July 17, 2006
Statement of Prof. Susan Helper
"China's Impact on the US Automotive Supply Base"

Before the U.S.-China Economic and Security Review Commission
Hearing on China's Impact on the U.S. Auto and Auto Parts Industries

I'm pleased to have this opportunity to testify before the Commission. I will focus my remarks in two areas. First, I will briefly discuss the state of the US auto parts industry, focussing on second-tier suppliers, and the role of competition from China. Second, I will provide a framework for thinking about when such competition is and is not a problem that should be addressed by public policy.

Thus, my presentation will most directly address the Commissioners' questions 3 and 5:

3. How has the investment by the Big Three in joint ventures in China affected the three tiers of the U.S. auto parts industry? What pressures are U.S. parts makers feeling to relocate production to China? Will those parts makers eventually export from China to the U.S.?
5. Should the auto parts plants that are facing closure as a result of foreign competition be redirected to other uses to preserve jobs and the industrial base? If so, how can that be done?

Off-shoring and "Second-tier" US auto parts suppliers

The findings discussed below are based on two sources. First, I have conducted interviews among auto suppliers for over 20 years, as part of my work with the MIT International Motor Vehicle Program. Second, in 2003 and 2006, I conducted surveys jointly with the Michigan Manufacturing Technology Center (MMTC). (The 2006 results are quite preliminary; data collection is still underway.) Methods and results are described in more detail in Luria (2005) and Helper and Stanley (2005).

The firms we surveyed are part of a national panel organized by the MMTC. They are primarily small and medium-sized firms (with employment less than 500), are "second-tier" suppliers, and sell largely (though not exclusively) to the auto industry. There were 615 respondents to the 2003 survey, and (so far) 177 respondents to our 2006 survey.

We asked the firms about their experience with off-shoring, with respect both to their customers' sourcing policy, and to their own. Several trends are apparent in the data. The first is that competitive pressure from China is very strong. In the 2003 survey, 87% said they had lost work to firms in low-wage nations; in 2006, 57% reported that their largest customer is relocating more of their manufacturing to China, India, or other low-wage regions in Asia. (The lion's share of the relocation in this group is to China.)

The firms themselves are only beginning to experiment with off-shoring. In the 2006 survey, we found that fewer than one-third of firms offshore any work to China at all, and even within this group only 11% of purchased inputs come from China. However, this percentage is growing fast (it was 5.6% two years ago), and the off-shoring is not concentrated in what might be thought of as "low-skill" tasks. In fact, as Figure 1 shows,

a lower percentage of component assembly (typically the most routine task) is sent to China than are more complex tasks such as tooling build and test.

Many firms are in trouble, and have seen huge declines in sales. However, there is a great dispersion of productivity, even among firms in the same narrow market segment. For example, in metalworking firms (see figure 2), the mean plant has a value-added per worker of $60,000—barely enough to pay a modest wage and re-invest in equipment. However, the top 10% have a value-added per worker of more than $160,000. Similar dispersion is observed in other industries that supply the automotive sector.

Which small suppliers do better? Analysis by Luria (2005) of the MMTC data found that the most successful companies follow a production model Luria calls "busy lean." "The phrase is meant to connote the thoroughgoing use of the full toolkit of lean manufacturing methods – from 5S to visual management to value stream mapping to one-piece flow – in the context of high and relatively steady demand that permits expensive, high-precision machinery to be kept busy." Key to keeping busy is to design unique products or processes—not just produce commodities that can be made by many firms (including those in China).

Suppliers in the top 10% of productivity are making sustainable profits, as figure 3 shows. (Note that they also pay *higher* wages than their less productive and less profitable counterparts.) Component suppliers, especially at the second and third tiers, are a resource shared by all automakers who produce in the US.

Yet, their customers are not helping them improve. Our 2003 survey found that most 2nd –tier suppliers are both more involved with, yet feel more abused by, their customers than in the past. The majority has done business with their largest customers for at least 10 years; yet many do so without any formal contract extending past one year. The majority report playing a larger role in product design than they did three years earlier; yet fewer than one in five report having received any design ideas from customers. More than seven in ten report that their customers are open to their suggestions for design changes that reduce costs; yet one in three reports customers stringing them out for payment more than 120 days after delivery. Nearly half report selling primarily into the engineering, rather than purchasing, functions of their key customers; yet nearly one in five report that customers have made inappropriate use of design information they furnished and almost half say they are not confident that the information they share will be kept confidential.

Should we be concerned about the role of China in the US auto parts industry?
When is it a problem that firms use non-US plants as suppliers? According to many economists, the competition from China is generally beneficial for the US. Competition spurs US firms to get better, and/or to focus on areas where they are more competitive.

