

The Long View

Investment Insights

January 2015



The Future Looks Bright.



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The Future Looks Bright

“Today it seems as if we are in the middle of another revolution, and clearly these changes pose significant challenges and opportunities for long-term investors.”

Rob Lovelace, Portfolio Manager

Flying cars? No, sorry. Hoverboards? Probably not, although there is progress on that front. The future, it seems, isn't going to be filled with all the fantastic things people have dreamed up.

But it is going to be remarkable. From cars that can drive themselves to breakthrough drugs that could lead to victory in the war against cancer, we may be on the cusp of a dramatically different world brought on by technology and innovation.

Indeed, we may now be in the midst of a knowledge revolution that has the potential to create immense bounty and opportunity.

Portfolio manager Carl Kawaja shares that optimistic outlook. “I think that the world, broadly, gets better,” Carl says. “I think people become wealthier. I think health care becomes better. I think education improves. I think we know more about the world.”

Carl is among the many investment professionals at American Funds who say the world is changing for the better. They say the changes have the potential to improve the standard of living across the globe, provide companies with new profit opportunities, and investors with potential reward.

Portfolio manager Rob Lovelace says we are now living through an era that may be as significant as the Industrial Revolution. “Today it seems as if we are in the middle of another revolution, and clearly these

changes pose significant challenges and opportunities for long-term investors,” Rob says.

Some of the changes are slow, global and have profound implications for the world's economy, such as the evolution of a middle class in developing countries.

“These are people that not that long ago had no opportunity, and now they have a small business,” says portfolio manager Gregg Ireland. “When you multiply that by hundreds of millions of people it's absolutely amazing. This is bubbling under the surface. It's massive and it's probably just going to build and build.”

Some changes seem to burst on the scene and transform an industry, or nearly everyone's daily life, such as the Internet and smartphones.

“It's incredible that a person today has access to more or less the entire globe's information,” investment analyst Brad Barrett says. “When you think about how powerful a trend that is, you get a grasp that we've really just seen the beginning of how transformative this technology is going to be and how many really huge companies are going to be built on the back of it.”

Brad says the world may now be at an inflection point, or beyond. Many developments that seemed nearly unimaginable a decade or so ago now seem commonplace. There is a sense that we are in the early stages of a shift as profound as that brought on by the Industrial Revolution.



Jonathan Knowles

Portfolio Manager

23 years of investment experience

A New Wave of Innovation

In the first 10 years of my career, in the 1990s, there was a lot of innovation in the health care sector. Then in the first decade of the 2000s, there wasn't much innovation. Perhaps one or two companies had great drugs. We saw a lot of consolidation among the big companies.

Now we're in a new wave of innovation that includes some very exciting developments in treatments for hepatitis C. There are more than 100 million people globally with hepatitis C, and it used to be very difficult to cure. Now it looks like there are going to be several companies with oral medications you take for seven to 10 weeks, and the vast majority of patients will be cured. It's remarkable. Similarly, immunology is going to bring tremendous change in medicine in the next decade, using an individual's own immune system to treat diseases.

As an investor, I'm always looking for new businesses and always asking myself where am I wrong, what has changed? Capitalism has this habit of demolishing your business. Look at what Amazon has done to traditional retail. Look at what Priceline has done to the hotel booking model. It's nonstop. It's a natural human instinct to be complacent, but I try and avoid it at all cost.

