THE TRADE COLLAPSE THROUGH THE SUPPLY CHAIN AND POLICY RESPONSE:
THE CASE OF THE AUTOMOBILE AND SERVICES SECTORS

SHORT VERSION

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ABSTRACT

The aim of this report is to examine the role of global supply chains in the recent financial and economic crisis and identify opportunities to facilitate future trade growth through a country- and industry-based analysis. Trade dropped disproportionately to GDP in the months following the Lehman Brothers’ collapse and the international fragmentation of production is widely believed to have contributed to the decline. Along with short-term hardships, economic crises also present opportunities for policymakers to better position their countries for the future and so policy options are offered with attention paid to country-specific characteristics.

The study focuses on the automotive and services sector in a regionally and economically diverse selection of countries (India, Mexico, Morocco, South Korea, and South Africa). The case studies include an overview of each country’s national trade policy and an evaluation of its trade performance in recent years. Special attention is given to comparative advantages in the sectors studied, along with an analysis of government policy responses to help these sectors when the crisis made them vulnerable. The report concludes with a future outlook that highlights country- and sector-specific opportunities and risks along with general policy recommendations.

In contrast to the automotive sector, services were proved more resilient in the crisis. We take a close look at the experience of India in the crisis given the prominent role of services in this economy trade flows. To examine why services were less affected, we focus in the nature of services with special attention to India’s IT sector.

VERTICAL SPECIALIZATION’S EFFECT ON TRADE FLOWS

1. Imports and exports tend to move together in response to a shock to either domestic or foreign demand as a result of the international fragmentation in production. For example, a drop in demand for automobiles in the United States will negatively affect car imports from Canada. At the same time, however, U.S. exports of auto parts to Canada will drop, as these components are used in the manufacture of the vehicles that Americans stopped buying.

2. Vertical linkages increase a country’s exposure to foreign shocks beyond what is counted in bilateral trade flows. For example, a drop in demand for consumer electronics in the United States will not only decrease Korea’s exports of these products to the United States, but also hurt Korean exports of electrical components to China where they are assembled before being exported to countries like the United States.

3. The spread of vertical specialization is widely considered a significant contributor to the disproportionate drop in trade relative to GDP. Trade flows are valued on a “gross basis” whereas GDP is measured on a value-add basis. Evidence suggests that the drop in demand was concentrated in goods that are produced in global supply chains, resulting in the disproportionate drop in trade relative to GDP.

GROWTH OF VERTICALIZATION

1. Advances in information and communication technology along with infrastructure growth and declines in trade barriers have allowed firms to slice up their value chain and carry out different stages of production wherever costs are lowest.

2. Multinational corporations have been key drivers behind this trend, as evidenced by the fact that exports of intermediate goods from U.S. parent companies to their foreign affiliates increased forty-fold from
1966 to 1999. International corporations have the capacity to effectively coordinate production and distribution across regions while continuously adjusting to new cost considerations and demand fluctuations.

TRADE AND PRODUCTION PATTERNS IN VERTICAL SPECIALIZATION FRAMEWORK

1. The most value-added activities may occur near the beginning or toward the end of the production process. In the first pattern, initial stages of production, which could begin with the extraction of raw materials, are considered less capital and skills intensive relative to later stages. Further processing adds more value until the final stage in which the output is a final good ready for the market.

2. In the second pattern, the lead firm provides product engineering and design while employing international producers to manufacture the product. Most value-added activities occur early in the production process while later stages only require low-skilled labor to assemble the good.

3. International modes of design, production and marketing may differ depending on whether the firm is “buyer-driven” or “producer-driven.”

4. Firms that exemplify the buyer-driven model can be thought of as “manufacturers without factories.” While lead firms may play key roles in coordinating international production networks, they do not actually make the branded products they order. They separate the physical production process from the marketing and retailing components of their business, relying fully on outside suppliers for the production of the final goods that they ultimately brand and sell in market.