However, there are several instances in which US interests are not well served by the current way that competition with China is structured. I discuss three such instances below:

a) firms often choose the location of production using an incorrect accounting framework
b) firms do not always consider the long-term consequences of their decisions
c) firms often do not take into account social costs of moving their supply chains

Incorrect accounting framework

Most of the firms I have interviewed—even large multinationals -- use standard accounting spreadsheets to make sourcing decisions. These techniques focus on accounting for direct labor costs, even though these are quite a small percentage of total cost (typically 5-15% in manufacturing), and ignore many other important costs. Some "hidden costs" of having suppliers far away include:

* Distraction of top management. Setting up a supply chain in China and learning to communicate with suppliers requires many long trips and much time, time that could have been spent on introducing new products or processes at home.

* Increased risk from long supply chain, especially with Just-in-time inventory policies.

* Increased "handoff costs" between US and foreign operations. More difficult communication among product design, engineering, and production hinders serendipitous discovery of new products and processes. Quality problems may be harder to solve due to geographic and cultural distance. Time-to-market may increase.

Long-term consequences

In many segments of the automotive parts industry, the "China price" is 20-30% lower than the US price for a similar component. (McKinsey, 2004; note that this study does not take into account most of the hidden costs discussed above.) As long as this differential persists, firms and consumers benefit from lower prices due to trade with China.

However, several factors could shrink this differential substantially, such as exchange rate fluctuations, or increased transportation costs due to increases in the price of oil. If the differential shrinks after many US firms have gone out of business, it may be difficult to re-establish the lost capabilities. Thus, extensive off-shoring may not be advantageous in the long run for firms in many industries.

Even in the medium term, the challenges of dealing with a far-flung supply base make it difficult for firms to innovate in ways that require linked design and production processes. For example, one Ohio firm had based its competitive advantage on its ability to quickly add features to its products (cup-holders in riding mowers, to take a non-automotive example). But when they sourced to China, the last-minute changes wreaked havoc with suppliers, and the firm was forced to freeze its designs much earlier in the product development process.

Some observers argue that US firms can remain competitive by off-shoring labor-intensive parts of the production process (such as assembly) and retaining high-skill parts of the process (such as tooling and design) in the US (Schulz, 2004).That is, these observers argue that there are types of off-shoring that can be considered successful

"triage" (in the sense that off-shoring low value-added work allows the high value-added work to remain). But it may be that off-shoring instead promotes "hollowing out" (in which off-shoring some tasks pulls other tasks to follow). Our data will allow us to study both of these possibilities, and we will have more to say on this very important issue in the future. For now we can note that both “triage” and “hollowing out” effects are likely in different industries. For example, in semiconductor design Clair Brown (2005) argues that off-shoring did protect high-skill US jobs. However, there are some signs that the “hollowing out” effect may predominate in an “integral” industry such as autos. First, as the data above suggests, in auto components skill-intensive tasks are sent off-shore, and assembly often remains in the US (to save on shipping costs). Second, to the extent that success requires tight interfaces between tasks (as in the example above), US firms may not remain competitive, and Chinese firms may increasingly add more complex tasks.

The above costs (of incorrect accounting methods, insufficient attention to factors that might change Chinese prices and to impacts of off-shoring on innovative capabilities) are largely costs that are borne by private firms. To the extent that these costs are present, off-shoring is not a profit-maximizing strategy. In addition there are costs that are not borne by the firms that are sourcing to China.

Social costs

Many of the costs of off-shoring are borne by workers and citizens, and are often not taken into account by profit-maximizing firms. These costs include:

* Community disruption and job loss--Jobs that pay high wages are replaced with lower wages and lower GDP, and tax revenues are reduced.
* Less dense supplier cluster—this reduces innovation in all firms that lose local partners

The low prices charged by Chinese firms often come at the expense of Chinese workers. Although wages have been rising, wages (and therefore buying power) are artificially low due to lack of democracy and independent unions Workers have no mechanisms for capturing a share of their productivity, since many factory workers are internal migrants with few legal rights (for example, they cannot leave one urban job to accept a higher-paying job). The AFL-CIO estimates that violations of labor rights cut Chinese costs 30-50%; even if this estimate is high, the savings to Chinese firms are substantial. China also has weak environmental laws, leading to air and water pollution among the worst in the world. The main beneficiaries of these conditions are US multinationals, not Chinese workers. (Multinationals account for 2/3 of trade between the US and China.)

Note that I am not arguing that all trade with China is bad. Trade with China has the possibility of raising the standard of living for both Americans and Chinese, as firms in each country specialize in what they are best in. However, this does not happen as much as it might because of the current way that trade is structured. Chinese workers create supply, but no demand — they are too poor to buy much from us.

