

**Free Trade Agreements and International Production Networks:
China and the Automotive Industry¹**

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It is inconceivable to consider International Production Networks (IPN) in Asia, however it is defined, without taking into account the important role that China plays within such networks. The integration of China into the global economy in general and East Asia in particular has further deepened international production fragmentation to unprecedented levels (Haddad, 2007; Athukorala, 2007). At the turn of the decade, China's processing exports (exports that are produced from processing and/or assembly of imported inputs) accounted for nearly half of its total exports. In 2006, 51.5% of China's intra East Asian trade was in machinery products, of which more than half was trade in parts and components. The rate of annual growth in parts and components with its East Asian partners between 1993 and 2006 was a staggering 22.7% (Kimura and Obashi, 2008). The drivers of the proliferation of IPNs as described in earlier chapters can be clearly seen in China. Three drivers of this process as explained by Ernst and Kim (2002) can be expanded for the case of China:

- a. The economic reform process that started in China in the late 1970s resulted in trade liberalization, more openness to foreign direct investment and the privatization of thousands of State Owned Enterprises (SOEs).²
- b. Coupled with relatively lower labour costs and artificially weak exchange rates, the opening up China provided MNCs an avenue to reduce drastically the cost of production.³ It is not surprising that the low inflation rates experienced by the world in the late 1990s to early 2000 can be partially attributed to China's low cost production. Low cost production opportunities became a powerful pull factor for MNCs to locate labour intensive production processes in China. Assembly operations were dominant in the early periods of China's reform era, but since the late 1980s, China became host to numerous independent suppliers who fall within the IPNs of popular brand-names like Bosch, GAP, Nike and the like.
- c. The rapid development of ICT and infrastructure played an important role in China, as it did in many other developing countries. The investment made by

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² China's simple average tariff rate was at 42.9% in 1992, but dropped to 9.7% in 2005 (WTO, 2008).

³ In 2002, the average hourly compensation of manufacturing workers in China was 3% that of an American worker (Banister, 2005). The undervaluation of the renminbi varies from close to parity to 40% based on different studies (The Economist, Feb. 5th, 2009).

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the Chinese government in infrastructure allowed MNCs to reduce their own costs and associated risks.⁴ ICT allowed firms to keep constant communication with their outposts in China, and in many cases reduced the lead time, particularly when it came to the transfer of designs.

The proliferation of regional trading agreements in East Asia also finds its impetus in China. An invitation by Premier Zhu Rongji in 2000 to ASEAN to form an FTA between China and ASEAN opened the doors for numerous other regional and bilateral FTAs among countries in the region. China itself is involved in 11 agreements, the latest being the China-Singapore FTA, and the China-Peru FTA.

The objective of this study is to consider the role, if any, of FTAs in the growth of IPNs in China. No doubt, IPNs precedes FTAs. However, with the collapse of WTO's Doha negotiations, one can expect more regional agreements to come into existence, while existing ones might expand in depth and scope. Thus, the intention is to consider those factors which are important within these FTAs that could encourage deeper use of IPNs in China. We do this by considering the automotive sector in China. Our research is carried out in two parts. First, we consider IPNs from a macro perspective by evaluating the patterns and growth of trade in parts and components within the automobile sector in China. The intention is to highlight some major policies that resulted in the change in those patterns of trade. Second, we evaluate IPNs from a micro perspective through a case study approach of several players within the network. The objective is to identify factors that influence decision making as well as the challenges faced by firms vis-à-vis FTAs. By taking into account both macro and micro perspectives, we will be able to highlight issues which need be considered seriously by policy makers for FTAs to be an important driver of IPNs.

Bilateral and Regional Trading Agreements Involving China

China is a party to 11 FTAs - 9 of which are in force while two more are being negotiated (APTIAD). We highlight below some of the FTAs and other agreements that China is involved in.⁵

Asia-Pacific Economic Cooperation (APEC) – as with other countries that border the Pacific Ocean, the Asia Pacific region hosts China's most important trading partners and investors. China became a member of the APEC forum in November 1991 and submits an annual Individual Action Plan (IAP) that provides a roadmap of its intended actions in various policy areas with a view to realizing APEC's liberalization goals. In 2001, China joined the APEC Business Travel Card (ABTC)

⁴ In 2007 for instance, the number of internet users per 100 people was 15.9 compared to 1.8 in 2000, while the number of fixed and mobile phone subscribers increased from 18 per 100 people to 69 within the same time period (World Bank, 2008).

⁵ The agreements listed below are based on those reported in China's Trade Policy Review 2008 (WTO, 2008)

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Scheme, and started to issue the ABTC card from November 2003. In the most recent summit in Peru, China joined other members in confirming their support for the global free trade agenda.

ASEAN+3 - China, Japan and the Republic of Korea have close economic ties with countries in Southeast Asia through the ASEAN+3 framework for cooperation.

ASEAN-China free-trade agreement (ACFTA)- The Framework Agreement on Comprehensive Economic Cooperation between China and ASEAN was signed on 4 November 2002, and came into force on 1 July 2003. Under the agreement, both parties agreed to negotiate the establishment of an ASEAN-China Free Trade Area (ACFTA) within ten years. The comprehensive agreement include eliminating tariff and non-tariff barriers for all trade in goods; progressively liberalizing trade in services; establishing an open and competitive investment regime to facilitate and promote investment among partners to the ACFTA; simplifying customs procedures and developing mutual recognition arrangements. To accelerate the establishment of the ACFTA, an "early harvest programme" specified that tariffs on all products in HS Chapters 1-8 and a limited number of products outside these chapters were eliminated in the first three years beginning 1 January 2004; a longer time-frame (i.e. no later than January 2010) was accorded to Cambodia, Laos, Myanmar and Viet Nam. The ACFTA involving the original ASEAN 6 (Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand) is to be established by 2010; flexibility up to 2015 has been provided for Cambodia, Laos, Myanmar, and Viet Nam.

Asia-Pacific Trade Agreement (APTA) – Came into force in 1976 as a preferential trading arrangement between developing countries in the Asia-Pacific region. China acceded to the agreement on 12 April 2001, and started implementing concessions on 1 January 2002. APTA is the only agreement that includes both India and China. APTA is essentially a preferential trading arrangement designed to liberalize and expand trade progressively in the Asia Pacific region through such measures as the relaxation of tariff and non-tariff barriers and trade-related economic cooperation. Nearly 5000 goods are covered through general and special concessions as well as margin of preferences (ESCAP, 2006).

Closer Economic Partnership Agreements China-Hong Kong and China-Macao – signed on 29 June 2003 and 17 October 2003 respectively. Both agreements resulted in full elimination of tariffs on imports originating from Hong Kong and Macao beginning 1 January 2006. The agreements also include the opening up of markets for services and investments.

China-Chile FTA - On November 18, 2005 Chile became the first country in South-America to sign a bilateral Free Trade Agreement with China. The agreement represented an unprecedented event in Asian and Latin American relations, as both countries agreed to lift tariffs on 92% of products exported from Chile to China and

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50% of the products exported from China to Chile over the course of 10 years.⁶ The reduction in tariffs is expected to increase bilateral trade, but more importantly provide new financial opportunities for Chinese and Chilean business leaders. Under the agreement, approximately half of China's exports to Chile were granted duty-free treatment, while 21 percent of the remaining duties will be phased out in five years, 26 percent over the course of 10 years, and 3 percent were completely excluded from the scope of the free trade agreement. At the APEC summit in Peru in November 2008, the China-Peru FTA was officially announced, making it the second Latin American country to conclude an FTA with China.

China-Pakistan FTA - On 5 April 2005, China and Pakistan signed an FTA Early Harvest Agreement under which bilateral tariffs on certain products were eliminated gradually between 1 January 2006 and 1 January 2008.

