

Development Models and Industrial Upgrading in China and Mexico

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China and Mexico have both pursued export-oriented development strategies in the global economy, but with different implications for national development and industrial upgrading. While Mexico has been the paradigm for the neoliberal ('Washington consensus') development model associated with foreign direct investment, extensive privatization, and open markets, China has attained record levels of foreign capital inflows and export growth utilizing a more strategic, statist approach to its development. In the past decade, China has surpassed Mexico in their battle for pre-eminence in the US market. One of the keys to China's success has been a unique form of industrial organization called supply-chain cities, which has permitted it to achieve both economies of scale and scope in global value chains.

Introduction

There are fundamental changes afoot in the global economy, and no simple answers for countries that want to improve or even maintain their levels of development. In recent decades, national and regional development models have come under increasing scrutiny, and countries are trying to determine what kinds of policies and institutions provide the best opportunities for long-term growth and prosperity.

This article will explore these issues through a comparative analysis that focuses on how international trade and foreign direct investment (FDI) have shaped the development trajectories of China and Mexico, two of the most dynamic emerging economies in the world. The first section of the article provides a broad comparison of the development models in Latin America and China, with an emphasis on how each has changed in recent decades. The second part of the article uses international trade data to examine industrial upgrading patterns in Mexico and China, with an emphasis on their competitive niches in the US market and why

China is taking the lead in a number of different industries. The third and final part of the article looks more closely at a new feature of China's industrial upgrading pattern known as supply chain cities. China's unique model of economic development is fascinating in its own right, but China's escalating importance as a supplier, a market, and recently as a source of outward direct investment makes many countries and regions in the world highly dependent on China's future economic performance.

Comparative Development Models

Since the mid-1980s, globalization has been associated with a neoliberal model of development that has produced rapid economic growth and improving standards of living in some parts of the world, most notably East Asia. In other regions, like Latin America, neoliberalism has been marked by slow-economic growth, large-scale unemployment, social deterioration,

and political protest. Development models in both Latin America and East Asia, however, have evolved considerably during this period.

Within these regions, China and Mexico present particularly interesting cases because of notable contrasts as well as similarities in their development policies and economic trajectories. Mexico is the most diversified and export-oriented economy in Latin America, with an emphasis on manufactured exports to the United States. China is one of the world's fastest growing economies, with extensive diversification and growing exports to the world. Mexico and China compete head-to-head in many product categories in the US market. This section of the article will review the main features of the Latin American and Chinese development experiences, as prelude to a more detailed analysis of industrial upgrading trajectories in both Mexico and China.

The Latin American Development Model

The idea of a common Latin American development model is misleading for two main reasons. First, Latin America as a region is extremely diverse in terms of its geography, demographics, infrastructure, and culture, and its individual economies have diverged in the post-war era. Countries like Mexico have been at the forefront of the region's development, while others have lagged considerably. Second, Latin American development remains a topic of fierce debate within the region, leading to clashing opinions regarding its future development trajectory (IADB, 2006). Despite these differences, some clear trends in the history of Latin American development policy can be identified.

Import-substituting industrialization (ISI)

From World War II through the early 1980s, most Latin American countries pursued the import substitution model, a set of policies that favored state-led industrialization and the protection of domestic industry, using a combination of support for publicly owned enterprises and extensive inflows of foreign investment (Thorp and Lowden, 1996). This approach was fueled by a conviction that certain Latin American characteristics—including its cultural values and institutional structure—made market-led mechanisms ineffective in the region, as well as a belief that the market would place further control over the economy in foreign hands.

Under ISI, the state played a central role in controlling the economy. Government made economic self-sufficiency and the development of domestic industry as its top priorities. Latin American

governments valued industrial development over the region's traditional agricultural and primary-resource trade patterns, and many believed that the gradual accumulation of industrial capacity that ISI encouraged would enhance Latin America's position in the world economy.

As ISI policies advanced in the 1950s and 1960s, they displayed a set of common features: high-tariff barriers against foreign goods, especially industrial items; overvalued currencies; and, after the 1950s, increasing provisions for the attraction of foreign capital. In the 1960s and 1970s, the leading Latin American economies moved from a phase of primary ISI, which focused on basic consumer goods (such as textiles, clothing, footwear, and food processing), to secondary ISI, which involved using domestic production to substitute for imports in a variety of more advanced products, such as consumer durables (e.g. automobiles), intermediate goods (e.g. petrochemicals and steel), and capital goods (e.g. heavy machinery) (Gereffi, 1994).

Like its Latin American counterparts, Mexico's ISI experience included a system of high tariff barriers, the formation of government-run monopolies in industries like petroleum and electricity, and government intermediation in the financing of Mexican businesses. The sustainability of these policies was aided by Mexico's political landscape, which was dominated by the Institutional Revolutionary Party (PRI). Under PRI leadership, Mexico posted solid growth from the 1950s to the 1970s, averaging about 6 per cent per year while maintaining low levels of inflation (Portes, 1997; Fourcade-Gourinchas and Babb, 2002).

Latin America became heavily dependent upon international capital markets in the 1970s to finance its burgeoning state sector, and this debt bubble eventually burst. By the 1980s, ISI was in trouble throughout the region. Mexico's public announcement in August 1982 that it was unable to meet its debt requirements was the first in a series of government defaults, putting an end to ISI and leading to major changes in the region's economic structure.