What can be done? As mentioned above, cost studies suggest China has only 20-30% cost advantage for many parts. US firms could match this under several conditions:

* Most plants match productivity of the best plants
* Customer and supplier firms reorganize to value innovation, quick turnaround, tacit knowledge
* Change accounting practice to take into account hidden costs of offshoring, as well as direct-labor savings.
* Trade agreements include labor and environmental standards.
* Chinese currency re-valued

Government policy plays a role in many of these recommendations, including in helping firms to adopt best practices. If the above conditions hold, such aid would not be 'corporate welfare' but rather solutions to market failures, where $1 of government expenditure creates more than $1 of benefits. These solutions should draw on our strengths and be hard for other countries to imitate. Therefore, a solution is not low taxes (which lead to low services) nor looser regulations — we can never match China at this game.

A simple policy would be to educate managers about hidden costs of off-shoring, and promote diffusion of accounting techniques that capture true costs and benefits of off-shoring. In addition, we should fully fund programs such as the Manufacturing Extension Program, which a variety of careful studies (summarized in Helper and Stanley, 2005) have shown to be highly cost-effective: one dollar of government expenditure yields four dollars in increased value-added. These policies are compatible with WTO if they are available to all firms in the US (both foreign-owned and domestically-owned).

Conclusions

In this section I will summarize my answers to the Commissioners' questions mentioned in the Introduction:

3. How has the investment by the Big Three in joint ventures in China affected the three tiers of the U.S. auto parts industry? What pressures are U.S. parts makers feeling to relocate production to China? Will those parts makers eventually export from China to the U.S.?

Purchasing policies by the US Big Three have led to a great deal of cost pressure on suppliers. Suppliers increasingly feel that the only way to meet these pressures is to source from China themselves — hence the doubling of inputs purchased from China among our survey sample in two years.

5. Should the auto parts plants that are facing closure as a result offoreign competition be redirected to other uses to preserve jobs and the industrial base? If so, how can that be done?

As discussed above, there is a wide variation in capability among second and third-tier suppliers. The top 10% have good productivity, but most of the rest struggle to pay workers and invest. This lack of capability is a problem for US automakers if Chinese costs continue to rise — or if Chinese become competitors. It also is a problem for society — these jobs are not being replaced with others that provide a ladder leading to a family-supporting wage.

However, many US firms can continue to compete if some or all of the following conditions are met:

* Most plants match productivity of the best plants
* Customer and supplier firms reorganize to promote innovation, quick turnaround, tacit knowledge
* Change accounting practice to take into account hidden costs of off-shoring, as well as direct-labor savings.
* Trade agreements include labor and environmental standards.
* Chinese currency is revalued

These findings suggest that devoting resources to raising laggards to best practice would have at least as great an effect on automakers' costs as devoting resources to establishing a foreign supply chain.

Thus for many firms, it is too soon — from both private and social points of view — to think about exiting the auto parts industry all together. However, given stagnant demand for cars and continuing productivity improvements, it is true that employment in the industry would probably shrink even in the absence of global competition. In any case, the suggested reorganization of firms to promote improved product design, process de-bugging, and fast turnaround will benefit firms even if they diversify to other industries.

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Appendix 1: Brief biography

Susan Helper (susan.helper@case.edu) is SBC Professor of Regional Economic Development, Weatherhead School of Management, Case Western Reserve University. She is also a Research Associate of the National Bureau of Economic Research and the MIT International Motor Vehicle Program. Her research focuses on the causes and consequences of long-term, information-rich relationships, between suppliers and customers and management and labor. Currently she is looking at the impact of the globalization of supply chains on workers and their families in the US, Mexico, and India. She has published in journals such as American Economic Review, Sloan Management Review, and Journal of Economics and Management Strategy. She has a Ph.D. from Harvard University and a BA from Oberlin College.

Figure 1.

