Applying global trends: A look at China's auto industry

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Strategists can challenge conventional wisdom and better prepare for uncertainty by analyzing the complex and not-so-obvious ways global trends interact in their industries.

Predicting the future is arguably the most important and hardest task facing strategists. One way of loading the dice in their favor: scrutinizing the demographic, technological, environmental, macroeconomic, and other long-term forces constantly shaping the global economy. The most eye-opening implications typically lurk at the intersections where multiple trends (and dozens or more subtrends) interact with one another, often in complex and not-so-obvious ways. Moreover, to analyze trends successfully, executives must develop a fine-grained understanding of the potential impact for specific geographies and industries.[1]

Only a dozen years ago, for example, authoritative predictions for the coming decade envisioned no more than a few million mobile-phone users throughout Africa. Local income, consumption, technology, infrastructure, and regulatory conditions seemed to hold little promise for significant growth. Less than ten years later, though, Nigeria alone had 42 million mobile subscribers—80 times more than initial forecasts predicted—as growth skyrocketed, largely as a result of the interaction between just two trends: improved income levels and cheaper handsets. This was a massive growth opportunity that global telcos missed but African and Middle Eastern players captured, to the tune of more than $100 billion,[2] by developing low-cost business models.

How can company strategists spot the next big opportunity or looming threat in their industries before it's apparent to everyone? In this article, we'll describe a four-step methodology for making global trends part of a scenario-based strategic-planning process. By bringing together trends and their interactions, industry-specific insights, and problem-solving techniques, this approach helps create quantitative, actionable, and unbiased scenarios for what might happen in the next five to ten years. Better scenarios, in turn, can help companies challenge conventional wisdom, pressure-test existing business models, identify market opportunities, and develop more innovative products and services.

To illustrate our thinking, we'll look at an intriguing example—how Chinese automakers could defy conventional wisdom and steal a march on competitors in developed markets by succeeding there much more quickly than expected in a future characterized by natural-resource constraints, unceasing innovation, a growing role for governments, and a shift of economic growth and power to emerging markets.

[1] See Mehrdad Baghai, Sven Smit, and S. Patrick Viguerie, "The granularity of growth," mckinseyquarterly.com, May 2007.

[2] From 1999 to 2009, the market capitalization of the top five Middle Eastern and African telecom operators increased tenfold, to more than $100 billion.

1. Establish the reference frame

The right frame of reference—a specific problem statement and a clear sense of the industry context for long-term shifts—is a critical starting point. For example: "What share of the car market in developed countries is Chinese auto manufacturers likely to capture by 2020, and what impact could they have on global profit pools?" This might be a timely question for the planning team at a European or US automaker. After all, Chinese automakers enjoy a 35 percent cost advantage over those in developed markets, and Chinese OEMs have supersized ambitions. *BusinessWeek* reported in July 2008, for instance, that Geely Automobile "intends to sell 2 million cars [in the US market] by 2015, and [the CEO is] confident he can thrive against global competition."[3] The company's March 2010 acquisition of Sweden's Volvo Cars suggests that these ambitions aren't just cheap talk.

Still, China's light-vehicle manufacturers haven't entered European or US markets at any scale, nor are they expected to do so soon. IHS Global Insight recently forecast that China's share of these markets would double, from 0.1 percent today to a still-marginal 0.2 percent by 2020. Chinese cars also suffer from poor consumer perceptions of their quality and safety. Evaluations by the China New Car Assessment Program (C-NCAP, a government-supported agency) give the country's automakers a quality index score of around 30, versus 45 for automakers in developed markets.

Hyundai provides a memorable and recent example of an Asian automaker that entered the US market (in the late 1980s) with quality problems and with volumes comparable to those of some smaller Chinese OEMs now. Though quite successful today, it took the company nearly two decades to establish a meaningful presence in developed markets by competing on price and slowly building out its sales network while improving its quality and brand image. Interestingly, the low market share numbers some forecasters expect for China's automakers seem to imply a trajectory similar to Hyundai's in the late 1980s.

But how relevant is this example for today's Chinese automakers? The vast difference in scale between China's domestic auto markets and South Korea's is obvious. But Chinese market penetration might be similarly measured if certain conditions held sway—such as the absence of major technological breakthroughs in engine technology, continued quality problems for Chinese automakers, and a need for the slow, steady development of a sales network.

[3] Dexter Roberts, "China's Geely has global auto ambitions," *BusinessWeek*, July 17, 2008.

Chinese automakers enjoy a **35 percent** cost advantage over those in developed markets.