China-Australia FTA - China and Australia signed a Trade and Economic Framework Agreement on 24 October 2003. The agreement promotes strategic cooperation in energy and mining; textiles, clothing and footwear; agriculture; mechanical and electronic products; tourism; education; inspection and quarantine; customs cooperation; environmental protection; investment; information and communications technology; biotechnology; public health; food safety; and intellectual property rights. On 18 April 2005, the two countries agreed to commence negotiations on a FTA.

China-New Zealand FTA - Like Australia, New Zealand signed a similar Trade and Economic Cooperation Framework on 28 May 2004 with China. Under this framework, both countries agreed to promote cooperation in: agriculture; animal husbandry; forestry; wool; services, including education, tourism, air services, and labour and professional services; science and technology; environmental protection; information and communication technology; and investment. New Zealand and China signed a free trade agreement in April of 2008 that will eliminate tariffs on all trade over the next 10 years. The agreement is the first full FTA between China and any developed nation and as such is a historical milestone in its opening up of its markets to the West. The agreement will eliminate tariffs on all trade eventually, with all tariffs below 5% (which covers 35% of New Zealand products going to China) being immediately dropped, those in the 6-20% range being phased out over 5 years (ending in 2012) and tariffs over 20% dropping immediately to 20% and being phased out over 6 years⁷. The agreement is a full free trade agreement and covers a vast group of products and services, including provisions for movement of persons and visa issues.

China-Singapore FTA - This is the most recent of agreements concluded by China. Negotiations started in October 2006 and a deal was struck in late October 2008.

⁶ National Customs Service. *Chile-China Free Trade Agreement 2006*, http://www.aduana.cl/prontus_aduana_eng/site/artic/20070227/pags/20070227172530.html#T3

⁷ New Zealand Ministry of Foreign Affairs and Trade (2008), "Key Outcomes: China-New Zealand Free Trade Agreement", accessed at <http://chinafta.govt.nz/1-The-agreement/1-Key-outcomes/index.php>.

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The agreement comes into effect on January 1st, 2009 and will see tariff being eliminated on 85% of Singaporean exports to China and a further 10% of exports becoming duty free by 2010. However, China will continue to impose tariffs on 260 products to protect its home-grown industries, such as coffee, pepper, paper products and certain vehicle parts. Singapore will remove all tariffs on Chinese imports from 2009. The FTA is a precursor to similar agreements that would be signed with the ASEAN nations in 2012.

The Automotive Sector in China

China's auto industry started in 1953 with the founding of the First Auto Works (FAW). The Shanghai Automotive Industry Corporation (SAIC) and Dongfeng Motors Corporation were later established in 1958 and 1967 respectively. As a result of reform policies, Chrysler and Volkswagen were allowed to establish joint ventures with the three local players in the 1980s. Peugeot and Citroen were allowed to enter China in the early 1990s. The industry saw the establishment of local independent car makers such as Geely and Chery in the late 1990s as well as significant investments made by late arrivals such as GM, Honda, Nissan and Ford. Not surprisingly, in terms of production and sales of completed automotive vehicles, China is one of the fastest growing markets in Asia, as well as the world. The automotive sector in China is well served by the country's position as a low cost producer and its increasingly wealthier population. Both these factors have contributed to China's increasing importance as a center for regional production integration for the industry within Asia such that it is rapidly becoming a hub for components and parts production, completed unit assembly, and completed unit sales.

According to the WTO (2008), China is the world's third largest automobile manufacturer, after the United States and Japan. In 2006, the automotive sector accounted for 7.3% of total manufacturing value added and accounts for 7.7% of the total manufacturing workforce (2.8% in 2004). In 2006, China had about 100 vehicle manufacturers and around 4,500 auto parts manufacturers. Foreign firms through joint ventures with local partners accounted for around 75% of cars produced in China, and 95% of cars produced in China in 2006 were sold in the domestic market.

In 2007, China reached record levels in both production and sales, with increases over 20% year-on-year.⁸ Production rose to 8.88 million units (an increase of 22%) with passenger cars amounting to 6.38 units. Trucks and buses made up the remaining. Along with production, sales of vehicles expanded by 22% to 8.8 million units. See Table 1. The growing prevalence of home grown models is also evident as 1.24 million Chinese branded sedans were sold in 2007. The exceptional growth was expected to continue into 2008, although the increase in oil prices in early 2008 as

⁸ China Autos Report, Q3 2008, Business Monitor International, July 2008.

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well as global economic downturn has caused a dramatic slowdown in sales since March 2008.

Table 1. Production and Sales of Automobiles, Historical and Forecast

	2005	2006	2007	2008f	2009f	2010f	2011f	2012f
Total Production (value USD billion)	68.1	97.8	119.3	137.2	164.6	189.3	217.7	239.5
Total Production (value RMB billion)	563.3	715.0	872.3	1006.8	1208.1	1388.2	1596.5	1756.1
Total Production (CBUs million)	5.71	7.28	8.881	10.249	11.801	13.571	15.533	17.086
.. Cars (million)	3.93	5.23	6.38	7.362	8.477	9.749	11.158	12.274
.. Commercial vehicles (million)	1.78	2.05	2.5	2.924	3.409	3.921	4.509	4.96
Sales (value, USD billion)	74.0	93.9	108.0	116.6	122.5	140.8	162.0	178.2
Sales (value, RMB billion)	612.1	777.2	917.1	990.6	1040.0	1196.0	1376.0	1513.4
Sales (CBUs, million)	5.76	7.22	8.796	10.116	11.128	12.24	13.22	14.277

f=forecast

Source: China Association of Automobile Manufacturers, OICA

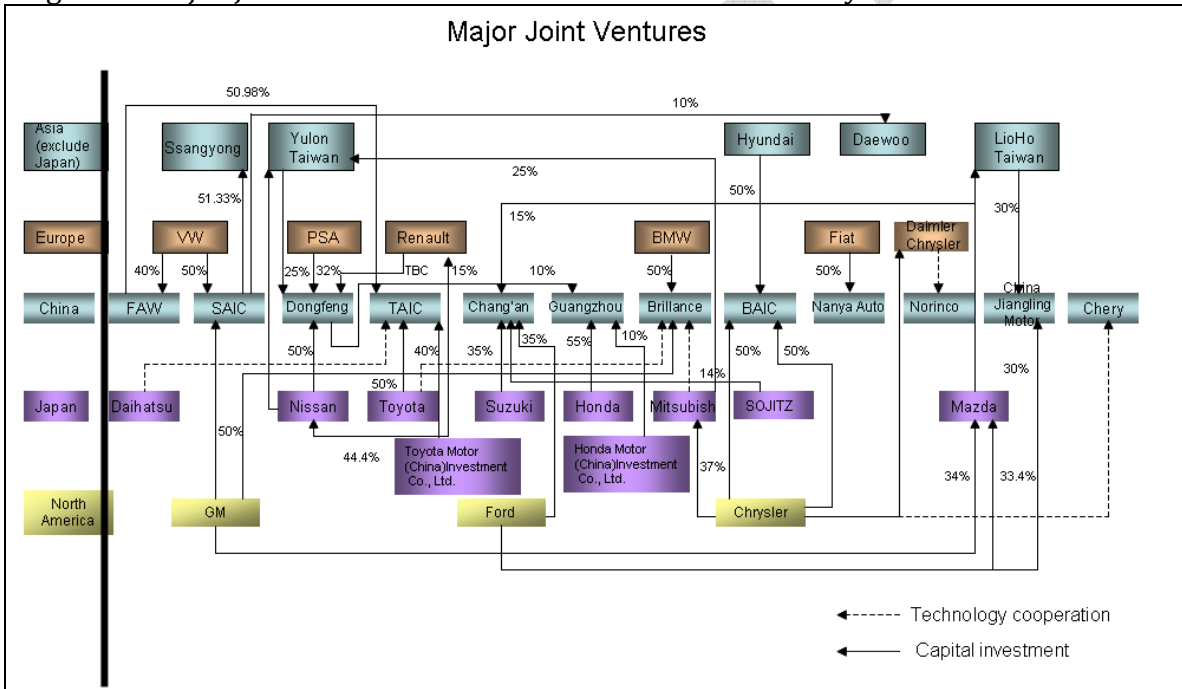
Since 2005, China has been a net exporter of completely built units (CBUs). It exported more than 16,000 more units than its imports. However, despite a surplus, in value terms, China had a trade deficit of RMB 3.6 billion in vehicle sales, which could only reflect China's relatively lower position in the value chain, i.e. exports mainly comprise of low end personal cars and commercial vehicles. For instance, the average price of an imported sedan (USD33,892) was four times the average price of its average export (USD8,693).⁹ Despite the low position in the value chain, China's CBU export has continued to increase and trade deficit has narrowed since 2005. In 2007, China's automotive exports surged by 79%, to 612,000 units. Passenger car exports more than doubled with 188,600 units in 2007, while export of buses rose 210% to 85,100 units and off-road vehicles exports increased 220% to 25,700 units. Chery, Geely and Brilliance were China's leading exporters. Trucks accounted for 40% of total vehicle exports in 2007, while passenger cars captured a 31% share. The remainder includes buses and vehicle chassis. Vehicle exports are expected to top the 1 million mark per annum by 2010.¹⁰ The major export markets are the Middle East, Africa and Asia. Russia is fast becoming an important market as well. Exports to Europe and the US have lagged behind due to higher emission standards and quality issues.

