

CHINA SINCE ECONOMIC REFORM: GROWTH, HISTORY AND PROSPECTS

<http://www.npr.org/blogs/money/2012/01/20/145360447/the-secret-document-that-transformedchina>

Interpreting the Numbers.

China's growth since the start of economic reform in November 1978 has been phenomenal. According to official figures, real GDP grew at an average rate of about 9.8% per year over 1979-2012 to become nearly 22 times as large in 2012 as in 1979. In per-capita terms, real GDP growth averaged about 8.8% per year to become 16 times as large in 2012 as in 1979. Very few other national economies, if any, have ever grown this rapidly for so long. Originally a developing economy, China is now a middle income country, and 700 million people have been lifted out of extreme poverty.

By Western standards, average incomes are still low. China's GDP per capita is no more than a third of that of Canada, using purchasing power parities, but China has a Minimum Standard of Living System as the basic component of its social safety net. It includes payments to poor households (the Minimum Living Allowance Guarantee) to enable them to live at or above this standard. The minimum standard of living varies widely across the country, however, and local governments cannot always afford to keep all families up to the standard in their areas. Nevertheless, the idea that everyone deserves to have at least a minimum standard of living, which has been rejected in much wealthier Western nations, including by the present provincial government of Ontario, has long been officially accepted in China.

Although China's economic growth has been high, the official figures may exaggerate growth for two basic reasons. First, local officials are judged on the basis of economic growth in their jurisdictions. State audits have revealed production claims that are often exaggerated. As a check on the official figures, we note that the process of economic development usually leads to growth of electric power generation that for a time is faster than the growth of GDP. When an economy develops, electric power replaces other types of power and power generation becomes a larger component of GDP. As part of this process, industry grows relative to agriculture, and a rural-to-urban migration occurs that raises the percentage of population living in urban areas. In China, this percentage was just 20% of the total in 1981, rising to 53% in 2013. Plans call for it to increase to 70% by 2025.

Electric power generation also grew rapidly over 1979-2012, by about 9% per year, to become more than 17 times as great in 2012 as in 1979. If this growth was greater than that of GDP, the latter would have grown by less than 9% per year. For example, if electric power generation per unit of GDP grew by 2% per year, GDP would have grown by 7% to become more than 9 times as large in 2012 as in 1979. Real GDP per capita would have grown by 6% per year to become 6.8 times as great in 2012 as in 1979. Private consumption would have grown by 5.9% to become 6.6 times as large in 2012 as in 1979. In per capita terms, these numbers are 4.9% and 4.7. These are still remarkable numbers. As an economy matures, the share of industry in GDP eventually falls, a process that has already begun in China, and the share of services rises. The shift to a service economy often coincides with a fall in the share of electric

power generation in GDP because services are less power intensive than is industry. GDP growth will then be faster than the growth of electric power.

The second reason for growth exaggeration is that investment and production respond not only to demand, but also to the political will of the state and Communist Party. This has been especially true over the past ten years during which the debt-to-GDP ratio has more than doubled—from 150% to over 300% according to the Institute of International Finance—in order to finance production for which there is often insufficient demand. In response to the Financial Crisis in the West, which reduced export demand, the Chinese government launched a \$586 billion stimulus program in November, 2008, in order to keep unemployment low. Many construction projects launched under the stimulus program, and many others launched since then, have low or negative economic returns.

Recent growth is sometimes called “infrastructural” growth, because it has relied heavily on expansion of infrastructure. This is not a bad thing *per se*, but much infrastructure is underutilized, and many “prestige” projects have been built, some of which are world-class engineering feats. For example, cities throughout China now want to build subways, including many that are too small to allow this means of transport to be economical. These projects go into the national accounts at cost of production, but would ideally be entered at their value to users, which is unknown, but lower in many cases.

In general, an investor maximizes his return by expanding each of his or her investments until the risk-adjusted yield on each is the same. The reason is that if investment A has a higher yield than investment B, an investor can increase his return

on any given total investment by scaling back B and expanding A. Thus if part of the yield on project A is a political or prestige return, whereas the return on B is entirely an economic return, project A will have a lower economic return than will B. Project A could even have a negative economic return.