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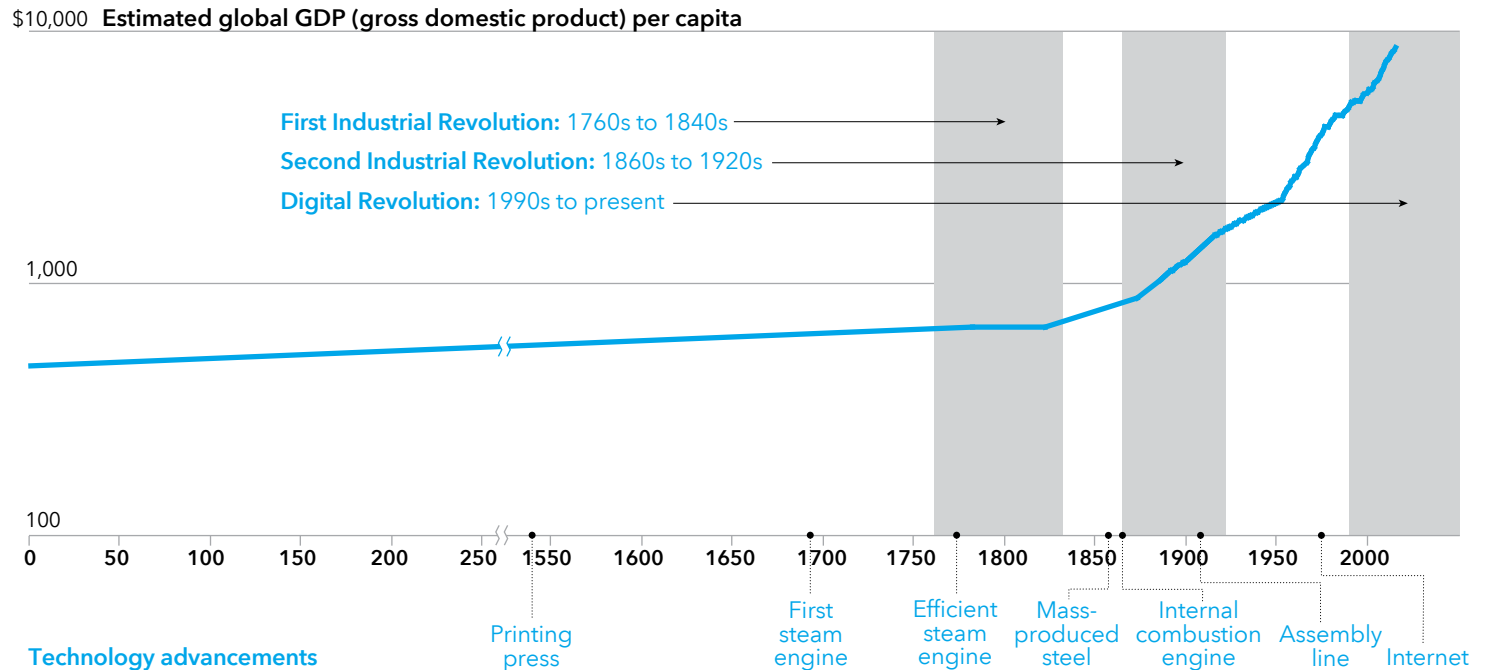
Past results are not predictive of results in future periods.

Welcome to the Revolution

The Digital Revolution is transforming the world and lifting mankind to a new level

“People tend to overestimate change in the short run and underestimate it in the long term.”

Brad Barrett, Investment Analyst



Source: Adapted exhibit from *Disruptive Technologies: Advances That Will Transform Life, Business, and the Global Economy*, May 2013, McKinsey Global Institute, www.mckinsey.com/mgi, McKinsey & Company. Please see back cover for additional information.

