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Global Production Networks and the Private Organization of World Trade

As John R. Commons understood, the role of the firm in providing employment and income distribution is a form of public power (JEI Munkirs and Knoedler 1987). This public power of firms is supported by the laws of the state, which protect private property and enforce market transactions.

The Global Production Network (GPN) is a new form of the firm, influenced by information technology to lower "transaction costs" (Coase), as well as international trade regimes, such as the "Washington Consensus" to influence the ease of world trade. The GPN is globe-scanning yet private, able to shape the economies and policies of countries. The only international organizations with jurisdiction over them are ones which enforce trade rules, such as the World Trade Organization (WTO), to facilitate the expansion of their reach (BIS and finance rules; WTO MLI treaties; ILO labor rules). Under the banner of branded products, the lead firm in a supply chain exercises considerable power over subsidiaries, contractors, workers, communities, and countries. By influencing trade relations, GPNs also influence international finance, foreign currency reserves and exchange rates, as well as trade deficits and "race to the bottom" of taxes and environmental protection.

Drawing upon interdisciplinary research, this topic benefits from an alliance of sociology, business, history, law, and international, as well as institutional economics, in the AFEE tradition. This paper will draw upon the work of leading scholars in the field (Milberg; Gereffi; Sturgeon; Baldwin; Antras; Flamm; Borrus), and will draw implications for the world trade system as well as ongoing political resistance to globalization. These GPNs are no longer "of" their country of origin (Tyson vs. Reich).

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I. Introduction

The corporation is an ancient institution (Davis 2016), yet is changing rapidly at present. There are observations that the number of publically traded firms is decreasing (Kahle and Stulz 2017), as well as the dispersion and "fragmentation of production" globally. This paper will focus on the latter phenomenon, specifically "supply chains," or global value chains. While the global value chain (GVC) is a form of the firm, it is also influenced by technology, company strategy, country industrial policy, and global trade regime. In turn, GVCs also influence the structure of global trade, country development strategies as well as income distribution. Understanding these interconnections will contribute to a theory of the corporation, embedded in related institutions (Davis 2015). We will proceed by examining these connections and consequences, including the power of the corporate form in the institutional tradition.

II. Determinants of the Shift in Corporate Form

There are several determinants of the evolution of the corporate form. One influence on the changing corporate form is technology. The development of information technology in the Post-World War II period lowered the cost of computations, facilitating contracting. According to Coase, this decrease in the transaction cost of contracts would lead to increasing use of the market instead of the hierarchical organization of the firm (Antras 2016). What is called the "supply chain" or "global value chains" subcontracts or "outsources" operations which had been internal to the firm to other firms, either to subsidiaries or separate firms in other locations. This contracting can be relational or "arms-length" (Gereffi and Lee 2012). That is, contracts can be made with suppliers, as well as employees.

The firms in the information technology industry have themselves converted to a "new economy business model" (NEBM), ending life-time employment, contracting out significant portions of production, and rewarding employees with stock options (Lazonick 2009). This form of the firm is more flexible, reducing fixed investments in factories and equipment, as well as long-term employment. As such, the firm is more conducive to "financlaization," able to respond to changing currency values, lower wages and taxes in other countries, and new market niches (Milberg and Winkler 2013). The role of stock prices is greater in such companies, providing information about performance, as well as performance-based rewards to executives and returns to stock holders. Stock buybacks have become an important strategy for the use of funds, rather than investment in longer term real assets, such as research and development and plant and equipment (Lazonick 2010).

In addition to technology and financialization, other factors have contributed to this new form of the firm. The end of the Bretton Woods regime made currency values more variable, rewarding flexibility in location as well as financial assets. The "Washington Consensus" then made investments in foreign countries more feasible, with open capital markets (Bhagwati 2004, 199-207). Further, the shift in strategy of developing countries, from import substitution industrialization to export-oriented industrialization, made emerging countries willing partners in establishment of enclaves and privileges for foreign direct investment, especially after the transformation of the USSR in 1989.

III. Theories of the Firm

There is no consensus regarding the theory of the firm, with important remaining open questions. For example, is the corporation a separate entity? Does it have a center? Are there boundaries, inside and

outside? Is there a hierarchy, based on management authority or equity ownership? Is the corporation a creature of the state (concession theory) and the law, or a product of the market?