⁹ Fitch Ratings, The Chinese Auto Industry – Tuning Up for Steady Growth, April 26, 2006.

¹⁰ Chinese Association of Automobile Manufacturers

As China is expected to produce more units in the coming years, industry consolidation is expected to gradually occur. There are about 1500 registered auto producers, of which fewer than 100 sold more than 10,000 vehicles each in 2006. Many of the small manufacturers sold only 300 to 500 vehicles each. The Chinese government has been encouraging consolidation in the fragmented industry to create a few national champions that can compete with global giants at home and abroad.¹¹ Since China still does not allow foreign auto manufacturers to establish wholly owned subsidiaries in China, consolidation will mainly focus on the leading domestic producers – FAW, SAIC, Dongfeng, Changan, BAIC, GAIG, Chery and Geely. Foreign automakers will play a major role in this consolidation process, as these automakers and their JVs have historically maintained a market share of about 80% in the personal car market.¹² Figure 1 shows the various JVs in the passenger car market while Box 1 provides further details on China’s automotive policy framework.

Figure 1. Major Joint Ventures in China’s Automotive Industry



Source: Based on Harper et. al. (2007), information on ownership and partnerships updated by the author.

Consistent with the growth in production, sales and exports of automobiles, the auto parts and components industry in China has also seen impressive improvements. Although in the past car manufacturers imported parts and components and

¹¹ Wilfred Kong, China Business Guide 2008, Shanghai Guansu Investment Consulting Co. Ltd.

¹² Fitch Ratings, op.cit. The economic crisis engulfing China is also causing many smaller car makers to go out of business, which is a big gain for large local players like Geely and Chery as well as for foreign players as competition is reduced (*Wall Street Journal*, 5 February, 2009).

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assembled them in China, today, an increasing number of these components are manufactured in China for both domestic use and for exports. This is mainly due to the entry of major auto parts producers into China. Among the world's top 100 auto parts suppliers, 70% already have a presence in China. There are about 1,200 foreign-funded or jointly-invested parts manufacturers in China holding 50% the market.¹³ Among them are brands such as Delphi, Bosch, Visteon and Continental. Local parts manufacturers such as Wanxiang (China's largest maker of auto parts), Shaanxi Fast, Fuyao Glass, Xinyi Glass and Nanjing Aotecar have made impressive entry into the industry, taking advantage of the 1,000 auto parts based industrial parks across the country.¹⁴ China's export of auto parts reached RMB 14.5 billion in 2007 as major manufacturers have become more confident of the quality of China's auto parts. Sales revenue of China's auto parts producers reached RMB403.5 billion in 2006. It is estimated that the output value of China's auto parts is expected to reach RMB800 billion in 2010.¹⁵

Box 1. Main features of China's auto policy

Foreign investment in the automotive industry requires prior approval from the central government. Foreign firms need to have their own product patents and trade marks, product development and manufacturing technology, independent international sales channels, and financing capabilities.

For CBUs and engines, the Chinese partner must own at least 50% of equity share. The limit can be relaxed if the intention is exports and located in an export processing zone. Foreign enterprises have to set up their own R&D departments in China and manufacture products that meet international technical standards.

Each foreign automaker is allowed to have two joint ventures per vehicle category; additional JVs are allowed if it means investing with the local partner to acquire other domestic automakers.

The minimum capital requirement for new entrants is RMB 2 billion, of which self-owned capital must be no less than RMB 0.8 billion, and an R&D institution must be established with investment of no less than RMB 0.5 billion. The total investment for auto engine manufacturers should be no less than RMB 1.5 billion, of which self-owned capital should be no less than RMB 0.5 billion. New assembly plants must have annual capacity to produce at least 10,000 trucks, or 50,000 autos with 4-cylinder engine, or 30,000 autos with 6-cylinder engine.

Automobile manufacturers exceeding certain production, sales, and R&D expenditure levels, are granted preferential treatment by the Central Government, such as reduction of tax rates when making fixed asset investment, favourable

¹³ China's Emerging Car Industry, Business Week, April 12, 2007.

¹⁴ China Auto Parts Industry Report, 2007-2008, reported by Reuters, March 10, 2008.

¹⁵ Ibid.

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conditions for bank loans, priority approval when listing on stock exchanges, and easier access to capital from abroad and government loans.

Imports of motor vehicles can only be done through coastal ports of Dalian, Tianjin, Shanghai and Huangpu; and terrestrial ports of Manchuria, Shenzhen and Xinjiang Alashankou.

Imports of used vehicles is prohibited.

Tariffs on imported parts is linked to the vehicle's final value. CBU units include assembled parts and are subject to the same tariffs as CBU units. If imports of key pieces reach or surpass stipulated volume, they are considered as assembled parts and may be subject to tariff rates applied to CBU units. The simple average applied rate (including interim duty) for motor vehicles (ISIC 3843) was 13.5% in 2006. Tariffs for vehicle components is 10%.

Enterprises' R&D expenditures are tax deductible provided they comply with the technological policy.

There are measures against local protectionism where local governments should not implement discriminative policies on automobiles not produced locally nor adopt measures that may result in discriminative consequence.

Source: WTO (2008) and WTO (2006).

The Auto Industry and International Trade

In value terms, China is a net importer of final goods in the auto sector. Defining final goods as SITC 781 (Passenger Motor Vehicles, excluding buses), 782 (Goods and Specialised Transport Vehicles) and 783 (Road Motor Vehicles not elsewhere stated), Figure 2 shows the large gap between imports and exports reducing in 2007. Exports of final goods experienced exponential growth since 2003. This may reflect the emergence of China's own auto producers like Geely, Chery and Brilliance. Among the product categories, SITC 781 (passenger cars) makes up about 60% of total final goods. Figure 3 shows that SITC 781 dominates the reason for the trade deficit in the auto industry. SITC 782 (vehicles for transporting goods etc.) and SITC 783 (buses etc.) show a trade surplus for China in recent years. China's imports of final goods come from traditional auto producers like Germany, Japan and the US (which together made up nearly three quarters of total imports in 2007). China's exports are more varied in location. Russia, as explained earlier, was the single largest destination. Other developing countries which are lesser known as export markets are important destinations for China's auto makers. These include Iran, Kazakhstan and Algeria.