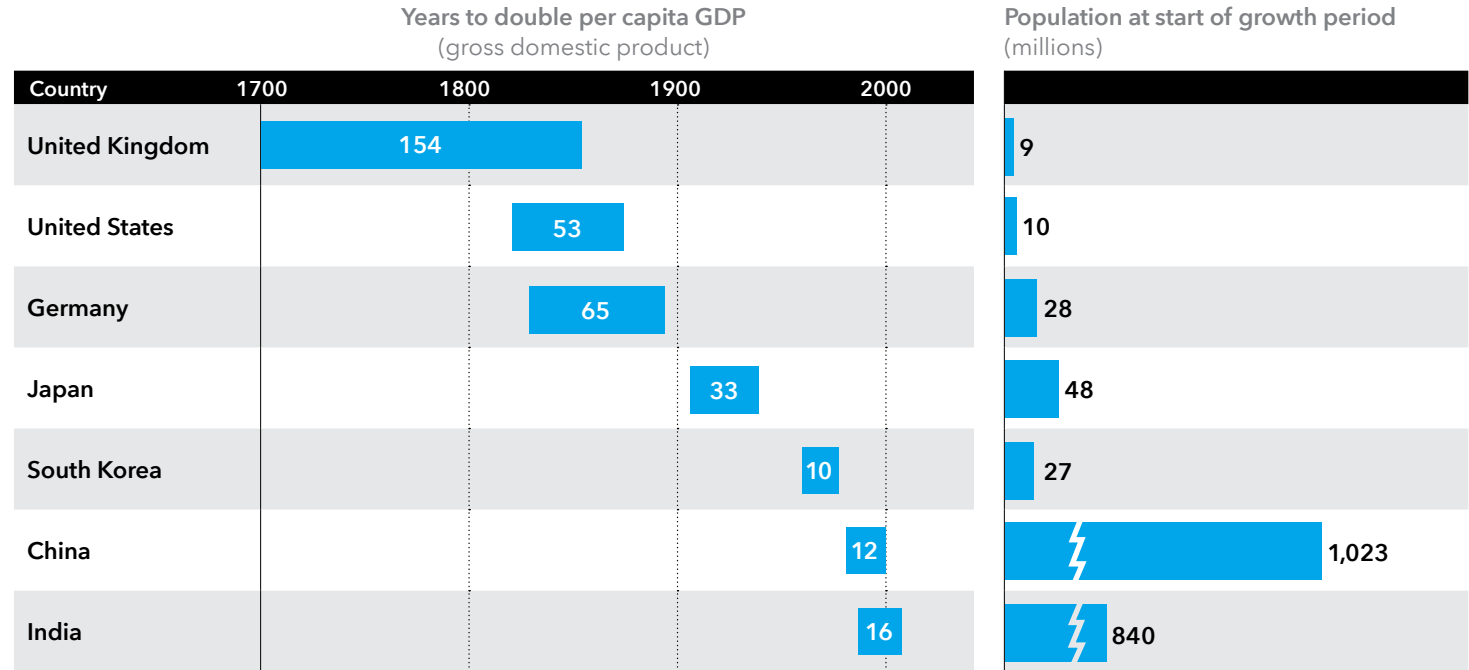
- A new revolution is under way, one that has the power to transform the way we live and work. But the Digital Revolution we are now living through is in many ways a continuation of a remarkable advance that began centuries ago. The chart above shows that “since the start of the Industrial Revolution more than 250 years ago, the global economy has been on a steep growth trajectory propelled by a series of advances in technology,” according to McKinsey & Company, a global research and consulting firm.
- Whether it was the steam engines that replaced water mills, the advent of electricity, telephones, automobiles, airplanes, transistors, computers and the Internet, each new wave of technology has brought about surges in productivity and economic growth, McKinsey reports. That’s enabled efficient new methods for performing tasks and given rise to new types of businesses. In each case, those developments set in motion events that would have been hard to imagine even a few years before they appeared.
- The changes can be massive and disruptive, but they can also be uplifting. From the introduction of Apple’s iPhone (350 million sold since 2007) to the rise of e-commerce company Alibaba (\$240 billion in 2013 sales), the digital revolution has led to extraordinary advances that have improved the standard of living around the world. For investors, innovation in technology, and the adoption of products among consumers, has provided investment opportunities that few could have imagined a decade ago.

Money Is Setting a New Speed Record

Spreading the wealth: Income is growing faster than at any time in history

“During the next 10 years, developing countries are expected to add about a billion people to the middle class and beyond. I believe that is going to have a transformational impact on the world’s economy.”

Noriko Chen, Portfolio Manager



Source: Adapted exhibit from *Urban World: Cities and the Rise of the Consuming Class*, June 2012, McKinsey Global Institute, www.mckinsey.com/mgi, McKinsey & Company. Time to increase per capita GDP is in purchasing power parity terms from \$1,300 to \$2,600. Per capita GDP is a measure of the total output of a country that takes the GDP and divides it by the number of people in the country. Per capita GDP is useful when comparing one country to another because it shows the relative performance of the countries. A rise in per capita GDP signals growth in the economy and tends to translate as an increase in productivity.

