

Management intuition for the *next 50 years*

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The collision of technological disruption, rapid emerging-markets growth, and widespread aging is upending long-held assumptions that underpin strategy setting, decision making, and management.

Intuition forms over time. When McKinsey began publishing the *Quarterly*, in 1964, a new management environment was just beginning to take shape. On April 7 of that year, IBM announced the System/360 mainframe, a product with breakthrough flexibility and capability. Then on October 10, the opening ceremonies of the Tokyo Olympic Games, the first in history to be telecast via satellite around the planet, underscored Japan's growing economic strength. Finally, on December 31, the last new member of the baby-boom generation was born.

Fifty years later, the forces symbolized by these three disconnected events are almost unrecognizable. Technology and connectivity have disrupted industries and transformed the lives of billions. The world's economic center of gravity has continued shifting from West to East, with China taking center stage as a growth story. The baby boomers have begun retiring, and we now talk of a demographic drag, not a dividend, in much of the developed world and China.

We stand today on the precipice of much bigger shifts in each of these areas, with extraordinary implications for global leaders. In the years ahead, acceleration in the scope, scale, and economic impact of technology will usher in a new age of artificial intelligence, consumer gadgetry, instant communication, and boundless information while shaking up business in unimaginable ways. At the same time, the shifting locus of economic activity and dynamism, to emerging

markets and to cities within those markets, will give rise to a new class of global competitors. Growth in emerging markets will occur in tandem with the rapid aging of the world's population—first in the West and later in the emerging markets themselves—that in turn will create a massive set of economic strains.

Any one of these shifts, on its own, would be among the largest economic forces the global economy has ever seen. As they collide, they will produce change so significant that much of the management intuition that has served us in the past will become irrelevant. The formative experiences for many of today's senior executives came as these forces were starting to gain steam. The world ahead will be less benign, with more discontinuity and volatility and with long-term charts no longer looking like smooth upward curves, long-held assumptions giving way, and seemingly powerful business models becoming upended. In this article, which brings together years of research by the McKinsey Global Institute (MGI) and McKinsey's Strategy Practice,¹ we strive to paint a picture of the road ahead, how it differs from the one we've been on, and what those differences mean for senior executives as they chart a path for the years to come.

Forces at work

In an article of this length, we can only scratch the surface of the massive forces at work.² Nonetheless, even a brief look at three of the most important factors—emerging-markets growth, disruptive technology, and aging populations—is a useful reminder of the magnitude of change under way.

Dynamism in emerging markets

Emerging markets are going through the simultaneous industrial and urban revolutions that began in the 18th century in England and in the 19th century in the rest of today's developed world. In 2009,

¹ For more, see Peter Bisson, Elizabeth Stephenson, and S. Patrick Viguerie, "Global forces: An introduction," *McKinsey Quarterly*, June 2010; and Yuval Atsmon, Peter Child, Richard Dobbs, and Laxman Narasimhan, "Winning the \$30 trillion decathlon: Going for gold in emerging markets," *McKinsey Quarterly*, August 2012, both available on mckinsey.com.

² Next year, the McKinsey Global Institute will publish *No Ordinary Disruption: The Four Global Forces Breaking All the Trends*, a book-length treatment of the issues in this article and related shifts under way in the global economy.

for the first time in more than 200 years, emerging markets contributed more to global economic growth than developed ones did. By 2025, emerging markets will have been the world's prime growth engine for more than 15 years, China will be home to more large companies than either the United States or Europe, and more than 45 percent of the companies on Fortune's Global 500 list of major international players will hail from emerging markets—versus just 5 percent in the year 2000.

The new wave of emerging-market companies now sweeping across the world economy is not the first. In the 1970s and 1980s, many US and European incumbents were caught unaware by the swift rise of Japanese companies that set a high bar for productivity and innovation. More recently, South Korean companies such as Hyundai and Samsung have shaken up the leading ranks of high-value-added industries from automobiles to personal electronics. The difference today is that new competitors are coming from many countries across the world and in numbers that far outpace those of past decades. This new wave will be far tougher on some established multinationals. The shift in the weight of the global economy toward emerging markets, and the emergence of nearly two billion consumers who for the first time will have incomes sufficient to support significant discretionary spending, should create a new breed of powerful companies whose global expansion will take place on the back of strong positions in their home markets.