International trade in parts and components contributed to more than two thirds (67%) of China's trade in the auto industry. China has been in the past, a net

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importer of auto parts and components¹⁶. As shown in Figure 4, China became a net exporter of parts and components only in 2007. The growth in trade for parts turns exponential in 2002, which coincides with the growth in the auto industry in China as explained earlier. Improvements made by local manufacturers in terms of design and quality also contributed towards making China a net exporter. Scrutinizing the macro trade data from UN Comtrade does not provide much explanation as to the exact parts that are traded. See Figure 5. In 2000, 45% of parts traded fell under SITC 78439 (Other parts and accessories). Although it fell to about 33% in 2007, it was still the largest category. However, among other important product categories that featured significantly in 2007 were SITC 78434 (Gearboxes), 78433 (Brakes), 78432 (parts and accessories of bodies), 7783 (Electrical equipment), 77313 (Ignition wiring sets), 71651 (Electrical generating sets), 71391 (other parts for internal combustion engines) and 7132 (Internal combustion engines).

The important role played by international production networks in the parts and components industry is also obvious when intra-industry trade (IIT) is considered. Two-way exchange between nations of related products can emerge due to differences in factor endowments (Helpman and Krugman, 1985) and consumer tastes and preferences (Krugman, 1980). The extent of China's IIT in automotive parts and components is shown in Figure 6¹⁷. IIT tripled from about 23% in 1992 to 60% in 2007. The increase in IIT occurred in nearly all product categories as shown in Figure 7. Zhu (2008) differentiates between horizontal and vertical IIT and finds that the latter dominates this industry. It goes to show that China's lower cost of production has been the prime driver of IIT. However, horizontal IIT is increasing, indicating that sophistication in output is increasing, and the demand for high quality components is on an upward trend.

¹⁶ For the purpose of this study we define parts and components in the auto industry as follows: 7132, 71391, 71651, 7422, 7439, 7463, 77313, 7783, and 784. These classifications are under SITC Rev. 3. These items were selected after an analysis of the items listed in Athukorala (2007) and Kaminski and Ng (2001) as well as the authors own scrutiny of the SITC list.

¹⁷ The most widely used method for calculating IIT was developed by Grubel and Lloyd (1971). A number of different modifications of the Grubel-Lloyd measure are often employed in IIT literature: unweighted IIT method and weighted IIT method. The preferred measure of IIT and the measure adopted in this study is the adjusted Grubel and Lloyd (1975) index using the relative size of exports and imports of a particular good within an industry as weights:

$$IIT = \frac{\sum_{i=1}^n (X_i + M_i) - \sum_{i=1}^n |X_i - M_i|}{\sum_{i=1}^n (X_i + M_i)} \times 100$$

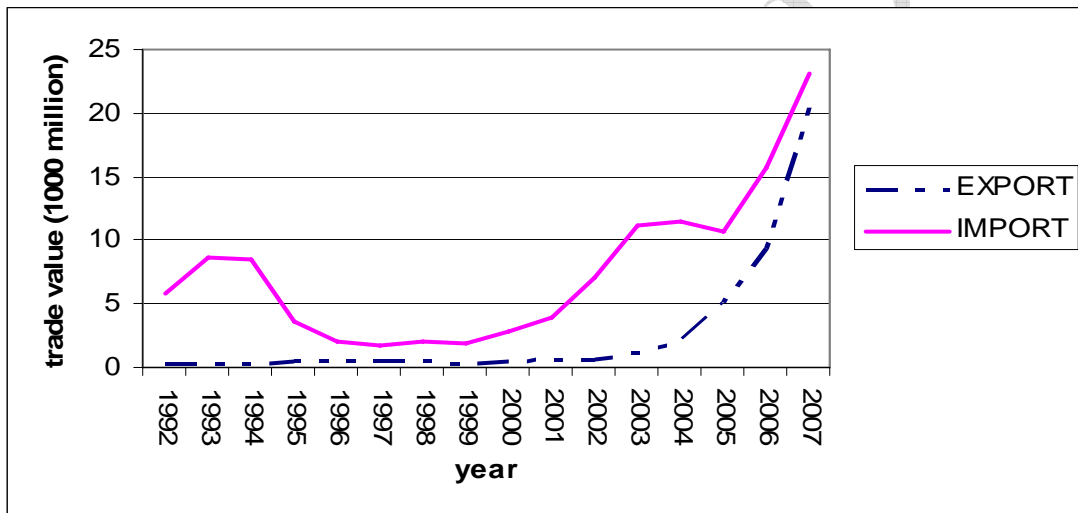
where X_i and M_i are China's exports and imports of product i respectively. The value of this index is zero if all trade is inter-industry trade, it is equal to 100 if it is completely IIT.

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The source of imports and destination of exports for 2007 are shown in Table 3. There are no surprises here as the main auto producing countries like Japan, Germany, Rep. of Korea and the US were source of imports while the US, Japan, Rep. of Korea and Canada are important destinations.

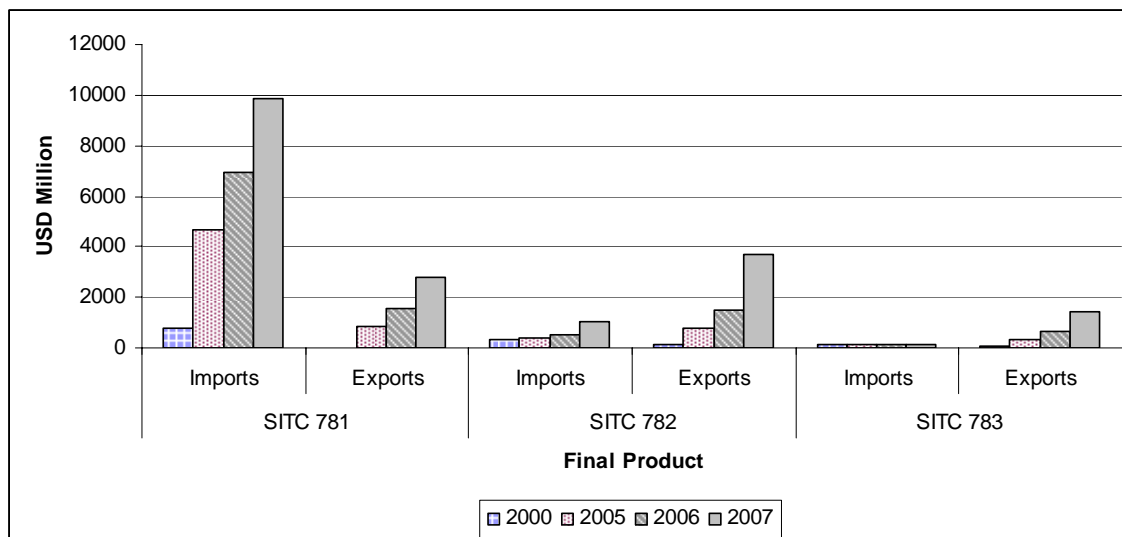
Considering the sources of imports and destinations of exports for final goods as well as parts and components in China's automotive related trade, we can conclude that FTAs do not play a significant role. Apart from Hong Kong, important trading partners in the auto sector are not those which China has an FTA with. Countries within ACFTA for instance, China's oldest and most advanced FTA, do not feature well in auto trade. See Table 4. Only exports of final goods to Vietnam stand out to be significant. However, it must be noted that automotive final goods, part and components as defined in this paper makes up only 6% of total China trade in 2007. Trade with FTA partners may be more significant in other sectors.

