

Japan's external asymmetries and assembly industries: lean production as a source of competitive advantage

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Japan's huge external asymmetries in both trade and foreign direct investment, especially with the developed countries, pose a nettlesome political issue.¹ By adopting a "techno-structural evolutionary" paradigm of Japan's trade and outward foreign direct investment, this article presents a framework of analysis within which the persistence of Japan's trade surplus and lopsided outflow of foreign direct investment can be explained in terms of Japan's manufacturing strength based on "lean" production (a manufacturing system originating in the Japanese automobile industry) against the backdrop of "reserved competition". It is argued that Japan's external asymmetries reflect a particular stage of its structural upgrading in which lean production is embedded.

Lopsided external balances

Japan's trade surplus surged to a record \$140 billion in 1993. Simultaneously, Japan showed a lopsidedly huge net outflow in its balance of foreign direct investment (FDI). Over the period 1950-1992, the cumulative value of Japan's outward FDI reached \$386 billion, while that of inward FDI amounted to only \$29 billion—that is, a ratio of 13.3 to 1.²

The question, therefore, arises as to *why Japan is so outward-oriented with respect to its own business activities, whereas, at the same time, it is so inward-inhibited for foreign business activities*. Indeed, these twin asymme-

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¹ A large number of articles related to this issue have been published recently, some in this journal: Lawrence (1992), Encarnation (1993) and Ramstetter and James (1993).

² In contrast, for other advanced countries, FDI inflows and outflows are more or less balanced. For example, at the end of 1991, the United States and the United Kingdom exhibited near balances (i.e., a ratio of close to 1:1), while Germany, at 1.4:1, and France, at 1.3:1, showed slight net outflows MITI (1994, p. 203).

tries are interpreted—and criticized—as evidence of the closed nature of the Japanese market. What is the principal cause of Japan's external asymmetries? Why are these imbalances so persistent and not easily rectifiable? Is Japan, even now, still pursuing blatantly protectionist policies? True, Japan has pursued a protectionist "infant-industry" strategy in the past. Today, however, the Government of Japan is trying to improve the situation through a variety of measures, including subsidies and a special capital-depreciation treatment for inward FDI.

Many possible explanations have been offered for Japan's twin imbalances. Perhaps the most frequently invoked is the "macro-policy discrepancy" theory, which states that Japan's trade surplus is the result of excessive real output over domestic absorption (basically, "excessive" domestic savings or a lack of domestic demand)—all the more magnified by the opposite situations prevailing abroad, especially in the United States. Others include, just to name a few, the "stages-of-the-balance-of-payments" theory, the "trade-balance-accounting-inadequacy" theory and the "lack-of-marketing-effort" hypothesis.³ Each may be useful in describing some specific aspects of the imbalances problem from different perspectives, but together they present rather cacophonous analyses.

Moreover, some hastily arranged policy measures have been adopted supposedly to rectify the imbalances. For example, the United States, especially since 1992, has been applying an exchange-rate policy initially by depreciating the dollar *vis-à-vis* the yen. The United States exchange-rate policy (which has been called "malign neglect"⁴) has actually aggravated the external disparities by inflating the dollar value of Japan's trade surplus and making FDI in Japan even more costly—yet, at the same time, "subsidizing" Japan's relocation of less competitive manufacturing activities to other countries, especially in Asia. In fact, the precipitous fall of the dollar became a major concern at the time of the Naples Economic Summit of the Group of Seven during the summer of 1994.

A large fiscal stimulus programme has also been adopted recently by the Government of Japan to jump-start the economy and help attract more

³ The "stages-of-the-balance-of-payments" theory argues that Japan is in a transitional stage from an "immature creditor" to a "mature creditor" with a trade surplus at its peak and a large and growing FDI stock overseas. The "trade-balance-accounting-inadequacy" theory states that trade alone is no longer an appropriate way of measuring transactions in goods and services and that the overseas output of, say, United States foreign affiliates needs to be taken into account as well. The "lack-of-marketing-effort" hypothesis postulates that foreigners are not trying hard enough to penetrate the Japanese market.

⁴ "Dollars and sense", *The Economist*, 14 May 1994, p. 19.

imports. But no sign of any substantial improvement has been seen as yet in the current external imbalances. So, again, what is the real cause of Japan's abnormally large external asymmetries?

This article presents a new, deeper and more fundamental explanation in terms of the post-war structural peculiarities that have been brought about by Japan's distinctive industrial approach to catching up and surging ahead, at both the market-structural and public-policy levels. Specifically, the explanation can be conceptualized in:

- What may be called the reserved-competition paradigm of industrial and technological development, a paradigm which identifies a particular modality of fostering a new growth industry once pursued by Japan with institutional/market-structural legacies.
- The creation and widespread application of a new manufacturing system in particular industries of Japan's manufacturing sector, a system popularly known as "lean" or "flexible" production,⁵ which has been in part fostered by the reserved-competition paradigm.

To put it differently, Japan's emergence and its rather unique characteristics as a one-sided dominant international trader and a lopsided transnational investor have been moulded by its post-Second World War pursuit of the reserved-competition paradigm which, above all, stimulated the birth of Japan's distinct manufacturing system, a formidable competitive advantage embodied in Japan's exports and outward FDI in certain manufacturing industries. Japan's current external disparities are thus explained in terms of the logic of its techno-structural dynamism.

An industry-specific and growth-stage-based phenomenon

One unique feature of Japan's trade surplus is that only a few of its manufacturing industries, notably transportation equipment (mostly, automobiles and parts, motorcycles and ships), electric and electronic goods (mostly, audio-video and communications equipment and semiconductors)

⁵ The phrase "lean production" was used to conceptualize Japan's new manufacturing system by James Womack, Daniel Jones and Daniel Roos (1990). They observed that "Lean production (a term coined by IMVP [International Motor Vehicle Program] researcher John Krafcik) is 'lean' because it uses less of everything compared with mass production—half the human effort in the factory, half the manufacturing space, half the investment in tools, half the engineering hours to develop a new product in half the time. Also, it requires keeping far less than half the needed inventory on site, results in many fewer defects, and produces a greater and ever growing variety of products" (p. 13).

and office and data-processing equipment (mostly, photocopiers, printers, computers and computer peripherals) account for the largest portion of its surplus. In 1992, for example, these three industries accounted for more than two thirds of Japan's merchandise exports—responsible, respectively, for 26 per cent, 23 per cent and 23 per cent. In the same year, in which Japan's overall merchandise trade surplus was \$107 billion, the automobile industry (inclusive of parts) registered a trade surplus of \$71 billion (\$79 billion of exports and \$8 billion of imports; a ratio of 10:1); while the electric and electronics industry had a surplus of \$65 billion (\$77 billion of exports and \$13 billion of imports, a ratio of 6:1); and office and data-processing equipment had a surplus of \$19 billion (\$25 billion of exports and \$6 billion of imports, a ratio of 4:1).⁶ Japan's trade asymmetry is thus basically an *industry-specific* phenomenon.

