



China and the evolution of the world economy



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ABSTRACT

China's rapid growth and its growth model have accelerated important existing structural trends in the world economy and made them decisive characteristics of the global economy. In particular, China has ensured that this will be the era of the global market economy; the super-industrial economy; the post-industrial economy; the ecologically constrained economy; the complex economy; the highly globalized economy; the innovation economy; an economy with a new moral consciousness about the global supply chain; and an economy with an emerging new monetary system.

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China's rapid growth for three decades has pushed the global economy past a number of thresholds, namely the era of the global market economy; the super-industrial economy; the post-industrial economy; the ecologically constrained economy; the complex economy; the highly globalized economy; the innovation economy; an economy with a new moral consciousness about the global supply chain; and an emerging new monetary system. In most of these cases, it accelerated trends initiated elsewhere, sometimes long under way, but it accelerated development past a tipping point for the world economy considered as a whole and ensured that the trends would continue in a way that might not have occurred if the Chinese economic takeoff in the last three to four decades had not taken place. For instance, Daniel Bell wrote in the mid-1970s about the emergent post-industrial economy in the United States,¹ but if China had not reformed under Deng Xiaoping in 1979 and if India had not had the example of Chinese reform, the world economy as a whole would not have moved decisively into the post-industrial era.

First, reformist China pushed the world over the threshold into a global *market economy*. Previously China and the Soviet Union had been autarkic non-market economies. India was decisively non-market in different ways. Much of the rest of the developing world was strongly influenced by their ideologies. Even though the market economies were already much more prosperous, anti-imperialism, dependency theory, and anti-capitalist egalitarianism converged for the majority of the world's population and the majority of the globe's land mass. In 1979–1980 the Soviet Union was believed, even in the White House, to be a very successful economy. India was not about to change direction. China had been promulgating an anti-market ideology all over the world. What broke the back of anti-market socialism was Deng Xiaoping's moves toward the market and the extraordinary success that followed from the return to family farming, the industrial responsibility system, market pricing, and the gradual opening to foreign market economies. China proceeded gradually, proclaiming the “socialist market economy” in 1994 and calling for market-dominated resource allocation in 2013, but the example of China's decisive and successful break with autarkic

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¹ Daniel Bell, *The Coming of Post-Industrial Society* (New York: Basic Books, 1973).

socialism and the practical consequences of China's withdrawal in the early 1980s from support of revolutionary movements around the world already had a decisive impact in the 1980s.

As with the other trends, China's impact brought to earlier fruition a trend that, barring some horrific event like a nuclear war, might well have come to fruition eventually but happened much earlier and much more decisively because of China.

The most important ramification of this market reform success was to lift a couple billion people out of poverty and to lengthen their lives. From Mao-era egalitarian reforms and infrastructure building in the 1950s through the market reform era, the life expectancy of Chinese nearly doubled, from a bit above 40 years to the mid-70s today. A decade after Chinese reforms, India had a crisis, realized it needed a new economic strategy, and Chinese success inspired market reforms that lifted hundreds of millions of Indians into better lives. When I held an advisory board meeting in Delhi in 2005 for the center I ran at RAND, India's Finance Minister gave the keynote speech and emphasized that "China's success is the best thing that ever happened to India," because it provided the desperately needed model for reform. Elsewhere in Asia, Africa and Latin America, large numbers of people have benefited from the model of gradually opening up and moving to the market. Bangladesh, long labeled a hopeless failed state, has experienced impressive growth from spillover of the Chinese model. Ethiopia, once a symbol of starvation and hopelessness, has recently been the world's fastest growing economy, based in part on advice from Justin Lin, the Chinese economist who became Chief Economist of the World Bank, and on Chinese investment.

