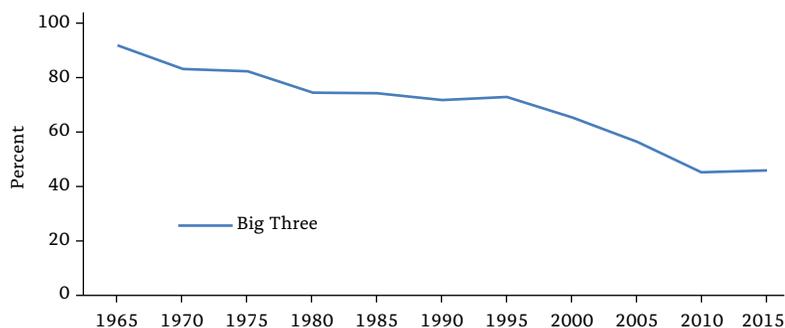


INTRODUCTION

In November 2008, with their companies on the verge of bankruptcy, the CEOs of the Big Three U.S. automakers—General Motors (GM), Ford, and Chrysler—flew to Washington to ask the U.S. Congress for a \$25 billion loan; in December, they were back again asking for more.¹ Ultimately, the federal government provided over \$50 billion in funds to GM and Chrysler and helped restructure both companies through Chapter 11 bankruptcies.² GM's filing was the largest industrial bankruptcy in U.S. history.³ The bankruptcy of two of the Big Three automakers and the need to have the entire U.S. auto manufacturing sector bailed out by the federal government marked a precipitous decline from the industry's peak in the 1950s and '60s.⁴

Just about a half-century before, in 1955, General Motors became the first corporation in history with profits that exceeded \$1 billion, and the auto industry as a whole was the largest in the nation. As a direct outcome of auto success, cities dependent on the industry also flourished. For instance, in 1960, Detroit's 1.5 million residents had the highest per capita income among the country's big cities, and the 200,000 residents of Flint, Michigan, had the highest per capita income among the world's medium-size cities.⁵ Mirroring the decline of their industries, these cities have now also nearly collapsed, losing most of their population and their wealth.⁶

So, what happened? How did the largest, most prosperous industry in the richest, most powerful country in human history crash and burn? In the December congressional hearing, GM CEO Richard Wagoner explained where he thought the blame for the Big Three's struggles lay: "What exposes us to failure now is not our product lineup,

Figure I.1 *Big Three Domestic Market Share, 1965–2015*

Source: Authors' calculations using WardsAuto data.

or our business plan, or our long-term strategy. What exposes us to failure now is the global financial crisis.”⁷

On the one hand, the global financial crisis was obviously a key catalyst leading to the auto crisis. Widespread panic over bank failures led consumer credit markets to tighten, making it more difficult for people to get loans to buy vehicles. The result was an industry-wide crash and an almost thirty-year low for sales of new cars.⁸ The impact of the crisis is illustrated well by General Motors: the company lost \$82 billion between 2004 and 2008, over half of which was lost in 2007 and 2008.⁹ On the other hand, the Big Three U.S. automakers had been steadily losing domestic market share over the past half-century. Figure I.1 shows the consistency of the decline: the three automakers controlled a collective 90 percent of the market in 1965, but only 45 percent by 2015.

In addition, there were major signs of dysfunction in the years preceding the economic crisis. For example, in 2005, GM lost \$850 million in the first quarter alone, its stock dropped \$4.71 in a single day, its earnings were 80 percent below projections for the fiscal year, and cash flow went from \$2 billion to negative \$2 billion.¹⁰ In 2006, a feature story in *Fortune* titled “The Tragedy of General Motors” argued that the evidence pointed, with increasing certitude, to bankruptcy.¹¹ In other words, the economic crash in 2007–2008 may have poured gasoline on the fire, but the Big Three had been slowly burning for years, and their flammability was the result of factors that had been in place for decades.

