A Commodity Chains Framework for Analyzing Global Industries

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In global capitalism, economic activity is not only international in scope, it is also global in organization. "Internationalization" refers to the geographic spread of economic activities across national boundaries. As such, it is not a new phenomenon. Indeed, it has been a prominent feature of the world economy since at least the seventeenth century when colonial empires began to carve up the globe in search of raw materials and new markets for their manufactured exports. "Globalization" is much more recent than internationalization because it implies functional integration between internationally dispersed activities (Dicken, 1998: 5).

Industrial and commercial capital have promoted globalization by establishing two distinct types of international economic networks, which can be called "producer-driven" and "buyer-driven" global commodity chains, respectively (Gereffi, 1994; 1999). A commodity chain refers to the whole range of activities involved in the design, production, and marketing of a product (see Gereffi and Korzeniewicz, 1994 for an overview of this framework). Producer-driven commodity chains are those in which large, usually transnational, manufacturers play the central roles in coordinating production networks (including their backward and forward linkages). This is characteristic of capital- and technology-intensive industries such as automobiles, aircraft, computers, semiconductors, and heavy machinery. The automobile industry offers a classic illustration of a producer-driven chain, with multilayered production systems that involve thousands of firms (including parents, subsidiaries, and subcontractors). In the 1980s, the average Japanese automaker's production system, for example, contained 170 first-tier, 4,700 second-tier, and 31,600 third-tier subcontractors (Hill 1989: 466). Florida and Kenney (1991) found that Japanese automobile manufacturers actually reconstituted many aspects of their home-country supplier networks in North America. Doner (1991) extended this framework to highlight the complex forces that drive Japanese automakers to create regional production schemes for the supply of auto parts in a half-dozen nations in East and Southeast Asia. Henderson (1989) and Borrus (1997) also support the notion that producer-driven commodity chains have established an East Asian division of labor in their studies of the internationalization of the U.S. and Japanese semiconductor industries.

Buyer-driven commodity chains refer to those industries in which large retailers, marketers, and branded manufacturers play the pivotal roles in setting up decentralized production networks in a variety of exporting countries, typically located in the third world. This pattern of trade-led industrialization has become common in labor-intensive, consumer goods industries such as garments, footwear, toys, housewares, consumer electronics, and a variety of handicrafts. Production is generally carried out by tiered networks of third world contractors that make finished goods for foreign buyers. The specifications are supplied by the large retailers or marketers that order the goods.

One of the main characteristics of the firms that fit the buyer-driven model, including retailers like Wal-Mart, Sears Roebuck, and J.C. Penney, athletic footwear companies like Nike and Reebok, and fashion-oriented apparel companies like Liz Claiborne and The Limited, is that these companies design and/or market—but do not make—the branded products they order. They are part of a new

breed of "manufacturers without factories" that separate the physical production of goods from the design and marketing stages of the production process. Profits in buyer-driven chains derive not from scale, volume, and technological advances as in producer-driven chains, but rather from unique combinations of high-value research, design, sales, marketing, and financial services that allow the retailers, designers, and marketers to act as strategic brokers in linking overseas factories and traders with evolving product niches in their main consumer markets (Gereffi, 1994).

Profitability is greatest in the relatively concentrated segments of global commodity chains characterized by high barriers to the entry of new firms. In producer-driven chains, manufacturers making advanced products like aircraft, automobiles, and computers are the key economic agents not only in terms of their earnings, but also in their ability to exert control over backward linkages with raw material and component suppliers, and forward linkages into distribution and retailing. The lead firms in producer-driven chains usually belong to global oligopolies. Buyer-driven commodity chains, by contrast, are characterized by highly competitive and globally decentralized factory systems. The companies that develop and sell brand-named products exert substantial control over how, when, and where manufacturing will take place, and how much profit accrues at each stage of the chain. Thus, whereas producer-driven commodity chains are controlled by large manufacturers at the point of production, the main leverage in buyer-driven industries is exercised by retailers and marketers at the distribution and retail end of the chain.