Within those markets, the locus of economic activity is also shifting, particularly in China (Exhibit 1). The global urban population is growing by 65 million a year, and nearly half of global GDP growth between 2010 and 2025 will come from 440 cities in emerging markets. Ninety-five percent of them are small and medium-sized cities that many executives haven't heard of and couldn't point to on a map: not Mumbai, Dubai, or Shanghai, of course, but Tianjin (China) and Porto Alegre (Brazil) and Kumasi (Ghana), among many others. Hsinchu, in northern Taiwan, is already the fourth-largest advanced-electronics and high-tech hub in the China region. In Brazil, the state of Santa Catarina, halfway between São Paulo and the Uruguayan border, has become a regional hub for electronics and vehicle manufacturing, hosting billion-dollar companies such as WEG Indústrias.

Exhibit 1

Previously unknown cities are becoming significant economic players in many emerging markets, particularly China.

Global top 200 cities in China, in terms of projected 2025 GDP

- New entrants into global top 200
- Already in 2010 global top 200

By 2025, will exceed nominal 2010 GDP of ...

- Los Angeles (\$731 billion)
- Singapore (\$222 billion)
- Bogotá (\$84 billion)



Source: McKinsey Global Institute analysis

Technology and connectivity

From the mechanization of the Industrial Revolution to the computer-driven revolution that we are living through now, technological innovation has always underpinned economic change and disrupted the way we do things. But today is different—because we are in the “second half of the chessboard.” The phrase comes from the story told by Ray Kurzweil, futurist and director of engineering at Google, about the inventor of chess and the Chinese emperor. The inventor asked to be paid in rice: a single grain on the first square, two on the second square, four on the third, and so on. For the first half of the chessboard, the inventor was given spoons of rice, then bowls, and then barrels. The situation changed dramatically from there. According to one version of the story, the cost of the second half of

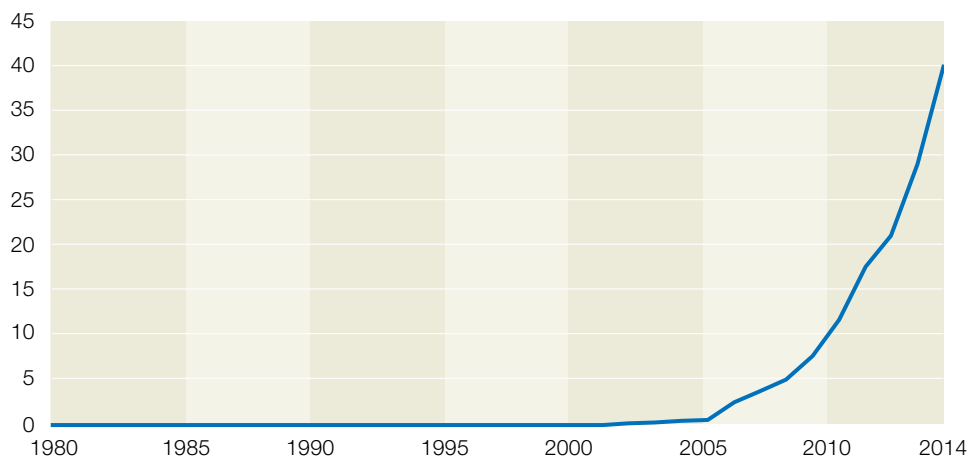
the chessboard bankrupted the emperor as the continued doublings ultimately required 18 million-trillion grains of rice, enough to cover twice the surface area of the Earth. Similarly, the continuation of Moore’s law means that the next 18 months or so will bring a doubling of all the advances in computational power and speed we’ve experienced from the birth of the transistor until today. And then it will happen again. We’re accustomed to seeing Moore’s law plotted on a logarithmic scale, which makes all this doubling look smooth. But we don’t buy computers logarithmically. As power increases, prices decrease, devices proliferate, and IT penetration deepens, aggregate computing capacity surges at an eye-popping rate: we estimate the world added roughly 5 exaflops of computing capacity in 2008 (at a cost of about \$800 billion), more than 20 in 2012 (to the tune of just under \$1 trillion), and is headed for roughly 40 this year (Exhibit 2).