2. Expand the solution space

Having carefully defined the problem and the industry context surrounding it, the challenge for strategists is to broaden the potential solution space by challenging conventional wisdom through the lens of global trends. Most companies have a broad range of experts who can help, yet these people are often tucked away in organizational silos that make it difficult for them to connect the dots. Automakers in the developed world are very good at gathering rich trend data and perspectives on topics such as regulation, macroeconomics, and demand. But regulatory analysts in car companies may spend more time developing strategies for government relations and lobbying than they do working with internal economists forecasting future demand. Those economists, in turn, rarely interact with engineers who focus on future game-changing technological possibilities.

When companies overcome these and other strategic and organizational barriers, they can begin developing a rigorous and more nuanced picture of how trends and subtrends might influence their industries. In the auto industry, for instance, could the developing world's rising economic influence, the increasing scarcity of resources, and the spread of "green" technologies combine to affect the market, with unexpected results?

While events could play out in many ways, Chinese carmakers could well leapfrog current engine technology and develop a significant competitive advantage in electric vehicles or other clean technologies; the Chinese player BYD Auto appears to be moving in this direction already.[4] For one thing, global resource constraints are prompting China to reduce its dependence on foreign oil, as well as pollution and greenhouse gas

[4] BYD Auto, an upstart automaker that began as a supplier of batteries and electronic components to mobile-phone makers, recently announced that it will have an electric car for the US market in 2011.

A man charges a BYD Auto electric vehicle at the company's campus in Shenzhen, China.

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emissions. With large funds available through an economic-stimulus package, the Chinese government is already investing significantly in R&D for alternative technologies.

In parallel, China's massive buildup of new infrastructure might spark an entirely novel green automotive infrastructure, without the massive replacement costs developed nations would incur. This infrastructure could include service networks and promote incentives for clean-tech cars (say, special traffic lanes and preferential parking). Such moves might inspire a large-scale consumer preference for alternative-technology vehicles, allowing Chinese automakers to achieve the required scale to begin mass production; China, remember, is a homogenous automotive market—as well as the world's largest and fastest-growing one. This, in turn, would give China's carmakers a cost and knowledge advantage that might help them pass over competitors in the developed world.

Likewise, Chinese cars could rapidly exceed minimum quality and safety standards if the government's appetite for technology and management know-how drove it to support the acquisition of a major automaker in a developed market (say, one of the top five). This move would speed the transfer of best practices to local Chinese companies, thus helping them to move rapidly up the learning curve, to improve their brand image, and to develop a more sophisticated understanding of consumer needs. Alternately, the Chinese government might raise safety, emission, and quality standards in response to consumer demands while simultaneously subsidizing local players so that they could meet the more stringent requirements.

Finally, natural-resource constraints and environmental concerns might persuade consumers in developed markets to adopt cost-effective clean-tech vehicles more quickly than expected, creating a large market that Chinese auto players would be poised to supply.

3. Define scenarios

In broadening the solution space by highlighting the way trends may interact to challenge conventional wisdom, we've emphasized two variables that seem quite uncertain and will probably have a major impact on the industry's evolution: first, whether Chinese manufacturers can achieve a scale advantage in clean technology and, second, whether they will acquire a large, leading Western auto brand. We can use these two variables to generate a handful of scenarios, each with a compelling but distinct narrative. A methodology called "quadrant crunching," which the US Central Intelligence Agency developed in recent years, allows planners to generate extreme but plausible scenarios quickly by reversing their underlying assumptions to arrive at a number of very different potential states of the world. This approach can help business strategists combine uncertainties to provide a basis for robust, quantitative, and therefore actionable scenarios, such as the following for our Chinese automotive example:

- **A perfect storm.** China's government aggressively promotes its carmakers by creating the con-

ditions for a domestic clean-tech market to flourish and by helping a Chinese company buy a major automotive business in a developed market in order to facilitate rapid market entry.

- **The clean-tech advantage.** China's market for clean-tech vehicles flourishes, allowing domestic automakers to develop competitive advantages to compete head-on in developed markets, but without acquiring a brand in any of them.
- **A helping hand.** A Chinese acquisition of a top auto player (one much larger than Volvo) in a developed market combines established brands and quality perceptions with access to a large sales network, as well as a homegrown cost advantage in traditional vehicles powered by combustion engines.
- **Follow in Hyundai's footsteps.** Chinese auto players use their existing brands or create new ones, leveraging their factor cost advantage to produce inexpensive traditional cars that compete head-on with the cars of incumbents in developed markets.

Two uncertainties could have a major impact on the evolution of China's auto industry and can be used to define potential scenarios.