Neoliberalism

In the 1980s, a series of economic issues—low growth, widening economic inequality, government balance-of-payments crises, and periodic hyperinflation—led to a more market-oriented approach, dubbed in the United States as the 'Washington Consensus' (Gore, 2000). This was facilitated by the rise of right-wing dictatorships in countries like Chile, Uruguay, and Brazil. Initially, neoliberal policies focused on reforming current and capital account flows, and controlling

volatile inflation rates in the region. Later, reform spread to addressing and reshaping the role of the state in the economy (Weyland, 2004; Huber and Solt, 2004).

In Mexico, these reforms proceeded in stages. The first stage, lasting from 1982 to 1985, was directly linked to Mexico's negotiations with international monetary authorities after its debt crisis, and brought new controls on monetary and fiscal policy, including much lower state expenditures. The second stage, which began in 1985, saw more drastic changes, including widespread privatization, lowering of trade barriers, and liberalization of the regulations governing foreign investment. The third stage began in 1994 with the passage of the North American Free Trade Agreement (NAFTA), and has resulted in further structural reforms and the continued lowering of trade and investment barriers (Fourcade-Gourinchas and Babb, 2002).

The most important policies of economic neoliberalism in Latin America can be summarized in seven major actions (Portes, 1997: 238):

- opening to foreign trade
- privatizing state enterprises
- deregulating goods, services, and labor markets
- liberalizing capital markets, including privatized pension funds
- promoting fiscal discipline, based on deep cuts in public expenditures
- dismantling and downsizing state-supported social programs
- ending ISI-style industrial policy

Neoliberal reforms spread through Central and South America at different speeds. In nearly every country, however, reformers stressed an increased use of market mechanisms. In addition, national governments sought to adjust their currency valuations and dramatically lower both barriers to free trade (tariffs) and controls on foreign private capital (FDI restrictions). Under the neoliberal model, Latin America showed moderate economic growth in the early 1990s. Yet slower growth in the late 1990s and early 2000s generated renewed criticism of Latin America's development model, a controversy that continues today (Dussel Peters, 2000; Lora *et al.*, 2004).

Current situation

The general debate over Latin American development stems from the simple fact that the region's economic performance under neoliberalism was less than hoped for, and far less than promised.

Although 'equitable economic growth' and 'economic justice' are priorities for most Latin Americans, economic inequality has grown markedly since 1990 and growth has lagged (Thorpe and Lowden, 1996; Dussel Peters, 2000; Ellner, 2006). Many have criticized their governments' neoliberal policies as a front for the economic elite to get rich at the expense of the entire population, claiming—as Vargas Llosa (2005: 23) does—that:

Countries replaced inflation with new taxes on the poor, high tariffs with regional trading blocs, and, especially, state monopolies with government-sanctioned private monopolies. The courts were subjected to the whims of those in power, widening the divide between official institutions and ordinary people...

In academic and policy circles, there has been an ongoing controversy regarding the success—or failure—of the neoliberal model. Weyland (2004) chronicles the debate in academic circles, noting that Huber and Solt (2004) blame neoliberal reform itself for Latin America's economic problems, while Walton (2004) argues that shortcomings have been due to an inadequate implementation of reforms and deficiencies in the surrounding institutional framework. Within the government arena, the agenda ranges from adjusting present policies to proposing new paradigms for regional development (IADB, 2006).

Politically, the trends are clearer. Latin America has shifted sharply to the left in the last few years, with a more radical cohort of leaders elected in Argentina, Uruguay, Venezuela, Chile, Bolivia, and Brazil. Yet as many authors note, this 'leftward' shift is hardly uniform. Chile, for example, under Socialists Ricardo Lagos and Michelle Bachelet, has retained an emphasis on free-market policies, despite being liberal on social issues. Argentina's Nestor Kirchner, in contrast, is far more critical of the international financial system and the policies of economic neoliberalism (Carlsen, 2004; Shifter, 2005; Vargas Llosa, 2005).

In recent years, the economic tide has been rising. Latin America's exports to the world increased by 11 per cent in 2007, marking the fifth consecutive year of growth, and Latin America's intra-regional trade as a share of its total trade with the world reached 17.3 per cent (IADB, 2007). The region's strong economic performance in recent years has been driven by two main factors: a robust US economy and exceptional demand from China for Latin America's primary product exports. While concerns about a slump in US economic activity are mounting (EIU, 2008),

demand from China in the near future is expected to remain strong.

China's Development Model

China's reform efforts began in 1978 with the Third Plenum of the 11th National Party Congress, and reforms accelerated after Deng Xiaoping's 1992 'Southern Trip' and again after China's 2001 accession to the World Trade Organization (WTO) (Wang and Meng, 2004; Branstetter and Lardy, 2005). These changes have taken place amidst a second wave of economic globalization, in which billions of people have joined the global economy, and in the midst of a broad dialogue among economists, politicians, and activists about the role of the market and how to utilize its power to promote healthy development.

Bai Gao (2006) highlights a number of key characteristics of the Chinese development model:

- government relies on the market as the driving mechanism behind economic growth;
- government aggressively seeks to attract foreign capital;
- government opens its domestic market to the outside world;
- government uses low-cost labor to participate in the global economy;
- government stresses harmony in the local economy, placing more emphasis on 'soft' supervision rather than inspection and control; and

- government values economic growth and upgrading, even at the expense of social stability.