These extraordinary advances in capacity, power, and speed are fueling the rise of artificial intelligence, reshaping global

Exhibit 2

Businesses and consumers will add roughly 40 exaflops of computing capacity in 2014, up from 5 in 2008 and less than 1 in 2005.

Annual additions to global business and consumer computing power, exaflops¹



¹ An exaflop is 1 quintillion (10 to the 18th power) floating-point operations per second.

Source: William D. Nordhaus, “Two centuries of progress in computing,” *Journal of Economic History*, 2007, Volume 67, Number 1, pp. 128–59; IDC; US Bureau of Economic Analysis; McKinsey analysis

manufacturing,³ and turbocharging advances in connectivity. Global flows of data, finance, talent, and trade are poised to triple in the decade ahead, from levels that already represent a massive leap forward.⁴ For example, less than 3 percent of the world's population had a mobile phone and less than 1 percent was on the Internet 20 years ago. Today, more than two-thirds of the world's population has access to a mobile phone, and one-third of it can communicate on the Internet. As information flows continue to grow, and new waves of disruptive technology emerge, the old mind-set that technology is primarily a tool for cutting costs and boosting productivity will be replaced. Our new intuition must recognize that businesses can start and gain scale with stunning speed while using little capital, that value is shifting between sectors, that entrepreneurs and start-ups often have new advantages over large established businesses, that the life cycle of companies is shortening, and that decision making has never had to be so rapid fire.⁵

Aging populations

Simultaneously, fertility is falling and the world's population is graying dramatically (Exhibit 3). Aging has been evident in developed economies for some time, with Japan and Russia seeing their populations decline. But the demographic deficit is now spreading to China and will then sweep across Latin America. For the first time in human history, the planet's population could plateau in most of the world and shrink in countries such as South Korea, Italy, and Germany.

Thirty years ago, only a few countries had fertility rates considerably below those needed to replace each generation (approximately 2.1 children per woman), comprising only a small share of the global population. But by 2013, about 60 percent of all people lived in such countries.⁶ This is a sea change. Germany's Federal Statistical Office expects that by 2060 the country's population will shrink by up to

³ See Katy George, Sree Ramaswamy, and Lou Rassey, "Next-shoring: A CEO's guide," *McKinsey Quarterly*, January 2014, mckinsey.com.

⁴ For more, see *Global flows in a digital age: How trade, finance, people, and data connect the world economy*, McKinsey Global Institute, April 2014, on mckinsey.com.

⁵ See Martin Hirt and Paul Willmott, "Strategic principles for competing in the digital age," *McKinsey Quarterly*, May 2014, mckinsey.com.

⁶ Michael S. Teitelbaum and Jay Winter, "Low fertility rates—Just a phase?," *YaleGlobal Online*, July 9, 2013, yaleglobal.yale.edu.

one-fifth and that the number of people of working age will fall to 36 million (from roughly 50 million in 2009). Thanks to rigorous enforcement of the one-child policy, the size of China's core, working-age population probably peaked in 2012. In Thailand, the fertility rate has fallen from 6.1 in 1960 to 1.4 in 2012. These trends have profound consequences. Without a boost in productivity, a smaller workforce will mean lower consumption and constrain the rate of economic growth. (For more on these dynamics, see "A productivity perspective on the future of growth," on mckinsey.com.)