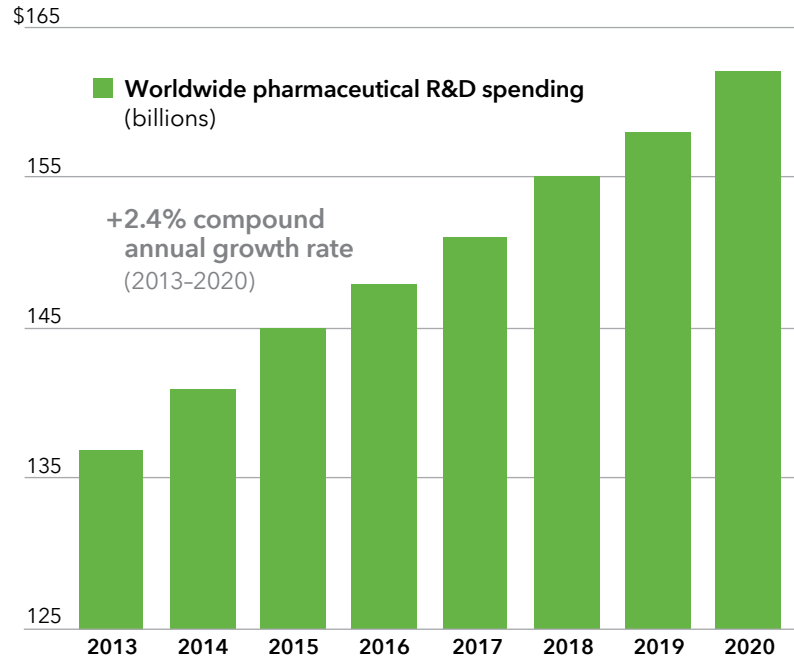
- Money is setting a new speed record in many parts of the world. Back in the day, it took more than 150 years from the start of Britain’s industrial revolution for GDP per person (measured at purchasing power parity) to double from \$1,300 to \$2,600. About 120 years later, America, with about the same size population, achieved the feat in about a third of the time. Much more recently, China doubled GDP per person in just 12 years, or four decades less than it took the United States to spread the wealth.
- Moreover, the McKinsey Global Institute reports, Britain and the U.S. began industrialization with population of about 10 million, whereas China and India began their economic rise with populations of roughly 1 billion.
- Around the world, average incomes in developing countries are growing more quickly than at any time in previous history. South Korea’s GDP per person, for example, has grown from the \$2,600 mark around 1980 to stand at almost \$32,000 per person to now.
- Asia and particularly China account for much of the world’s new wealth, but the rise in household wealth is a global phenomenon. From Mexico to Nigeria, millions of people are moving into the middle class and beyond and creating a consumer class with discretionary income. That’s provided opportunity for companies ranging from BMW to International Container Terminal Services, which operates many of the ports around the world that goods go through on their way to new consumers.

Innovation Opening New Fronts in the War on Cancer

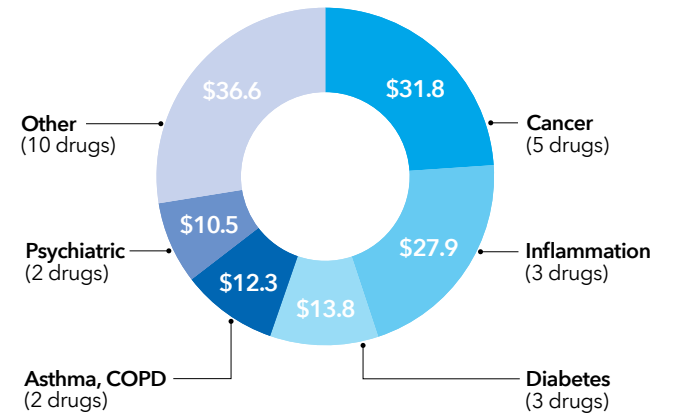
Increased R&D spending could lead to more breakthrough drugs

“A number of drugs with enormous potential are in development. Medical science appears to be on the brink of a paradigm shift in the treatment of many troubling conditions.”

Jonathan Knowles, Portfolio Manager



Largest 25 sellers in 2013: Drug sales grouped by disease (billions)



Sources: For left chart (“worldwide pharmaceutical R&D [research and development] spending”), *World Preview 2014, Outlook to 2020*, June 2014, EvaluatePharma. For right chart (“largest 25 sellers/drug sales by disease”), *Genetic Engineering & Biotechnology News*, March 2014. Please see back cover for additional information.

- Not so long ago, the prognosis for anyone diagnosed with cancer was generally grim. In recent decades, however, improved understanding of how to prevent, diagnose and treat various types and subtypes of the disease have improved the odds for many cancer patients. The outlook for oncology should become even brighter over the next decade. For many people with cancer, radical new drugs now in the early stages of development could shift the paradigm from treatment to possible cure.
- One therapy that appears to have great potential in the war on cancer is immuno-oncology (IO), which harnesses a patient’s own immune system to recognize and fight cancer. Certainly, there are scientific challenges with IO that will need to be overcome. Treatments must strike the optimal balance, enabling the immune system to counter disease effectively without triggering a potentially dangerous physiological response that overwhelms a patient’s immune system and damages healthy cells. Ascertaining the optimal mix of therapies for different cancer types will be challenging.
- Many pharmaceutical companies are investing heavily in research and development. The payoff could be drugs such as Humira®, an injectable drug made by AbbVie that’s used to treat rheumatoid arthritis. In 2013, Humira was the top-selling prescription drug in the world, generating \$10.7 billion in sales. Or Sovaldi, Gilead Sciences’ hepatitis C treatment, which has \$8.7 billion in sales since its December 2013 launch.