Similarly for FDI: transportation equipment, electric and electronic products and machinery are largely responsible for creating the external investment asymmetry. They are Japan's three largest transnational players abroad. In 1991, for example, they accounted together for nearly half the cumulative value of Japan's FDI in manufacturing over the period 1970-1991 (24 per cent, 14 per cent and 10 per cent, respectively). In sharp contrast, inward FDI in these industries is either all but absent (with the exception of some stock acquisitions in existing Japanese firms and certain distribution industries), or relatively insignificant as far as local manufacturers are concerned.⁷

The basic cause of Japan's external asymmetries in trade and FDI must therefore lie in these three industries (automobiles and parts, electric and electronic goods and office and data-processing equipment)⁸. It is conceivable that, had it not been for these industries, Japan's trade surplus would certainly be much smaller or might even disappear and Japan's FDI flows would also be less unbalanced.

⁶ Based on figures from trade statistics prepared by the Ministry of Finance, as cited in JETRO (1993), pp. 418-421.

⁷ IBM Japan is rather an exception. In 1981, it had 33 per cent of Japan's market for mainframe computers, a market share larger than that of any Japanese computer maker. In 1991, however, IBM Japan's share declined to 24 per cent, overtaken by Fujitsu with a market share of 25 per cent.

⁸ Another industry in which Japan has developed a competitive advantage is steel because the relative newness of steel manufacturing facilities enabled Japan to introduce state-of-the-art technologies in the post-war period ('late-comer' advantages) and because Japanese steelmakers were able to make rapid technological/organizational innovations in products and processes.

But what is so *particular* about these industries? As shown in figure 1, these are the very industries that emerged as Japan's stellar exporters in the 1970s and 1980s by replacing textiles and steel, two dominant exports during the 1950s and 1960s. As is discussed below, their suddenly acquired competitiveness reflects the effective creation of absolute advantages based on lean production technology, a new man-made source of trade advantages.

Moreover, these newly emerged industries represent a particular phase of Japan's post-war economic development, a phase that constitutes the third stage of structural upgrading which may be identified as "components-intensive, assembly-based" industrialization (or development of "differentiated Smithian industries"⁹). Basically, Japan has gone through four major structural transformations since the end of the Second World War: phase I, "labour-intensive" industrialization (from 1945 to the mid-1960s); phase II, "scale-based, heavy industry and chemicals" industrialization (from the late 1950s to the early 1970s); phase III, "components-intensive, assembly-based" industrialization (from the late 1960s to the present); and phase IV, "innovation-focused" industrialization (from the early 1980s onwards). Japan is currently in the throes of a structural transition from phase III to phase IV.¹⁰

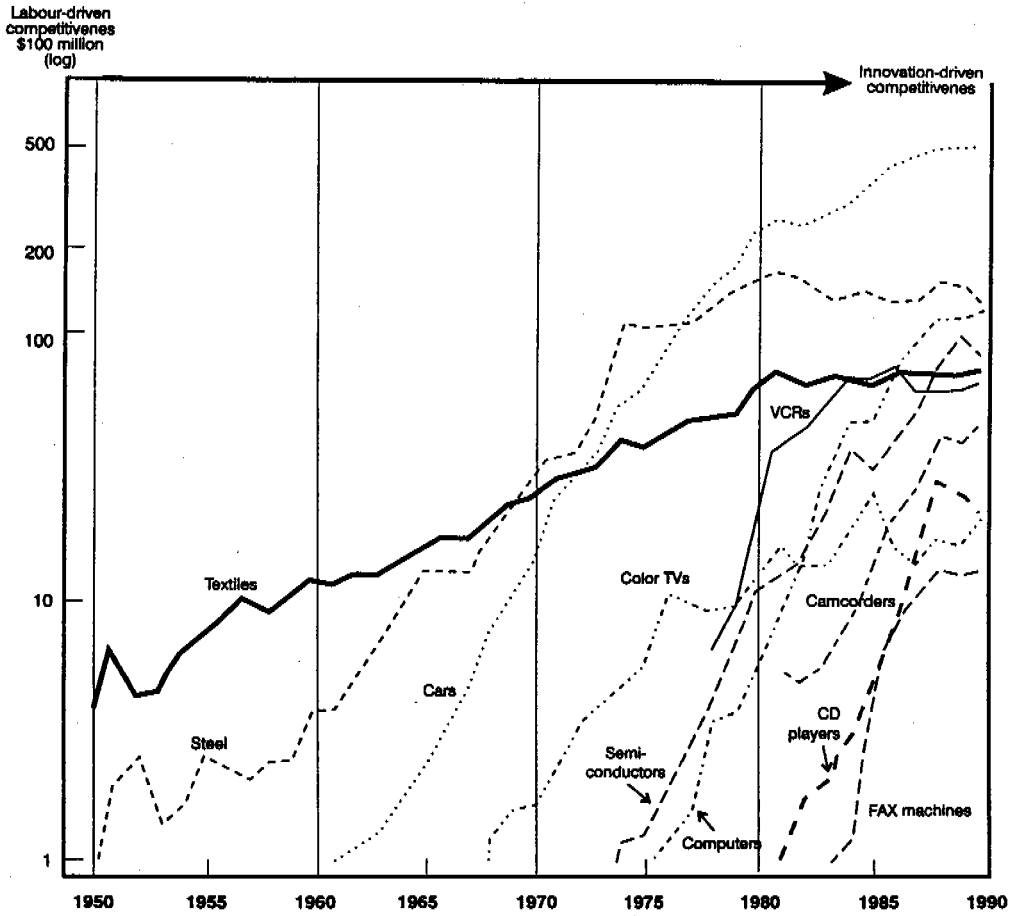
The three manufacturing industries identified above are components-intensive, assembly-based industries. And their trade surplus and net outward FDI positions became dominant in the 1980s when structural upgrading in phase III reached its peak. In other words, Japan's present external asymmetries are growth-stage moulded and specific to a particular type of manufacturing. And, more importantly, it is in these components-intensive, assembly-based industries that Japan's new lean production system originated, has been applied most widely, and is still being "perfected" in a never-ending search for further improvement. As a result, these industries enjoy the world's highest level of productivity and competitiveness.¹¹ In comparison,

⁹ They are identified as "Smithian" because they exploit the economies of scale and learning, and "differentiated" because their products are produced in great variety (Ozawa, 1992).

¹⁰ These different phases of growth are presented in Ozawa (1992). Japan may have difficulty developing the innovation-focused industries needed in phase IV. The new phase requires a lot of *individual* originality, creativity and idiosyncratic thinking unhampered by groupism and conformity. The latter happened to be the desirable attributes of the period of catching-up development, but may now stand as obstacles to new innovation-focused activities required by phase IV.

¹¹ The "components-intensive, assembly-based" industries, by nature, can and need to produce differentiated products for competitive reasons. A myriad of parts, components and accessories used in this type of industry can be combined in *a large number of variations* for the purpose of product differentiation. In other words, they have a built-in structural proclivity

Figure 1. Trends of Japan's major exports of manufactures



Japan's other manufacturing industries (excepting certain industries such as steel) are much less productive—so much less, in fact, that the average level of Japan's manufacturing productivity is below that of the United States.

