade diversion and to encourage trade creation. Creation of a regional economy, with regionally structured production networks, is likely to be more beneficial than preferential trade liberalization which tend to segment member economies of the region from each other.

The technology-initiating Japanese companies are aware that if foreign sourcing of a component is cost-saving, then it improves the competitiveness of the final product of which it is a part. If the firm that makes the final product is a price-taker, then reduction in production costs increases profitability and creates an incentive to expand output. And if the firm is a price-maker in final product markets, then the reduction in costs brought about by offshore sourcing enables it to lower price and thus gain market share. When final products consist of multiple components whose production technologies differ, then factor intensities will vary across components. The factor intensity of the final product itself is simply the weighted average of the factor intensi-

ties of its constituent components. Varying factor intensities across components mean that countries' comparative advantage will vary across components, just as varies across final products. A labor-rich, low-wage country will possess comparative advantage in labor-intensive components, and so on. These considerations also apply to the factor intensity of product assembly.

It follows that if countries involved in the regional trading arrangement specialize in component production according to the dictate of comparative advantage, all countries' welfare will rise. Thus, the effect of component production specialization is similar to the effect of technical progress. An important feature of this regional arrangement of production is that every country which moves to offshore procurement of components it has comparative disadvantage will experience a welfare improvement. The focus is to facilitate intra-regional trade and stimulate the creation of regional production networks and regional firms. This kind of approach is to create an integrated region whose purpose is not to protect regional producers from outside competition, but to enable the region's producers to become more efficient and competitive through location decisions that are not constrained by national frontiers. Trade is mainly to permit the unimpeded flow of components and final products within the region. The cost-saving consequence of the regional market is to make indigenous producers compete more effectively within the region with outside competitors as well as to enable the region's exports to compete in other markets.

IV. Government Policies in Indigenous Production Networks

Despite the dominance of Japanese technology, many other Asian countries' governments endeavored to encourage indigenous production networks. Besides of Korea, where the chaebol dominated domestic electronics development, ethnic Chinese played the principal entrepreneurial role in Taiwan, Hong Kong and Singapore, and later in Malaysia, Indonesia, Thailand and along the coastal provinces of China. Governments provided a variety of fiscal and tax incentives, invested in infrastructure, generic technology development, and technical up-skilling of the work force, engaged

in selective strategic trade interventions, and in some cases, even provided market information and product development blueprints (see, *e.g.*, Wade 1990; MacIntyre 1994). They intended to plug into the burgeoning international production networks in the region, and to use them as a lever toward autonomous capabilities. The result was burgeoning indigenous electronics production through the region in the early 1990s, under the control of indigenous capital.

Advanced indigenous electronics activity, aside from Korea's consumer electronics industry, is concentrated in personal computer (PC) and PC-related products. As a consequence, the nerve centers of that activity in PC electronics are Taiwan and Singapore. Acer in the former and Creative Technologies of the latter are prominent multinational corporations in such area. Taiwanese firms held significant or even dominant position in world market of several categories of PC-related products. By contrast, Singapore produced about half of the world's hard disk drives, most of its multimedia sound cards, increasing share of computer printers, PC subassemblies and even finished PC. When every country produces its own components, production scale is likely to be small. But if production of a given component is allowed to take place in the country or countries where costs are lowest, then scale economies will be accessible.

For this structure to work, governments must eliminate policy obstacles which prevent firms from producing anywhere in the region. The objective is not simply to liberalize trade flows, but to create an integrated regional production system. Politician and the public must abandon the viewpoint that the outflow of investment capital as inimical to national welfare. In an integrated regional production network, investment by firms in a country to produce components in another country may be more beneficial to the regional and global competitiveness of those firms than investment only in the home industry. This will happen if the cost of an imported component is reduced more than that best domestic investment. Therefore, the domestic capacity of production will certainly be expanded and hence domestic output and employment will rise when the industry invests abroad.

V. Conclusion

The development of regional production networks is to make producers of the Asia-Pacific region more efficient and competitive in regional and global markets. This is a more outward-oriented approach. A production network, spread throughout the region and engaged in component specialization, allows components to be produced and final products assembled according to the dictates of comparative advantage. Production costs are cut across the region, making the region's producers more competitive in world markets.