China's economy has expanded at a phenomenal pace since 1978. Average annual gross domestic product has increased by 9 per cent a year; exports grew by 12.4 per cent annually in the 1990s and by more than 20 per cent a year since 2000 (IADB, 2005). China's development model is premised on leveraging its domestic advantages, including the size of its potential market and the low cost of its factor inputs—chiefly labor, but also the cost of land, electricity, and raw materials. Over time, China has sought to add to these advantages by seeking to minimize its weaknesses (bureaucratic red tape, low quality of labor), upgrade its logistics capabilities, and move up the technology value chain.

However, the Chinese development model is also associated with its impressive ability to attract FDI. The annual FDI flows in China jumped from \$40 billion in 2000 to \$69 billion in 2006, making it the world's fifth largest recipient of FDI, after the United States, the United Kingdom, France, and Belgium (UNCTAD, 2007, Annex Table B.1). The total stock of FDI in China exceeded \$290 billion in 2006, compared to Mexico's FDI stock of \$230 billion, and an FDI inflow of \$19 billion in 2006 (Table 1). FDI has brought both capital goods and high technology into the country, and helped to move China's export mix from 'unskilled' to 'skilled' labor-intensive activities, and has boosted China's exports in the capital- and technology-intensive sectors (Brandt and Rawski, 2005: 23).

Table 1 FDI in China and Mexico, 1990–2006

	1990–2000 (annual average)	2004	2005	2006	
FDI flows (millions of dollars)					
China	30,104	60,630	72,406	69,468	
Mexico	9,328	22,396	19,736	19,037	
FDI flows as a percentage of gross fixed capital formation					
China (%)	11.3	8	8.8	8	
Mexico (%)	12.1	16.7	13.3	11.1	
	1980	1990	2000	2005	2006
FDI stocks(millions of dollars)					
China	1,074	20,691	193,348	272,094	292,559
Mexico	...	22,424	97,190	209,564	228,601
FDI stocks as a percentage of gross domestic product					
China (%)	...	5.4	17.9	13.7	11.1
Mexico (%)	...	8.5	16.7	27.3	27.2

Source: UNCTAD, *World investment Report*, 2007.

From an upgrading perspective, China's openness is beginning to pay off. China has become a top destination for research and development (R&D), due both to its crop of high-quality, low-cost engineers and to the size of its potential market (Hu and Jefferson, 2004). China's growth of R&D centers has been especially dramatic: whereas in 1997 China registered less than 50 multinational R&D centers, by 2004 the Chinese government registered over 600 multinational R&D facilities in the country, many from large US multinational corporations (MNCs) (Freeman, 2005: 8). In just one year, from June 2003 to June 2004, MNCs established 200 R&D centers in China (*Asia Times Online*, 2005).

This reliance on FDI and private property is generating an intense ideological debate within China over the merits of socialism versus capitalism and the future direction of the Chinese development model (Kahn, 2006). Criticisms of the current Chinese model highlight rampant corruption, widening income inequality, geographic polarization, the plight of rural migrants, and environmental issues as evidence that neoliberalism and openness have tarnished China's recent economic growth (Nolan, 2005). There are also concerns that foreign firms are dominating the Chinese market, especially in certain key products like automobiles, leaving less room for Chinese firms to compete and profit. Others, however, argue that the answers to these problems lie in further reform and a vigorous implementation of existing reforms. They blame market rigidities and entrenched political elites for many of China's vexing social issues, and claim that abandoning reform would be a mistake (Huang, 2006). Despite this defense of current policies, the voices of critics are growing increasingly loud and the debate is becoming more acrimonious.

Observers of India, Asia's other emerging economic powerhouse, point out that India's economic growth relies on home-grown entrepreneurs, while China may be tying its export-led manufacturing boom too closely to FDI, since foreign-invested firms account for over 60 per cent of China's exports (Huang and Khanna, 2003). Given the 'external contradictions' of the Chinese development model, there are calls for a new 'domestic demand-led development strategy' (Palley, 2006).

Any comparative assessment of the development paths taken by Latin America and China rests heavily on institutional and historical factors. How have these models performed in practice? Has export-oriented development in countries like Mexico and China led to industrial upgrading in these countries over the past two decades? In the next section,

we will use international trade data to explore these questions.

Industrial Upgrading in Mexico and China—An International Trade Perspective

Industrial upgrading is defined as 'the process by which economic actors—nations, firms, and workers—move from low-value to relatively high-value activities in global production networks' (Gereffi, 2005: 171). One of the ways that we can assess industrial upgrading for export-oriented economies like China and Mexico is to look at shifts in the technology content of their exports over time. We divide each country's exports into five product groupings, which are listed in ascending levels of technological content: primary products, resource-based manufactures, and low-, medium-, and high-technology manufactures.¹

In Figure 1, we see that in 1987, nearly 50 per cent of Mexico's total exports to the US market were primary products, the most important of which was oil. In 1993, one year prior to the establishment of NAFTA, medium-technology manufactures (mainly automotive products) and high-tech manufactures (largely electronics items) moved ahead of raw materials in Mexico's export mix. By 2006, about two-thirds of Mexico's exports of \$212 billion to the US market were in the medium- and high-technology product categories, followed by primary products (which rebounded from their nadir of 10 per cent of total exports in 2001) and low-technology manufactures (such as textiles, apparel, and footwear). Thus, in less than 20 years, Mexico's export structure was transformed from one based on raw materials to one dominated by medium- and high-technology manufactured items.