Lean production

The revolutionary nature of lean or flexible production was well articulated and publicized in Womack, Jones and Roos (1990, pp. 11-12):

“After World War II, [Toyota Motor Co. in Japan] pioneered the concept of lean production. The rise of Japan to its current economic preeminence quickly followed, as other Japanese companies and industries copied this remarkable system.

“Manufacturers around the world are now trying to embrace lean production, but they're finding the going rough. *The companies that first mastered this system were all headquartered in one country—in Japan.* As lean production has spread to North America and Western Europe under their aegis, trade wars and growing resistance to foreign investment have followed . . . Many Western companies now understand lean production . . . However, *superimposing lean-production methods on existing mass-production systems causes great pain and dislocation.*

“But why should we care if world manufacturers jettison decades of mass production to embrace lean production? Because the adoption of lean production, as it inevitably spreads beyond the auto industry, will change everything in almost every industry—choices for consumers, the nature of work, the fortune of companies, and ultimately, the fate of nations.”

(Footnote 11 continued.)

to differentiate products to a considerable extent in response to the ever-diversifying tastes of consumers. But such a manufacturing system thrives on a high degree of efficiency in what Thorstein Veblen (1929) called “interstitial coordination” for design work, production and delivery between a large number of economic units (both inside and outside of the firm) which produce and supply a variety of parts, components and accessories. Other industries also adopted some of the techniques of lean production, such as the “just-in-time” delivery system, in-process quality control, multi-skilling of workers, and teamwork-based *kaizen* (continuous improvement efforts), but more or less in a fragmentary fashion. These techniques are certainly useful in any industry. But lean production as a *system* is not as effectively applicable to non-assembly industries in its systemic totality as it is to assembly-based industries. The author is indebted to his colleague, Dennis Black, for bringing to his attention Veblen's writing on the notion of interstitial coordination.

Indeed, if it can be contended that mass production constituted the second manufacturing-paradigmatic revolution (largely replacing the factory-integrated craft production system developed earlier in Europe¹²), perhaps it can equally be argued that lean production is currently leading the third manufacturing-paradigmatic revolution.¹³

This new manufacturing system is different from the Fordist-cum-Taylorist mass production system in several important features. Lean production involves a particular set of multi-skilled workers grouped for teamwork, flexible deployment of multi-functional machinery, a blurred division of labour (i.e., unspecified or broad job descriptions for individual workers), a “flattened” hierarchy, a just-in-time delivery system, in-process quality controls by workers (instead of end-of-line inspection by specialists), and the adoption of workers’ ideas for constant improvements. What is revolutionary about Japanese-style lean production is the activation of intellectual capacities of shop-floor workers; they are no longer treated merely as “brawn workers” who only receive orders, as under Fordism/Taylorism, but they are also considered as “brain workers” who can figure out operational problems that they encounter daily, suggest ways of solving them, and keep improving their own work processes.¹⁴

John H. Dunning (1994, p. 14) aptly identified the flexible production system as “organo-centric” in contrast to the “techno-centric” or “machino-centric” production system of the Fordist era. But the Japanese system can be also characterized as *organo-anthropo-centric*. It is an innovation-focused system on an extended form of workshop organization that involves the whole structure of labour-management relations, as well as that of assembler-supplier relations (or what is called “alliance capitalism” by Michael Gerlach, 1992). Hence, it is inseparably linked in functional terms with the managerial philosophies and practices and social organizations (such as labour unions) specific to it. In fact, this explains why “superimposing lean-production methods on existing mass-production systems causes great pain and dislocation” (Womack, Jones and Roos, 1990, p. 12),

¹² Of course, craft production has not been destroyed completely. On the contrary, it continues in traditional industries (e.g., furniture and other crafts-oriented industries). Small-lot focused, high-tech engineering industries (such as aircraft) are based on an advanced form of a craft-based manufacturing system.

¹³ For implications of lean or flexible manufacturing for modern capitalism, see Piore and Sable (1984) and Best (1990). Cusumano (1989) provides a detailed comparative analysis of the Toyota and Nissan production systems.

¹⁴ Lean production originated at Toyota Motor Co. under the leadership of Taiichi Ohno; hence it is often called “Toyotism”; see Ohno (1978).

especially in the United States, the leader of “hierarchical capitalism” built on the mass or scale production system.¹⁵

The reserved-competition paradigm

How did the Japanese industry manage to renovate the conventional mode of mass production by introducing a new system of manufacturing? Why did lean production originate in Japan and not in the United States or in Europe? Was it a purely market-based innovation or did the Government—and some socio-cultural institutional factors—have a role to play? The basic proposition is that what may be called a “reserved-competition” paradigm provided at least *one* critical and necessary, if not sufficient, condition that facilitated the origin of lean production in Japan’s automobile industry and its rapid spread to other assembly-based industries, although a host of other factors also played a role.¹⁶

Reserved competition involves a process of industrial development whereby a new targeted industry is initially heavily protected from both imports and inward FDI, but, within that protected industry, a large number of domestic firms are induced to enter the industry and compete vigorously with each other in a fierce contest to grab market share. This multi-entrant formula is diametrically opposite to the “national champion” strategy pursued by some European nations, especially by the United Kingdom and France.¹⁷

Japan’s television set industry, for example, had no less than 40 producers at the beginning, although only six major manufacturers now survive (Morita, 1986, p. 226). There are more than 100 machine-tool makers in Ja-

¹⁵ John H. Dunning related the three techno-economic paradigms (craft, mass and flexible-production systems) to their corresponding forms of capitalism: entrepreneurial, hierarchical and alliance capitalism.

¹⁶ For example, another key factor was Japan’s cooperative labour unions organized around their own companies (company unions). Post-war poverty and patriotism (to rebuild the defeated homeland) contributed to workplace harmony and an eagerness to experiment with new production techniques on the part of both managers and workers on the shop floor.

¹⁷ The “national champion” formula is well conceptualized at the policy level and popularly known as such. In contrast, the “reserved-competition” paradigm is only an *a posteriori* notion conceptualized as such by this author. It should be stressed that Japan’s policy makers and, for that matter, industry itself, did not have such a clear-cut idea about the coincidental efficacy of their protectionist approach, coincidental because of the dynamism of Japan’s private sector that happened to be highly responsive to protection and promotion in the early post-war period. The success of reserved competition thus owes more to the private-sector dynamism than to MITI’s interventionism, although both are necessary components of the phenomenon.

pan. Eleven major auto-makers have long been vying with each other in the crowded Japanese market since the end of the Second World War. Back in 1957, eight domestic computer makers began to commercialize “home-made” computers, and now six surviving firms are still engaged in cut-throat competition, along with IBM Japan. In any globally competitive Japanese industry (such as automobiles, electronics, office equipment and machine tools), multiple domestic producers can always be found competing with each other.