The main features of producer-driven and buyer-driven commodity chains are highlighted in Table 1. Producer-driven and buyer-driven chains are rooted in distinct industrial sectors, they are led by different types of transnational capital (industrial and commercial, respectively), and they vary in their core competencies (at the firm level) and their entry barriers (at the sectoral level). The finished goods in producer-driven chains tend to be supplied by core country transnationals, while the goods in buyer-driven chains are generally made by locally owned firms in developing countries. Whereas transnational corporations establish investment-based vertical networks, the retailers, designers, and trading companies in buyer-driven chains set up and coordinate trade-based horizontal networks.

[Table 1 about here]

There is an affinity between commodity chains and development strategies. The import-substituting industrialization (ISI) development strategy, which prevailed in Latin America for nearly five decades until the 1970s, was based on producer-driven commodity chains. Transnational corporations, which have actively tapped Latin America's oil, mineral, and agricultural resources since the nineteenth century, were invited to establish more advanced manufacturing industries in the region, beginning with automobile assembly plants in large countries like Mexico, Brazil, and Argentina in the 1920s. By the 1950s and 1960s, a range of advanced ISI factories were spread throughout the region in diverse industries such as petrochemicals, pharmaceuticals, automobiles, electrical and non-electrical machinery, and computers (Gereffi and Wyman, 1990). Output was mainly destined for the domestic market, although in the 1970s more attention was given to manufactured exports to offset the costly import bills associated with ISI deepening. Buyer-driven commodity chains, by contrast, have been virtually ignored in Latin America since the transnational firms that established ISI were primarily interested in Latin America's domestic markets, not exports. This allowed the local exporters in the East Asian NIEs that pursued export-oriented industrialization (EOI) to gain the lion's share of U.S. and European markets for the profitable consumer goods that are only supplied via buyer-driven chains.

Both buyer-driven and producer-driven commodity chains are useful in analyzing and evaluating global industries. As with traditional supply-chain perspectives, the commodity chains framework is based on the flow of goods involved in the production and distribution of

apparel products. However, the global commodity chains approach differs in at least four respects from related concepts, such as the "pipeline" (AAMA, 1984) or "value chain" (Porter 1990) approaches. The global commodity chain framework:

1) incorporates an explicit *international dimension* into the analysis;

2) focuses on the *power* exercised by the lead firms in different segments of the commodity chain, and it illustrates how power shifts over time;

3) views the *coordination* of the entire chain as a key source of competitive advantage that requires using networks as a strategic asset; and

4) looks at *organizational learning* as one of the critical mechanisms by which firms try to improve or consolidate their positions within the chain.

One of the major hypotheses of the global commodity chains approach is that development requires linking up with the most significant "lead firms" in an industry. These lead firms are not necessarily the traditional vertically integrated manufacturers, nor do they even need to be involved in making finished products. They can be located upstream or downstream from manufacturing (such as the fashion designers or private label retailers in apparel), or they can be involved in the supply of critical components (such as microprocessor companies like Intel and software firms like Microsoft in the computer industry). What distinguishes lead firms from their followers or subordinates is that they control access to major resources (such as product design, new technologies, brand names, or consumer demand) that generate the most profitable returns in the industry. What follows is a brief listing of prominent kinds of lead firms in the automotive and apparel commodity chains.

Lead Firms in the Automotive Commodity Chain

The United States is the world's largest consumer market for passenger cars and light trucks. The "Big Three" U.S. automakers – General Motors, Ford Motor Company, and Chrysler Corp. (now part of DaimlerChrysler following its merger with Daimler-Benz AG) – accounted for 68% of the passenger cars produced in the United States in 1997. The remaining 32% of U.S.-made cars came from Asian and European "transplant" firms. Along with these giant assemblers, the automotive commodity chain also includes parts manufacturers. The auto parts industry is fragmented, consisting of thousands of suppliers ranging in size from small shops to large multinationals. The auto parts segment of the chain is divided between original equipment manufacturers (OEMs) and the replacement market. OEMs are companies that produce parts and components that automakers use in the assembly of new vehicles. Participants in the replacement market (also known as the aftermarket) make parts and components to substitute or supplement items that were included in the original assembly of the vehicles. Both OEMs and replacement parts suppliers and distributors may be independent firms or subsidiaries of larger companies.