In Figure 2, we see the composition of China's exports to the US market during the 1987–2006 period. Unlike Mexico, the leading product category in China's exports to the US market was low-technology manufactured goods. These were primarily made up of a wide variety of light consumer goods—apparel, footwear, toys, sporting goods, house wares, and so on. These products accounted for about two-thirds of China's overall exports to the United States in the early 1990s. By 2006, however, high-technology exports from China had increased their share to nearly 40 per cent of China's overall exports to the US market, and were poised to pass low-technology exports for the top spot in China's export mix.

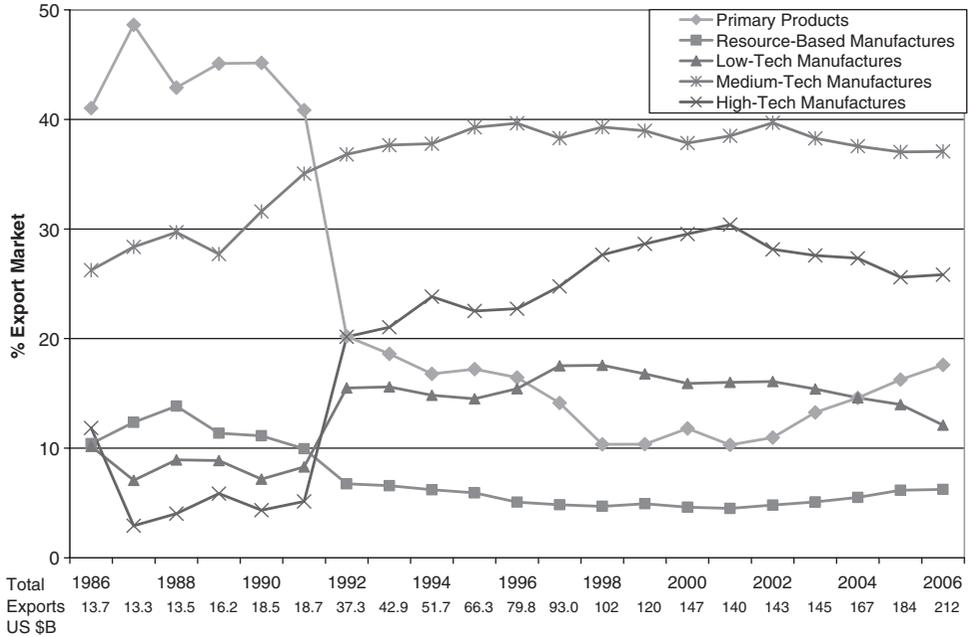


Figure 1 Composition of Mexico's exports to the US market, 1986–2006. *Source:* UN Comtrade (<http://comtrade.un.org/db/dqBasicQuery.aspx>)

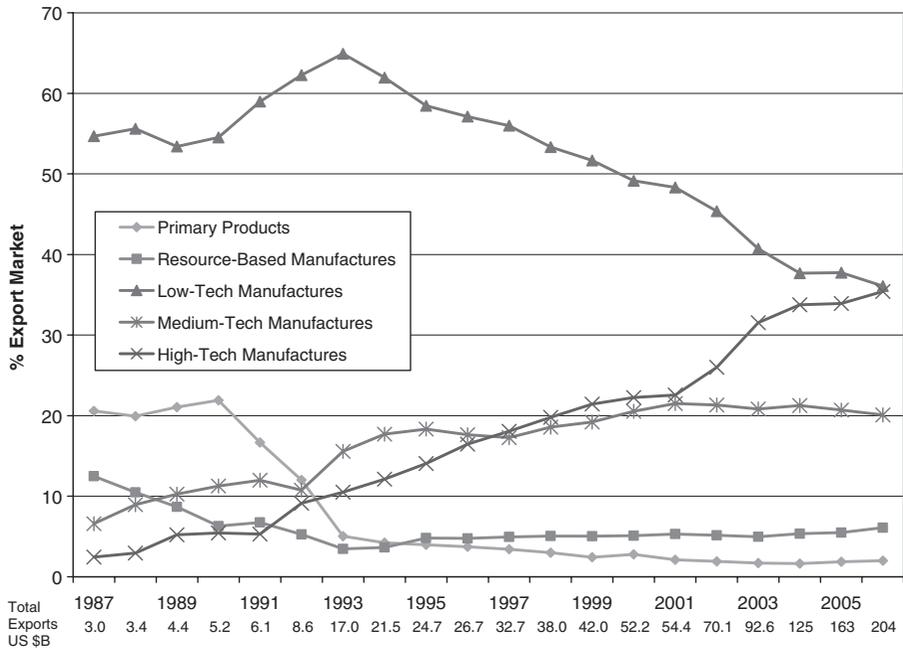


Figure 2 Composition of China's exports to the US market, 1987–2006. *Source:* UN Comtrade (<http://comtrade.un.org/db/dqBasicQuery.aspx>)