Even today, in fact, and even without protection, the proliferation of keen domestic rivalries is the order of the day. But in the early post-war period, protection fostered multiple entries. The phenomenon of fierce domestic competition under protection may be identified in an *ex post* sense as “reserved competition”, that is to say, domestic competition *reserved* for national producers so that the winners out of this unique brand of protected competition are *always* national enterprises and not foreign enterprises.

No doubt, competition is the mother of efficiency and technological progress. Thus, what is protected (or reserved for domestic producers) is not only an industry itself but, more importantly, an efficiency-inducing mechanism (the “survival of the fittest”) that can nurture world-class manufacturers. This is, again, in sharp contrast to the “national champion” formula which lets only a few privileged firms, typically one major firm in each strategic industry, pursue the benefits of scale economies and monopoly profits.

Conceptually, it can be postulated that the effectiveness of reserved competition depends on the conditions under which the fostered intensity of reserved domestic competition takes place and whether reserved competition is greater in absolute terms than the reduction in foreign competition caused by protection so that the net competitive effect would be positive; otherwise, the surviving domestic firms would never be able to compete in the global market:

Domestic competition		Foreign competition		Net competitive effect (NCE)
[+]	+	[-]	=	NCE > 0

This intensified competition among multiple domestic entrants in a reserved market also created a lean production-compelling environment, since the domestic market (small in the early post-war years) was even more fragmented, thereby forcing multiple competitors to make every effort to reduce the break-even point by turning “fixed cost” components into “variable cost” components (that is, to break up many fixed, single functions into multiple-variable, flexible functions) and by differentiating their products in

variety that is at the heart of making production “lean” and “flexible” and products niche-focused in marketing. In other words, when multiple entrants had to compete with each other within a small, fragmented domestic market with varied consumer preferences (whose demand is limited in volume), they *had to* give up the idea of depending solely on scale economies (via the conventional mass-production methods) and instead strived to introduce lean-production techniques for small-batch manufacturing.¹⁸

The automobile industry: an illustration

The notion of reserved competition can best be illustrated in terms of the experience of Japan’s automobile industry where lean production (in its original form of the Toyota production system) was actually born and nurtured (figure 2).

Post-war government policies had consisted of three approaches:¹⁹

- First, *protection*: tariffs (a tax system favourable for small (i.e., domestic) cars and unfavourable for large (i.e., imported) cars); and controls on inward FDI.
- Second, *promotion*: technology imports; financial assistance; domestic demand creation and infrastructural support (highway construction).
- Third, trade-dispute mediation with other Governments (United States and Europe) with respect to voluntary export restraints.

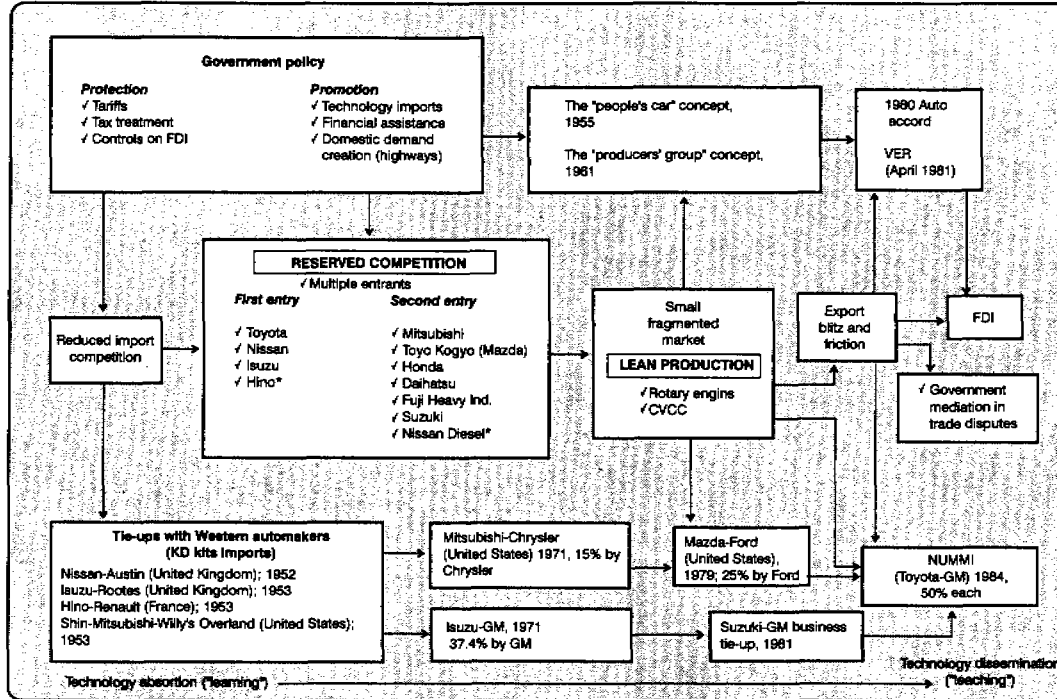
In 1948, the “Basic Automobile Industry Policy” was announced for the purpose of expanding automobiles as a targeted industry.²⁰ The Law on Temporary Measures for Promoting the Machinery Industries (Machine Industry Law) of 1956 specifically selected the auto-parts industry as one of the 17 industries for promotion, which were qualified for special funding

¹⁸ In this respect, the “national champion” formula is mass-production-accommodative in nature. This may, in part, explain why Europe as a whole has so far been rather slow in adopting the techniques of lean production as compared with the United States, whose automobile industry is characterized by much more intensive inter-firm rivalry.

¹⁹ This section on the automobile industry draws on Mutoh (1988), Shimokawa (1985) and Shiroasawa (1979).

²⁰ Although the automobile industry came into existence in Japan before the Second World War (in fact, as a strategic industry for military purposes), it was in the post-war period that it began seriously to manufacture passenger cars. In the pre-war days, the industry was concentrating on utility/commercial vehicles, such as trucks and buses.

Figure 2. The reserved competition paradigm of industrial development: Japan's automobile industry



* Maker of buses and large trucks.

from the Japan Development Bank. The Law was designed to build a streamlined production system by modernizing/rationalizing manufacturing facilities (e.g., via special depreciation measures), promoting exports, assisting technological progress and formulating overall policies on raw materials.

In order to overcome the initial quality and cost disadvantages of Japanese auto-makers, the Government allocated scarce foreign exchange to promote technology imports via knockdown assemblies of foreign models in collaboration with Western auto-makers. The four approved ventures were the Nissan-Austin (United Kingdom) tie-up in 1952; the Isuzu-Rootes (United Kingdom) contract in 1953; the Hino-Renault (France) tie-up in 1953; and a venture between Shin-Mitsubishi Heavy Industries and Willy's-Overland (United States) in 1953. These knockdown-assembly ventures helped Japanese auto-makers learn the basic techniques of mass production.