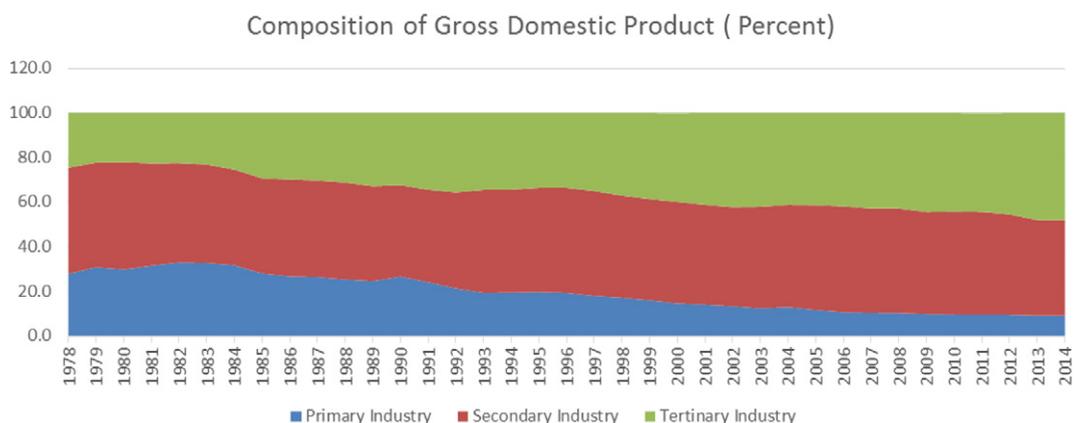
Given its success with progress toward an open market economy, China has led us into a *super-industrial or surfeit economy*. For all of human history until the end of the 20th century humanity has lived in an economy of scarcity. Perhaps one could even say that life in general has lived in a context of scarcity. We have not had enough food, cement, clothing or toys to feed, shelter, clothe or amuse the whole human race. With the transformation of China from a society of scarcity, one where many people starved in the 20th century, one where members of "one-pants families" in Northeast China had to share a single set of clothes, and one in which, through part of the 1950s, the average person lived only a little over 40 years, into an economy of surplus, not just China but also the whole world has passed a tipping point. We now have more than enough shirts and shoes, more than enough cement, and other basic materials and more than enough toys to provide the basic needs of every human being on the planet. In 2014 China alone produced approximately 14 billion pairs of shoes and 74 billion RMB worth of toys, enough to provide almost two pairs of shoes and one or two toys to every member of the human race.

That is of course different from saying that every human being actually has what he or she needs. We still have a severe distribution problem. There are hungry people in China, hungry people in America, and huge numbers of hungry people in India and Africa. But we have moved from an era where the problem was inadequate production to an era where the problem is exclusively distribution—a crucially important problem, one that we don't know how to solve, but a different problem from the problem of scarce production. China's increased productivity and integration into the world economy have even shown that the problem of feeding the whole human race, a problem that writers like Lester Brown erroneously believed would become disastrous as a result of China's development,² have been resolved—also a distribution problem, not one of production.

Somewhat paradoxically, China has also helped the world into the era of the *post-industrial economy*. The super-industrial economy is so efficient that we no longer need most people to work in the industrial economy. Production keeps going up, but the number of workers needed to create that production keeps going down. All developed economies have long had more workers in services than in manufacturing. Now that China, too, has passed that threshold, as it did in 2012, the world as a whole has passed the tipping point. This transformation is fundamental. Two centuries ago most of the world population, including almost all Americans, worked in agriculture; now only about 2% of Americans work in agriculture, not because U.S. agriculture is weak, but because it is strong. Now the same thing is happening in manufacturing; Europe, the U.S. and China are all losing manufacturing jobs, not because manufacturing is weak but because it is strong—although U.S. politicians, spurred by interest groups, generally refuse to acknowledge this.

