

## Development Policy

### Lecture Note 7

# The Global Business Revolution

In 2005, New York Times columnist Thomas L. Friedman published an influential book entitled *The World is Flat: A Brief History of the 21<sup>st</sup> Century*. For many observers of development, the image of a “flat world” captured the new economic realities stemming from globalization and ever closer economic integration. The book argues that the rapid spread of technology, “outsourcing” in manufacturing and new kinds of collaboration across national borders has “flattened” the world as an economic playing field. Innovative companies and people across the globe are linking up and competing with each other. The breadth and intensity of this competition and the rapid pace of technological change resulting from the globalization of knowledge and innovation will give rise to unprecedented prosperity and economic growth in the developing world, particularly India and China.

Friedman’s flat world is made possible by liberalization of trade and investment in combination with the information technology revolution. The digitization of information has sharply reduced the cost of communication and increased precision. It enables manufacturers to codify designs, specifications and manufacturing in one location, and to send them to another quickly, cheaply and accurately. In the past, manufacturing had to take place close to where engineers designed products and the machines to make them. Auto parts manufacturers set up factories near automobile assemblers to make sure that their parts adhered to the specifications determined by automobile makers. But with digitization, these designs and manufacturing processes can be codified digitally and send around the world. Manufacturing is therefore “modularized,” divided into discrete components and stages. The individual components no longer have to be manufactured near the designers or assemblers. Auto parts manufacturers in Thailand and China receive digitized specifications from automobile assemblers and compete with each other on the basis of price and quality.

The impact of digitization is not limited to manufacturing. Friedman cites numerous examples of outsourcing of services made possible by the IT revolution. Accountants in India examine US tax returns at a fraction of the cost of American accountants. Indian doctors diagnose American hospital patients from their digitized CAT scans. Call centers in the Philippines provide information to customers of UK banks. Firms in the industrialized world lower their costs through outsourcing, while employment is created for skilled workers in the developing world.

A flat world rewards knowledge, skill and innovation. According to Friedman, although jobs will be lost in the US as companies outsource manufacturing and services, new jobs will be created. But these new jobs will be more knowledge and skill intensive. Philippine call centers and Indian doctors will rely on the latest American software and will have lunch at Pizza Hut or Starbucks. Americans will have to adapt to greater competition from the rest of the world, but ultimately Americans will benefit because a flat world is richer and more innovative.

Friedman makes valid points about the impact of globalization, the growing importance of knowledge and innovation, and outsourcing (and “insourcing,” when one company invites another to operate an internal process, for example catering, accounting or human resources). But have they made the world “flatter” or a more even economic playing field? In some ways, yes. The fact that doctors in India can provide services to American patients through the internet opens what was previously a nontradable service to foreign competition. Supplier companies around the world compete with each other to manufacture components based on detailed designs and systems encoded as digital information that can be transmitted around the world in seconds.

But in other ways the “flat world” hypothesis tells only part of the story. It ignores another important fact about the globalization age: namely, the unprecedented concentration of economic power that has taken place over the past twenty to thirty years. More intense competition has resulted *not only* in millions of small and medium scale firms fighting it out in the global market. It has also led to the concentration of productive capacity, technology, market power and branding in the hands of a small number of lead or “system integrator” firms in each sector.<sup>1</sup> These system integrators account for an ever increasing share of production in a widening array of markets. They also stand at the pinnacle of complex global supply chains, and are deeply involved in design and production decisions made by their suppliers.

Trade and investment liberalization efforts since the 1990s have created global markets for a wide range of goods and services. Large firms have several important advantages over smaller companies in these markets. First, economies of scale are available in manufacturing. The minimum scale of an efficient auto assembly plant is about 300,000 units per year. Economies of scale are even more important in research and innovation. Small companies cannot afford to invest sufficient resources in developing new products and production processes. Third, brand recognition enables global companies to charge higher prices for their products, which increases profits. Apple computers and phones, Coca-Cola, Toyota, Pizza Hut and Citibank are all examples of global products and services that command a large share of the global market and reap massive benefits from brand recognition and loyalty. Fourth, large system integrators are able to use

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<sup>1</sup> Nolan, Peter, Jin Zhang and Chungang Liu (2008) “The Global Business Revolution, the Cascade Effect and the Challenge for Firms from Developing Countries,” *Cambridge Journal of Economics*, 32, p. 29-47.

their market power to exert pressure on their suppliers to continually improve quality and lower costs.