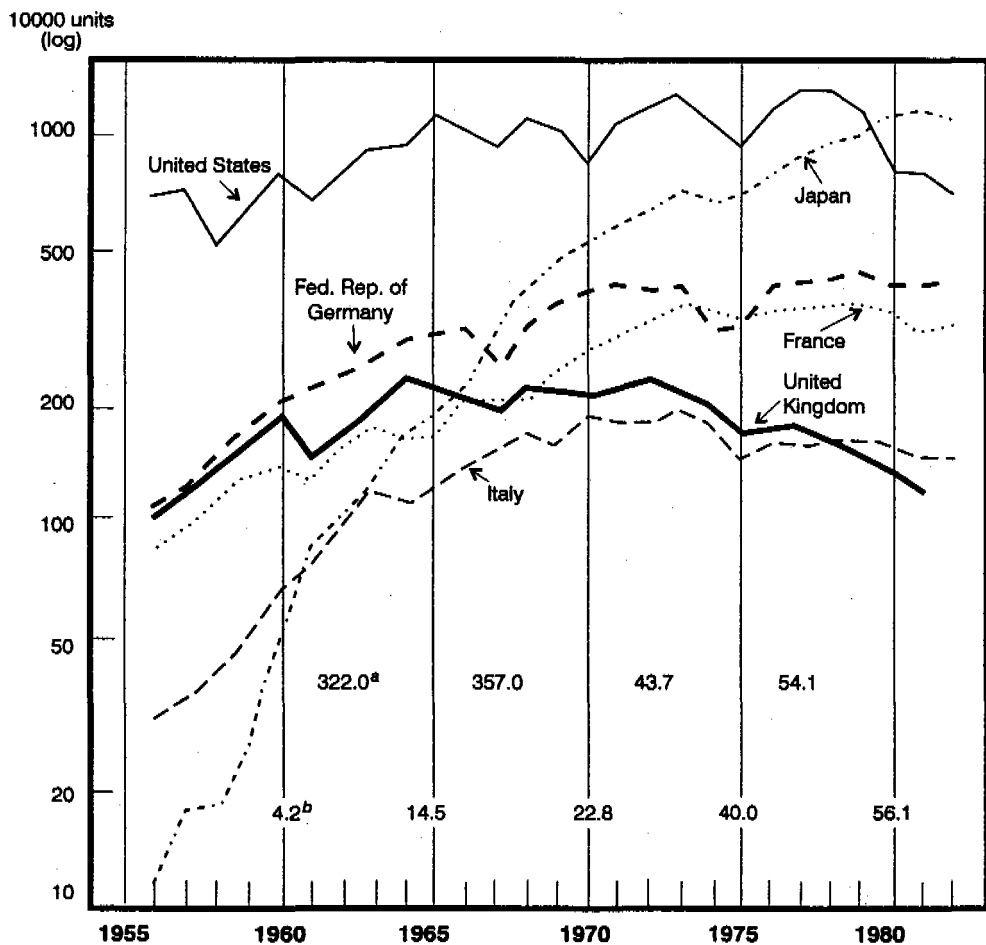
At the start, Toyota, Nissan, Isuzu, Hino and Prince were the first-entry groups that began to manufacture domestic automobiles. They were quickly followed by the second-entry group of Mitsubishi,²¹ Toyo Kogyo (Mazda), Honda, Daihatsu, Fuji Heavy Industries, Suzuki and Nissan Diesel.²² Nissan soon absorbed Prince (in 1966), thereby reducing the number to eleven auto-makers. They vigorously vied with each other in expanding productive capacities and raising output at a phenomenal pace.

This growth is vividly shown in figure 3. From 1960 to 1965, output expanded 322 per cent; from 1965 to 1970, it rose by 357 per cent, with Japan overtaking the European auto-makers and emerging as the second largest auto-maker next only to the United States. From 1970 to 1975, a 44 per cent jump in output occurred; and from 1975 to 1980, another 54 per cent increase finally led Japan to catch up and unseat the United States as the world's largest automobile manufacturer in the late 1970s. Simultaneously, as expected, Japan became the world's largest exporter of cars. Its dependency ratio on exports rose from 4 per cent in 1960 to 15 per cent, to 23 per cent in 1970, to 40 per cent in 1975, and to 56 per cent in 1980.

²¹ Mitsubishi Motors used to be the automotive division of Shin-Mitsubishi Heavy Industries, but became a separate company on the occasion of its tie-up with Chrysler in 1971. Strictly speaking, therefore, Mitsubishi Motors is not really a second-entry firm, although it began to stress passenger cars for export only after 1971.

²² Nissan Diesel used to be Minsei Diesel, an independent maker of diesel engines. Nissan Motor began to purchase diesel engines from Minsei in 1949 and acquired a 46 per cent interest in Minsei in 1953. This Nissan affiliate changed its name to Nissan Diesel in 1960; see Cusumano (1989, p. 253). Nissan Diesel specializes in trucks and buses.

Figure 3. Passenger-car production by major countries



Source: Adopted with modifications from Mutoh (1988, pp. 308 and 319).

^a Five-year average growth rates of Japan's car output.

^b Japanese car exports as a proportion of total output.

Interestingly, during the course of this precipitous growth, the Ministry of International Trade and Industry (MITI) ironically attempted to curb what it perceived as "excessive competition" among the multiple entrants by introducing two policies: the "people's car" concept in 1955 and the "producer-group" concept in 1961. The people's car programme aimed at introducing a low-priced small car for both domestic and export markets, with production concentrated in one firm so as to exploit scale economies, a plan modeled on Germany's Volkswagen. The Ministry of International Trade and Industry's attempt to implement this programme did not work in the face of fierce rivalries among the domestic auto-makers, all of which produced small cars in their own ways. The producer-group plan was introduced as a way of strengthening the competitiveness of the Japanese automobile industry, as Japan was forced to liberalize car imports for commercial vehicles (in 1961) and passenger cars (in 1965). The plan envisaged dividing the domestic auto-makers into three groups of two-to-three firms each, with the first group specializing in mass-produced passenger cars (with a monthly output of at least 7,000), the second group producing specialty vehicles (with a monthly output of 3,000 luxury and sports cars), and the third group manufacturing small cars. The industry strongly resisted this administrative interference, and the three-group plan failed to be legislated.

It was against intense competition at home that Mitsubishi Motors, a newcomer, manoeuvred a tie-up with Chrysler in 1971, despite MITI's opposition. In the same year, Isuzu concluded a capital link-up with General Motors, which acquired a 32 per cent equity interest in Isuzu. Another new challenger, Toyo Kogyo (Mazda), established close relations with Ford, which culminated in the sale of 25 per cent equity to Ford in 1979. Japanese auto-makers were still in the learning stage and gained from partnerships with United States firms, perhaps, most importantly, learning about not only the basic techniques of mass production, but also becoming aware of its weaknesses as an effective production system.

The above discussion raises one set of important questions: why were there so many willing entrants into a new industry such as cars, thereby generating the dynamics of fierce competition in Japan? Obviously, protection alone is not a sufficient explanation; there need not be many competitors. But if there was so much competition in the first place, was the Government's involvement (protection-cum-promotion) then really required for boosting Japan's automobile industry? To answer the second question first, the generally accepted answer is "yes" for this particular industry. Without protection (i.e., if free imports of cars had been permitted), it is safe to sur-

mise that Japan's automobile industry would never have had a chance to develop into the world's largest producer and exporter of cars that it is today.