Regionalization of production networks requires harmonization of regulatory and other policies, and the removal of barriers to flows of products, persons and financial resources. These changes need to be implemented in the early process of regional integration. This is a kind of regional trade preference arrangement that is not discriminatory. Production needs not to be restricted to regional firms, even though sometimes a regional firm is implicitly more welcomed than others. However, the case of Taiwanese company Kinpo discussed above illustrates how regional production networks are complicating the interpretation of trade and direct foreign investment. Similarly, regional networks of production may also render the "local content" dubious. These require relevant analyses to go beyond national sphere.

Dependence on regional production networks may increase productivity and facilitate skill enhancement. But it can also inhibit indigenous innovation or, as is often the case in East Asia, delay the supply of new technologies and hence the speed of spreading new products and market development. It can also get a policy maker into political problem, as he/she may fear losing policy options or state power. This may have nothing to do with economic development or welfare of the region, but it may just cause some political headache.

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東亞生產區域化所形成之企業網絡關係

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關鍵詞：生產網絡、區域整合、外人直接投資

我們一般談到區域經濟整合，腦際就會浮上某種特定的型態：首先各國就某些產品給予彼此優惠的貿易待遇，然後再加以擴大，簽訂一正式與完整的協定。接著將範圍擴大至人員、資金的跨國移動，乃至經濟政策的調和等等。最後，經過一系列冗長與累人的程序之後，終於宣告，市場區隔已完全解除，單一市場總算成立。然而，我們想問的是：這樣的過程是東亞國家所期許的嗎？或者是：這是目前東亞各國經濟互動所將產生的結果嗎？

在本文中，我們將以亞太區域特殊的區域生產網絡(regionalized production networks)為主體，探討這將可能導致一種不同的而更為人所接受之經濟整合的型態。近十多年來馬來西亞、泰國以及中國沿海與東北亞各國在生產上的緊密結合，為東亞經濟帶來顯著的變遷。這種結構上的變化，包括區域生產網絡的形成，跨越各國之全面生產體系等等。這將超越各國疆界，形成區域性、乃至全球性的經濟景觀。這種基於跨國生產網絡的區域體系，若促成經濟更緊密的整合，將對人民福利有更大的貢獻。

以下我們在第一節裡首先陳述東亞地區的生產關係如何超越各國國界，而成為區域性的生產網絡。在第二節裡則以電子業為例，闡釋區域性的生產網絡是如何成形的。在下一節我們將探討生產網絡所形成的區域整合，將會有什麼樣的福利效果。而在第四節裡，我們將探究政府針對生產網絡所應扮演的角色，以及其中的困境。最後一節則為結論。

一、東亞生產之區域化

若論及東亞生產的區域化，可追溯至戰前日本在台灣、韓國與中國滿洲的統治，奠定了日後的基礎。而戰後 1950 年代日本在台灣之電子與機械等產業的直接投資，因應台灣政府對股權與本地生產比例等的管制規定，與本地企業建立聯

盟關係，區域化的生產體系逐漸成形 (Bernard and Ravenhill 1992)。同時，在日韓於 1965 年簽訂恢復正常關係條約之後，日本也在韓國建立了類似的生產關係。

1980 年代是東亞生產的區域化之重要轉變時期，尤其是在 1985 年五國集團（法、德、日、英、美）簽訂廣場協定(Plaza Accord)，促使日圓對美元大幅升值之後（譬如見 Funabashi 1989）。該協定造成區域貨幣的調整，也使得亞太區域之經濟關係產生重大變化。雖然台灣與韓國趁著日圓升值極力提升出口競爭力，但旋即在美國等的壓力下，也被迫將貨幣升值並開放市場。台灣與南韓在美國的出口市場逐漸受到箝制之際，美國終於在 1989 年將兩國從其一般優惠待遇體系(GSP)畢業(graduated)，不再享受其他開發中國家對其出口的低關稅優惠措施（見 Sakong *et al.* 1995 裡的論文）。