Table 2 Mexico's and China's competing exports to the United States, 2000–2006

SITC category	Product	2000		2006		Change in market share 2000–2006
		Value (millions)	Share of US market	Value (millions)	Share of US market	
752	Automatic data processing machines and units					
	Mexico	6,413	11.5	5,561	8.2	−3.2
	China	6,310	11.3	33,924	50.2	38.9
	US Total	55,909		67,530		
764	Telecommunications equipments and parts					
	Mexico	9,128	20.6	8,916	13.7	−6.9
	China	4,579	10.3	21,797	33.4	23.1
	US Total	44,349		65,300		
778	Electrical machinery and apparatus					
	Mexico	3,144	18.3	4,986	22.7	4.4
	China	2,040	11.9	5,132	23.4	11.5
	US Total	17,149		21,960		
784	Auto parts and accessories					
	Mexico	4,639	16.3	9,310	21.1	4.8
	China	440	1.5	2,711	6.1	4.6
	US Total	28,440		44,198		
821	Furniture					
	Mexico	3,202	16.9	4,466	13.6	−3.3
	China	4,476	23.6	15,171	46.3	22.6
	US Total	18,927		32,782		
84	Articles of apparel and clothing					
	Mexico	8,731	13.6	5,530	7.0	−6.6
	China	8,483	13.2	23,123	29.2	16.0
	US Total	64,296		79,150		

Source: US Department of Commerce (<http://dataweb.usitc.gov>). Downloaded 11 January 2008.

Thus, Mexico and China have a number of commonalities in their export trajectories to the US market during the past two decades. Both are diversified economies, with a range of different types of export products. In both cases, manufactured exports are more important than primary product or resource-based exports; within manufacturing, high- and medium-technology exports are displacing low-technology goods. While these export data have limitations as indicators of industrial upgrading,² both economies appear to be increasing the sophistication of their export structures.

A more detailed look at the international trade data, however, shows that since 2000, China has bested Mexico in head-to-head competition in the US market. Table 2 identifies six of the leading manufactured products in which China and Mexico are significant US suppliers. In five of these products, Mexico's share of the US market was greater than China's in 2000; by 2006, China had wrested the lead from Mexico in all

but one of these items. In automatic data processing machines (SITC 752), for example, China's share of US imports increased nearly fivefold from 11.3 per cent in 2000 to 50.2 per cent in 2006. In telecommunications equipment (SITC 764), China's market share more than tripled from 10.3 per cent to 33.4 per cent; and in electrical machinery (SITC 778), it doubled from 11.9 per cent to 23.4 per cent. Only in auto parts and accessories (SITC 784) did Mexico expand its lead in the US market over China.

Table 3 shows the top US imports in which either Mexico or China accounted for 20 per cent or more of the US market in 2006. Mexico had 12 products that met this criterion in 2006, whereas China had 25 such items. However, if we raise the threshold to 40 per cent or more of US imports, Mexico had four such products and China had 13. For example, nearly three-fourths of all footwear imported to the United States comes from China, while China also accounts for 61 per cent of television or sound recorders

Table 3 US imports in which Mexico and/or China hold 20 per cent or more of the US market, 2006

Product	Mexico			Product	China		
	SITC categories	Percentage market share in United States	Change in percentage market share 2000–2006		SITC categories	Percentage market share in United States	Change in percentage market share 2000–2006
054	Vegetables, fresh, chilled, frozen; roots, tubers and other edible vegs	59.8	−1.1	894	Baby carriages, toys, games, and sporting goods	80.5	15.9
773	Equipment for distributing electricity, n.e.s.	53.1	−7.6	831	Trunks, suitcases, vanity cases, binocular, camera cases, handbags, wallets, etc.	74.2	24.4
761	TV receivers (including video monitors and projectors)	51.2	−12.2	851	Footwear	72.5	10.6
782	Motor vehicles for the transport of goods	43.7	12.1	813	Lighting fixtures and fittings, n.e.s.	66.4	8.1
772	Electrical apparatus for switching or protecting electrical circuits	27.9	3.4	697	Household equipment of base metal, n.e.s.	61.7	26.0
741	Heating and cooling equipment and parts thereof, n.e.s.	26.0	1.6	763	Sound recorders; television image and sound recorders	60.8	38.6
716	Rotating electric plant and parts thereof, n.e.s.	24.3	−8.7	848	Articles of apparel and clothing accessories; non-textile fabrics	56.5	11.7
775	Household type electrical and non-electrical equipment	23.9	4.2	751	Office machines	53.2	24.0
872	Instruments and appliances for medical, surgical, dental or veterinary purposes	23.4	3.2	752	Automatic data processing machines; magnetic or optical readers;	50.2	38.9
778	Electrical machinery and apparatus, n.e.s.	22.7	4.4	658	Made-up articles of textile	46.6	22.5