5. Producer-driven commodity chains generally involve multinational manufacturers that coordinate production networks in capital and technology intensive industries. Unlike profits in buyer-driven firms—which result from superior combinations of high-value research, design, sales, and marketing—producer-driven profits primarily come from scale, volume and technological advances.

AUTOMOTIVE INDUSTRY

1. Today the role of auto assemblers is virtually limited to the formation of body panels and the welding of vehicle frames. All other components—including engines, seats, instrument panels, and other electrical, mechanical, and decorative items—are purchased from external suppliers.

2. Car parts are manufactured in production chains that include first-, second-, and third-tier suppliers. Equipped with design and innovation capabilities, first-tier suppliers increasingly produce complete modules, while relying on subcontractors to provide individual parts. First-tier suppliers establish operations in every country, or at least in every region, where car assembly takes place.

3. Second-tier suppliers often produce on the basis of designs provided by higher level firms and so they require lower amounts capital and a less skilled labor force. These firms are held to strict quality requirements and must be able to deliver just-in-time, but barriers to entry are lower at this level of production and firms from developing countries have successfully penetrated this market segment. Third-tier suppliers supply these firms with basic parts and compete mainly on price.

4. The global and economic crisis devastated car sales in developed economies with OECD countries experiencing an average drop of more than 20 percent from September 2008 to January 2009. American automakers were hit the hardest during the recent recession as both GM and Chrysler filed for bankruptcy protection in 2009.
5. Developed countries experienced a temporary increase in car sales in mid-2009 as a result of “cash-for-clunkers” programs, but emerging economies are widely believed to be the source of sustainable growth for the industry. The Boston Consulting Group (BCG) predicts that BRIC countries alone will account for 30 percent of world auto sales in 2014.

6. In general, emerging market countries displayed resilience during the recent recession, as evidenced by a 26 percent increase in the number of vehicles sold between 2007 and 2009 in BRIC countries.

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**GENERAL FINDINGS OF THE CASE STUDIES**

The automotive industry plays a unique role in each country according to where the industry falls in the value chain and the industry’s prominence in each country’s economy. For Mexico and less so for South Africa, the automotive sector is one of the most important areas of the domestic economy in terms of production, employment, investment and exports. In the mid 1990s, both countries liberalized trade and opened the automotive sector to foreign investment and ownership. Mexico’s automotive industry represents 15% of manufacturing exports and employs 1 million people, most of which are in auto component production with only 5% employed by Original Equipment Manufacturers (OEMs). Similarly, the auto sector in South Africa represents 18% of manufacturing exports and employs more than 300,000 people.

By comparison, Morocco’s automotive industry is relatively small, employing 60,000 people, though it has ambitious plans to expand the industry to become more integrated with Europe by attracting subcomponent manufacturers. In the case of South Korea, the auto sector represents just 10% of manufacturing exports and employs about 200,000 people. South Korea was ranked the world’s 5th largest vehicle producer in 2008, which owes to well-established Korean automaker brands such as Kia Motors and Hyundai. Not until the 1997 Asian crisis did the government allow foreign majority ownership of domestic car companies.