The Received Wisdom

Aside from the Big Three leadership's self-serving explanation that left them blameless, analysts of the auto industry have posited three main explanations for the decline of the U.S. auto industry: (1) industrial maturity, (2) the culture of management at the Big Three, and (3) the "culture" of U.S. autoworkers, which is often a nice way of saying "greedy unions."¹²

PRODUCT LIFE CYCLE THEORY

Industrial maturity as an explanation for the decline of the U.S. auto industry is rooted in product life cycle theory, which sees the innovativeness of an industry, how producers compete, and the geographic location of production as natural consequences of the way market forces shape the development of a product over its life course.¹³ That is, when a new product is introduced, the demand for that product is local, so production also remains local. As demand for the product grows, producers innovate to compete for a share of this growing demand. Eventually, paradigmatic technical innovations are exhausted, and the companies that had been most successful at innovating consolidate a sectoral oligopoly. At this point, the product is well known and in high demand, but companies are unable to increase profit rates through innovation, so they disperse production geographically to meet increased demand away from the place where the product was invented.¹⁴ At this point, the product has reached maturity. Eventually, product expansion will reach its limit and the decline stage of the product life cycle will begin; at that stage, the only profit is in producing the standardized product cheaply. Since innovation in general is exhausted at this point in the life cycle, the only place to cut costs is labor. This is another place where market forces directly influence the product life cycle, as wages, and thus labor costs, are the result of the relative scarcity of labor (that is, the tightness of the labor market). Of course, the nature of the labor market is itself a result of the reciprocal relationship between government regulation and actions by unions and business. During this stage, production is relocated to areas with weak unions and lower government regulation, and thus cheaper labor. Often, foreign com-

panies with the conditions for cheaper labor will make the product and export back to the country that invented it.

On the surface, product life cycle theory seems to perfectly explain the decline of the U.S. auto industry: from introduction of a new product made entirely in the southern Michigan region where it was invented, through the incredibly innovative growth stage ending right before the Great Depression, to postwar maturity with standardization of the auto manufacturing process and expansion across the United States and internationally, to the decline stage where the product was made by the Japanese in their U.S. transplants, using cheaper non-union labor, and sold to the United States. The seemingly perfect fit of theory to case led the Abernathy group at MIT to this conclusion: "So if in Detroit there is wringing of hands or gnashing of teeth, such lamentation is as useless as it is irrelevant. Neither in Lear's age nor our own has anyone discovered an effective remedy for the inexorable cycles of nature."¹⁵

The problem for the product life cycle narrative, however, is in the details. The theory is built on the claim that maturity comes when innovation is exhausted, which leads to geographic expansion and competition based on reduction of costs, which leads to production moving to countries where labor is cheaper. As we will demonstrate, however, Japanese automakers did not take market share from the United States primarily through labor cost advantage. Rather, their advantage lay in product and process innovation. In fact, Japanese automakers transplanted some production to the United States and used American workers. In addition, Japanese and European automakers have been in production for longer than the United States was before their industry reached maturity, yet the Japanese and European product is neither mature nor in decline, suggesting that neither is an inevitable part of a life cycle. As we will also demonstrate, in the United States the decline of innovation followed geographic expansion of production, not the other way around.

Although many of our challenges to product life cycle theory are not obvious and require significant evidence and explanation, all industry analysts have observed that the Japanese auto industry is highly innovative. Since this observation alone challenges the industrial-maturity orthodoxy, analysts have seen it as a puzzle to explain away. The dominant explanation focuses on cultural differ-

ences—between U.S. and Japanese management, and between U.S. and Japanese workers.

CULTURE: MANAGEMENT

The culture-of-management argument was first made in the 1970s and associated the virtues of the Japanese system with Japanese cultural practices. An exemplar of this type of analysis is Peter Drucker's 1971 piece in the *Harvard Business Review*. Drucker recommends that American management learn from Japanese management, but he also identifies the difference through culture, arguing that the Japanese apply "to the problems of an industrial society and economy the values and the habits developed far earlier by the retainers of the Japanese clan, by the Zen priests in their monasteries, and by the calligraphers and painters of the great 'schools' of Japanese art."¹⁶ Today the culture-of-management argument focuses on American corporate culture instead of the uniqueness of Japanese culture. Yet, when analysts explain the decline of the U.S. auto industry as the result of a risk-averse management that prefers stability to change, or a management culture defined by arrogance and inattention to detail, the implication is that the Japanese are humble, innovative risk-takers who pay great attention to detail.¹⁷ That is, in order for these cultural traits to explain the loss of market share by U.S. auto, they cannot be shared with Japanese management. Whatever factors are supposed to explain the loss of market share by the Big Three to the Japanese auto industry cannot be shared between the two groups. Hence, the modern cultural argument is not that different from the 1970s version—the innovativeness of Japanese auto is inevitable, as it is part of their culture, while the lack of innovation in the United States is equally inevitable and cultural.