Figure 2. Import and Export of Final Goods in the Auto Industry, 1992-2007.



Source: UN Comtrade, downloaded from <http://comtrade.un.org/db/default.aspx>.

Figure 3. Trade in Final Goods by Product Category



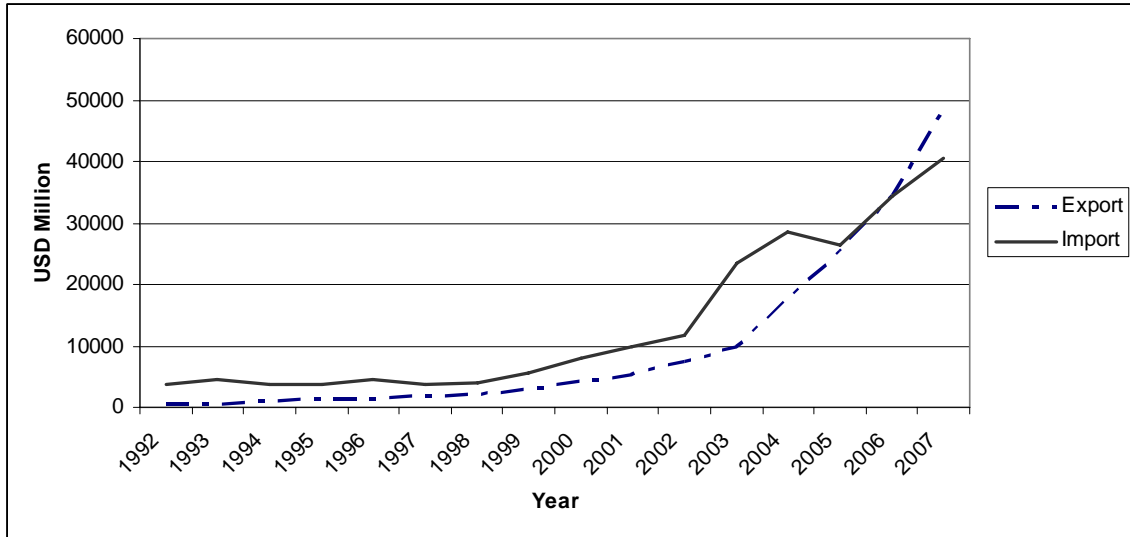
Source: UN Comtrade, downloaded from <http://comtrade.un.org/db/default.aspx>.
 Note: SITC 781 refers to Passenger Motor Vehicles, excluding buses; SITC 782 refers to Goods and Specialised Transport Vehicles; SITC 783 refers to Road Motor Vehicles not elsewhere stated.

Table 2. Import Sources and Export Destinations of Final Goods, 2007

2007 import		2007 export	
Partner	Percent	Partner	Percent
Germany	33.25	Russian Federation	18.67
Japan	27.49	Iran	6.49
USA	13.18	Kazakhstan	5.99
Rep. of Korea	6.97	Algeria	4.65
Slovakia	5.21	Viet Nam	4.45
United Kingdom	4.71	South Africa	4.30
Sweden	3.17	Ukraine	4.16
Austria	1.57	USA	3.94
Mexico	0.71	United Kingdom	2.96
France	0.67	Syria	2.86
Total top 10	96.93	Total top 10	58.47

Source: UN Comtrade, downloaded from <http://comtrade.un.org/db/default.aspx>

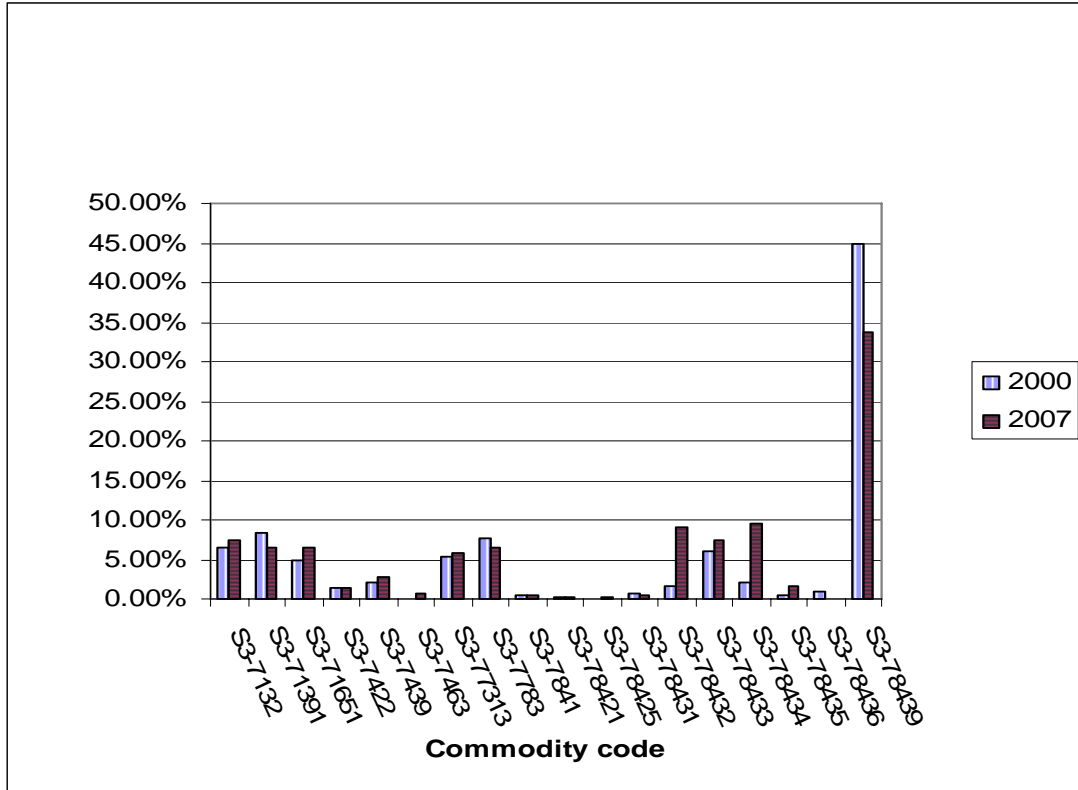
Figure 4. Exports and Imports of Parts and Components, 1992-2007



Source: UN Comtrade, downloaded from <http://comtrade.un.org/db/default.aspx>

Figure 5. Trade in Parts and Components: Important Product Categories

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Source: UN Comtrade, downloaded from <http://comtrade.un.org/db/default.aspx>

Figure 6. China's Intra-industry Trade in Automotive Parts and Components, 1992-2007