As to the effectiveness of the Government's promotion policy, for example, Hiromichi Mutoh (1988, p. 330) made the following assessment:

“. . . promotion policies were advanced with the recognition of the infant industry status of the Japanese automotive industry. It was not a great mistake in and of itself to have targeted it as an industry of the future, and with certain reservations, the initial import restrictions, the promotion of technology licensing, special depreciation allowances, and other policies did produce some positive results. Of course, there were also the rationalization efforts of the firms themselves, and these were able to function well because of the heavy initial protection.”

Thus, the initial protection and promotional measures had a desirable effect from Japan's industrial policy perspective, since they provided a “greenhouse” to the infant industry. Moreover, this greenhouse also fostered the phenomenon of reserved competition, namely, multiple entries under protection, because:

“The firms in the ‘greenhouse’ avoided *unnecessary* price reductions, which gave rise to *excess profits*. In the long term these excess profits lowered the barrier to entry, making it possible for *numerous firms to coexist*. It is ironic that cooperation among domestic makers in fact worked to prevent increasing concentration in the industry” (emphases added) (Mutoh, 1988, p. 324).”

Although not elaborated above, “cooperation” meant an implicit agreement (or a sort of collusion) among the participants not to resort to “disorderly” price competition, but instead to compete in terms of cost reduction and quality-raising efforts through technological improvements. This production-focused rivalry allowed all the participating firms to retain all gains from technological progress (since they did not pass such gains to consumers in the form of lower product prices) and to reinvest in productive capacities. Moreover, reserved competition made the participating firms all the more export-oriented because of the overcrowded domestic market, and their focus on production efficiency also made them even more competitive in exporting.

To return now to the first part of the two questions raised earlier: why are there so many effective entrants in Japan's key industries? (In fact, so

many that MITI itself considered the figure excessive.) In the quote above, excess profits (or protection rents) are cited as a strong inducement for multiple entries of competitors. In addition, moreover, the cost of entry was kept rather low due to *keiretsu* financing; the entrants' own *keiretsu*-affiliated banks extended preferential loans to them because the *keiretsu* groups competed with each other in entering any new growth industry under the so-called "one-set" development pattern, whereby each major *keiretsu* group wanted to establish "one set" of key growth industries (Miyazaki, 1967). And automobiles were certainly considered as one of the most promising growth industries. Hence, the core *keiretsu*-affiliated banks played an active role in financing the group's advance into automobiles (table 1).²³ The attraction of automobiles as a new growth industry was particularly strong for the *keiretsu* since this is the industry with numerous industrial linkages, notably backward (input) linkages with steel, tires, plastics and machinery. Since each major group was building up simultaneously these key (upstream) industries under the one-set principle, each group was naturally eager to use automobiles as an outlet to these industries.

Table 1. Auto-makers and *keiretsu* financing

Firm	<i>Keiretsu</i>	Bank
Toyota	Mitsui	Mitsui Bank
Nissan	Fuyo	Fuji Bank
Isuzu	Dai-Ichi Kangyo	Dai-Ichi Kangyo Bank
Mitsubishi	Mitsubishi	Mitsubishi Bank
Toyo Kogyo	Sumitomo	Sumitomo Bank
Daihatsu	Sanwa	Sanwa Bank
Honda	Mitsubishi	Mitsubishi Bank

Source: Compiled from Miyazaki (1967), pp. 67-70.

The automobile industry demonstrates well the "reserved-competition" phenomenon and the widespread use of lean production. But other key industries, such as computers and semiconductors, can likewise provide equally illustrative examples.

²³ Thus, each of the six major *keiretsu* groups ended up with a minimum of one auto-maker. It should be noted that Honda is more or less independent without any formal membership in the Mitsubishi group's council of presidents, but it still maintains a close financial relationship with the Mitsubishi Bank.

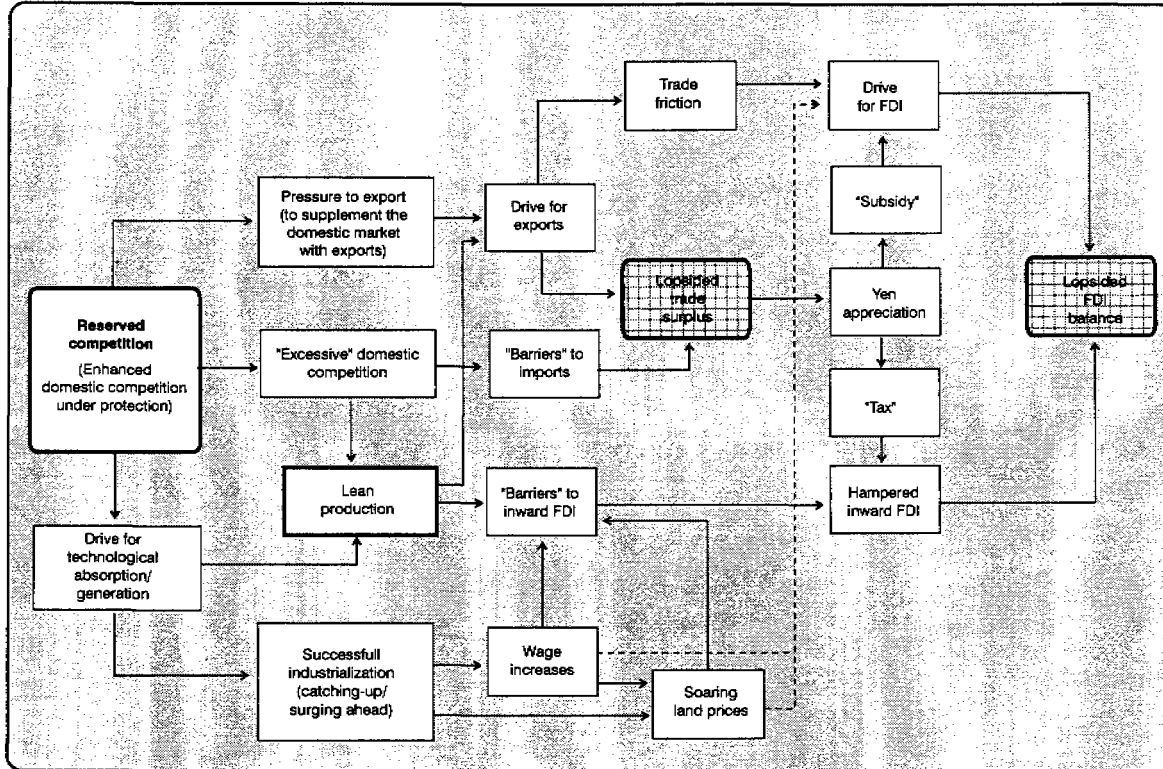
A techno-structural-evolutionary paradigm of Japan's twin external asymmetries

An understanding of Japan's external asymmetries requires a new conceptual framework in which the structural outcomes and sequential events that took place during the course of Japan's catching-up development phase can be taken into account, a framework which may be called a "techno-structural-evolutionary" paradigm (figure 4). Looked at in the light of the preceding analysis, it is now easy to understand why the "reserved-competition" phenomenon, which eventually led to the creation and widespread use of lean production, generated simultaneously both an enormous drive for exports (out of fierce domestic competition) and structural hindrances to imports, resulting in a lopsided trade surplus (especially in the once targeted growth industries such as automobiles, auto-parts, computers and semiconductors).