The great collision

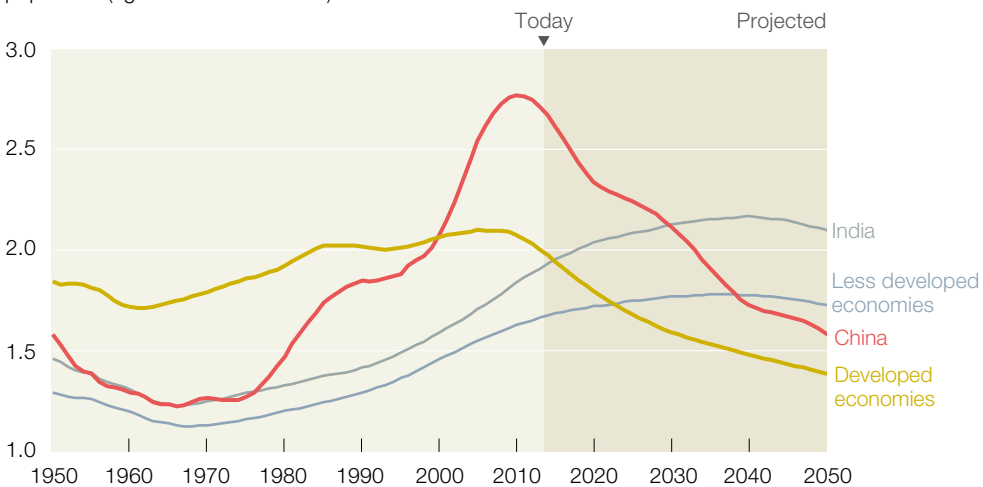
Declaring an inflection point, particularly when the underlying forces at work have been operating for some time, is a major claim. What justifies it, we believe, isn't just the growing pace and scale of these forces, but the ways in which they are coming together to change the dynamics we are accustomed to experiencing on both the demand and the supply side of the global economy.

Exhibit 3

Aging populations in much of the developed world and China will create long-term growth headwinds.

Number of workers per dependent,

ratio of working-age population (aged 15–64) to dependent population (aged 0–14 and over 65)



Source: United Nations population statistics; McKinsey analysis

On the demand side, since the 1990s we've been enjoying a virtuous cycle of export-led emerging-market growth that created jobs, raised incomes, and generated enormous opportunities in those markets, while also reducing prices for goods in developed ones and enabling faster consumption growth in the West. For example, in the United States, real prices for nonpetroleum imports fell more than 30 percent between the early 1990s and today. As emerging markets get richer, it will be harder for them to play the low-cost-labor arbitrage game, making it critical for local consumers to emerge as growth drivers in place of ever-rising exports to developed markets. It will also be harder for Western consumers to continue enjoying de facto gains in living standards resulting from ever-falling import prices. As all this happens, trade between emerging markets, already on the rise, should continue growing in importance.

On the supply side, we've been operating for many years on a two-track productivity model, with developed markets continually pushing forward and emerging markets playing catch-up. Emerging markets are still less productive than developed ones, and those with capital-intensive catch-up models will find them difficult to maintain as their economies become more consumer and service oriented. As anyone who has seen row after row of empty brand-new high-rise apartments in overbuilt Chinese fringe cities can attest, the transition from investment-led growth is unlikely to be smooth, even for countries like China with explicit policies aimed at shifting to more consumer- and service-oriented economies. On the other hand, digitization and mobile technologies should provide a platform for product and service innovation, as we are already seeing in Africa, where 15 percent of transactions are carried out via mobile banking (versus 5 percent in developed markets), and in China, where Alibaba has proved that consumer online markets can take on unprecedented scope and scale.

How these interdependencies in supply and demand will play out is far from clear. We've modeled optimistic and pessimistic global GDP scenarios for a decade from now. They diverge by more than \$17 trillion,⁷ a spread approaching the size of current US GDP. Variables at play include the pace and extent of the shift to emerging-market consumers as the critical global growth engine, the adjustment of developed markets to a world where they can no longer draft

⁷ In 2013 dollars.

off the combined benefits of low-cost imports and low-cost capital enabled by emerging markets, and the emergence of new productivity solutions as developed and emerging markets alike try to advance the frontier in response to their demographic and other growth challenges.