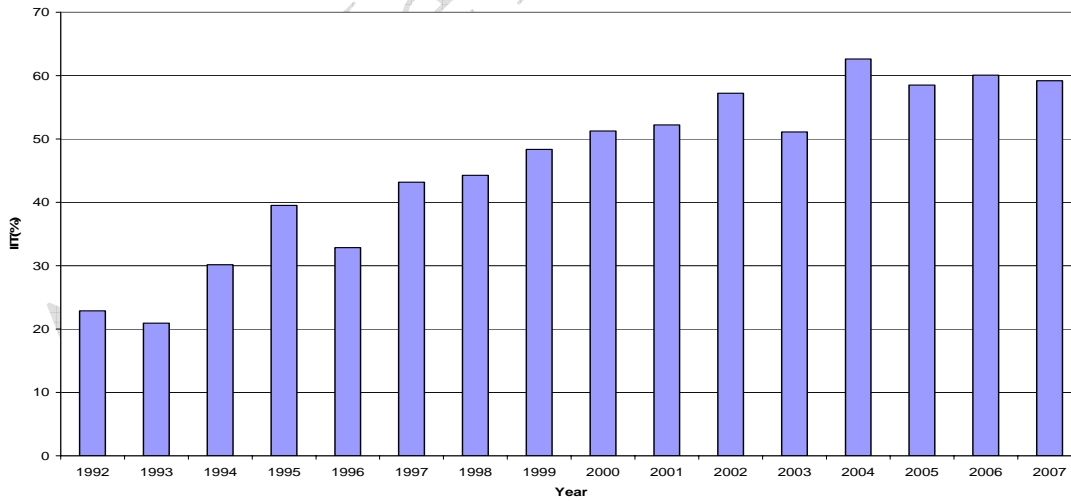


Figure 7. China's Intra-industry Trade in Selected Parts and Components

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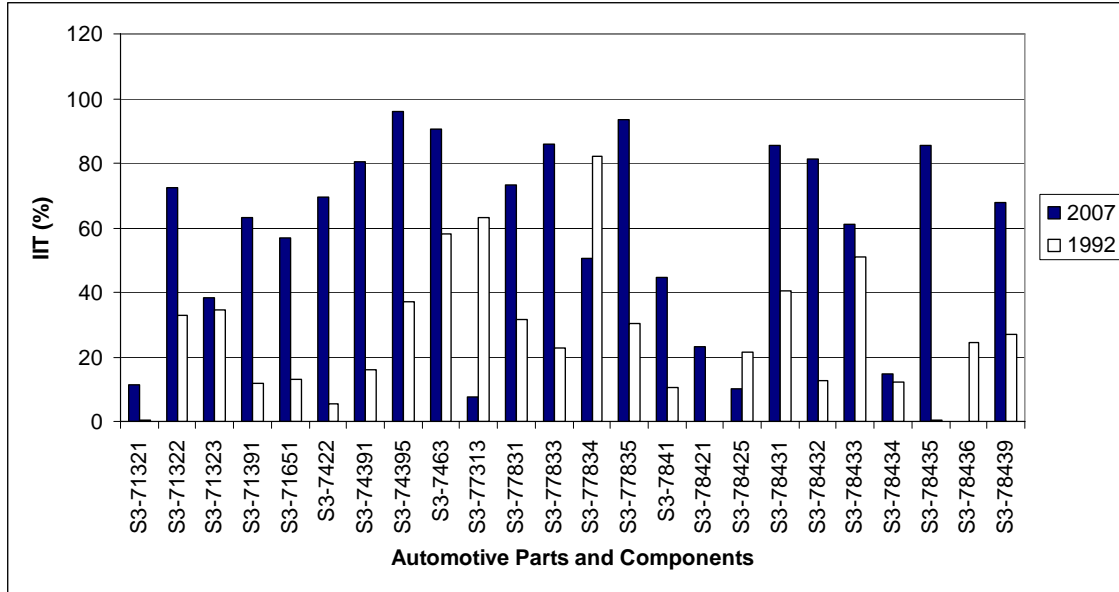


Table 3. Important Import Source and Export Destination of Auto Parts and Components, 2007

2007 Import		2007 Export	
Partner	Percent	Partner	Percent
Japan	16.28	USA	14.69
Germany	9.87	Japan	8.48
Rep. of Korea	5.10	Rep. of Korea	3.78
USA	3.40	Canada	1.92
France	1.66	Germany	1.61
Hungary	1.45	United Arab Emirates	1.38
United Kingdom	0.79	Italy	1.30
Spain	0.69	Iran	1.14
Canada	0.61	United Kingdom	1.03
Other Asia, nes	0.58	China, Hong Kong S/	0.97

Source: UN Comtrade, downloaded from <http://comtrade.un.org/db/default.aspx>

Perhaps more significant than FTAs is China accession to the WTO in 2001. China's current WTO obligations related to trade in completed vehicle units and parts include:

- As of July 1st, 2006 China's Customs Tariff Commission of the State Council reduced tariffs on cars, SUVs and minibuses from 28% to 25%.
- Taxes on selected parts were also reduced from 13.8% to 10%.
- Tariffs on parts such as transmissions, clutches, and radiators are 10%.

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Table 4. China's Trade with selected FTA partners, 2007

Country	All Goods (%)		Trade in automotive parts and components (%)		Trade in automotive Final Goods (%)	
	Import	Export	Import	Export	Import	Export
Malaysia	3.0	1.5	0.1	0.5	0.0	0.2
Thailand	2.4	1.0	0.2	0.5	0.0	0.3
Philippines	2.4	0.6	0.0	0.2	0.0	0.4
Indonesia	1.3	1.0	0.2	0.6	0.0	0.1
Vietnam	0.3	1.0	0.0	0.5	0.0	4.5
Singapore	1.8	2.4	0.2	0.3	0.0	0.4
New Zealand	0.2	0.2	0.0	0.0	0.0	0.1
Pakistan	0.1	0.5	0.0	0.3	0.0	0.3
Chile	1.1	0.4	0.0	0.1	0.0	0.8
HK	1.3	15.1	0.0	0.7	0.0	0.4
Macau	0.0	0.2	0.0	0.0	0.0	0.1
Australia	2.7	1.5	0.4	0.6	0.0	0.6
Total	16.6	25.4	1.1	4.3	0.0	8.2

Source: UN Comtrade, downloaded from <http://comtrade.un.org/db/default.aspx>

The reduction in tariffs for final goods as well as parts and components could further explain the dramatic rise in trade. The emergence of China as an important automotive player in the global market is not without obstacles. China recently lost its first trade dispute with the WTO when they were challenged by the US, Canada, and EU over non-competitive trading practices. Since 2006, China has charged the same import tariff of 25% for a completed unit as would be charged for a kit of imported parts. The US, Canada, and EU argued that these imported parts do not constitute a complete kit for a complete unit and thus should be charged an import tariff of 10%. This policy was designed to protect domestic manufacturers and encourage foreign vehicle manufacturers to purchase from domestic suppliers. These policies were recently ruled discriminatory practices and China now fully complies with WTO regulations.

International Production Networks and FTAs: Firm Level Issues

Our research on the issue of IPNs and FTAs at the micro level was based on in-depth interviews (lasting between 1.5 to 2.5 hours) with 7 China based firms in the automotive sector. These firms include Chinese car manufacturers, world renowned parts manufacturers, a spare parts dealer of a well known Swedish car manufacturer as well as medium sized exporter of auto parts. Details of the interviewees are given in Box 2.

Box 2. Brief overview of respondents

Company A is a Swedish firm incorporated in the US. It develops, markets and manufactures airbags, seatbelts, safety electronics, steering wheels, anti-whiplash systems, seat components and child seats as well as night vision systems and other active safety systems. It serves all the leading automobile manufacturers in the world. They are served from 80 facilities in more than 30 countries, employing nearly 42,000 people globally. In China for more than 20 years, it manufactures safety systems including seat belts and airbags by buying components and assembling these in their factories in Changchun, Nanjing, Shanghai and Guangzhou. The components are sourced from Europe and the US, as well as from domestic producers. Very little is sourced from other Asian countries due to the high quality required for the safety systems. Nearly 70% of the output is for the local market (covering nearly all major car manufacturers in China), while the rest is exported mainly to Australia, South Korea and Japan.

Company B is a foreign owned company and a subsidiary of a well known Swedish brand. It sells spare parts to dealers in China. It imports 99% of its parts from Belgium and France, sometimes via Singapore. A small proportion is imported from South Korea due to an assembly plant that is located there. There is some limited local sourcing because the quality of local parts is unstable. Nevertheless, the quality has improved recently. Local production through external suppliers could start in 5 years for domestic consumption as well as exports to Europe and Australia.