日圓、台幣與韓圜（以及新加坡幣）在廣場協定後相繼升值，中國與東南亞其他各國則相對調降幣值，因而提升了後者對外人投資的吸引力，也使得出口更具競爭力。日圓在 1985-87 年間共升值了近 40%，同一時期新台幣也升值了 28%，而韓圜則在 1986 到 1988 年間升值了 17%。日本以及東北亞各新興工業國家（包括新加坡）的貨幣相對於美國、中國以及東南亞各國的貨幣大幅升值，這使得中國以及東南亞各國對外人投資有了更大的吸引力，同時也使得其對外出口更具競爭力。

日本以及東北亞新興工業國家(NICs)因貨幣升值以及伴隨而來的國內工資上漲，乃將國內若干產業移向國外，主要為中國與東協(ASEAN)各國，尤其是中國東南沿海以及馬來西亞與泰國等地。這些地區不只與投資國地理接近，而且彼此也有著極為密切的關係。台灣與中國有著極為「自然的」關聯性優勢，而馬來西亞與泰國則不只繼續享受美國的 GSP 優惠待遇，而且因龐大的華人人口而居於特殊的優勢，同時還擁有眾多熟習英語的勞力。

後者這些國家由於外貿的逆差， 1980 中期全球初級產品價格的下跌導致債務的上升，正苦於資金的短缺，於是乃採行措施，大力吸引外人投資。當時許多外來資本，特別是國外的經濟援助也逐漸短缺，於是東南亞各國遂藉機消除各種外人投資的限制，譬如簽署投資保障協定，並採行諸如租稅假期以及加速折舊等激勵投資的措施。

日本、台灣與韓國在 1980 年代下半葉大幅的對外投資，導致生產區域化數

量上的重大轉變。日本在 1980 年代末已成為全球最大的對外直接投資國，在 1986 到 1989 年間每年平均成長率超過 50%。對外投資達到每年四百八十億美元，高出 1985 年的六十五億美元數倍之多 (Urata 1993)。雖然日本對美國與歐洲各國的投資更大，而使其對亞洲國家之投資比例反而下降，但在製造業之投資方面，還是相當驚人的；事實上，日本在 1986-89 年的對亞洲國家投資總額，即超過了她在 1951-85 年間累積投資額(Urata 1993)。

此外，亞洲區域生產的型態也有極大的轉變。在 1985 年時，日本對東協國家的投資總額，已超過了她對東北亞新興工業國家的投資額；1986 年之後，這個差距益形擴大，日本已將投資於消費產品以銷往全球市場的大本營，從東北亞新興國家移向東南亞各國。日本對台灣與韓國的投資，則逐漸以銷售本地市場以及各種服務業為主 (Takeuchi 1990)。至於對東南亞的投資，也很快從紡織與金屬製品轉為電子機械的生產（譬如見 Tran 1997; Heinrich and Konan 2001）。

台、韓對東南亞的投資更是突出。在 1987 年底時，台灣對東協各國之製造業投資存量為七千八百萬美元，在其後三年之間，總投資金額達到八億五千萬美元。與日本一樣，電子業也是台灣對東南亞投資的最主要部門(Chen and Chen 1998)。而南韓對東協各國的投資金額，也從 1985 年的四千二百萬美元增加為 1989 年一年就有一億三千二百萬之多。亞洲四小龍在 1980 年代末對所有東南亞國家（泰國除外）的投資額，已與日本相當 (World Bank 1996) 。

因此，在廣場協定後沒多久，馬來西亞、泰國及中國沿海即與東北亞國家建立了緊密的生產關係，尤其就某些製造業部門來說，已經是生產的區域化了。這種區域生產顯著的特質，就是各個廠商相互之間以及與其他組織之間之聯結，所產生的「網絡」關係。在下一節裡，我們將探討這些區域生產網絡如何在東北及東南亞運作，以及他們如何與其他生產網絡有所區別。

二、區域生產網絡

馬來西亞、泰國以及中國部分區域與東北亞生產上的連結，對東亞經濟結構產生很大的衝擊。本節將以以電子業為例，觀察區域生產網絡的興起，並探討他們對區域發展的意涵。

許多東北亞的低階消費電器之生產，在廣場協定後大量移入馬來西亞以及泰

國，隨後並從東協地區移入中國，甚至越南(World Bank 1996)。在短短五年之間，自 1950 年代以來即在區域興起的電子業，其低階與出口導向的家電組裝部門幾乎全都移向東南亞與中國部分地區。