It's likely that different regions, countries, and individuals will have different fates, depending on the strength and flexibility of their institutions and policies. Indeed, we're already seeing this in portions of Southern and Eastern Europe that remain mired in recession and debt and in the United States, where some local governments are on the verge of failure as their economic bases can't keep up with the needs of their aging populations. Similarly, as aging boosts the importance of productivity-led growth in many emerging markets, progress will be uneven because many known productivity solutions depend on effective regulatory regimes and market mechanisms that are far from standard in emerging markets.

Given the multiple stresses that are occurring at once in the global economy, we should not expect uniform success—but neither should we become too pessimistic. The massive pressures created by the dynamism of emerging markets, technological change, and rapid aging will help stimulate the next era of innovation and growth in a variety of areas. They will include the more productive natural-resource use that will be necessary to support the world's growing global consuming class, the more efficient use of capital, and the more creative management of talent.

Management implications

Emerging on the winning side in this increasingly volatile world will depend on how fully leaders recognize the magnitude—and the permanence—of the coming changes and how quickly they alter long-established intuitions.

Setting strategic direction

McKinsey research suggests that about two-thirds of a company's growth is determined by the momentum—the underlying growth, inflation, income, and spending power—of the markets where it competes. Harnessing market momentum in the years ahead will

require covering more geographies, more industries, and more types of competitors, prospective partners, and value-chain participants—as well as more governmental and nongovernmental stakeholders. Rather than thinking of a primary national market broken into three to five value segments, tomorrow’s strategist must comprehend a world where offerings may vary by city within a country, as well as by distribution channel and demographic segment, with aging and income inequality necessitating increasingly diverse approaches. All this will place a premium on agility: both to “zoom out” in the development of a coherent global approach and to “zoom in” on extremely granular product or market segments.

The importance of anticipating and reacting aggressively to discontinuities also is rising dramatically in our increasingly volatile world. That means monitoring trends, engaging in regular scenario-planning exercises, war-gaming the effects of potential disruptions—and responding rapidly when competitive conditions shift. For example, few of the traditional mobile-phone manufacturers protected themselves against Apple’s disruption via the iPhone. Samsung, however, managed to turn that revolution into an opportunity to rise dramatically in the mobile-phone league tables.

Finally, the strategist increasingly needs to think in multiple time frames. These include a company’s immediate tactics and ongoing improvements to counteract new competitive threats, market selection and emphasis given current capabilities and competitive positions, investments to enhance capabilities within the current strategic construct and to enable entry into adjacent markets, and, for the longest term, the selection and pursuit of new, long-lived capabilities. The latter point is worthy of emphasis—advances in technology and the interconnectedness of geographic and product markets make the half-life of “normal” competitive advantages very short indeed. This puts a premium on the selection and development of difficult-to-replicate capabilities. (For more, see Dan Simpson’s essay in “Synthesis, capabilities, and overlooked insights: Next frontiers for strategists,” on mckinsey.com.)

Building new management muscle

It will be increasingly difficult for senior leaders to establish or implement effective strategies unless they remake themselves in the image of the technologically advanced, demographically complex, geographically diverse world in which we will all be operating.

Everyone a technologist. Technology is no longer simply a budget line or operational issue—it is an enabler of virtually every strategy. Executives need to think about how specific technologies are likely to affect every part of the business and be completely fluent about how to use data and technology. There is a strong argument for having a chief digital officer who oversees technology as a strategic issue, as well as a chief information officer, who has tended to be in charge of the nuts and bolts of the technology the company uses. Technological opportunities abound, but so do threats, including cybersecurity risks, which will become the concern of a broader group of executives as digitization touches every aspect of corporate life.