Energy Independence: The Dream Is Becoming a Reality

If Texas were a country, it would be the world's eighth-largest oil producer

"The energy boom has such broad implications for the United States that you're going to see tremendous transformations over the next decade."

Barry Crosthwaite, Portfolio Manager

Crude oil production of these states ...

... rivals these countries

| | | | |
|------------------------------|-----------|----------------|-----------|
| Texas | 3,136 bpd | Iran | 3,385 bpd |
| Louisiana | 1,614 | Algeria | 1,721 |
| North Dakota | 1,114 | Oman | 964 |
| Alaska & California | 974 | United Kingdom | 826 |
| Kansas & Oklahoma | 479 | Ecuador | 559 |
| Colorado & Wyoming | 437 | Libya | 484 |
| Pennsylvania & West Virginia | 33 | Syria | 35 |

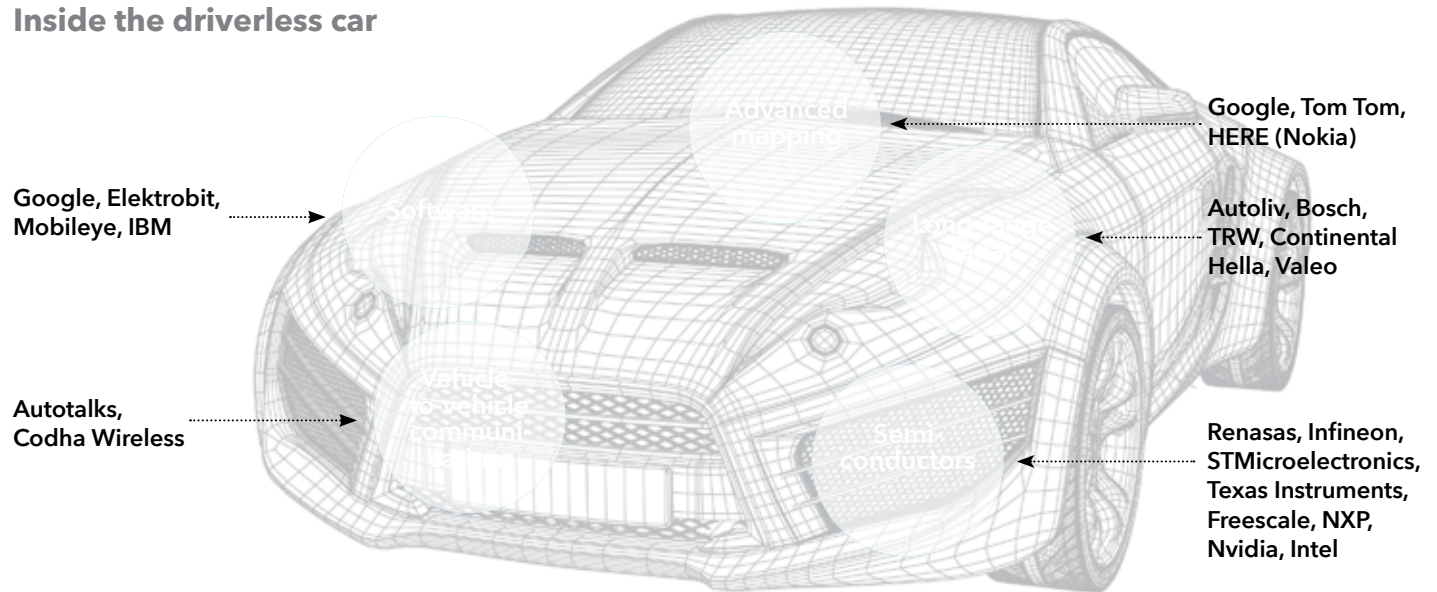
Source: U.S. Energy Information Administration. Data represent thousands of barrels per day (bpd) for the month of July 2014. The data for Louisiana and the United Kingdom include offshore production.