The problem with the culture-of-management argument is that it implies that innovation is a choice and that the choice is informed by culture, assigning causal primacy to culture in explaining material reality. We will demonstrate that innovation is determined by the structural properties of the production system, and that the culture of management develops as a reaction to the material reality created by these structures. The smoking gun here is that the flexible production system that facilitates Japanese innovation was adapted from a

similar production structure used in the United States before World War II. During the period when U.S. automakers used this system, their rates of innovation were extremely high and analysts described U.S. management culture as centrally valuing innovation and change.¹⁸ Only once this production system was abandoned in the United States did the rates of innovation fall, and once innovation slowed, analysts began noting the “risk-averse” culture of U.S. auto management.

There is room in the model we present for the culture of management’s focus on agency. The choice does not pertain directly, however, to innovation. Rather, management has agency over how to structure production, and this choice has consequences for innovation. That said, we do not see cultural differences as a primary explanatory factor in the differing decisions regarding production structure. We will demonstrate that both the U.S. and Japanese automakers’ choices regarding production structure were the result of the interaction of class conflict, contingent events, and historical path dependency.

CULTURE: WORKERS

Company culture, however, is not the only factor used to explain the different rates of innovation in the modern Japanese and U.S. auto industries. Union culture in the United States is also targeted as a culprit hindering the competitiveness of U.S. industry. The basic narrative is that the culture of the United Auto Workers (UAW) and its rank-and-file members is shaped by conflict. Through union negotiations, autoworkers seek to do the bare minimum required by their contracts, demand higher and higher wages and benefits, and refuse to compromise on work rules. These factors all supposedly inhibit innovation.¹⁹ As an explanation for the decline of the U.S. auto industry, the narrative of the greedy and lazy worker rests on the assumption that labor costs in Japan and Europe were dramatically lower than those in the United States, giving the imports a price advantage that allowed them to penetrate the U.S. market in the late 1960s and threaten the viability of the U.S. industry. In this narrative, the key moment becomes the UAW’s successful insistence—when

the imports started arriving—on maintaining its unsurpassed wage package. By the 1970s, this intransigence led, the narrative goes, to the forced migration of the industry to locations with cheaper labor costs—first the non-union American South, then across the border to Mexico.

Like product life cycle theory and the culture-of-management argument, worker culture as the cause of industrial decline falls apart upon close examination. First, the job migration supposedly triggered by foreign competitors using cheaper labor began in 1947, twenty years before the imports arrived. By 1962 (when imports were only 5 percent), 134,000 manufacturing jobs and 10 percent of the population had already been lost in Detroit.²⁰ Second, as we demonstrate later in the book, the competitive disadvantage of the U.S. auto industry derived mainly from the production inefficiency of the U.S. production system compared to Japan's, not from different wages and benefits. Finally, any claims that Japanese workers are more docile and willing to work harder than their American counterparts collapse as an explanation for the struggles of American auto when we examine instances such as Toyota's takeover in the 1980s of the Fremont factory, "one of GM's worst, a factory known for sex, drugs and defective vehicles. . . . [As] part of an historic joint venture, Toyota turned the plant into one of GM's best, practically overnight."²¹

If the drastic decline of the U.S. auto industry is not primarily the result of (1) the 2008 financial crisis, (2) the life cycle of products, (3) different management styles and labor work ethics rooted in national culture, or (4) decades of union activism greedily raising the costs of labor to restrictive levels, then what does explain the Big Three U.S. automakers' loss of half their domestic market and eventual bankruptcy? The immediate answer is that the Big Three produce lower-quality products, but must sell them at a higher cost than Japanese and some European automakers. This answer is not controversial, however, as most analysts agree this is the proximate cause of decline. Where we offer a drastically different story is in explaining why this is the current reality. In the next section, we offer a brief summary of our argument before laying out our strategy for explaining it in detail and providing empirical support for our argument throughout the rest of the book.