Barring catastrophe, for the rest of history the majority of Gross World Product (GWP) will come from the service economy. The majority of jobs will be in the service economy. (In China, the number of jobs in secondary industry, largely manufacturing, turned down starting in 2012. In 2015, the service economy became 50.5% of China's economy, surpassing the primary and secondary sectors combined.) The best jobs—for instance jobs in finance, law, education, accounting, government, entertainment—will be in the service economy. (In the U.S. there is a myth that service jobs are typified by serving burgers at McDonalds; while those are indeed service jobs, if they were typical then GDP would not grow as output comes increasingly from the service economy.) All wealthy large economies are predominantly service economies, and all large service economies are wealthy. (Small island tourist economies like Jamaica may sometimes be poor and also primarily services-based. Oil economies like Kuwait can be wealthy based on primary goods. But these are exceptions.) Given the Chinese transition, our global economy will be a *service economy*.

² Lester Brown, *Who Will Feed China?: Wake-Up Call for a Small Planet* (New York: Norton Worldwatch Books, 1995). The book was enormously influential, even though it was eviscerated in a devastating review: Robert L. Paarlberg, "Rice Bowls and Dust Bowls: Africa, Not China, Faces a Food Crisis," *Foreign Affairs*, May/June 1996.



Source: CEIC. Chart created by Jenny Wang.

The transition to a services economy is difficult. Workers with manufacturing skills do not necessarily have the necessary skills for service jobs. The mentality of most manufacturing firms, for instance textile producers, is hierarchical. Everybody does rigidly what the boss tells them to do; delegation of decision making and creativity are marginal. (There are many caveats to this generalization, for instance concerning Japan's emphasis on bottom-up innovation, but the basic structure, even in Japan, is extremely hierarchical.) The mentality of a university or a restaurant is quite different; the employees are highly trained but can only be successful if they are given considerable scope for individual and creative decision making. The shift is difficult everywhere, including in China, and is connected to the broader social and political system.³

In the service economy, finance comes to play a dominant role. Finance is of course important in the agricultural economy and the manufacturing economy, but in advanced service economies the role of allocating resources becomes both far more complex, too complex for governments that are accustomed to managing allocation centrally, and it reaches a scale and influence that are proportionately unprecedented compared to previous eras. Instead of a few sectors—e.g., agriculture, energy and infrastructure—the economy has hundreds of sectors, including for instance many sectors just within electronics, many kinds of transportation, many kinds of communication, a seemingly infinite variety of individual products. Innovation becomes decisive for growth, and it is very difficult for government to know which innovations will prosper and which will not. Government cannot possibly sort out the efficient allocation of capital; only the market can. So finance becomes more complex and crucial than ever.

Parallel to these transitions, and partly caused by them, is a transition to a far more *complex economy*. Imagine, to oversimplify in a heuristically useful way, an economy comprising landlords, peasants, road builders, and textile and radio manufacturers. That economy, and ones that are complicated only to this rough order of magnitude, is one where governments can understand the needs of the economy with considerable clarity and allocate resources from the center with considerable efficiency. In the early days of South Korea, an economic secretary in the president's office assigned production quotas, export quotas, the sizes of loans, interest rates, the organization of industrial clusters, and infrastructure, among much else, and the economy grew quite quickly. Now think of a modern economy with hundreds of thousands of manufactured products, multiple sources of energy, multiple sources of transportation, hundreds of financial instruments, immensely differentiated education needs, complicated health, environment and safety requirements, and competing interests within and among all these categories. No government can manage such complexity in detail, so the move to a predominantly market economy becomes a prerequisite of continued growth.

As with the other transitions, modern societies like the U.S. long ago became highly complex. But much of the world, including China, India, Africa, and most of Latin America, continued to live in much simpler economies. China's shift from a relatively simple, predominantly agriculture-based economy not only affected its own society but also pulled other economies into more complex structures and linked them together, thereby magnifying the complexity.

The complex economy generates complex interest groups and the complexity of interest groups creates a proportionate challenge to political management. This is why the current administration in China has made a strategic decision to move decisively toward market allocation of resources and why it is facing difficult challenges of political management.