784	Parts and accessories for tractors, motor cars and other motor vehicles, trucks, public-transport vehicles and road motor vehicles n.e.s.	21.1	4.8	821	Furniture and parts; bedding, mattresses, supports, cushions	46.3	22.6
713	Internal combustion piston engines and parts thereof, n.e.s.	20.2	3.3	762	Radio-broadcast receivers	45.8	10.4
				775	Household type electrical and nonelectrical equipment	43.8	6.6
				893	Articles, n.e.s. of plastics	39.7	8.9
				842	Women's or girls' coats, capes, jackets, suits, trousers, dresses, skirts, underwear, etc. of woven textiles	37.6	21.7
				759	Parts and accessories for use office machines	35.5	23.9
				899	Miscellaneous manufactured articles	34.5	-8.3
				771	Electric power machinery	34.1	12.3
				764	Telecommunications equipment, n.e.s. and telecommunications accessories	33.4	23.1
				699	Manufactures of base metal, n.e.s.	30.0	16.3
				761	TV receivers (including video monitors and projectors)	27.4	24.8
				845	Articles of apparel, of textile fabrics, whether or not knitted or crocheted	27.2	16.3
				778	Electrical machinery and apparatus	23.4	11.5
				679	Iron and steel tubes, pipes and hollow profiles, fittings for tubes and pipes	22.6	15.5
				897	Jewelry, goldsmiths' and silversmiths' wares, and other articles of precious or semiprecious materials	20.5	10.7

¹Criteria: Over 2 billion dollars in US imports from China or Mexico in 2006 at the 3-digit SITC level.

Notes: n.e.s. means "not elsewhere specified".

Source: United States International Trade Commission and US Department of Commerce. (<http://dataweb.usitc.gov>)

(DVDs), 56 per cent of US imports of clothes, and over 50 per cent of imported office machines and automatic data processing machines.

Why has China gained US market share over Mexico so rapidly and decisively? There are several factors. First, China has significantly lower labor costs than Mexico. In 2002, the US Bureau of Labor Statistics calculated China's average manufacturing compensation at \$0.64 an hour,³ compared with Mexico's US\$2.48 (*Business Week*, 2004). It remains to be seen if this gap will widen, shrink, or be maintained in coming years. Persistent labor shortages are now being reported at hundreds of Chinese factories, a trend that is pushing up wages and leading a number of manufacturers to consider moving their factories to lower-cost countries like Vietnam (Goodman, 2005; Barboza, 2006).

Second, China has sought to leverage its huge economies of scale, and it has made major investments in infrastructure and logistics to lower transportation costs and to speed time to market for their export products. The growth of China's 'supply-chain cities'—led by FDI-driven clusters in Guangdong (including Dongguan and Humen) and single-product clusters in Zhejiang (such as Anji and Datang)—is a perfect illustration of how China's governments and entrepreneurs are turning scale-driven specialization into a persistent competitive advantage for the country (Wang and Tong, 2002; Sonobe *et al.*, 2002; Zhang *et al.*, 2004).

Third, China has a coherent and multidimensional upgrading strategy to diversify its industrial mix and to add high-value activities. In their careful study of China's export performance, Lall and Albaladejo (2004) argue that China and its East Asian neighbors are developing high-technology exports in a regionally integrated fashion, based on complex networks of export production that link leading electronics MNCs and their first-tier suppliers and global contract manufacturers (see also Gereffi, 1996; Sturgeon and Lee, 2005; Gereffi *et al.*, 2005). The export patterns for high-tech products reveal complementarity rather than confrontation between China and its mature East Asian partners (Japan, South Korea, Taiwan, and Singapore). China's role as a motor of export growth for the region, however, could change as China itself moves up the value chain and takes over activities currently carried out by its regional neighbors. Rodrik (2006) suggests that China is already exporting a wide range of highly sophisticated products, and he calculates that China's export bundle is similar to that of a country whose per capita income is three times higher than China's current level.

Fourth, China is using FDI to promote 'fast learning' in new industries and knowledge spillovers in its domestic market (Zhang and Felmingham, 2002; Wang and Meng, 2004). Despite restrictions imposed by the WTO against domestic performance requirements for MNCs, China's local market is sufficiently attractive for multinational manufacturers that they are willing to comply with the wishes of local, regional, and national government authorities, despite stringent technology transfer requirements.

A Note on China's Supply Chain Cities and Industrial Upgrading

The concept of 'supply chain cities' has been used in media reports and academic literature to highlight the growth of large-scale production in China and the agglomeration of multiple stages of the value chain in particular locales within China as a key to its upgrading success. Barboza (2004), for example, lays out in Figure 3 the incredible specialization and scale that characterizes China's diversified export success in the apparel industry, even before the phase-out of the multifibre arrangement and apparel quotas by the WTO on 1 January 2005.

The term 'supply-chain cities' encompasses two distinct, but related, phenomena in China. The first usage refers to giant, vertically integrated *firm factories*. Appelbaum (2005), as well as a variety of textile journals and large textile/apparel companies like Luen Thai (2004), use 'supply chain city' to indicate a new breed of 'super-factory' that firms are constructing in China and in other parts of Asia (Kahn, 2004; Pang, 2004). These factories are company-specific, and are designed to bring together multiple parts of the firm's supply chain—designers, suppliers, and manufacturers—so as to minimize transaction costs, take advantage of economies of scale, and foster more flexible supply chain management. Luen Thai's factories in Guangdong Province (in Dongguan, Qingyuan, and Panyu) are the poster children for this approach.⁴ Many of the firms actively establishing these giant factories are from Hong Kong and Taiwan.