Summary of Our Argument

The Japanese automakers are able to produce higher-quality cars at a lower cost than the Big Three owing to the different structures of production used by U.S. and Japanese manufacturers.²² The Japanese (and some Europeans) use a flexible production system characterized by geographic clustering, machine flexibility, long-term sole suppliers, and just-in-time delivery. This system facilitates continuous innovation in product and process, allowing the coordination of ongoing product improvement with constantly increasing worker productivity. The U.S. automakers use an ossified mass production system featuring geographic dispersal of production, parts and machine rigidity, and large stockpiles (what we refer to as a “dispersed parallel production system”). This system impedes the implementation of innovation.

The continued use by the Big Three of an ossified mass production system is the path-dependent result of choices made by management during the Great Depression, which led to the post-World War II abandonment of their own version of flexible production. Understanding the series of decisions that culminated in their abandonment of flexible production requires an examination of the pre-World War I U.S. auto industry.

Before World War I, Henry Ford invented the moving assembly line and began to develop a production system with features similar to what we now call “flexible production.” Flexible production systems facilitate constant innovation that results in increased output using less labor. The system accomplishes this by horribly exploiting workers, inevitably leading to discontent and resistance. The production system’s geographic concentration and just-in-time delivery of parts, however, also provides workers with maximal structural leverage (that is, the power derived from a party’s structural role in keeping a system functioning). Thus, an epidemic of mass absenteeism and turnover at Ford Motor in 1914 crippled the company (despite the mass action being unorganized and without specific demands for redress). Henry Ford resolved this crisis by introducing the \$5 day and establishing an “effort bargain” with his workers that traded very high wages and benefits for worker acquiescence to the physically oppressive production system. Shortly thereafter, General Motors

and the rest of the U.S. auto industry adopted this effort bargain, and a moral economy developed in the auto industry where workers accepted the sacrifices required of attempts at innovation (including layoffs, furloughs, and wage rate cuts) in exchange for a share in the benefits of successful innovation (rehiring laid-off workers at wage rates higher than before the innovation). Essentially, the auto industry became governed by an ethos of shared sacrifice and shared reward (even if workers took on the larger share of sacrifice, while the company received a larger share of the reward).

This effort bargain and moral economy provide us with a context to understand the series of events during the Great Depression that led to the Great Flint Strike. At the start of the Depression, the Big Three engaged in massive layoffs and furloughs and slashed wages and benefits in order to avoid losing money when the economy crashed. This move, on its own, did not violate the moral economy of the industry. In 1936, however, when profits exceeded pre-Depression levels and wages were not returned to their previous levels, the effort bargain and moral economy were broken. By the end of the year, a few hundred workers had joined the United Auto Workers and engaged in a sit-down strike in a number of GM plants in and around Flint. This marked the first time autoworkers had successfully utilized their structural leverage in an organized fashion. As a result, a few hundred workers brought the largest corporation in America to its knees and within four years had unionized the entire auto industry.

Immediately after the Flint strike, General Motors began planning ways to disrupt workers' structural leverage. Its plans to reorganize production, however, were postponed by World War II. During the war, the power of the workers inherent in the system became obvious as thousands of "wildcat" strikes (strikes undertaken by local rank-and-file workers, unsanctioned by the national leadership of the union) won massive concessions from the Big Three. At the end of World War II, the captains of the auto industry could have chosen one of two paths. They could have accepted the demands of their now-unionized workers for an expanded—and explicit—version of the (previously implicit) effort bargain, in which workers would not only share in the profits of their labor but also gain a degree of control over the intensity of the production process. Or they could

choose to undermine worker power by eliminating the workers' leverage. They chose the latter path. The automakers dispersed production away from Detroit to segregate new workers from the militant unionists and make strikes more difficult to organize; they eliminated single sourcing of all key components, so that work stoppages in one plant would not interrupt production elsewhere; and they maintained large stockpiles of inventory at every workstation so that upstream work stoppages would not (quickly) interrupt production. This massive restructuring of production did reduce workers' leverage, but it also had the unintended consequence of dramatically decreasing production efficiency and the rate of innovation.