In the face of limited local markets, domestic competitors (especially, the new entrants) had to look outside the domestic market for expansion (the export-compelling mechanism). Because of the relatively small and fragmented domestic market, the prevailing "excessive" competition and the protective mode of the Japanese automobile industry, there was not much attraction for foreign TNCs to come in and operate (the inward-FDI-inhibiting mechanism).²⁴ Fierce competition at home also enhanced the Japanese entrants' appetite for advanced technologies in order to outsmart other domestic competitors. They vied with each other in seeking out state-of-the-art technologies from the advanced Western economies. This rivalrous environment contributed to the rapid absorption of technologies from overseas (the technology-absorption impulse), as well as the introduction of original innovations—largely the by-products of technological adoption and adaptation efforts (the technological adaptation/improvement mechanism). The birth of lean production in Japan as a superior alternative to mass production represents such a technological achievement. The upshot was the rapid development of growth industries at home and the export expansion, initially in

²⁴ On the whole, up until the late 1970s, most foreign producers had not considered Japanese markets seriously; "Japan for many years was a marginal market for most foreign producers. Being present in Japan was not important to their basic well-being. . . . The closed Japanese market was not viewed by American producers as a strategically important or vital export market through the mid-1970s. At most the Japanese market was important for tactical gains and marginal increases in profit. Struggling against trade and direct investment barriers was not worthwhile for most companies" (Tyson and Zysman, 1989, pp. 105 and 129). In other words, the developed economies exhibited "benign neglect" or "benign resignation" to the Japanese market (Ozawa, 1986).

Figure 4. The techno-structural paradigm of Japan's twin external imbalances



Asian markets, but ultimately targeted at the more advanced Western markets.

The incessant export drive and the resulting trade frictions caused a drive for outward FDI (of the trade-friction-avoiding type), especially in the developed countries, but the prevailing structure of “excessive competition” at home presented hindrances/barriers to inward FDI. The continuous huge trade surpluses inevitably forced the yen to appreciate drastically, bringing about a “subsidy” effect on outward FDI and a “tax” effect on inward FDI. The success of reserved competition also contributed to Japan’s economic growth, driving up wages and land prices which, in turn, became additional barriers to inward FDI. The net result is the lopsided FDI balance.

Phase III industries (components-intensive, assembly-based industries) are vertically integrated in the structure of manufacturing activities (chain of value-added processes). Here, Japanese firms have formed an externalized pattern of a vertical division of labour along the lines of different wage levels, varied factor intensities and different technological sophistications—that is, a vertical division of labour among several major assemblers (large-sized oligopolistic firms), their closely affiliated primary suppliers of sub-assemblies, parts, components and accessories, and a large number of sub-contractors (small-sized firms) operating in a highly competitive market. In other words, another set of the *keiretsu* groups—more specific to certain industries—has come into existence. Here, the doctrine of comparative advantage is pursued *internally* within each group so as to enhance and project its competitive advantage *externally*. And this tightly knit system is viewed as an additional barrier to entry by any newcomers.

Strong competitive advantages matter: conclusions

Japan is now an advanced economy and as such it is expected to have relatively well balanced trade and investment relations. Hence, Japan’s present external asymmetries are intolerable. This view is quite understandable, but it should be remembered that:

- In the immediate post-war years, Japan was still an underdeveloped economy, with a huge technological gap *vis-à-vis* the advanced economies, exporting mostly standardized manufactures (for example, textiles and steel, as illustrated in figure 1).
- In the course of Japan’s unique catching-up development phase (whose features include the “reserved-competition” phenomenon), Japan

stumbled upon a radically new way of organizing manufacturing in those industries (lean production) that is characterized by components-intensive, assembly-based and vertically integrated operations, notably in automobiles, auto-parts and electronic goods.

- Japan is at the very forefront of this new manufacturing revolution, just as the United States used to be at the forefront of the Fordist/Taylorist mass-production system, and Europe used to be the leader for factory-integrated craft production.

Although Japan no longer needs and pursues the infant-industry approach described in this article and, in fact, its Government is now trying to open Japanese markets, the legacies from its past development path still linger in the form of bureaucratic regulations and mentalities and the fierce rivalry among domestic competitors, many of which have grown to be among the world's leading manufacturers.²⁵ In so far as Japan's manufacturing sector *as a whole* is concerned, it is probably as liberalized and as open as that of any other advanced economy. But the sharply appreciated yen, high land prices and tight labour market are adding to the cost of doing business in Japan. Such costs increased further by the fierce rivalry among the *keiretsu* (especially in connection with the just-in-time delivery system of lean production) and the widespread practice of lean production among Japanese manufacturers in phase III industries.

In this connection, some argue that, although the Government of Japan has reduced many barriers to imports and inward FDI, Japan's private sector is still erecting obstacles, because it engages in *keiretsu*-based exclusive business relations that often impede acquisitions (Lawrence, 1992) and for-

²⁵ There are, of course, several inefficient industries in Japan which are still "sheltered" through Japanese business practices, if no longer by outright State protectionism. Japan's materials industries, such as basic chemicals, synthetic fibres and resin, have been able to survive despite their weak competitiveness largely because of their close affiliation with the *keiretsu* groups as their "captive" customers. But their customers are now increasingly turning to imports, because of the homogeneous (largely non-differentiated) nature of the products, the improved quality of foreign-made materials and the recent sharp appreciation of the yen that makes imports even more price competitive. Moreover, the current economic slump is creating excess capacities in Japan's materials industries. For example, Japan's chemical industry reportedly has a combined ethylene production capacity of 7.5 million tons a year, while domestic demand in 1993 totalled 5.9 million tons, resulting in a 22 per cent excess capacity. But the high yen is hindering exports (*Nikkei Weekly*, 10 October 1994, p. 1). Distribution, finance and banking are other inefficient industries which have only recently begun to be deregulated gradually. Obviously, protection, regulations and business practices have long been barriers to inward FDI and imports, but these industries can no longer escape from the accelerating trend towards internationalization.

eign sales in Japan (Encarnation, 1993), that is to say, "private-sector impediments" have become a new policy issue (Mason, 1992).