A second usage of this term refers to so-called *cluster cities*. Barboza (2004) and others use 'supply-chain cities' when discussing the growing number of single-product industrial clusters that have sprung up in China's coastal regions. These areas have dramatically increased production of one specific product, and are churning out massive volume, but are not limited

Made in China, Shipped Worldwide

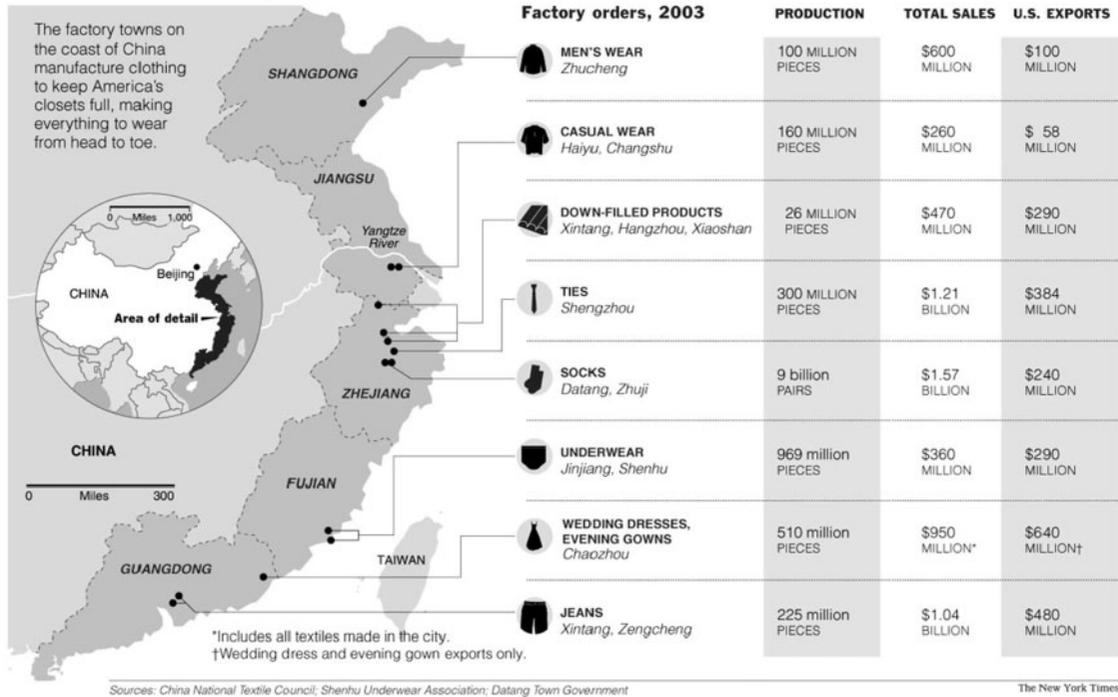


Figure 3 China's supply-chain cities in apparel. Source: David Barboza, In roaring China, sweaters are west of socks city, *New York Times*, 24 December, 2004

simply to manufacturing firms. As these clusters have grown, they have attracted related and supporting businesses, including yarn dealers, sewers, pressers, packagers, and freight forwarders. These clusters also feature large sprawling factories, with factory buildings, dormitories, and limited amenities for workers, but the focus here is on the overall cluster of firms. Illustrative examples include Datang (socks) and Shengzhou (neckties) (Wang and Tong, 2002; Zhang *et al.*, 2004; Wang *et al.*, 2005; Kusterbeck, 2005).

What forces drive the formation of China's supply-chain cities? In addressing this question, bottom-up versus top-down metaphors offer a misleading dichotomy for China, simply because both characterizations are oversimplified. 'Top-down' implies that development patterns are directed closely by the central government, while 'bottom-up' implies that development patterns are determined purely by market forces. The reality in China lies somewhere in the middle.

(a) 'Supply-chain city' super-factories appear to be more bottom-up than top-down, since they

result from individual sourcing decisions by private firms and are not directed by central government policy. The location of many of these factories is tied to existing manufacturing activities and the low cost of factor inputs (land, electricity, and labor), though local and provincial government has played a key role in providing a beneficial policy environment (tax incentives, streamlining bureaucratic red tape, etc.).

(b) As for the formation of clusters, this story is more complicated, and involves regional, technological, and industry factors. There is a growing body of scholarship—mostly in Chinese—on this topic, addressing the economic, policy, cultural, and historical reasons behind cluster formation.⁵ At the risk of over generalizing China's current situation, the major analytical divide in these clusters seems to be between clusters whose formation was driven initially by foreign capital, and those whose formation was initiated by domestic entrepreneurship.

The *foreign-led clusters* were founded first in the 1970s and 1980s as export-oriented production

platforms, mainly in South China (Guangdong, Fujian). These began in low-cost manufacturing industries, including textiles and apparel, and have now expanded to include newer industries like electronics. Foreign investment was particularly important, with large investments coming from Hong Kong, Taiwan, and Macao; thus the central government's role in determining FDI policy was important. These clusters were founded in South China due to its low-cost labor and its relative proximity to both investors and major transportation centers. Guangdong (close to Hong Kong) and Fujian (across from Taiwan) were pioneers of this type of cluster, with larger cities in the Yangtze River Delta (Shaoxing, Hangzhou) developing at a later date (Zhang *et al.*, 2004; Wang and Tong, 2005).