Company C is a leading global supplier of mobile electronics and transportation systems, including powertrain, safety, steering, thermal, and controls & security systems, electrical/electronic architecture, and in-car entertainment technologies. Its technology is also found in computing, communications, consumer electronics, energy and medical applications. The company is headquartered in the US and has approximately 155,500 employees and operates 148 wholly owned manufacturing sites in 35 countries with sales of \$22.3 billion in 2007. The company has had a presence in China since 1993. It established a solid footprint in China, with a world-class research and development center, mature manufacturing facilities, and customer service centers in many cities including Beijing, Shanghai, Guangzhou, Suzhou, Wuxi, Yantai, Changchun, and Baicheng. Recently, the company also expanded into the aftermarket in China, launching its original equipment (OE) quality products and services for Chinese drivers. Our respondent specialized in wiring, harnesses and electric circuits. It uses raw materials from both China (50%) and abroad (50%) and sells their final output to major car manufacturers (both JVs and local players) in China (85%) and abroad (15%).

Company D is China's largest exporter of passenger cars. In 2007, it had exported almost 120,000 cars to nearly 70 foreign countries, and has 7 assembly plants in Asia, Africa, Europe and South America. It has proprietary technology to build core components and was the first Chinese automaker to develop products and manufacture cars for foreign OEMs. Their main business is the production of CBUs,

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engine gearboxes and spare-parts. However, 90% of revenue comes from the sales of CBUs. The company produces the critical components itself, while non critical components are outsourced, mainly to other suppliers in China. The main market for its cars is China while important export markets are Russia and Ukraine.

Company E is headquartered in Germany, and has nearly 200 sites for production and R&D in 36 countries. It is one of the top automotive suppliers worldwide, producing a range of automotive components including brake systems, systems and components for the powertrain and chassis, instrumentation, infotainment solutions, vehicle electronics, tires and technical elastomers. It's the world leader in a number of automotive components including hydraulic braking systems, airbag electronics and instrumentation. In 2007, sales amounted to 16.6 billion euros and employed more than 150,000 people worldwide. It began its automotive operations in China in 1994 and opened its Asia headquarters in Shanghai in January 2006. Today it has 9 automotive plants and one test center in China. The company employs a specialist, based in Shanghai, to track FTAs in the Asian region. Although it prefers local suppliers, high quality standards have to be met. The company puts in much effort in developing local suppliers, particularly in China. Local suppliers are preferred because it shortens the supply chain, improves the reaction time in case of frequent demand fluctuation and possibly reduces the landed costs.

Company F is a Chinese company with a well known foreign JV partner. It produces light duty vehicles including light trucks, pick up trucks and vans. The company has dominated China's high-end light bus market and is a leading player in the diesel-engine commercial vehicles and high-end light bus markets. Its local brandnames dominate the mid and high end market. It produces the main components such as engines, body frame and parts and outsources other components to China based suppliers. Its main market is China (90%) but also exports to North Africa and the Middle East. The company uses local suppliers because they are price competitive, lead time shorter and communications is convenient.

Company G was established in 2003 as an international manufacturing, exporting, trading and industrial support company in Shanghai. It is part of a Tehran based group that includes 70 overseas locations worldwide. It deals with a range of auto products including Electromotors and bearings for its affiliated factories, companies and customers in the US, Europe, Africa and the Middle-East. In China, it sources for parts to be exported and more recently, it established an assembly plant for some motor parts.

The interviews were based on open ended questions, allowing respondents to provide detail explanations and examples of issues surrounding the trade in automotive parts and final goods. We highlight below key issues that resulted from our interviews:

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1. Awareness and Importance of FTAs

Since our respondents were of different sizes, a clear observation is that FTAs seem to matter more to larger players than smaller ones. Respondents who were world players in the production and assembly of parts for instance had dedicated personnel who track the development of FTAs in the region which becomes an important criteria when making decisions on the location of future plants or supplier source. In particular, when the footprint of these companies is Asia based, FTAs seem to be more important. Chinese car manufacturers who were interviewed claimed some knowledge of FTAs but added that the agreements usually ignored the automotive industry. Not surprisingly, China's FTA partners do not seem to be important sources and destinations of their products. Smaller players like exporters and spare parts dealers had limited knowledge of FTAs, claiming that import duties were passed on to consumers in any case.

The degree of importance of FTAs in business decision making is dependent on three factors:

- a. The depth of tariff reduction
- b. Volume of business
- c. The amount of documentation required for tariff reduction eligibility

Smaller firms require a substantial reduction in tariffs if the effort put into the documentation process is going to be worthwhile. On the other hand, firms that deal with large volumes of parts and components claim that even a 3% reduction in tariff may save a plant a substantial amount in costs. Thus, while the current import duty on parts and components in China is 10%, a reduction to 5% as a result of an FTA may be considered important to a large player that imports several million dollars worth of parts for assembly in China.

2. Selection of Suppliers and Markets

When sourcing for parts and components, the quality of those products seem to matter most to firms in the industry. As many of our respondents deal with safety related products (for example, braking systems, airbags etc), the ability of suppliers to meet quality standards set by car manufacturers is essential. Landed price (which includes import duties) is also important, but without a compromise on quality. The long term relationship with the supplier is also considered by all our respondents. For the foreign producers, the ability of parts suppliers to meet the quality standards of one manufacturer provides some assurance that the standards imposed by other manufacturers could also be met. Although tariffs and non tariffs barriers were considered important by all our respondents, quality and supplier relationships were considered critical factors in the selection process. Thus, there seems to be a preference for Chinese suppliers or foreign suppliers with a presence in China. As mentioned earlier, tariffs and FTAs become important if it substantially reduces the landed price.

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A related issue in the selection process is the localization of production of parts and components. Among our local respondents, there was a clear preference to deal with local suppliers because of the ease of communication and the convenience of managing quality and logistics issues that reduces lead time. The fact that many foreign producers of parts and components like Bosch, Delphi and Continental have established production and assembly bases in China means that most parts can be sourced from within China.¹⁸ In the early 1990s, automotive components were shipped in kits to China, assembled, and exported back to the producer country. That explained the small gap between exports and imports in the 1990s (see Figure 2). In recent years, the technological capabilities of Chinese producers have increased, the production capacity of local producers enhanced due to the increasing size of the local automotive industry, and greater alliances between foreign suppliers and local producers have turned China into an important exporter of parts and components. The growth of the auto parts industry in China can be seen from the figures supplied by Gasgoo.com (China's largest auto parts business portal). It classifies the auto parts industry into three – the domestic original equipment (OE) market, the export market and the aftermarket (spare parts), as shown in Table 5. With a total market output of RMB 740 billion (about USD 105 billion), the sector is expected to become a significant component of China's manufacturing industry. Despite being a late-mover in the auto parts and components industry, the economies of scales advantage experienced by Chinese producers reduced the average service link cost (Kimura and Obashi, 2008), thus providing these producers with a competitive edge over their counterparts elsewhere.

Table 5. Growth in the Auto parts Market

	2002	2007
Domestic original equipment	RMB 190 billion	RMB 500 billion
Exports	RMB 15 billion	RMB 120 billion
Aftermarket	RMB 70 billion	RMB 120 billion

Source: www.gasgoo.com

Herein lays the conflict between protecting the domestic industry and the expansion of trade from an FTA. Tariff protection (as practiced by China and Thailand) results in the emergence of a domestic parts and components industry as car manufacturers are forced to transfer the technology and build production capacities within the country. Once volume is built and economies of scale effects are realized, the country has a competitive advantage and turns to be an exporter. In the case of China, the size of the potential market provided an added incentive to develop a thriving local industry. Thus, an FTA would benefit a country only when the

¹⁸ The example of Shanghai Automobile Industry Corporation (SAIC) provides clear evidence. For its Roewe 550 (formerly Rover) model, purchasing parts and components within China is feasible because its key supplier, TRW Automotive Holdings Corp, an American based global safety system supplier produces domestically in China, while driver and passenger airbags are manufactured by SAIC's joint ventures in Shanghai and Changchun.