譬如台灣之電子產業，早期受到美、日等投資的影響，到了 1980 年代已累積了驚人的技術與組織能力，不再只是美商與日商的初級夥伴(Guerrieri 1998)。台灣已達到極度之出口專業的地步，不論出口與進口都集中於一類產品：電子資料處理產品佔了 1993 年總出口的 55%，而電子零件則佔其總進口值的 60%。台灣是諸多電子產品全球最主要供應者，筆記電腦最大生產國，在半導體也居於舉足輕重的地位(Ernst and Guerrieri 1998)。

東北亞國家對東協的投資，使得電子產業的生產結構發生了很大的變化。以台灣金寶電子對泰國之投資來說，它在 1990 年計算機、傳真機等產品總銷售額的 88%都出口，主要輸往美國與加拿大(Bernard and Ravenhill 1995, 186)。金寶是台灣最大電子廠商之一，而其出口型態以及對外投資的性質，可說極為典型。

1990 年四月它在泰國設廠，生產已無法在國內生產與出口的低階計算機。它一直都在替日本的卡西歐(Casio)及佳能(Canon)代工生產(OEM)，日圓升值後更與大阪的聲寶公司(Sharp)建立夥伴關係，並在與聲寶協商之後赴泰國投資。聲寶決定不自己到泰國投資，而倚賴金寶的代工。產品的創新、品牌以及市場開發，都由日本人來做；計算機的主要零件 [譬如液晶顯示螢幕(LCDs)]，在泰國工廠的生產設備（譬如置入儀器），都從日本進口。另一方面，採購與管理則由台北控管，工廠亦由台灣人來管理，而勞工是泰國人。生產產品全部出口，在貿易帳裡，顯示的是泰國出口的電子產品；對購買者來說，是日本貨；就投資統計來說，則為台灣對外投資。

由上述可見，電子產業在東亞區域的生產網絡，已超越了國家的範圍。零件以及最終產品的供應，來自不同地區的不同技術。這不只是來自台灣的投資，由泰國出口，實際上則由日本設計而已，它絕對比貿易與投資統計裡所記載之數量的加總，還要來得大。日本的家庭電器已經從本國之創新產生驟變，從美國併購公司以連結軟體與硬體。而台灣雖亟欲仿效日本的創新或發展零件生產能力，但並未成功，它還是必須倚賴日本在主要零件上的供給，並逐漸從日本輸入產品；它已經逐漸不再從台灣出口，隨著貿易的開放，更反過來從日本進口新一代的電

器產品(Bernard 1991, 引自 Bernard and Ravenhill 1995, 188)。

因此，雖然我們可說台灣電子業的成就非凡，但是這也顯出了它的弱點，因為它是建立在薄弱的基礎之上。他對日本零件的極度倚賴，使得它對日本貿易產生了極大的逆差。而當台灣持續融入日本的亞洲生產網絡之際，也產生了兩項有趣的發展。日本電子公司一方面自 1994 年以來即大幅提升其對台灣廠商的委託代工，而另一方面，台灣亦逐漸成為許多電子零件的主要供應者。

相對於台灣與南韓，東南亞對國外技術的倚賴就更高。正如 Kunio Yashihara (1988)所言，東協區域正在歷經一種所謂「無技術」(technologyless)的工業化過程(p. 111)。與東北亞新興工業國家相較，他們在製造業之出口方面，極度倚賴跨國公司在海外的子公司；而在區域生產網絡居於主導的日本企業之海外分公司，也幫助了東南亞國家取得較台、韓更大的優勢。台、韓許多家電產品在 1980 年代末期之對日出口的降低，主要是因為日本將進口轉向它在東南亞設立的子公司之故。由於日本公司持續掌控他們在東南亞公司之技術的使用，所以這些日本生產網絡的成員，即可取得較諸日本在台灣與南韓所設立公司更先進的技術。當然，東南亞國家時常無法合乎日本對產品品質與可信度的要求，應該是他們希望提高國內採購率最主要的障礙。