However, as it is well articulated in Stephen Hymer's "monopolistic advantage" theory of FDI (1976), any successful TNC that is a direct participant in a foreign market must overcome the costs of doing business there by way of its own firm-specific advantages. "Private-sector impediments" basically reflect the local market conditions just like any other exclusive business arrangement (e.g., exclusive licensing and franchising agreements) or "market-imperfection-creating" activities (e.g., advertising and consumer loyalty). In fact, irrespective of whether a firm is foreign or local, it will incur these additional costs so long as it is outside a *keiretsu*. And these are the costs of doing business in Japan. What is needed, then, are strong firm-specific competitive advantages that can overcome such costs. Indeed, many successful foreign ventures in Japan operate under this principle. Besides, it is even argued (Ramstetter and James, 1994) that *keiretsu* relationships, on the whole, actually have a positive, rather than negative, effect on United States affiliates in Japan.

To sum up, the most important legacy of Japan's past developmental path is the creation and continuous improvement of lean production in Japan's components-intensive, assembly-based industries, notably automobiles and electronic goods. Even if all the remaining residues of protectionism are completely removed in Japan (and assuming all other developed countries do the same), a level-playing field will not be immediately realized, for Japan already has a head start in the new industrial revolution. This fact is well illustrated by the high assembly efficiency of Japanese transplants in the United States; United States auto-makers and the United Auto Workers once reasoned that Japan's auto-makers would never be able to compete if they were forced to produce locally by employing United States assembly workers.

This expectation proved wrong. Japanese transplants continue to demonstrate higher efficiencies in both assembly and production changeovers. As far as assembly efficiency is concerned (table 2), a recent comprehensive study made by Harbour & Associates Inc., designed to correct for differences in levels of vertical integration, found that Nissan and Toyota's transplants are as much as 42 per cent and 38 per cent, respectively, more efficient than General Motors. As far as model changeover time requirements are concerned (table 3), Japanese transplants are again outperforming United States auto-makers. Japanese auto-makers' ownership-specific advantages are clearly exploited in their overseas operations. The superiority of Japanese-

style manufacturing in automobiles and other industries as evidenced in the United States has been well documented by Martin Kenney and Richard Florida (1993) and Tetsuo Abo (1994).

Table 2. The assembly efficiency of selected automobile plants in the United States, 1993

(Number and percentage)

Firm	Per vehicle labour requirements	Relatives ^a
Nissan, Smyrna, Tennessee	2.29 workdays	58
Toyota, Georgetown, Kentucky	2.44 workdays	62
General Motors ^b	3.94 workdays	100

Source: Compiled from information reported in *The Wall Street Journal*, 24 June 1994, p. B8.

^a Index calculated on the basis of General Motors' 3.94 workdays = 100.

^b Refers to the least efficient plant of General Motors whose name and location were not revealed in *The Wall Street Journal*.

Table 3. Model-changeover time in selected automobile plants in the United States, 1990

(Number and percentage)

Model	Changeover time	Relatives ^a
Honda, Marysville, Ohio	3 days (1994 Accord)	3.4
Toyota, Georgetown, Kentucky	18 days (1992 Camry)	20.7
Ford, Kansas City, Missouri	60 days (1995 Mercury)	69.0
General Motors, Oshawa, Ontario	87 days (1995 Chevy Lumina)	100.0

Source: Compiled from "Motown's struggle to shift on the fly," *Business Week*, 11 July 1994, pp. 111-112.

^a Index calculated on the basis of General Motors' 87 days = 100.

Viewed in this light, Japan's trade surplus and its FDI asymmetry are likely to remain in the foreseeable future. Just as the United Kingdom once experienced substantial external asymmetries in both trade and investment during the heyday of the Pax Britannica (during which the United Kingdom's current account surplus between 1870 and the First World War averaged 5 per cent of its GNP (Krugman and Obstfeld, 1994, p. 529), a figure much higher than Japan's current ratio of a little over 3 per cent), and akin to the United States until the end of the golden age of post-war capitalism (1950-1974), Japan is expected to exhibit a similar set of external asymmetries for some time until the new manufacturing system spreads to other

countries. This does not mean that Japan is presently the world-dominating hegemon comparable in industrial and military power to the United Kingdom in the last century and the United States in the latter half of the twentieth century. Rather, Japan is a “shy” industrial power because it has no comparable military might to speak of; at the moment it merely has a superior manufacturing system, mostly in assembly-based industries.

Japan’s external disparities are likely to diminish as the techniques of Japanese-style lean production disseminate to the rest of the world. In fact, such dissemination to the developed countries is already noticeable, although, as quoted earlier, “superimposing lean-production methods on existing mass-production systems causes great pain and dislocation”. Detroit’s recent comeback is a good example, as best demonstrated by Chrysler’s Neon model. In fact, the key features that characterize the business re-engineering movement (Hammer and Champy, 1993) now sweeping the United States—such as horizontal compression of jobs (i.e., multiskilling), the vertical compression of work (i.e., flattened hierarchy), the case teams (i.e., teamwork) and moving from just-in-case to just-in-time inventory—are actually the same ingredients used in Japanese-style flexible production.

In short, Japan’s present external disparities in trade and FDI are basically *transitory* phenomena that mirror the current dominant position of Japan’s assembly-based manufacturing industries that have mastered, and continue to improve, the techniques of lean production. In other words, Japan’s present trade surplus can be expected to last until the techniques of Japan-originated manufacturing gradually spread to other countries. At the moment, its lopsided FDI position *vis-à-vis* other industrialized countries, notably in automobiles, electronic goods and office equipment, fundamentally reflects a unilateral flow of manufacturing technology from Japan in internalized form (i.e., via FDI²⁶) that eventually helps equilibrate international discrepancies in production efficiency. In this respect, Japan’s TNCs in assembly industries are playing a key role as an instigator/facilitator of the present restructuring from mass production to flexible production in the global economy.

This does not mean, however, that Japan can slacken its present efforts to open up society and industry, especially its relatively inefficient industries, to more direct interaction and competition with the outside world so as

²⁶ Since lean production is basically organo-anthropo-centric in nature, it is not so easily transferable through licensing or any other contractual non-equity (non-ownership) arrangements.

to restructure the once sheltered domestic markets in accordance with the norms of an advanced open economy. The recent sudden rises in imports of manufactures (from automobiles and computers to beer) and inward FDI (especially in chemicals, pharmaceuticals, machinery, and distribution)²⁷ are encouraging signs. In fact, as Jagdish Bhagwati (1994, pp. 10-11) demonstrated for seven important high-technology markets (scientific instruments, aircraft, communication equipment, electrical machinery, computer equipment, pharmaceuticals and chemicals), ‘the U.S. and Japanese import shares (based on recently released data from the National Science Foundation) look pretty similar, so much so that if the industries and the countries were blacked out, one could well mistake the U.S. chart for Japan’s’. Just as Japan’s exports and FDI serve as powerful restructuring stimulants in other countries, both imports and inward FDI need to be more actively capitalized as upgrading catalysts for Japanese industry. ■

²⁷ In particular, European firms such as Bayer (Germany), Hoechst (Germany), Sandoz (Switzerland), Ciba-Geigy (Switzerland), Tetra Pak (Sweden) and ICI (United Kingdom) are active in establishing research centres and direct distribution channels.

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