The advantages of bigness drive the trend toward mergers and acquisitions and increasing concentration of production in the hands of a small number of global companies. For example, 60 percent of ATM machines sold in the world are made by two companies: NCR and Diebold. Half of all heavy construction machinery is made by two companies, Caterpillar and Komatsu. Concentration in the pharmaceuticals industry accelerated markedly in the 1990s and continues today. The headquarters of these global companies are based in the US, Europe and Japan. Only two companies in the Fortune Global 50 are located outside of the US, Europe and Japan: Samsung (Korea) and China National Petroleum Company.

System integrator firms do not compete primarily on price. They compete on the basis of branding, market power and technological innovation. In lucrative products like electronics, telecommunications, automobiles, commercial aircraft and pharmaceuticals, survival and growth depends on the company's capacity to remain at the technological frontier. The Wall Street Journal estimates that global spending on R&D is \$1.4 trillion, and about \$450 million of this is undertaken by US companies. The top 100 firms account for about three-fifths of the total. In other words, the world's biggest companies dominate spending on technological innovation. That is how they stay at the top.

Systems integrators are locked in what the economist William Baumol calls a "technological arms race" in which failure to invest at high enough levels in research and development does not mean lower profits, it means bankruptcy.<sup>2</sup> Because failure to stay at the technological frontier can mean the death of the company, system integrators must match the R&D spending of their rivals. A recent example of the consequences of failing to remain technologically competitive is the handheld computer maker Palm, which until recently was a major competitor to Blackberry and Apple in the smartphone market. From November 2009 to May 2010 the value of the company's stock fell by 70 percent, and the company was eventually acquired by HP for just USD 1.2 billion. Losing its technological edge did not mean lower sales for Palm: it meant extinction in less than one year. Another example is Motorola Mobility, which was bought by Google for \$12.5 billion in 2011. Nokia's decision to launch phones using Microsoft's Windows Mobile rather than its in-house software is an attempt to defend the company against the two-front war that it is fighting against Apple's iPhone and phones using Google's Android operating system. If this strategy fails it will not just result in lost revenues: it could mean the destruction of Nokia as a competitive mobile phone maker. With ever-shortening product cycles (for example, a new iPhone every year) the process does not take long.

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<sup>2</sup> William J. Baumol (2002) *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*, Princeton: Princeton University Press, p. 11.

System integrators use their market dominance to demand ever lower costs from their suppliers and constant improvements in design and quality. Failure to meet the demands of a system integrator means the loss of their valuable business. Take the car assembly business as an example. The top ten automobile assemblers account for about 80 percent of the global market for cars and trucks. This remains true even as small Chinese assemblers capture a larger share of China's domestic market. Concentration continues to intensify at the top of the automobile industry. In February 2012 General Motors acquired a seven percent stake in PSA Peugeot. Each of these dominant assemblers (system integrators) spends between two to eight billion dollars *per year* on research and development of new products to make their cars lighter, more fuel efficient, safer and more attractive. They also demand innovation from their suppliers. Each assembler spends tens of billions of dollars on materials and components, and uses their market power to force down suppliers' prices and demand improvements in design and quality. This has led to unprecedented concentration among auto parts suppliers. Three parts companies (Delphi, Denso and Bosch) are far ahead of the pack, each spending more than two billion dollars on R&D per annum. Parts suppliers participate directly in the development of new technologies and in quality assurance at the point of assembly. The trend is replicated in tires, auto glass, seats and brakes.<sup>3</sup>

The second tier firms that supply the systems integrators in turn exert similar pressure on *their* suppliers, and so on down the supply chain. Second, third and fourth tier suppliers that cannot meet the demands of the firms above them ultimately fail. The result is higher levels of concentration at every tier of the supply chain. Peter Nolan calls this the "cascade effect."<sup>4</sup> Pressure for lower costs and better quality cascades down the supply chain. Concentration increases at every tier of the chain in response to the need for ever lower costs and constant improvements in technology. Developing countries that want to create a national champion car assembler must ask themselves not only if they can produce a technologically current automobile, but also if they can keep up with the constant improvements in technology achieved by the market leaders.

Even relatively low-tech, labor intensive sectors are not free from these pressures. Systems integrators in athletic footwear compete with each other by expanding the array of styles on offer and by rotating products in ever shorter seasonal cycles. They force their contract manufacturers to compete with each other in reducing production times and improving quality. For example, Taiwanese contractors operating in China reduced the time required to produce a pair of shoes from 25 days to ten hours over the period 2002 to 2006.

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<sup>3</sup> Nolan, Peter, Jin Zhang and Chungang Liu (2008) "The Global Business Revolution, the Cascade Effect and the Challenge for Firms from Developing Countries," *Cambridge Journal of Economics*, 32, p. 29-47.

<sup>4</sup> Peter Nolan (2010) "America and the Crossroads of Capitalist Globalization," *Challenge*, November/December, 77-92.