上述東亞區域生產的特性，由於還需倚賴日本在零件與機器上的供給，所以日本國內的家電產業並未沒落。而且，即使台灣與韓國成功地接替了日本所讓出的高加值部門，他們還是沒有真正仿效日本在家電上的經驗。日本一方面投資於區域家電的生產，一方面還持續不斷在國內從事創新。反觀台灣，當她逐漸增加對東南亞電子業之投資的同時，國內之家電產品的生產也跟著消失了！

三、生產網絡在區域經濟整合所扮演的角色

經濟整合是提昇跨國經濟互動的一種過程，透過區域整合組織與全面之法律協定的推動，可達成正式的整合。不過，各經濟體之間也可透過民間部門，而並非正式的協定或組織，以促成隱含性的整合。

就東亞地區來說，正式整合的例子還是相對較少；它是一個較歐洲或北美為多元與異質的區域，咸認這是阻礙區域整合的主要因素(譬如見 Frankel, Stein and

Wei 1996）。亞太國家之政治體制較分歧，有共產主義（中國與越南）、極權資本主義（東亞大部分國家）以及民主資本主義（日本，韓國、台灣以及一些新興民主國家）等不同制度之國家，相對來說，歐洲聯盟(EU)以及北美自由貿易區(NAFTA)的所有成員，都採行民主體制；經濟發展程度之差異也極大，日本的每人所得就為越南的一百倍，而歐洲聯盟國家最大差距者不過 3.5 倍（瑞典與希臘），北美也只有 7.1 倍（美國與墨西哥）(Peng 2000)。至於文化與社會的差異更不用說了，區域裡的三大族群—日本人、華人及穆斯林，就極難相互順利溝通，並相處愉快。

在亞太地區，基於上述各種障礙，導致區域內經濟互動的困難。而上述區域生產網絡，正可克服這些阻礙。從最近一、二十年來的發展，我們看到亞太區域內貿易的比率從 1980 年之前許多年都維持在 40%左右的水準，提升到 1995 年的超過 50% (Anderson and Francois 1997, Table 2) ，這雖然不能與歐洲聯盟相比，但已經是很大的進展了。有人也許會把這歸因於貿易障礙的降低，不過貿易障礙的降低是全球性的趨勢，應該不至於會使貿易偏向於區域內的其他國家，故而需要其他的解釋因素。

我們可以區域生產網絡來解釋這種亞太區域整合的現象。由於跨國採購或跨國生產零件，會大幅提昇經濟福祉，還會創造就業並擴大產業之生產，而且時常導致工資的上升（譬如見 Arndt 2001; Deardorff 2001），所以我們可以視一個區域，而非單一國家，為生產的基地，然後依據比較利益將零件之生產散佈於整個區域。其目的是要提昇效率、降低生產成本，並增加競爭力。如此，將有助於區域內各成員取得更大的市場。

就傳統貿易理論來說，優惠性貿易協定將使得相對價格居於世界價格與最初包含關稅在內的國內價格之間。故若協定使得價格趨向（較高的）國內價格，而與（較低的）世界價格差距較大，那就較可能導致貿易的移轉(trade diversion)，也就是從較低成本的生產者轉向成本較高者(Johnson, 1965)。就東協國家來說，他們知道由於本國市場不大，故若只追求東協區域內的經濟整合，給予彼此貿易優惠，產生的利益將不多—即使諸如規模經濟、外人直接投資以及隱含性成長等動態利益，還是難以抵銷上述的靜態效果；而即便動態效果本身，也常因各國市場規模不大，以及受到協定包含之地理區域所限，無法發揮。故若無法因相互貿

易大幅降低價格的話，將會導致貿易的移轉，而非貿易的創造。他們也積極循找其他途徑，以激勵貿易的創造，降低移轉的可能性。因此，假如從區域生產網絡著手，而不是將區域成員相互區隔，應該較能獲得更大利益。

追求技術創新的日本公司也了解，透過跨國之零件的採購，若因此降低了成本，也將使得最終組合的產品之競爭力上升。假如生產最終產品的廠商是價格接受者（不能輕易變動價格），那麼生產成本的降低將會提升獲利率，並提供擴張產出的極大誘因。反之，若生產者能夠影響價格的話，那麼因海外採購所降低的成本將可進一步降低產品價格，擴大市場的佔有率。若最終產品包含多個技術層次各異的組成部分，各個組成部分之要素密集度將會不同。由於最終產品之總要素密集度為各組成部分要素密集度的加權平均，故而若變動組成部分的要素密集度，亦將改變個別國家在各個組成部分的比較利益，這當然也會改變最終產品的比較利益。一個勞力豐富而工資低廉的國家，即會在勞力密集之組成部分上，具有相對之比較利益；同理亦適用於其他資源豐富的國家，當然這也是決定產品組合之各種要素密集度時，重要的考量因素。