**Table 1. Automotive Sector Country Overview**

<table>
<thead>
<tr>
<th>Country’s comparative advantage</th>
<th>Mexico</th>
<th>Morocco</th>
<th>South Africa</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cheap labor, proximity to US and NAFTA – North American regional production</strong></td>
<td>Proximity to 28 production sites in France, Spain and Portugal, Cheap labor, Strong government engagement</td>
<td>75% of Africa’s production Tariff-Free Entry to EU</td>
<td>Proximity to big emerging markets, China and India, highly skilled workers, low-cost parts and materials, diversified export markets</td>
<td></td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td>From North America: powerful labor unions, overcapacity, sweeteners for OEMs Country-based: lack of developed suppliers in higher end tiers, pool with limited suitability for higher value added positions, security and violence</td>
<td>Small domestic market, lack of highly qualified labor, low vertical integration</td>
<td>Increasing labor cost, decreasing productivity, strong local currency, low vertical integration</td>
<td>Rigid labor law, volatile relationship between management and labor unions, frequent strikes</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th></th>
<th>Mexico</th>
<th>Morocco</th>
<th>South Africa</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production</strong></td>
<td>Export-oriented</td>
<td>Domestic moving</td>
<td>Domestic moving</td>
<td>Export-oriented</td>
</tr>
<tr>
<td></td>
<td></td>
<td>towards export-</td>
<td>towards export-</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>oriented</td>
<td>oriented</td>
<td></td>
</tr>
<tr>
<td><strong>% of manufacturing exports</strong></td>
<td>15%</td>
<td>17%</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>% of manufacturing production</strong></td>
<td>16%</td>
<td>-----</td>
<td>16%</td>
<td>-----</td>
</tr>
<tr>
<td><strong>People employed</strong></td>
<td>1 million</td>
<td>&gt; 50,000</td>
<td>&gt; 300,000</td>
<td>&gt; 200,000</td>
</tr>
<tr>
<td><strong>Comments</strong></td>
<td>Auto part component sector highly concentrated in few players and mostly multinational, foreign owned</td>
<td>75 rank 2 and 3 firms make up the majority of the national auto production industry most of which are SMEs. A major upcoming project: Renault Tangier Med Factory (multiplies by 5 national production)</td>
<td>Sector highly concentrated in few players and mostly multinational, foreign owned</td>
<td>Sector concentrated in 5 multinational players, domestic and foreign owned</td>
</tr>
</tbody>
</table>

The recent global crisis has affected the countries examined here differently according to their economic structure and external exposure in trade. The most open and trade-dependent economies were hit the hardest. In Mexico, for example, trade dropped dramatically and GDP fell 7% in 2009 largely owing to its dependence on trade with the United States. South Africa also suffered from the decline in global demand with trade dropping 32.7% and GDP decreasing 1.8%. Similarly, South Korean exports decreased 15% in 2009 and GDP only grew 0.5%. By contrast, though the sharp drop in the demand of Morocco’s trading partners affected the country’s exports and imports, the effect on the economy was limited since national trade as a percentage of GDP is relatively small.

Given the degree of vertical integration in the automotive sector, focus on this industry helps illustrate how the synchronized drop in international trade played out at the national level. South Africa and Mexico fared the worst of the countries studied here. The unprecedented collapse in foreign demand for auto exports along with drops in domestic sales led to massive overcapacity, temporary plant closures, and layoffs. Vehicle production for the domestic market fell by 36% in 2009 as Mexicans put off vehicle purchases in favor of imported used cars from the United States. In South Africa, vehicle exports fell 38% in 2009 and domestic sales dropped 29%. In Morocco, local subsidiaries saw a 21% reduction in activity due to declines in European demand. However, domestically oriented firms fared better as demand for low-cost cars at home remained fairly strong. By contrast, South Korean carmakers weathered the crisis fairly well since their product lineup is largely comprised of medium-sized and small cars that were less affected by the economic downturn.
Table 2. Crisis Impact in the Automotive Sector in 2009, % Change 2008-09

<table>
<thead>
<tr>
<th></th>
<th>Mexico</th>
<th>Morocco</th>
<th>South Africa</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production volume</td>
<td>-28%</td>
<td>120%</td>
<td>-34%</td>
<td>-8.2%</td>
</tr>
<tr>
<td>Export volume</td>
<td>-36%</td>
<td>225%</td>
<td>-38%</td>
<td>-20.1%</td>
</tr>
<tr>
<td>Domestic sales</td>
<td>-26%</td>
<td>37%</td>
<td>-29%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Comments</td>
<td>Massive overcapacity, temporary plant closures, and layoffs. Credit for the auto industry fell by 12% in 2008 and 20% in 2009</td>
<td>New production line dedicated for export of low-cost cars</td>
<td>Drops in domestic and foreign demand hit the country’s auto sector hard; overcapacity and layoffs</td>
<td>Domestic sales helped offset the drop in demand for Korean cars abroad</td>
</tr>
</tbody>
</table>