While the Big Three and their suppliers invested vast sums of capital in creating this dispersed, ossified, and less efficient production structure, the resurgent auto companies in Japan implemented and elaborated the flexible system that Detroit had pioneered. Unlike the Big Three, they accepted the constraints of the system, rewarding their workers with very high wages, lifetime employment, and a degree of influence over production methodology. For fifteen or twenty years after the dismantling of flexible production—but before the arrival of foreign imports—the Big Three saw record profits. When the imports began arriving in the late 1960s, however, the U.S. auto industry spent far more money to produce a demonstrably inferior product. This advantage continued to amplify, because the Japanese could and did regularly introduce new features and more efficient production methods, an innovative dynamic that the rigid U.S. system could not match. Unable to compete in terms of efficiency, U.S. management chose to compete by lowering labor costs and expanded their strategic retreat from southern Michigan by relocating parts of production in low-wage areas inside and outside the United States.

The low labor cost strategy of competition has not regained any of their lost market share for the Big Three, largely because their Japanese competitors are able to also produce in areas with cheap labor. The difference is that the Japanese maintain geographic concentration by building entire complexes in cheap labor areas, whereas U.S. auto reinforces geographic dispersal by only moving parts of production. Thus, Japanese automakers continue using flexible production and maintain their advantage in terms of innovation, while

limiting the U.S. ability to gain any cost-of-labor advantage. The major consequence of U.S. reliance on outsourcing parts of production, then, has been massive deindustrialization in former production centers like Detroit, while paving their own path toward decline by making a return to flexible production less likely.

The Organization of the Book

Having presented this summary of our argument without supporting evidence, we dedicate the rest of the book to detailing our argument with ample evidence to convince even the most skeptical reader. In addition, our argument raises a number of important associated questions to which we will provide in-depth answers, such as, if the Big Three were compelled to abandon the system in order to reduce worker power, why haven't Japanese companies also been forced by powerful workers to abandon flexible production?

In chapter 1, we establish two fundamental facts on which our analysis rests. First, we demonstrate that the bulk of the Japanese advantage in quality and price lies in product and process innovation. Second, we detail the features of flexible production, show that Japan utilizes the system while the United States does not, and fully explain the relationship of the structure of production to innovation. Thus, in this chapter we demonstrate that the root cause of the loss of domestic market share to Japanese automakers is lack of flexible production.

In chapter 2, we show that the pre-World War II U.S. auto industry developed a flexible production system and that the Japanese system was the result of mimetic isomorphism.²³ This chapter provides evidence that runs counter to the culture-of-management argument.

Chapter 3 is dedicated to answering why the United States abandoned flexible production. We first provide an in-depth discussion of the concept of structural leverage and elaborate how flexible production both maximizes leverage for workers and facilitates its activation. Then we give a detailed account of the series of events, starting with Henry Ford's establishment of the effort bargain in the industry, through the violation of the moral economy during the Depression, to the activation of structural leverage during the Great Flint Strike and the eventual shuttering of flexible production by the Big Three.

Thus, in this chapter we document the role of class conflict in motivating the Big Three to end their use of flexible production.²⁴

Chapter 4 documents the relationship between abandoning flexible production and the decline of innovation in the U.S. auto industry. This link is the final piece of evidence in our dismissal of differing cultures as the primary explanation for the decline of the U.S. auto industry and the rise of the Japanese. Combined with chapter 2, it demonstrates that the Japanese advantage lies not in cultural difference but in differing production structure.

Chapter 5 addresses the important lingering questions of why the Japanese were able to maintain their flexible production system in the face of worker structural leverage, and why the United States did not reinstitute flexible production when it became clear that it conferred a large efficiency advantage on Japanese automakers. In this chapter, we answer the first question by elaborating on the concept of deactivation of structural leverage through compromise, providing two historical examples: Ford in 1914 and Toyota in 1953. We also analyze the divergent paths taken by Toyota and the Big Three after their initial deactivation of worker structural leverage. To answer the second question, we document how sunk costs established when the Big Three first abandoned flexible production, along with the broken trust with their workers that the Big Three continually reinforce through their actions, undermine efforts to reestablish flexible production.

We conclude with a discussion of two important lessons that stem from our analysis of the decline of auto. First, we discuss the way that structure guides human agency and shapes its consequences. That is, the decline of U.S. auto is the result of decisions made by Big Three management, but those decisions were guided by the structure in which they were embedded, and they led to decline because of how they interacted with economic and social structures. Finally, we ponder what the lessons of our book suggest about the future of the post-crash domestic auto industry. Here we demonstrate that neither the Obama-era bailout nor Trump's recent policies fixed the underlying structural problems that caused industry decline. Thus, we expect further decline, plant closings, and loss of U.S. auto jobs.