故而，當各國成立貿易協定，依據各個零件的技術結構，分配給不同技術層次的國家來生產，讓各國依據其比較利益從事零件的專業生產，其結果就好像技術進步一樣，使得國民福祉因而上升。一個國家將它較不具生產利益的零件，轉向區域其他國家採購，如此，不只提昇了區域內的相互貿易，促使區域生產網絡以及區域廠商的產生，增加了各個參與國家的福祉。這將造成一整合性的區域，它並不是在保護區域生產者對抗外面的競爭，而是透過跨國生產區位的配置，使得區域內生產者更有效率，並更具競爭力。貿易主要是使得區域內零件與最終產品的流通更自由無阻，如此產生的區域市場，使得本土生產者在區域內與外面從事更有效的競爭，同時也使得區域的出口在其他市場取得更大的優勢。

四、政府對本土生產網絡的策略

在日本技術的主控之下，其他亞洲國家還是極力推動本土之生產網絡。除了南韓因其財閥(chaebols)掌控了國內電子業的發展之外，華人實主導了台灣、香港以及新加坡的企業，乃至於後來的馬來西亞、泰國以及中國沿海各省。各國政府提供了財政與租稅的誘因，投資於基礎建設、技術發展以及勞力技術的提昇，從事選擇性之策略貿易措施，有時甚至主動提供市場情報以及產品開發藍圖（譬

如見 Wade 1990; MacIntyre 1994）。他們嘗試介入區域裡逐漸興起的生產網絡，以期提昇自主的能力。結果造成了 1990 年代初期大幅興起由本土資本所掌控的本土電子產業。

較先進的本土電子業，主要集中在 PC 與 PC 相關的產品，其中樞在台灣與新加坡（韓國的家電除外），前者的宏碁以及後者的創鉅(Creative Technology)都是其中的佼佼者。台灣佔有全球若干 PC 相關產品大幅甚或主導市場的地位，新加坡則佔有全球半數以上的硬碟市場，絕大部分的多媒音效卡，漸增的電腦印表機、PC 半成品以及成品之市場。若每個國家都自己生產零件，生產規模將會很小，而若集中於成本最低的國家生產，就可獲得規模經濟效果。

若要達成此目的，政府就要防止廠商在區域裡每個地方都生產，這不只是要促成更自由的貿易流通，而且要形成一整合性的區域生產體系。因此，政治家以及一般大眾都應該拋棄「資本對外投資有害本國利益」的觀念。在一個整合性的區域生產網絡裡，一國廠商到其他國家生產零件，將比祇投資於本國產業，對區域乃至全球的競爭力有更大的助益。如此，若進口零件成本的降低大於本國最優之投資生產的話，本國之生產能力將因而擴增，本國之產出與就業也會相形提昇。

結語

區域生產網絡的發展是要使得亞太區域的生產者更有效率，在區域與全球更有競爭力。一個跨越區域的生產網絡，依據比較利益，從事零件與最終產品的專業生產，將降低成本，提昇區域生產者的全球競爭力。

區域生產網絡需要調和管制與其他的政策，並移除產品、人員與金融資源之流動的障礙。這樣的變革，必須在區域整合過程的初期即開始實施。這是一種不歧視的區域貿易優惠體制，不必限定由區域生產者來生產。當然，我們不能否認，區域生產網絡使得對貿易與外人直接投資的解讀，變得更為複雜；同樣地，何謂「原產地」，也變得含糊不清。這些都需要超越國家的領域，來加以探討。

對區域生產網絡的依賴，固然將提高生產力與促進技術升級，不過也可能阻礙了本土的創新，而且如同常在東亞地區所發生，可能延緩新產品的散佈以及市場的開發。同時，它也常使得政策決策者陷入政治困境，深懼因此減少了可資選擇的政策措施，並喪失了自主權。

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