The basic method of making automobiles changed very little between 1913, when Henry Ford first invented the moving assembly line, and the 1970s, when a radical new system of "lean production" began to emerge in Japan. Pioneered by the U.S. Big Three, the automobile industry was *the* mass-production industry par excellence. The Fordist method of production made a limited range of standardized cars for mass-market customers. Auto manufacturing was carried out in massive assembly plants using rigid methods in which each assembly worker performed a highly specialized and narrow task very quickly and with endless repetition. The big U.S. and European automakers developed a particular kind of relationship with their suppliers, based on short-term, cost-minimizing contracts. As the major producers scoured the world for low-cost components, the increased

geographical distance between the assemblers and their suppliers made it necessary for assemblers to hold huge inventories of components at their assembly plants. In this "just-in-case" system, the possibility of the assembly line being disrupted by a temporary shortage of components (or by faulty batches) was reduced.

Since the early 1980s, the auto industry has been marked by intensifying competition and increased globalization, which has resulted in lower costs and also improved product quality. With the advent of lean production by the principal Japanese automakers, led initially by Toyota, "just-in-time" systems emphasized close assembler-supplier relations and flexible forms of production in which quality control (or total quality management) was viewed as an essential element at all stages of the production process (Womack et al., 1990; Dicken, 1998, chs. 5 and 10). U.S. as well as foreign motor vehicle assemblers now employ supply chain management to diffuse lean production methods and high performance work organization practices into the broader automotive industry.

U.S. Big Three (General Motors, Ford Motor, Chrysler). Supply chain management is central to the efforts of the U.S. automakers to restructure, rationalize, and integrate the automotive supplier industry across Canada, the United States, and Mexico. In particular, the Big Three have initiated three key changes in the 1990s that have redefined their relationship with suppliers (Kumar and Holmes, 1997). First, automakers have shifted more of the responsibility for product design and inventory programs to their suppliers. This has allowed the assemblers to focus their resources on their "core capabilities," which include overall system design, drive trains, final assembly, and the marketing of the completed vehicle. Second, the size and complexity of those items of the vehicle that are sourced from suppliers has grown from individual parts and components to entire subassemblies, such as acceleration, braking, steering, handling, and seating systems, or even larger modules such as integral automobile interiors that include carpets, headliners, and dashboards. The out-sourcing of complete systems and modules offers important cost savings to the assembler through reductions in the size of the plant and workforce needed to assemble vehicles. Third, automotive assemblers are reducing the number of their direct suppliers and offering them longer contracts, which lowers the overhead costs of managing and coordinating the entire system.

Chrysler was the car company that initially broke ranks with its U.S. brethren and launched many of these new relationships with its suppliers. In the 1980s Chrysler was cash poor and struggling to survive. As the smallest of the Big Three automakers, Chrysler typically stood third in line with suppliers, behind the much stronger Ford and General Motors. Instead of dictating to suppliers and trying to pit them against each other, Chrysler borrowed from Japanese companies and established mutually beneficial partnerships with its suppliers whereby they developed entire subsystems in return for long-term supply and cost-sharing agreements. Chrysler went from the brink of bankruptcy to having the lowest cost structure of the Big Three and the highest average profit per vehicle. Furthermore, Chrysler's strategy gave its suppliers the impetus to develop whole automotive subsystems, which has pushed the automotive industry from a predominantly vertical structure to a more horizontal one (Dyer, 1996; Fine, 1998: 61-62).