The super-industrial economy give rise to the *ecologically constrained economy*. For most of human history most (not all) societies have been able to take for granted clean air, clean water, productive soil, and fertile oceans. Contrary to much of what is written, the

³ I am indebted to brilliant oral presentations by Po Chung, the founder of DHL International, for my understanding of the difficulties of transitioning from a social structure based around manufacturing and one based primarily on services. He maintains, moreover, that certain cultures are particularly supportive of services while others are not.

constraints do not come from depletion of resources; Malthus, Lester Brown, Meadows and Meadows,⁴ and their myriad followers have always been wrong. The world has the resources of energy, building materials, and inputs for food to support far larger populations than the world today. Nor is the problem that growth inexorably brings potentially fatal pollution. London in the 1950s, with the fog of coal dust that killed thousands; the U.S. in the 1960s, where major rivers sometimes caught fire; Japan in the 1970s, where air pollution and mercury poisoning of the soil killed or crippled large numbers of people—all have become cleaner due to growth. This has occurred not mainly because they exported their pollution but because growth gave them the resources and motivation to clean up.

Analysts have been forecasting the exhaustion of oil for well over a century,⁵ but humanity keeps discovering more oil, more ways to extract oil, and more ways to use oil efficiently, and in any case the issue is not the availability of oil but rather the availability of energy; with solar, wind, thermal, tidal, nuclear and perhaps fusion energy, the potential reserves are inexhaustible. We continually discover more copper, more substitutes for copper, and ways to build global telephone systems without using copper wire. The problem is not exhaustion of resources or inevitably greater pollution, but rather the failure of regulatory mechanisms in conjunction with the proper use of the market to preserve resources in a form supportive of human welfare. The risk is that national and international regulatory mechanisms that supplement the market so as to address the “tragedy of the commons” issue will be inadequate to prevent the spoliation of resources essential to humanity.⁶ It is not inevitable that cars will poison the atmosphere, that sewage and overfishing will destroy essential populations of fish, that industrial companies will kill our rivers and lakes by dumping poisonous chemicals into them, but there is a risk that we will do so because we cannot regulate the market wisely through government policies and international agreements to control our factories or agree on sustainable limits for fishing.

Chinese political and business leaders long believed in the premise of resource scarcity and this led them to overinvest in resource production and resource inventories at the peak of the market. In turn this has led to numerous problems: paying too much for access to resources, committing to resource development in excessively risky places (Sudan, Venezuela), acquiring excessive inventories of resources at high prices, accepting excessive environmental costs for resources, and incurring political costs for some of their investments in unpleasant places like Sudan. Since resource investments and resource availability outpaced demand, and commodity markets crashed in 2015, China in the middle of the second decade of the 21st century has entered a phase of resource sobriety.

Just as the transition to a super-industrial economy has been developing for a long time, the risk of environmental degradation has been emerging for a long time. Some smaller societies have destroyed themselves by failing to address environmental risks.⁷ Globally, the emergence of the super-industrial economy and the risks associated with it in a context of regulatory inadequacy, have come to a head in China. The South China Sea, one of the world's most important sources of fish, natural beauty, and biodiversity, has been correctly characterized as providing a toilet for more than a billion people, including of course Southeast Asians as well as Chinese. China is hardly alone in contributing to this problem, but the amount of human and industrial waste pouring into the South China Sea as a ramification of China's economic success transforms a manageable problem into a potential catastrophe. Chinese, Japanese and Korean overfishing, and Chinese destruction of reefs magnify the risks, not just in the South China Sea but also throughout the world. Likewise the shift of increasingly prosperous Chinese to coal-based power on a huge scale, to family cars as a mode of transportation and to a heavily meat-based diet changes the problems of pollution and climate change from emergent, somewhat localized problems to urgent global ones.