Globalized production presents developing countries with opportunities to break into new parts, component and assembly industries that were previously dominated by advanced countries. System integrators, original design manufacturers (ODM) and contract manufacturers (CM) are willing to share technology and involve suppliers in the development of new products and processes if this helps them to reduce costs or increase the pace of innovation. But to gain access to these opportunities firms must survive cutthroat competition involving numerous contenders from around the world. Cheap labor provides some advantages, but hardly enough to guarantee survival: on average, labor costs make up three to four percent of the border (FOB) price of products shipped from the developing world to the United States, and 0.75 percent of the retail price.<sup>5</sup> Management consultants are unanimous in their contention that cheap labor is not a long-term growth strategy for firms in the developing world.

The concentration of technology, market share and economic power in the hands of system integrators means that most developing countries will find it difficult to compete in markets for automobiles, computers and pharmaceuticals. Even China, with its 1.3 billion consumers, has found it difficult to create Fortune 500 companies in sectors other than oil and finance. China's response has been to buy western system integrator companies like IBM laptops and Volvo cars. The strategy is to acquire foreign technology and managerial expertise, while at the same time taking full advantage of the size of the domestic market.

For most other developing countries, industrial development will to a large extent depend on the capacity of domestic firms to insert themselves into existing global supply chains. The development of technological and managerial capabilities is the key to surviving the global business revolution. Some of these capabilities can be acquired locally the old fashioned way: learning by doing, reverse engineering and hiring experience workers from other firms. But in most cases the processes are too advanced, and learning times too truncated, to succeed using these methods. The best hope for developing country firms in many product lines is to develop strong linkages with multinational enterprises that have an interest in cultivating capabilities amongst their supplier firms.

Foreign direct investment (FDI) has grown in tandem with the global business revolution. Although FDI flows move up and down with the economic cycle, the long term trend is up sharply. Inward investment is now a vital link to global supply chains and technological capabilities within and between firms. Intra-firm trade has risen to more than 35 percent of total world trade in goods as multinational companies diversify the location of their production facilities. According to UNCTAD, multinational firms account for some three-fourths of world trade. Countries compete for foreign

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<sup>5</sup> Suzanne Berger et al. (2005) *How We Compete: What Countries Around the World are Doing to Make It in Today's Global Economy*, New York: Doubleday, p. 124.

investment not just on wage levels but also on the availability of skilled labor, the density of domestic supplier industries, the quality of infrastructure and the transparency of business regulation. The issue is no longer simply the amount of foreign investment: increasingly middle income countries have focused their attention on the type and quality of investment.

A good example of the need to attract foreign investment to gain access to global supply chains is the business of producing electronics components. China has emerged in recent years as the “assembler to the world.” Manufacturers of consumer electronics like mobile phones, Ipods and personal computers assemble their products in China—often under contract from Taiwanese or Korean companies—from parts produced around the globe. These parts are often produced by American, Taiwanese, Korean and Japanese companies in Southeast Asia. The export of electronics components to China has helped these countries achieve trade surpluses with China.

Two countries in the region have not managed to gain a foothold yet in these markets: Indonesia and Vietnam. Indonesia, which is a major exporter of natural resources, maintains a chronically overvalued exchange rate. This and the threat of political violence have discouraged multinational companies from using Indonesia as a supply base for electronic components. There is considerable interest among multinationals in Vietnam, including a major investment by the chip maker Intel. However, concerns about infrastructure, access to skilled labor and official corruption have raised questions about Vietnam’s capacity to attract this sort of investment in large volumes.

The availability of skilled labor is an important factor in foreign companies’ decision to invest. One of the problems faced by Southeast Asian countries is that the university system is not producing sufficient number of graduates in the science and technology disciplines like engineering, physics, mathematics, chemistry and biology. Unlike the East Asian countries, including China, Southeast Asian students are more likely to be trained in other disciplines (for example, public policy!). Moreover, the quality of university is much lower. One measure of university quality is the number of scientific publications by local scholars in international journals. Southeast Asia performs poorly in the production of scientific research, lagging far behind China, which has rapidly stepped up its scientific research capacity.

Thomas Friedman is right to point out the transformative effects of globalization and the rapid development of information technology. But the world is far from flat. While it is true that globalization presents new opportunities to the developing countries, it is also the case that economic power is *more* rather than *less* concentrated. The global business revolution has created massive system integrator companies that dominate entire sectors owing to their capacity to invest in research and innovation. They in turn exert pressure on their suppliers, which have also become larger, more concentrated and more technologically sophisticated. These companies are locked in a technological

arms race, in which failure to invest in innovation can result in the complete failure of the firm. These pressures serve to accelerate the pace of technological change, but make it more difficult for newcomers to approach the technological frontier.