In China, investment projects with low or negative returns include buildings with low occupancy rates, little-used infrastructure (including bridges and roads to nowhere), excess production capacity in cement and iron and steel, and prestige projects that are far from paying for themselves. High levels of debt have resulted from financing these projects. For example, there are believed to be about 65 million unoccupied apartments in China—despite subsidization of housing demand—and "ghost cities" have resulted from efforts to rapidly urbanize many rural dwellers.

Thus the large increase of GDP since 2008 reflects the construction of much capacity that is under-utilized for want of demand. In this context, the share of private consumption in GDP is low in China by international standards. At present, it is only about 39%, down from 52-53% at the start of reform. By contrast, the private consumption share is 57-58% in Canada and about the same worldwide, according to the World Bank. As a result, the level of per-capita consumption in China is similar to that in a nation with around 70% of China's GDP per capita, but a more conventional consumption share of GDP. In this way, living standards in China are lower than her level of GDP/capita would suggest. High growth results from a high level of investment enabled by an even higher rate of saving. The average return on investment is low.

We should also note the costs of growth in terms of the high levels of air and water pollution that have resulted. One in five deaths in China is linked to pollution (vs.

one in six worldwide), and about a million Chinese die prematurely from pollution each year on average. Coastal areas of China are threatened with rising water, especially around the Pearl River delta in southern China. On balance, the rapid rise in per-capita GDP has not been matched by comparable improvements in health and longevity of life, although in 2019, China appears to making significant strides forward in pollution reduction.

The Nature of Chinese Growth.

Chinese economic growth has been export-led, and China has run large trade surpluses year after year. To contrast the nature of China's growth now with growth before economic reform began in 1978, we recall that extensive growth results from increases in inputs, mainly capital, while intensive growth results from improvements in technology. There are three basic types of economic growth in terms of the sources of growth:

(a). *Extensive Growth*. This is growth owing to increases in inputs, mainly capital, with constant technology. Such growth eventually peters out owing to diminishing returns to capital—that is, a falling marginal product of capital as the capital-to-labour ratio rises. This was the fate of Soviet-type economies, where the return on investment imitated Niagara Falls as the capital-to-labour ratio rose. However, diminishing returns to capital can be nullified by mixing extensive growth with intensive growth because the latter raises the marginal product of capital at any given capital-to-labour ratio, thereby making capital more productive.

(b). *Intensive Growth using imported technology* that is new to the importing country, but already in use elsewhere in the world. This is growth based on technology catch-up, which originally powered the East Asian growth model, pioneered after WW II by Japan and used by other East Asian countries. Since 1979, China has relied mainly on a combination of types (a) and (b) growth and has been especially effective in promoting growth of type (b).

However, type (b) growth can at best keep a nation technologically up-to-date with other nations and can easily do worse than this. State promotion of type (b) growth usually favours some industries and regions over others in terms of access to resources, subsidies, protection from competition, and finance. In this sense, the playing field is not level. Instead, a network of privileges becomes embedded into the economy, and this is true in particular of China, owing to the basic compromise discussed below, which originally allowed the reform and opening to proceed. It is hard to end these privileges because political support depends on them, but maintaining them starves other sectors of finance and resources.

(c). *Intensive Growth based on innovation—that is, on technology that is new worldwide.* This type of growth is the hardest of the three for government to manage. Successful direction of the economy requires a government to know which industries, technologies, and production methods to promote and in which specific types of human and physical capital to invest. Without observable past experience as guide, this knowledge either does not yet exist or else is scattered among various economic agents—producers, consumers, researchers, etc.—and much of it

remains tacit. An advantage of markets originally noted by F. A. Hayek is that they can work well without having to centralize this information.