Foreign Transplants. Currency fluctuations have encouraged the production of foreign models of cars in North America and reduced the flow of imports. In particular, the long-term appreciation of the Japanese yen versus the dollar (which seems to have reversed itself since a mid-1995 peak), together with the earlier imposition of U.S. "voluntary export restraints" against Japanese car imports, made many Japanese automakers step up their North American transplant manufacturing capacity in order to maintain competitive prices on their core products. European automakers are also expanding their U.S. and Mexican production operations. Mercedes Benz and BMW joined Honda in assembling cars in Mexico for the first time in 1996, and both German companies are also constructing new U.S. production facilities. The main impact of the foreign automotive transplants is

that they offer alternative kinds of supply chains to which North American parts firms can affiliate, and they also are important partners for the growing number of strategic alliances, mergers, and acquisitions among the large U.S. and foreign assemblers.

Tier 1 suppliers ("systems integrators"). The automotive supply chain has always been organized hierarchically into "tiers," but in recent years the tiered structure has become much more pronounced. There has been a drop in the number of suppliers at all levels of the supply chain, with each assembler relying on a core group of highly competent Tier 1 suppliers. To meet the automakers' ever increasing demands for cost reductions, enhanced productivity, and quicker delivery times, automotive parts suppliers have continued to consolidate. This has resulted in the emergence of a relatively small number of "systems integrators" among the ranks of Tier 1 suppliers that are capable of designing, manufacturing, and delivering complete modules to motor vehicle assembly plants (Kumar and Holmes, 1997). Sophisticated parts firms like Delphi, Bosch, Denso, Johnson Controls, Lear, Federal-Mogul, and Dana Corp. are consolidating across subsystems, which is leading to a significant degree of vertical integration in what had been a relatively fragmented industry. Systems integrators are beginning to assume prime responsibility for selecting lower tier suppliers and for coordinating key segments of the automotive supply chain at a global level. Thus, these top Tier 1 suppliers are challenging the assemblers for control over the key high value activities in automotive production. Since many of the leading auto suppliers make parts in Mexico, this is another avenue for Mexico to move up in the industry.

Lead Firms in the Apparel Commodity Chain

Because of the intensive use of low-skilled labor in apparel production, transnational companies have limited potential for deriving firm-specific advantages from direct foreign investment in overseas locations. Instead, they have turned to other forms of transnational activity, such as the importing of finished garments, brand name and trademark licensing, and the international subcontracting of assembly operations. These various activities have led to multiple lead firms in buyer-driven commodity chains.

There are three types of lead firms in the apparel commodity chain: retailers, marketers, and branded manufacturers (Gereffi, 1997). As apparel production has become globally dispersed and the competition between these types of firms intensified, each has developed extensive global sourcing capabilities. While "de-verticalizing" out of production, they are fortifying their activities in the high value-added design and marketing segments of the apparel chain, leading to a blurring of the boundaries between these firms and a realignment of interests within the chain.

Here's a quick look at where each lead firm stands in apparel sourcing:

Retailers. In the past, retailers were the apparel manufacturers' main customers, but now they are increasingly becoming their competitors. As consumers demand better value, retailers have increasingly turned to imports. In 1975, only 12% of the apparel sold by U.S. retailers was imported; by 1984, retail stores had doubled their use of imported garments (AAMA, 1984). In 1993, retailers accounted for 48% of the total value of imports of the top 100 U.S. apparel importers (who collectively represented about one-quarter of all apparel imports). U.S. apparel marketers, which perform the design and marketing functions but contract out the actual production of apparel to foreign or domestic sources, represented 22% of the value of these imports in 1993, and domestic producers made up an additional 20% of

the total[1] (Jones, 1995: 25-26). The picture in Europe is strikingly similar. European retailers account for fully one-half of all apparel imports, and marketers or designers add roughly another 20% (Scheffer, 1994: 11-12). Private label lines (or store brands), which refer to merchandise made for specific retailers and sold exclusively in their stores, constituted about 25% of the total U.S. apparel market in 1993 (Dickerson, 1995: 460).