From legal history, managerial authority is derived from the law of master/apprentice (Orren 1991; O'Kelley 2012, 1258-1259). In contrast, contracting theories of the firm tend to assume voluntary contracts among equal parties. From debates in business history, there has been a perceived shift from the Chandlerian firm of management control to the post-Chandlerian firm of collaboration (Sabel and Zeitlin 2004). Some changes can be understood as evolutionary, with factors such as transaction costs treated as endogenous (Berk and Schneiberg 2005)

IV. Strategic Role of Information Technology Industry

From the Chandlerian perspective, the development of managerial expertise focused on the systematic organization of production and analysis of information, first regarding labor productivity and then returns on investment. The parallel development of information technology as an industry complemented this focus on management of information. The information technology industry itself was also the first industry to benefit from off-shoring of production (Grunwald and Flamm 1985). Information technology products and components have high value and low weight, ideal for international trade. These products and components tended to become standardized, facilitating the modularization of production.

The global value chain can also be understood as part of long-standing division of labor between mental and manual labor, and the division between headquarters and manufacturing (Fujita and Hamaguchi 2014, 2-3; Antras 2016, 41-42). While noted by Marx and Braverman, this hierarchical division of labor within the firm can benefit from lower costs of information and communication technology, to locate the headquarters and the plants in different locations, even different countries. The typical spatial distribution would indicate that the headquarters function remains in the high income country, while the low wage manufacturing employment would be dispersed among low-wage countries. This potential has been exacerbated by further "fragmentation" of production within and between countries by the GVC. The spatial clustering of high skilled work in urban areas benefits by agglomeration, while the dispersion of low wage work intensifies competition among emerging countries.

The high value services within the firm are related to finance as well as marketing and brand differentiation (the "smile" curve) (Yu and Shih 2014, 345-346), as well as headquarters services. The location of these different functions and stages of production in different countries can affect global income distribution, as well. The country's "position" in the global value chain refers to which stage of production is located in that country. A country's strategy for economic development can consist of the desire to "move up" the GVC to improve its share of rents generated by branding, to increase its share of the "value" in the GVC. An alternative strategy is to become a financial center; for example, Singapore's development strategy consists of focusing on both high tech and financial services.

The products of the information technology industry, both hardware and software, then further facilitate the "disintegration" of the firm, increasing the capacity for outsourcing to far-flung locations, as well as trading in financial assets in increasing frequency and types of "products" (Brine and Poovey 2017). That is, the information technology firms are shaped by financialization, while their products further contribute to it, and in turn the financial sector is a key customer for information technology hardware, software, and services.

V. Different Theoretical Approaches

Within the GVC literature, there are very different theoretical approaches.

Within the neoclassical tradition, the firm is a rational maximizer of profit. The firm has a choice as to location of production and control (inside or outside of the firm). In the neoclassical context of perfect contracting and no information costs, there would be no boundary of the firm. With costs of contracting in an imperfect world, the firm's boundary exists (Antras 2016, 13-16). Such costs of contracting include enforcement mechanisms and protection of intellectual property rights. The Property Rights Theory (Hart 2017) and incentives for workers and investors (Holmstrom 2017) are also approaches in the neoclassical tradition.

With the GVC, the corporation becomes more like a "nexus of contracts" (Jensen and Meckling 1976), instead of relationships among employees. There are now "relationships" among contractions and sub-contractors, instead of workers (Gereffi and Lee 2012). Innovation consists of the purchase of start-ups rather than internal R&D.

A second approach in the GVC literature is technical, focusing on technological change. The dramatic change in technologies over centuries, including the industrial revolution, is the prime determinant of location of production, in this view (Baldwin 2016).

A third approach focuses on world systems theory and the international division of labor, and the generation and extraction of surplus (Luthje 2002; Luthje et.al. 2013).

Finally, the focus on financialization emphasizes the priority of financial returns over product development and innovation. Beginning with the increasing fixed costs of semiconductor R&D and fabrication, along with financial crises, IT firms sought lower cost locations (Brown and Linden, 2011, 10-12. 40-58). Financial pressures also led to the decisions by vertically integrated firms like HP and IBM to sell plants in the 1980s (Luthje 2002, 231, 236; Lazonick 2009) to contract manufacturers, and shift to the "new economy business model".

The approach proposed here is to document the evolutionary institutional history of the corporation (Davis 2015), in its changing contexts and with its complex determinants.