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capabilities and capacities within an industry have reached a competitive level. Since automotive goods are still not included into the FTAs that China is a party to, one can assume that the Chinese authorities are not convinced that the nation is ready for tariff-free competition.

3. Non-tariff barriers to IPNs

The challenges faced by firms involved in international trade beyond the border are well-known. However, the same challenges are amplified for firms within an IPN. Participants in the supply chain need to adhere to strict delivery (or lead) times, failing which the entire chain may collapse due to accumulated delays. In addition, as parts and components may originate from different locations across the region (or worldwide for the case of China's automotive sector), the documentation involved in customs procedures can be substantial. The respondents in our study highlighted three main barriers that inhibit efficient flow of products in their IPNs.

First, the codification of parts and components that varies from country to country. This barrier is particularly challenging for assemblers who source parts from different countries. Despite efforts by various FTAs to harmonize the customs code¹⁹, at the practical level, the national customs department decides on the code of a part or component. The problem is further exacerbated when the code is changed from time to time, either due to revision in the codification system or due to changes in the customs officer. This creates uncertainties for the firm, which affects its strategic planning. For instance, an ABS braking system which is coded as HS9032 (electrical system) by Japan and Malaysia, is classified as HS8708 (hydraulic brakes) by Thailand. The import duties vary greatly between these codes. Furthermore, HS8708 is usually classified under the sensitive list and would not be considered for tariff reduction in an FTA. Thus, differences in the codification system act as deterrence for deeper IPNs. Related to this issue is the calculation of local content which also varies from country to country. Our respondents referred to EU Community Customs Code which standardized the code, and allowed importers to use the certificate received from one EU partner throughout the Union. However, it should be noted that it took the EU 25 years to realize and devise a common code.²⁰

Second, if FTAs are to make a significant impact on IPNs, documentation requirements for tariff reduction eligibility must be brought down to a minimum. A respondent quipped, "FTAs are a cost to us". For an assembler who sources parts from various countries and are partners in different FTAs, the documentation required can be cumbersome and may not be worth the effort, particularly if the tariff reduction is small. In this regard, our respondents prefer a multilateral agreement or an FTA with more members, if standard documentation processes apply.

¹⁹ See for instance <http://www.aseansec.org/10113.htm> for the case of ASEAN.

²⁰ Wulf (2005)

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Third, IPNs would flourish if customs clearance procedures are streamlined and made less cumbersome. For smaller importers/suppliers that cannot benefit from lower tariffs (because the margin between the WTO imposed duties and FTA agreed margin of preference is small) or from low volumes are unable to gain from an FTA. The agreements can only be useful if products that ply between member countries could be cleared from ports at a faster rate. To these firms, an FTA should result in less documentation for clearance or a reduction in the sample of shipment that goes under custom's scrutiny. As mentioned earlier, if FTAs are designed to bolster trade between member countries, trade facilitation has to be an important feature of the agreements, particularly among firms within a value chain.

Discussion

Our study of the automotive sector vis-à-vis FTAs and IPNs highlights several issues.

First, China's accession to the WTO changed the automotive industry significantly. The largest jump in imports of final goods as well as parts and components occurred after 2001, most likely due to a reduction in tariffs. At the same time, China also received the MFN status from its trading partners which boosted its exports, making it a net exporter of parts and components in 2007.

Second, FTAs seems to matter little in China's automotive sector. FTA partners do not feature strongly in auto trade. This may be due to the exclusion of vehicles, parts and components in FTA deals. However, as the proliferation of FTAs continues, and the depth of agreements increases, FTAs may prove to be important in the future. It is important to note that rather than trying to protect its own automotive sector, China may insist that its trading partners open up their markets to China made products. Chinese producers we interviewed are already lamenting on the barriers imposed by Russia and others on Chinese made autos. Not surprisingly, the strategies employed by these firms are similar to those employed by their counterparts when they entered China in the 1990s i.e. export parts and components in kits and assemble them in target markets to avoid high import duties.

Third, China's success as an auto parts and component producer can be attributed to the following factors:

- a. low cost labour, at least at the initial stage;
- b. incentives provided by the government in the form of land, import and export duty rebates, conditional access to the domestic market, etc.;
- c. the sheer size of the Chinese market that provided economic of scales advantages which was then used to gain a competitive edge in other markets; and
- d. protection of the domestic auto industry against outright competition, allowing local firms to grow capabilities and capacities.

The Chinese auto industry is an excellent example of how initial protection of the industry through tariff and non-tariff barriers, careful incentivization and liberal

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domestic policies can grow a near non-existent industry into one that is world standard. This implies that trade barriers may act as a potent tool for developing competitive advantage. However, there are three conditions – a significant domestic market should exist; the industry should have some initial competitive advantage for instance low labor costs; and there has to be a time period for protection. If these conditions do not exist, trade barriers can only result in inefficient allocation of resources.

Fourth, for FTAs to have positive effect on IPNs, an industry specific agreement may be useful. In particular for the automotive industry, the number of parts and components involved is so extensive that documentation procedures become tedious when some parts qualify for tariff reduction while others are not. In this context, a multi-lateral tariff reduction, or an FTA that involves more countries would be helpful if the agreement has standard clauses for all parties involved. The current practice of customs codification which varies from one partner to another does not contribute to the benefit of free trade. In this regard, an industry specific agreement for the automotive sector would take into consideration the peculiarities of the industry and include those products that can expand trade within the sector. Industry specific agreements would need intense involvement by businesses rather than leaving the negotiations to bureaucrats who have limited knowledge of industry issues.

Finally, businesses are of the opinion that governments should be clear as to the objectives of FTAs. If the objective is to promote greater peace and security in the region i.e. for international relations purposes, then FTAs can be considered successful. However, if the FTAs have a trade agenda, then policy makers need to consider not just tariff reductions, but also operational issues like standardization of documents, harmonization of codes and transparency in customs clearance procedures. While on the surface, leaders shake hands and sign agreements, the actual effect on trade can be minimal as businesses need to overcome a myriad of exclusions and administrative hurdles to gain a minor reduction in costs.

Conclusion

In the same week that leading US auto makers were pleading for a USD 25 billion bailout to save the industry from a near collapse, the 6th Guangzhou International Auto Show showcased new models that the same US companies were planning to roll out through their joint ventures in China.²¹ For the whole of 2008, unit sales grew at 7%, compared to 20% annual growth that was seen throughout the decade. In 2009, no growth or even a modest contraction is expected, but in January 2009, China became the largest car market in the world, surpassing the US.²² The growth of China's automotive industry over the last 2 decades was not only due to a growing wealthier population, but also carefully designed policies by Beijing. A

²¹ China Daily, 20 November, 2008

²² The Wall Street Journal, February 5, 2009.

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closed domestic market to wholly owned foreign car manufacturers, the creation of domestic champions – initially state owned then allowing privately owned manufacturers, relatively high tariff barriers which were reduced due to WTO accession, and the marketing of Chinese cars to markets ignored by industry leaders, has resulted in an industry that will soon be the second largest in the world. Although FTAs have not contributed significantly to the development of IPNs within the automotive industry in China, we cannot ignore its future significance as Chinese made parts, components and vehicles make their way into the global market.

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