Other societies have faced analogous problems, from the London fog of the 1950s to the Los Angeles smog of the 1960s to the Tokyo haze of the 1970s, and all of the analogous soil and water and food problems, but China faces these problems on a daunting scale that has global consequences. Its effluent can kill the South China Sea. Its air pollution spreads across the Pacific to foul the air of North America. Chinese and American carbon emissions can melt the Arctic and Antarctic and submerge island nations and inundate many global coastlines. China is one of the countries most vulnerable to environmental degradation because it is dependent on water from the Himalayan glaciers; if those melt excessively, much of China could become arid. The problems can be solved, just as they were solved following earlier industrial takeoffs, but this time the stakes include the boundaries between the oceans and the continents and the welfare of the entire human race.

One reason why environmental risks are now global is that China has accelerated the world into a truly *globalized industrial economy*. All countries are now to a significant extent part of the globalized economy. All regions are linked with all other regions. Intricate supply chains weave the world together in a way that is quite different from the trade interdependence of a century ago. A laptop computer or an iPhone is likely to have inputs from around 20 different countries, an aircraft far more. Not only trade has globalized. Supply chains are global. Finance, talent and information are global. This has created both global opportunities and,

⁴ Thomas Malthus, *An Essay on the Principle of Population*, originally published 1798; Lester Brown, op. cit.; Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* Paperback (Washington D.C.: Potomac Associates, 1974). One of the most enjoyable episodes of my early career comprised debates with advocates of *The Limits to Growth* and the MIT model on which it was based. Among other things, someone had taken the model, which predicted the end of human life in 135 years due to depleted resources and inexorably increasing pollution, and ran it starting 135 years before 1974; sure enough, the model showed that we all had to be dead by 1974. It employed a mechanical assumption that more economic growth meant more pollution, but while the U.S. was growing, the Los Angeles air was getting cleaner, commercial fishing was becoming viable in the Hudson River for the first time in a century, Midwestern rivers were no longer catching fire, and so forth. Finally, at one of my speeches, some leaders of the Club of Rome stood up and said it was unfair of me to characterize *The Limits to Growth* as representing the views of the Club of Rome. Within a couple years of publication, the thesis was generally regarded as discredited. Now, unfortunately there are efforts to revive the thesis, and the thorough refutations have been forgotten, so we have to go through the cycle again.

⁵ Herman Kahn, *The Next Two Hundred Years* (New York: Morrow, 1976) provides marvelous detail on a century of forecasts that proven reserves would soon decline and much else.

⁶ See for instance Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge, UK: Cambridge University Press, 1990.)

⁷ See Jared Diamond, *Collapse: How Societies Choose to Succeed or Fail* (New York: Penguin, 2003).

conversely, special risks of cyber conflict, financial instability, and supply chain disruption. China is at the center of both the opportunities and the risks and has magnified them.

Globalized resource demand has brought much of the formerly impoverished and vulnerable world into the modern economy. Chinese resource demand has improved the lives of people from Indonesia and Papua New Guinea to Ecuador and Peru and much of Africa. In many areas it has increased resilience as well as living standards. Thanks to Chinese demand, the Global Financial Crisis of 2008–2009 was the first in which Latin America and Africa did not lead the crisis. But of course Chinese demand created an *opportunity* for sustainable growth and resilience, not an assurance. When the inevitable commodity downturn came, as it did in 2015, countries like Indonesia that had undertaken even relatively modest reforms stayed afloat. Those like Brazil that had used Chinese demand to avoid thorough reforms performed poorly—but not as poorly as in previous global financial crises, in part because global demand for their resources remained much higher than in the past and because development had made their economies more diverse and resilient.

Partly because of globalization, we now live in *an economy of accelerated structural change and innovation*. China is of course at the heart of this, because of high investment into China, high investment out of China, and the rapid evolution of supply chains with their centers of gravity in China, among others. This has rendered differences in ability to innovate and to react to change particularly important. For instance, the U.S. is much better at innovating and reallocating resources than Europe is. While China is indeed at the heart of this process, it remains to be seen how successful China will be at rapid innovation and adaptation. The country's leaders have for years been studying innovation and trying to encourage it, and partly for this reason the core commitment of the Third Plenum's major announcement on economic reform was market allocation of resources. But big state enterprises, dear to the leaders, are a drag on innovation; lingering ties among Party leaders and state enterprises interfere with innovative decisions; the bureaucracy distributes resources for innovation largely by political clout rather than merit; and restrictions of speech and information flow could inhibit innovative ideas. Paradoxically, China has accelerated the global innovation process, but for China itself the outcome remains unpredictable.