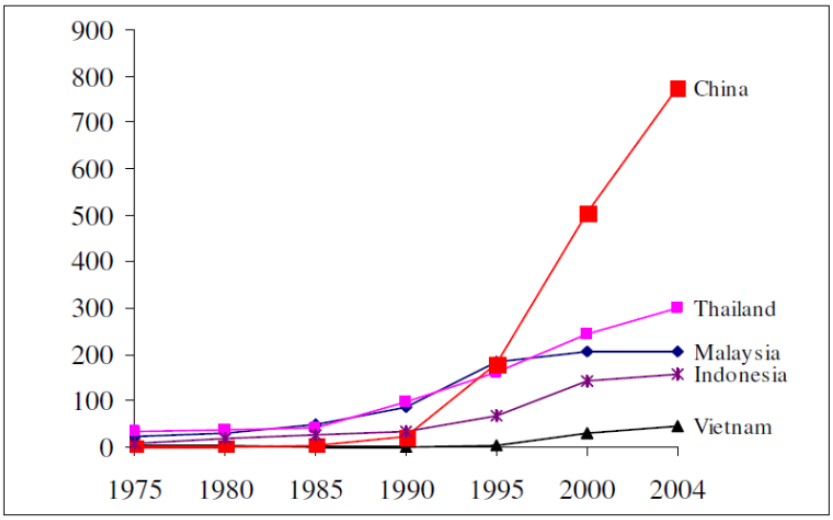
VI. Integration of Company, Country, Trade Regime, and Finance

The feasibility of supply chains partly depends on country strategies and industrial policies, which affect corporations. As a legal entity based on national laws and courts, the form of the firm will be influenced by the country's stage of technological development, geographical location, income, trade relations, and political governance structure.

a. Japan

As a recovering country after World War II, Japan developed a strong role of the state in economic development. Focusing first on labor intensive goods, Japan developed an export strategy to the US market. After some success, Japan moved up the value chain to automobiles and electronics, with an increasing capacity to challenge US firms. Experiencing some pressure to placate its ally, Japan agreed to a revalutaion of the yen as part of the Plaza Accord of 1985.

Figure 2: Placement of Japanese plants in East Asia, 1975 – 2004; Emergence of China.



Note: The figure shows the sum of plants in the auto and electrical machinery industries.
Source: "The Coming Age of China-plus-One," Fujita and Hamaguchi (2006) presentation at IDE-JETRO workshop Janauary 2006 (original based on data from "Kaigai shinshutsu kigyo soran" various years).

Japan responded the rising value of the yen by shifting to overseas production (Fujita and Hamaguchi 2014, 7; Ernst 1997, 218-219). This model of retaining headquarters in the advanced country while outsourcing production to low cost locations was then emulated by other countries.

b. Taiwan

Taiwan also followed a model of state involvement in economic development, similar to Japan. Taiwan founded state-sponsored research institutes, which conducted research, later shared with private companies for commercial development. This public/private partnership was aided by Taiwanese nationals who were educated in the US, and later returned to Taiwan, recruited by the research institutes.

The "pure-play foundry" of semiconductors, separating production from design, was an innovative business model from Taiwan. This model "had a major revolutionary influence on the global IT production network," which facilitated the separation of stages of production along the value chain (Breznitz 2005, 199-206; Breznitz 2007, 110-112). This product of Taiwanese industrial policy facilitated the growth of the industry in Taiwan, but may have limited its potential for innovation and branding (Breznitz 2005, 197; Breznitz 2007, 126; Yu and Shih 2014). There are global brands from Taiwan, nonetheless, such as Acer. Recently Foxconn, a Taiwanese contract manufacturer, purchased Sharp, a Japanese branded electronics firm, increasing its potential for product development and branding (Inagaki 2016), possibly even competing with its lead manufacturers.

c. Mexico

As a low wage country on the southern border of the US, Mexico gained advantage by its proximity to the US market, especially after NAFTA in 1994. An electronics industry cluster from US multinational corporations centered on Guadalajara as early as the 1970s (Ancelovici and McCaffrey 2005). The later shift of investment to China, after its 2001 entry into the WTO, hurt investment in Mexico, nonetheless. China's growing cluster of contract manufacturers from Taiwan and Japan, its focused domestic human capital investments as well as specific industry targets proved an attractive production and marketing platform (Luthje et.al. 2013, 79-96, 153-170; Gallagher and Zarsky 20007; Gallagher 2016; Gereffi 2009).

d. China Circle

The cultural ties and geographic proximity of China, Hong Kong, and Taiwan have been dubbed the "China Circle" (Naughton 1997, 2007). The different stages of development, access to capital, migration of skilled labor, and degrees of openness helped facilitate a regional cluster in several industries, called "Factory Asia" (Baldwin 2016).

e. Regional Patterns

While GVCs are global, there are definite regional patterns (Baldwin 2008, 2011, 2013; Subramanian and Kessler 2013; Luthje et.al 2013), based on transportation costs and cultural ties. There seems to be a "center" to each regional entity, which retains the high valued functions, with competition among the various peripheries for low wage production. Since the 1980s, there has been an ongoing shift in the proportion of trade in intermediate goods towards East Asia, perhaps aided by market size and Asian industrial policies, compared with North America and Europe (Fujita and Hamaguchi 2014).