The *Chinese-led clusters* are mainly in Zhejiang and Jiangsu provinces, and began to grow more rapidly in the 1990s. These clusters are based on so-called town and village enterprises (TVEs) that were a major part of the government's push for economic development in the 1980s and 1990s, and are often in traditionally rural areas. In Zhejiang, many of these clusters were founded by chance—with a confluence of historical knowledge, individual entrepreneurship, networking, and pure luck—but continued to grow because of conscious local government policy. Thus, private entrepreneurship is critical, but the government had an important facilitative role (Sonobe *et al.*, 2002; Zhang *et al.*, 2004: 7–8; Wang *et al.*, 2005: 12).

An additional question is whether these clusters are seeking to upgrade and move up the value chain. Again, it is helpful to separate our clusters into two groups.

- *South China:* The foreign-led cluster cities in Guangdong and Fujian seem to be further along in terms of fostering new, higher tech industries, building firms with international brands, and feature a broader export mix in traditional industries. The growth of the electronics industry is a good example (Lüthje, 2004).
- *East China:* These cities lie at an earlier point on the development trajectory, and Chinese authors like Jici Wang have commented that these areas are still producing at the low end of the technology value chain. Even here, firms and government officials are increasingly conscious of their need to find new competitive advantages, especially in the face of rising labor costs and growing competition

from other locations (Wang and Tong, 2002; Wang *et al.*, 2005).

Conclusion

In the past several decades, China and Latin America have pursued very different economic trajectories. China's development model appears to have served it well, delivering steady levels of growth since 1978 and facilitating China's rise to economic prominence on the world stage. Latin America, in contrast, has displayed a far more uneven pattern of growth, and political observers have noted the shift to more radical leaders and leftist rhetoric. In both cases, however, international trade and FDI have played major roles in promoting industrial upgrading.

Yet, these two regions have much to learn from each other. Both China and Mexico currently face a host of new social and economic problems—corruption, environmental degradation, and income inequality—and are actively questioning the merits of a neoliberal, export-led growth model (Nolan, 2005). Each region faces criticism that previous paradigms of development have left parts of the economy vulnerable to foreign control or foreign pressure. In each case, reformers are calling for new social welfare programs to address their concerns, and they confront those who argue that only a fuller implementation of neoliberalism can address the problems of development.

In addition, China's growing economic links with Mexico and Latin America make this study a valuable one. Latin America has become an important source of raw material exports to China in the last decade, and a foreign policy priority as well, marked by major visits to the region by President Hu Jintao and Vice President Zeng Qinghong in recent years. In addition, Mexico and China are competing for US markets in a widening array of product lines, ranging from textiles/apparel and furniture, to automotive and electronic products.

To understand China's development model and industrial upgrading experience, one must situate China within emerging intra-regional trade and production networks in East Asia, as well as to examine China's broader role in the global economy. Foreign direct investment has facilitated China's export diversification, but China is also pioneering new forms of domestic industrial organization in the form of supply-chain cities. The Chinese model is predicated on a clear value-chain strategy of giving high-value activities the most attention, and thus there is a

growing emphasis on R&D, design, science and engineering education, and brands.

Both China and Mexico are trying to move beyond a simple cost-based approach to competitiveness (Farrell *et al.*, 2005). Increasingly, the stakes are defined not as a race to the bottom, but as a quest to push the upgrading model beyond comparative advantages in raw materials, cheap labor, and manufacturing production to high value niches in a broad range of global industries. China's current edge is its huge domestic market and its voracious appetite for raw materials and intermediate inputs from abroad to feed its soaring industrial growth. However, massive rural to urban migration, poor working conditions, acute labor shortages, and a deteriorating environment threaten to undermine the Chinese model if these problems are not ameliorated. While China and Mexico have made remarkable economic progress in recent decades, their development challenges continue to grow at least as fast as their accomplishments.

Notes

1. Sanjaya Lall (2000) developed this technological classification of exports based on 3-digit Standard International Trade Classification (SITC) categories. His article provides the detailed list of products under each category.
2. The main problem with these export data is that they are not sufficiently detailed to tell us about the process by which these products are made. Auto parts or electronic components, for example, could still be made in labor-intensive ways by relatively unskilled workers. Thus, industrial upgrading cannot be assured just by moving in the direction of medium- or high-technology finished products. However, it is probably true that the relative proportion of high-value activities goes up as we move from low-technology to medium- and high-technology export categories.
3. China's 30 million urban manufacturing workers on whom data could be found earned an average of US\$1.06 an hour, while 71 million suburban and rural manufacturing workers earned 45 cents an hour, for a blended average of 64 cents (*Business Week*, 2004).
4. In Dongguan, in southern China, apparel maker Luen Thai Holdings Ltd boasts of a 'supply-chain city' that is a two-million square foot facility that includes a factory, dormitories for 4,000 workers, and a 300 room hotel (Kahn, 2004). Appelbaum (2005: 7, 8) describes Hong Kong-based Yue Yuen—the world's largest footwear supplier—as a company that made nearly 160 million pairs of shoes for export in 2003, one-sixth of the world total of branded athletic and casual footwear. One of its four Dongguan factories employs as many as 70,000 workers.
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