One aspect of accelerated change is what we might call the looming *employment paradox* throughout the global economy. Rapid aging in Japan, Korea, and much of Europe creates concern that there won't be enough working age people to support the dependent population of children and increasingly numerous seniors. On the other hand, rapid automation and other productivity-enhancing developments decrease the need for workers and create concern that there won't be enough jobs to provide employment for all the working age people. In all probability we will experience aspects of both. Rapid change will render many workers obsolete because they lack the skills to succeed in a rapidly changing economy, while simultaneously those who have appropriate skills may be stretched to cover the needs of millions of retired people. Societies that train people properly for the new economy may have the option of tremendously expanding their workers' leisure. China has just made the turn from having huge numbers of surplus workers to having a shortage and is rapidly becoming an aging society. Whether it stagnates like Japan or rises to the challenge of the era of aging will greatly influence the world economy's future.

China is also key to an era of increasing *moral consciousness about supply chains*. The great industrial takeoffs, from Britain's in the early industrial revolution to China's since 1979, have lifted large populations out of misery, indeed out of animal-like living conditions, and into the world of decent food, housing and education. But they have also, without exception, seen serious abuses at the bottom of the supply chains—Britain's exploitation of India's economy, child labor, polluted factories, abuse of women, unsafe buildings, forced overtime. Concern about exploitative conditions first rose in the currently developed countries—U.S., Europe, Japan—and led to ameliorative domestic laws, but only recently has there developed an imminent global consciousness in which companies have come to realize that their brands can be destroyed in their home markets by abuses in distant supplier countries. A convenient marker of the current surge in such consciousness is the collapse of a building, Rana Plaza, in Bangladesh in 2013, killing 1129 workers. Bangladesh has been the preferred country for textile and garment production after wages became uncompetitively high in China. This industrial migration has saved a society that was until very recently thought to be hopeless, but it has also concentrated attention on Bangladesh's terrible supply chain abuses. One corporate response has been to pull production back to the home country, for instance Disney moving production back to the U.S., but that reaction risks destroying the sustenance of millions of women and their families and thereby spreading poverty, hopelessness, failed states and terrorism.

Leading firms in developed countries, working with the International Labor Organization and the International Chamber of Commerce, are struggling to create and enforce norms that will reduce the abuses and save the women's jobs. China's stance will be crucial to the outcome. While China has made great progress in raising wages and reducing abuses at home, its companies, along with those of South Korea and Taiwan, are prominent among those most guilty of abuses outside their home countries. Will China become mainly part of the solution or remain mainly part of the problem? We don't know.

China is also leading the world into a *new monetary order*. The U.S. Congress' refusal from 2009 until December 2015 to modernize the Bretton Woods institutions (World Bank, IMF, plus associated institutions like the Asian Development Bank) created a vacuum in global economic management that desperately needed to be filled. The instability of 2008–2009, in which U.S. and EU financial mismanagement created a global crisis, disillusioned much of the rest of the world, particularly in Asia and Russia, with institutional structures controlled by a few rich countries and based around the U.S. dollar. China has moved to fill the resulting gap with institutions like the Asia Infrastructure Investment Bank that are cumulatively intended to be larger than the Bretton Woods institutions. Once again, China is at the center of transformative change, but the outcome is unclear. Will the new and old institutions converge and cooperate? Alternatively, will they become competitive, even hostile subsystems that might worsen monetary instability, inhibit globalization and magnify geopolitical rivalries? We don't know, but once again China's role is crucial to the way the global economy evolves.