

**Jameson M. Wetmore's Review of Kelly Sims Gallagher,
*China Shifts Gears: Automakers,
Oil, Pollution, and Development*
MIT Press 2006**

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For several decades those who follow the automobile industry have been speculating as to what will happen when the Chinese people begin to build and drive automobiles in large numbers. The issue has generated both excitement and concern. While automobile executives have fantasized about a potentially large and lucrative market, others worry about the local and global environmental effects of hundreds of millions of new drivers.

The ultimate economic and environmental consequences of China's motorization are still not known, but the process is well underway. Moreover, the forces that will largely determine the outcome have been in motion for some time. In *China Shifts Gears*, Kelly Sims Gallagher, director of Energy Technology Innovation Policy at the Belfer Center for Science and International Affairs at Harvard University, examines one particular segment of this process. The book explores the role that foreign manufacturers have played in the development of the Chinese automobile industry in an effort to discern whether or not these relationships can help create vehicles that are environmentally responsible. Gallagher's hope is that with the help of foreign direct investment (FDI) China can leapfrog past older automotive technologies that consume more fuel and produce more emissions than those available in the United States today.

To determine what effect FDI has had on the adoption of new environmental technologies, Gallagher interviewed 90 people in the automobile industry and Chinese government from 1999 to 2003. Her book focuses on three case studies: a joint venture that began in the early 1980s between Beijing Automotive Works (later Beijing Automotive Industry Holding Company) and Jeep (first a subsidiary of AMC and later Chrysler); a project that brought Shanghai Automotive Industry Corporation (SAIC) together with General Motors in the 1990s; and Ford Motor Company's stake in Jiangling Motors Corporation and other ventures in the 1990s.

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Gallagher's basic conclusion is that using FDI to spark technology transfer was not as successful as it could have been. The goal of the Chinese government to build an automobile industry using foreign help was hampered in large part because foreign companies were focused on China as a place to sell cars and not as a place to develop cars. They saw partnering with Chinese corporations as a mechanism to gain access to a potentially lucrative market and not as an opportunity to share knowledge. Gallagher is also not satisfied with the transfer of technologies intended to make automobiles cleaner and more efficient. She notes that while US firms included pollution control technologies on the vehicles they built in China, they did not equip them with the latest devices being deployed in the United States.

This somber view of FDI is tempered a bit, however. Gallagher notes that not only did FDI help to develop automotive parts suppliers, but that "foreign auto technology transferred to China beginning in 1983 effectively allowed China to skip over about 20 years of automotive technological development to a new generation of automobile technologies." Thus while FDI in the 1980s and 1990s did not get China's automobile industry to be on par with the United States, it did get China much closer than perhaps it might otherwise have been.

Gallagher believes that lessons can be learned from these experiences and that success can be attained in the future. For instance, she argues that the Chinese government should make a concerted push for stricter regulations since US manufacturers promptly responded with new technology when the Chinese government set performance standards for automobiles. In addition, she encourages China to build on its successes in promoting internal innovation and education with government sponsored R&D. Gallagher also maintains that the international community should not sit idly by. She contends that foreign countries and organizations can help China to adopt cleaner technologies by offering aid, sponsoring international regulations, and acting as responsible examples.

Gallagher's book covers a fair amount of ground, but the perspectives that shape it should be noted. First, the book is written from an American point of view. For example, although the author notes that China's most successful early partnership with a foreign car manufacturer was with Volkswagen, this is not one of the case studies analyzed. Gallagher also uses vehicles produced in the United States as the benchmark against which China should be judged even though vehicles produced for the European market are, on average, considerably more fuel efficient than those produced for the US market. Ultimately the book may be more useful for people with knowledge of the American car industry.

Second, the book takes a decidedly macro view of the issues. For instance, technology transfer is framed as a discussion between governments and corporations. The book does not examine what happened inside corporations or how Chinese and American employees interacted or conveyed knowledge. Gallagher does note at times that conveying tacit knowledge is crucial to the actual transfer of technology. But quotations like "The foreign companies are not good teachers, but the Chinese companies are not so clever" (pg. 75) are as close as the book gets to giving the reader an idea of what life on the factory floor was like during the time period. The book often views automotive technologies from afar as well. A few examples of technologies are discussed briefly, but for the most part the black boxes

remained closed. Gallagher is more interested in looking at technological trends rather than the pros and cons of specific devices.

Thirdly, because the majority of the research for the book was conducted in the early 2000s the book primarily examines the last two decades of the twentieth century. Thus it does not cover the large changes that have occurred in the Chinese auto industry in the last few years. For instance, the book only briefly mentions the Chinese auto companies that have recently begun to export their products around the world—including Geely, Chery, and Great Wall Motors. Some recent events may call for a change in some of Gallagher's conclusions. For instance most of the people Gallagher interviewed said that concerns about intellectual property had not in any way inhibited technology transfer. The IP issue may be more of a contentious issue since today, however, because of events leading to the recent court case between GM and Chery Automobile over the fact that Chery's QQ appears to be a near duplication of the GM subsidiary Daewoo's Matiz (evidently the cars are so similar that many of the parts are interchangeable).

Despite these limitations, the book provides a number of useful insights into an increasingly important topic. From 1990 to 2004 the total number of passenger cars produced annually in China jumped from 42,000 to over 2.3 million. Scholarship such as this book is incredibly valuable in that it helps to clarify the process by which China's increase in production happened and offers suggestions for how to direct it towards less environmentally destructive ends. The lessons are not, however, limited to simply the automobile industry. GM's investment in automotive partnerships in the 1990s was the largest single foreign investment ever made in China. *Shifting Gears* provides some of the key background necessary to understand how foreign relationships with China can shape not only China but the entire world.