VII. Importance of GVC in World Trade

The GVC phenomenon has changed the structure of world trade, with more trade in intermediate inputs, and greater ratio of trade to global GDP (Antras 2016, 5-6; Timmer et. al., 2014, 104-106; Riad et.al. 2012). Existing trade statistics, based on final products, obscure the role of the GVC (Johnson 2014). Improved statistics, based on foreign and domestic value added, have been developed to provide more reliable and accurate information (Koopman 2014; Bernard and Fort 2015; Houseman and Mandel 2015). Due to the increasing importance of GVC participation, there has been a decline in value-added in many countries' exports as they become more integrated in GVCs (Caraballo and Jiang 2016). Because contract manufacturing can be called a service, there is a decline in measured manufacturing in the industry composition of countries (Bernard, Smeets, Warzynski 2016). The balance of trade, measured in trade in final products, grossly overestimates the US deficit with China, for example (Gereffi and Lee 2012).

VIII. Trends in GVCs

There has been much attention to Apple as the prototype of branded product with finely differentiated supply chain (Antras 2016, 5). Apple certainly illustrates the complexity of the supply chain, with 792 factories among its suppliers, only 52, or 6.6% are in the US while 62% are in East Asia (Fujita and Hamaguchi 2014).

Product standardization facilitates outsourcing, but limits the opportunities for branding by contract manufacturers, perhaps intentionally (Yu and Shih 2014; Breznitz 2007, 112). With product

standardization, there is also more basis for cost competition among the suppliers, and tighter control among lead firms.

Firms with more skilled labor and capital intensive production methods tend to have higher value added (Antras 2016, 20-23; Timmer et al., 2014, 106-114), further affecting income distribution.

IX. Taming EMCs within TNC or transferring technology and competitiveness

While GVCs provide opportunities for emerging market countries to produce without the initial investment in training, equipment, and technology, it also may limit their development. By allowing foreign firms to set up production in their country, with special resources and privileges, there is an implicit exchange of sovereignty for development (Baldwin 2016, 98-105). Further some countries seem to have benefitted more for attraction of foreign direct investment than others, such as China compared with Mexico (Gallagher and Zarsky 2007; Gallagher 2016).

While there is a risk of loss of intellectual property by the lead brand name firm, there is also the risk of profit margin and low wage competition on a global scale for the suppliers. Certainly Apple's model has been enormously profitable, for example.

While Baldwin is optimistic about a "Great Convergence," others see a "race to the bottom" and a form of "neo-Taylorism" (Luthje et.al. 2013, 228-235). The Trump-led tax cut for corporations may be the result of competition for investment on a global scale, with multinational corporations benefitting from the concessions granted, now from the US as well.

X. Risks and Backlash against Technology and Globalization

The GVCs have contributed to a "profits glut," highly profitable global operations and few attractive investment opportunities, at least by comparison (Milberg and Winkler 2013, 291-295). As emerging market economies compete for position in the GVCs, there is declining labor share, less effective demand, and global excess capacity. In addition, there is evidence of a continuing backlash against globalization. For example, geographic areas in the US with increasing import penetration tend to have distinct political orientation (Autor et.al. 2016). There is a global rise in populism (Judis 2016), as well, with increasing anger against immigrants and minorities, even in the face of increasing inequality.

XI. Markets Incorporate Power

In summary, the corporation, especially in the form of global value chains, is able to wield increasing power on a global stage. But this form of the corporation is linked to technology, country strategies, and global trade regimes. As Polanyi well understood, markets incorporate power, not just corporations (no pun intended). In a market economy, the "prod of hunger" insures competition for employment, as a matter ultimately of life or death. Corporations are one instrument in a set of related institutions, key agents in a global market system.

The globalization of investment has taken place through multinational corporations and now supply chains, increasing the differentiation of production and skill, extending the basis of competition. Now decisions by companies determine the fate of countries. Not only corporate taxes, but labor and environmental regulations are at stake, even while the GVCs may exacerbate financialization and risk.

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