Four 2020 scenarios, estimated Chinese auto OEMs' market share and capture of profit pool[1] in developed markets

Variable 1: Chinese OEMs develop significant scale advantages in clean tech

Yes	**The clean-tech advantage** Market share: **3–6%** Profit pool: **$1 billion–$3 billion**	**A perfect storm** Market share: **7–15%** Profit pool: **$4 billion–$8 billion**
No	**Following in Hyundai's footsteps** Market share: **0–3%** Profit pool: **0–$1 billion**	**A helping hand** Market share: **3–6%** Profit pool: **$1 billion–$3 billion**
	No	Yes

Variable 2: Chinese OEMs acquire 1 or more major developed-market OEMs

2 methods to estimate the probability of each scenario and market share impact
- Quantitative analysis where trends are well-established and predictable
- Delphi technique[2] where outcomes are binary (either/or), difficult to predict, or both

The clean-tech advantage
Chinese OEMs leapfrog technologies to develop first compelling electric car

Following in Hyundai's footsteps
Chinese OEMs compete head-on in developed markets

A helping hand
Chinese OEMs buy top auto player, combining established brand/quality with cost advantage

A perfect storm
China aggressively promotes OEMs by heavily subsidizing clean tech and buying established brands

[1] Assumes Chinese OEMs achieve profitability similar to that of current compact segment average.
[2] Systematic forecasting method developed in the 1940s to minimize groupthink. It draws on knowledge of panel of experts with diverse, incomplete information.

4. Quantify industry impact

Such scenarios are important because they provide strategic clarity, and they become even more powerful when accompanied by probabilities and financial estimates that help clarify their implications. One classic approach involves the Delphi technique—a systematic forecasting method, developed in the 1940s, that draws on the knowledge of a panel of experts with diverse, incomplete information. By keeping individual predictions anonymous and using an iterative process to converge on a limited set of outcomes, this method minimizes "groupthink" and helps experts to get comfortable with high levels of uncertainty.

We used the Delphi method with a panel of McKinsey auto industry experts after briefing them extensively on the scenarios. The outcome? The panelists saw only a 40 percent likelihood that the scenario based on conventional wisdom would be realized. In this scenario, Chinese automotive companies would capture, at most, $1 billion of the profit pool in developed markets by 2020.

By contrast, the panel saw a 60 percent likelihood of an aggressive entry by China into developed markets, with Chinese players capturing a 3 to 15 percent market share. One scenario gave Chinese players a

The Delphi technique

A systematic forecasting method developed in the 1940s, this method draws on the knowledge of a panel of experts with diverse, incomplete information to generate predictions on which future scenarios can be based.

Stages	Design Design the panel, choose the questions, and identify the panelists.	Quality control Double-check the panel's composition and scrutinize questions.	Run the poll Poll, aggregate responses, repoll.	Synthesize Aggregate the final estimates.
Imperatives	Ask the panelists for estimates, justification, and level of confidence in their estimate. Choose panelists with a general background but with knowledge spike.	Be sure the panel is balanced. Do a dry run with team members or colleagues to be sure questions are clear.	Group the justifications and aggregate predictions. Repoll until the estimates don't change (2–3 times should be enough).	Look for the story between the justifications and the estimates. Weigh the estimates by self-assessed confidence levels.
Caveats	Avoid ambiguous questions, which confuse panelists and result in unusable answers.	Avoid a preponderance of like-minded panelists by including external experts. Homogeneity among panelists may lend a perception of rigor to a biased estimate.	Results will often cluster around scenarios. Don't allow the story to be effaced, but do average the results.	Don't report on the precision of the forecast (eg, confidence intervals); rather, include average confidence of each group of panelists.

10 to 15 percent chance of entering the developed world with the benefits of both a clean-tech cost advantage and a major acquisition. Subsequently, we estimated that this scenario implies that Chinese automakers would capture a whopping $4 billion to $7 billion share of the global profit pool.

To be sure, much would have to happen for this most aggressive scenario to play out, but it is plausible enough—and the stakes are high enough—to demand more serious attention from auto strategists in developed markets. Indeed, if this scenario came to pass, the implications would be significant: developed-market players would likely see a big profit erosion that could put their viability in question, thus propelling a large-scale restructuring of the industry.

Uncertainty isn't limited to the auto sector. A wider range of actionable scenarios based on a granular understanding of global trends and their interactions can help strategists in any industry see opportunities where others see only uncertainty. Armed with a more robust outlook, executives can define the appropriate strategic postures, identify no-regrets moves and steps to mitigate risk, and spot the potential big bets—insights that together underpin a long-term strategic plan. By reassessing scenarios over time, companies can prepare to seize opportunities before their competitors do.

To read more about harnessing global trends, visit mckinsey.com/strategic_trends.

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