Government responses to the crisis ranged from quick and effective to “too little, too late.” Mexico was the least prepared to stimulate the economy during the crisis. In fact, it raised taxes in October 2009 to avoid a sovereign debt downgrade (which still happened in November 2009). The automotive sector received US$800 in loans and US$147 million that went toward paying one-third of employees’ salaries to avoid layoffs. Critics claimed the funds distributed were insufficient and only to companies that halted production after January 15, 2009. Going forward, the Mexican government should ensure that incentives and subsidies provided during the crisis are evenly distributed among all industry players. Special attention should be given to small and medium size companies. To expedite the delivery of stimulus funds, the Mexican government might develop a contingency plan that would kick in during time of crisis. Moreover, Mexico needs to improve customs law enforcement to control rising illegal imports of used cars from the US.

In contrast to Mexico’s government response to the crisis, Morocco’s stimulus response was praised by the IMF for its speed and the effectiveness of its loan guarantees. The South Korean government intervened and offered a 70% tax rebate on automobile taxes to customers exchanging old cars for smaller cars, which led to an increase in domestic sales amidst the crisis. The South African government responded promptly to cushion the sector and encourage transnational companies to further expand investment in the country.

In the long term, similar measures may be implemented to increase value-added and competitiveness to better position the countries for the future. Mexico, Morocco, and South Africa in particular would benefit from closer relationships between universities and auto companies to increase innovation and the production of more value-added products. Government programs to promote R&D, which have already benefited the automobile industry in countries such as Mexico, should be further encouraged, especially in the lower end of the supply chain. Morocco and South Africa in particular would benefit from increasing the amount of specialized labor through technical training programs as a means to move up the value chain. Korean automobile makers should consider the economic crisis a new opportunity to increase their share in global markets by producing what they do best: compact and low emissions cars. Finally, South Africa needs to bring costs down and increase productivity in order to climb up the automotive industry’s supply chain.

Diversifying sources of credit may help strengthen the resilience of the auto sector. Even though the recent crisis demonstrated how openness to foreign credit sources can be risky in a global credit crunch, FDI may help transfer know-how, managerial skills and innovation to host countries. In the auto industry, FDI may be
critical to improve human capital. Further studies should focus on exploring ways countries can diversify sources of foreign and domestic funding while also avoiding credit crunches in times of crisis.

**In contrast to the experience of the manufacturing sector across countries, the services sector proved resilient in the recent financial crisis.** We examine the experience of Indian to study the impact of the trade collapse in the services sector and understand why the sector fared better.

India’s software exports which represent around 45 percent of the services exports recorded a contraction in the fourth quarter of 2008-09 of around 15 percent. However, there was a fast recovery in this sector with software exports bottoming out in March 2009. On the contrary, merchandise trade has suffered a longer and deeper contraction with a sluggish recovery.

**The fast recovery within services in particular of the IT sector can be attributed to the resilient nature of the sector.** On the supply side, this sector is less dependent on trade finance and credit and is characterized by a production process that is not deeply fragmented across borders. On the demand side, service firms do not suffer from inventory-driven collapses of demand, since most high-tech services cannot be stored and are thus non-postponable. The Indian government responded with a heavy stimulus, part of which was aimed at encouraging exports. Assistance to export-oriented industries included interest subsidies on export finance, refunds on excise duties/central sales tax, and a 2 percentage-point reduction in central excise and service tax.

**India should keep in mind challenges the IT sector faces as it grows.** The success of IT services in India illustrates the potential of creating a dynamic virtuous circle with higher education leading to the growth of service exports. This may lead in turn to faster growth and more investments in higher education. To achieve sustainable growth, lead firms should continue efforts to move up the value chain by acquiring better software project management capability. Improving and expanding the human capital base through efforts such as English-language training may be key to success.