Marketers. These manufacturers without factories include companies like Liz Claiborne, Donna Karan, Ralph Lauren, Tommy Hilfiger, Nautica, and Nike, that literally were born global because most of their sourcing has always been done overseas. In order to deal with the influx of new competition, marketers have adopted several strategic responses that are altering the content and scope of their global sourcing networks. These measures include:

- shrinking their supply chains, using fewer but more capable contractors;
- instructing contractors where to obtain needed components, thus reducing their own purchase and redistribution activities;
- discontinuing certain support functions (such as pattern grading, marker making and sample making) and reassigning them to contractors;
- adopting more stringent vendor certification systems to improve performance; and
- shifting the geography of their sourcing networks from Asia to the western hemisphere.

Branded Manufacturers. The decision of many larger manufacturers in developed countries is no longer *whether* to engage in foreign production, but *how* to organize and manage it. These firms supply intermediate inputs (cut fabric, thread, buttons, and other trim) to extensive networks of offshore suppliers, typically located in neighboring countries with reciprocal trade agreements that allow goods assembled offshore to be re-imported with a tariff charged only on the value added by foreign labor. This kind of international subcontracting system exists in every region of the world. It is called the 807/9802 program or "production sharing" in the United States (USITC, 1997), where the sourcing networks of U.S. manufacturers are predominantly located in Mexico, Central America, and the Caribbean; in Europe, this is known as outward processing trade (OPT), and the principal suppliers are found in North Africa and Eastern Europe (OETH, 1995); and in Asia, manufacturers from relatively high-wage economies like Hong Kong have outward processing arrangements (OPA) with China and other low-wage nations (Birnbaum, 1993).

A significant countertrend is emerging among established apparel manufacturers, however, who are de-emphasizing their production activities in favor of building up the marketing side of their operations by capitalizing on both brand names and retail outlets. Sara Lee Corporation, one of the largest apparel producers in the United States -- whose stable of famous brand names includes L'eggs hosiery, Hanes, Playtex, Wonderbras, Bali, and Coach leather products, to name a few -- recently announced its plans to "de-verticalize" its consumer-products divisions, a fundamental reshaping that would move it out of making the brand-name goods it sells (Miller, 1997). Other well known apparel manufacturers like Phillips-Van Heusen and Levi Strauss & Co. are also emphasizing the need to build

[1] These figures do not include the production-sharing activities of U.S. apparel firms in Mexico and in the Caribbean Basin, which also have been expanding very rapidly (USITC, 1997).

global brands, frequently through acquisitions of related consumer products lines, while many of their production facilities are being closed or sold to offshore contractors.

The strengthening of brand names has led to a new focus on "concept stores" that typically feature all the products offered by manufacturers and marketers, such as Levi Strauss, Nike, Disney, and Warner Bros. These stores provide a direct link between manufacturers and consumers, bypassing the traditional role of retailers. Levi Strauss, the largest apparel company in the United States, had 126 Levi's retail stores in 1993, all operated by a retail specialist, Designs Inc. Over half of Levi Strauss's profits in 1993 were generated from overseas operations, which included about 900 franchised Levi's shops in 30 countries in Europe, Asia, and Latin America (Warfield et al., 1995: 80-81). Thus, a de-verticalization of production co-exists with a re-verticalization of brands and stores.

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Table 1

Main Characteristics of Producer-Driven and Buyer-Driven

Global Commodity Chains

	Producer-Driven Commodity Chains	Buyer-Driven Commodity Chains
Drivers of Global Commodity Chains	Industrial Capital	Commercial Capital
Core Competencies	Research & Development; Production	Design; Marketing
Barriers to Entry	Economies of Scale	Economies of Scope
Economic Sectors	Consumer Durables Intermediate Goods Capital Goods	Consumer Nondurables
Typical Industries	Automobiles; Computers; Aircraft	Apparel; Footwear; Toys
Ownership of Manufacturing Firms	Transnational Firms	Local Firms, predominantly in developing countries
Main Network Links	Investment-based	Trade-based
Predominant Network Structure	Vertical	Horizontal