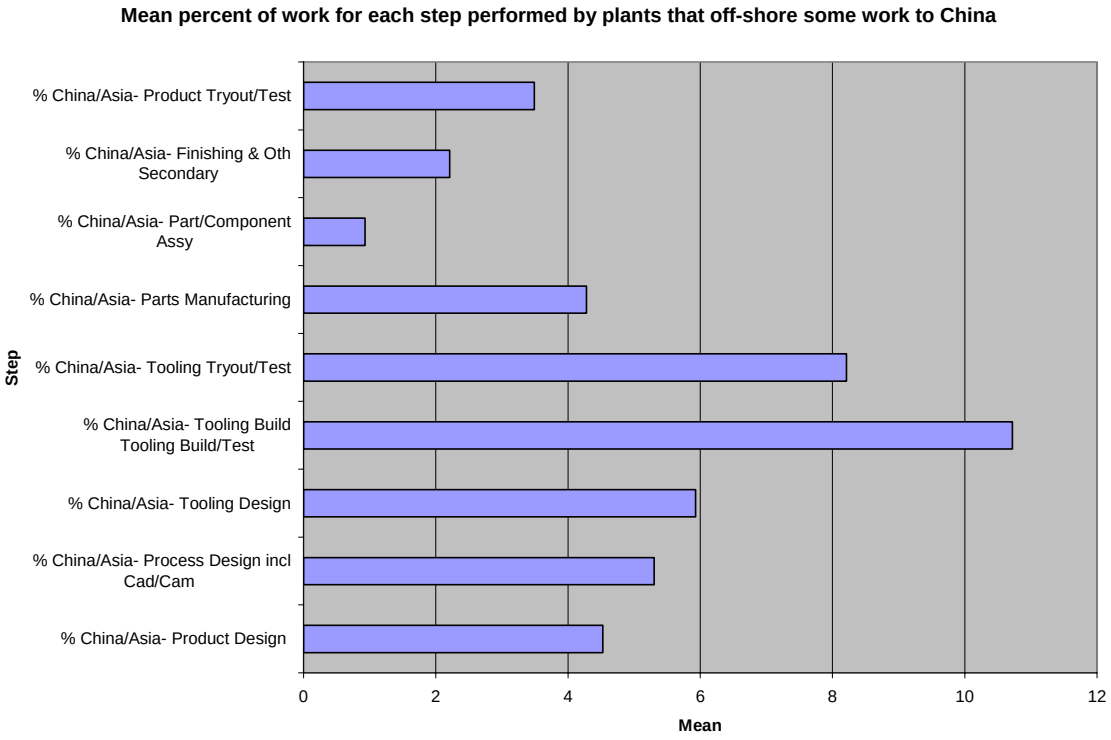
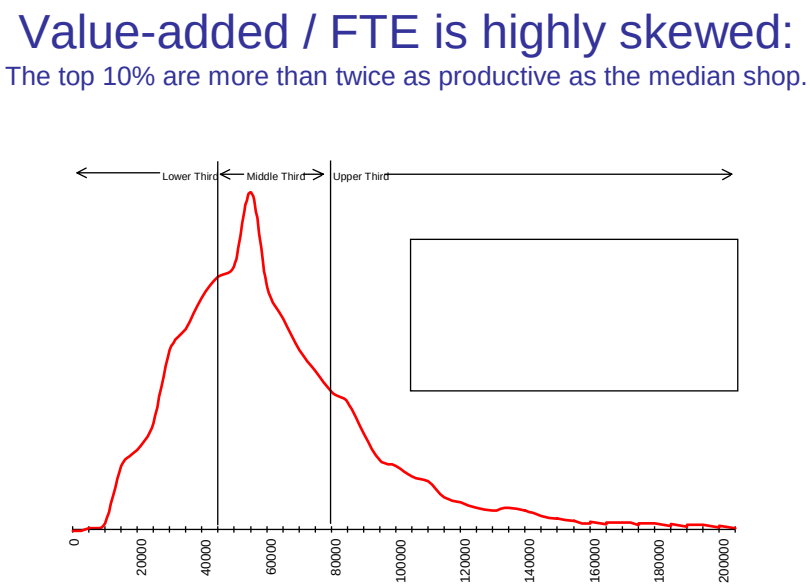


Figure 2.



Source: Performance Benchmarking Service: metalworking respondents

Figure 3.

SMEs (molders) in the top 10% on VA/FTE in 2003…

	Mean top 10%	Mean bottom 50%	Top 10% as a % of bottom 50%
Value-Added per Full-Time Employee	$128750	$53325	226%
Gross Margin	48	16	300%
Average Hourly Shop Wage	14.20	9.49	148%
Benefits as a Percent of Labor Costs	27.2	17.9	170%
Performance-Based Pct Payroll	12.1	1.8	735%
Pct Sales to Final Consumers	16.5	2.8	589%
Pct Sales from Make-to-Stock Work	13.0	3.8	342%
Pct Gauges Electronic & Linked Collector	52.5	0.0	
Keyboards/Keypads per Employee	1.06	0.1	1060%
Pct Suppliers Exchg'd EDI Transact Sets	95.0	5.0	1900%
Replacement Value of Equipment per FTE	$129400	$29700	398%
Pct Employees Using Computers	100%	21.4%	467%
Pct of Shop Floor Workers in Teams	100%	0%	
Employee Turnover Rate	9.0%	76.1%	12%