- In January 2007 the U.S. Senate Committee on Energy and Natural Resources convened a panel of energy and foreign policy experts to discuss the "Geopolitics of Oil." Most of the experts had one word to describe America's energy future: bleak. One expert said there was no economically plausible scenario under which America could reduce its dependence on imported energy during the next quarter century. Then came the shale revolution. Now the U.S. is on its way to energy independence.
- Not many saw the shale revolution coming, or anticipated how dramatic the transformation would be for the country. Indeed, since 2007, the combined daily output of America's three largest oil fields – the Bakken, Eagle Ford and Permian Basin – has increased from 1 million barrels per day (bpd) to an estimated 4.6 million at the end of 2014. Texas' oil production alone topped 3.1 million bpd in July 2014, the highest in 33 years, according to the Energy Information Administration.
- The steep drop in the price of oil at the end of 2014 raised questions about the sustainability of U.S. oil production. While lower prices present a headwind for some producers, the long-term trend toward independence seems firmly established. Indeed, from companies such as Devon Energy, one of the nation's largest independent oil companies, to C&J Energy Services, which focuses on complex well completions, the boom has boosted businesses across the country and transformed the energy map.

Companies Around the World Will Hitch a Ride on Driverless Cars

Millions of self-driving cars may be on the road by 2035

Inside the driverless car



“Taken to the extreme, I believe that autonomous cars will eradicate automobile accidents, eliminate traffic and significantly reduce the real estate dedicated to automobiles, freeing land for more productive use.”

Justin Toner, Investment Analyst



Source: Chris Bryant and Andy Charman, “Race Is on to Build World’s First Driverless Car,” October 13, 2014. Used under license from Financial Times. All rights reserved. Capital Group is solely responsible for providing this abridged version of the original illustration and The Financial Times Limited does not accept any liability for the accuracy or quality of the abridged version.

- Long a staple of science fiction and futuristic prediction, self-driving cars are on the verge of becoming a reality. Automakers around the world, and several technology companies, are not just working on driverless cars, but putting them on the street. Audi, for example, recently received a permit from the state of California to test self-driving cars on public roads. Mercedes Benz, Volvo and other carmakers are also testing autonomous vehicles, and Google has about 700,000 test miles on its driverless cars.
- Autonomous cars represent an opportunity for companies that have not traditionally been part of the auto industry. Beyond Google, others from the technology sector working on elements of the driverless car include Cisco Systems, IBM and Intel. Many other companies around the world are working on cameras, radar, sensors and other equipment that help cars drive themselves. They include Delphi, Continental, TRW, Denso and Autoliv. Still others will sell media to occupants of cars with free time.
- The economic implications are huge. Researchers at Morgan Stanley estimate the benefit of autonomous cars to the U.S. economy could range from \$700 billion to \$2.2 trillion per year – if 100% of the cars on the road were autonomous. That’s unlikely in the near term, but a recent IHS Automotive study estimates 54 million will hit the streets worldwide by 2035. Completely driverless cars could be on the road by the end of the decade, transforming the auto industry and life around the globe.

The Future Looks Bright

- We are now in the midst of a revolution that has the potential to create immense bounty and opportunity.
- From cars that can drive themselves to breakthrough drugs that could lead to victory in the war against cancer, we are on the cusp of a dramatically different world.
- Companies that are poised to take advantage of these changes have the potential to reap new profits, and provide investors with opportunities that few could have imagined a decade ago.

The following information pertains to the cover story and charts on the pages specified below.

Front-page column: Jonathan Knowles' years of experience are as of January 1, 2015.

Page 1: Per capita GDP is a measure of the total output of a country that takes the GDP and divides it by the number of people in the country. Per capita GDP is sometimes used as an indicator of standard of living, with higher per capita GDP being interpreted as having a higher standard of living.

Pages 1-2: The axis breaks (double, jagged lines) represent a break in a graph or scale. This symbol is used to show a break in the intervals on the X (horizontal) or Y (vertical) axis in charts that illustrate a wide range of data or include one number that is significantly larger than others in a series.

Page 3: Industry sales for pharmaceutical R&D spending are based on the top 500 pharmaceutical and biotech companies. Forecast pharmaceutical R&D spending is based on a consensus of leading equity analysts' estimates for company level R&D spending, extrapolated to pharmaceutical R&D when a company has non-pharmaceutical R&D activity. The "cancer" category for the largest 25 drug sellers includes all sales of one drug that is also used selectively in the treatment of inflammation. "COPD" stands for chronic obstructive pulmonary disease. The "other" category includes treatments for multiple sclerosis, HIV and high cholesterol, among other conditions.

The statements in *The Long View* are the opinions and beliefs of the speaker expressed when the commentary was made and are not intended to represent that person's opinions and beliefs at any other time.



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