Managing the new workforce. Technology is increasingly supplanting workers, and the pace of IT innovation is transforming what constitutes work as well as how, when, and where we work. MGI research suggests that as many as 140 million full-time knowledge workers could be displaced globally by smart machines—at the same time aging workforces are becoming commonplace and labor shortages are emerging for pockets of technical expertise. New priorities in this environment include ensuring that companies are using machine intelligence in innovative ways to change and reinvent work, building the next-generation skills they need to drive the future’s tech-led business models, and upskilling and retraining workers whose day-to-day activities are amenable to automation but whose institutional knowledge is valuable. (For more on artificial intelligence, see “Manager and machine: The new leadership equation,” on [mckinsey.com](https://www.mckinsey.com).)

For workers with more replicable skills, there’s a danger of doing less well than their parents—which will create social stresses and challenge managers trying to energize the entire workforce, including employees dissatisfied about falling behind. Developed and emerging markets will experience different flavors of these issues, making the people side of the equation particularly challenging for geographically dispersed organizations. (For more, see “The past and future of global organizations,” on [mckinsey.com](https://www.mckinsey.com).)

Rethinking resources. The convergence of IT and materials science is spawning a surge in innovation that will dramatically change when, where, and how we use natural resources. In their new book *Resource Revolution*, our colleague Matt Rogers and his coauthor,

McKinsey alumnus Stefan Heck, argue that combining information technology, nanoscale materials science, and biology with industrial technology will yield substantial resource-productivity increases. Taken together, those improvements represent an extraordinary wealth-creation opportunity and will be the key to achieving high-productivity economic growth in the developing world to support billions of new members of the global middle class. Capturing these resource-technology opportunities will require new management approaches, such as substitution (replacing costly, clunky, or scarce materials with less scarce, cheaper, and higher-performing ones), optimization (embedding software in resource-intensive industries to improve, dramatically, how companies produce and use scarce resources), and virtualization (moving processes out of the physical world).⁸

Breaking inertia

Change is hard. Social scientists and behavioral economists find that we human beings are biased toward the status quo and resist changing our assumptions and approaches even in the face of the evidence. In 1988, William Samuelson and Richard Zeckhauser, economists at Boston University and Harvard, respectively, highlighted a case in which the West German government needed to relocate a small town to mine the lignite that lay beneath. The authorities suggested many options for planning the new town, but its citizens chose a plan that looked “extraordinarily like the serpentine layout of the old town—a layout that had evolved over centuries without (conscious) rhyme or reason.”⁹

Businesses suffer from a surprising degree of inertia in their decisions about how to back up strategies with hard cash to make them come to fruition. Research by our colleagues showed that between 1990 and 2010, US companies almost always allocated resources on the basis of past, rather than future, opportunities. Even during the global recession of 2009, this passive behavior persisted. Yet the most active companies in resource allocation achieved an average of 30 percent higher total returns to shareholders annually compared with the least

⁸ For more, see Stefan Heck and Matt Rogers, “Are you ready for the resource revolution?,” *McKinsey Quarterly*, March 2014, mckinsey.com.

⁹ See William Samuelson and Richard Zeckhauser, “Status quo bias in decision making,” *Journal of Risk and Uncertainty*, 1988, Volume 1, Issue 1.

active.¹⁰ The period ahead should raise the rewards for moving with agility and speed as digitization blurs boundaries between industries and competition in emerging markets heats up.

It would be easy, though, for organizations and leaders to become frozen by the magnitude of the changes under way or to tackle them on the basis of outdated intuition. Taking the long view may help. In 1930, the great British economist John Maynard Keynes boldly predicted that 100 years on, the standard of living in progressive countries would be four to eight times higher. As it turned out, the upper end of his optimistic expectation turned out to be closer to the truth. Those who understand the depth, breadth, and radical nature of the change *and opportunity* that's on the way will be best able to reset their intuitions accordingly, shape this new world, and thrive. ○

¹⁰ See Stephen Hall, Dan Lovallo, and Reinier Musters, “How to put your money where your strategy is,” *McKinsey Quarterly*, March 2012; and Mladen Fruk, Stephen Hall, and Devesh Mittal, “Never let a good crisis go to waste,” *McKinsey Quarterly*, October 2013, both available on mckinsey.com.

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