With some exceptions, China has found it harder than did the smaller East Asian nations to transition to type (c) growth. Before reform began in November, 1978, China was a Soviet-type economy and relied mainly on extensive growth. This was mostly growth of industry and featured a rapid increase in capital per unit of labour in the state sector, mainly in large-scale industry in urban areas. As a result, the return on investment fell there, as diminishing returns to capital set in. Total factor productivity, or GDP per unit of combined capital and labour input, also fell, owing to poor management of the economy, which often came under the control of ideologues. Outside the state sector, labour productivity was low because of low investment.

China followed a closed-door policy regarding foreign trade and investment and international relations. For a time, China's foreign trade was lower than that of Singapore, whose population was then less than 2 million. The Chinese economy therefore became increasingly backward technologically, much to the chagrin of reformers who wanted a modern economy with up-to-date technology—see the last paragraph of this paper. After Mao's death, they sought to end this backwardness. In order to sell their program of modernization and greater economic freedom to more conservative Communist Party members, however, they had to compromise.

The nature of this compromise was that government would retain the basic preference for state-owned firms over other types of ownership, as well as the Party's monopoly on political power. In return, reformers were allowed to relax many of the existing restrictions on production, resource movement, and ownership and to begin the

Open Door Policy (see below) which expanded China's foreign trade, foreign investment into China, importation of technology and modern management methods, and China's international relations. This compromise has proved to be durable, although its interpretation has varied over time.

Originally, it opened a vast new space for growth, which involved mainly non-state firms. In this way, China's reform was different from that of other socialist countries of the day. Potential returns on investment were high outside the state sector, both because the capital-to-labour ratio was low there and because of technological backwardness. Realizing this potential required economic reform, however—reducing the reliance of firms on the government so that greater entrepreneurship and creativity could come into play. Since the state sector resisted efforts to reform, growth had to come mainly by building new, market-oriented firms rather than by trying to change the practices of existing state enterprises. In fact, China did not begin to downsize and restructure the state sector until 1996, well after the start of reform. Then over a few years, more than 30 million state sector employees lost their jobs. Restructuring has been limited since then.

The new space for growth resulted from two factors, one related to supply and the other to demand. The first was the emergence of a huge supply of low-skilled labour that was no longer needed in farming following de-collectivization over 1979-83. China had long had too much labour and too little land in agriculture—in part because of the internal passport system, which kept people in rural areas plus the Party's preference for investing in the cities. However, collective farming of the land used

labour wastefully, which concealed this surplus and made it appear that there was a labour shortage.

When the land was divided up to be farmed individually, with households or small groups leasing the land from the state, the labour surplus became apparent. It took the form of peasants who had no land or too little land to make a living just by farming. This represented a potential crisis of unemployment and under-employment, but also an opportunity to achieve an economic 'miracle' by putting this surplus to work in more productive jobs. Thus began the era of high growth, although coupled with rising inequality and environmental degradation.

De-collectivization raised peasant productivity in agriculture by making peasant households the residual claimants to the income from their work. At the same time, it made many millions of peasants redundant by lowering the number of farmers needed in agriculture. In effect, de-collectivization raised the *average* product of farm labour, or output per unit of labour input, but lowered labour's *marginal* product or productivity at the margin. To employ these redundant workers, the government relaxed restrictions on ownership of firms—to permit a wider variety of ownership forms, including joint ventures with foreign owners—and on the mobility of labour, which stimulated labour migration. Entrepreneurship flourished, creating new jobs in industry and services—in both urban and rural areas—and literally millions of new factories, workshops, and other workplaces were built to utilize this labour. The release of more than 250 million peasants from farming led to the creation of many new rural enterprises and to a huge "floating population" of migrant workers. The latter took jobs in urban areas, but were obliged to keep their rural residency status and were (and are) often exploited.

De-collectivization plus relaxed restrictions on ownership and labour mobility marked the start of China's high growth period by creating a huge supply of labour for industry that was willing to work at near-subsistence wages. China was in a position described by W. Arthur Lewis in his famous 1954 paper, "Economic Development with Unlimited Supplies of Labour." This article marked the beginning of modern development economics, and Lewis, who hailed from St. Lucia in the Caribbean, won the Nobel Prize in economics in 1979.

The huge supply of labour at near subsistence wages—virtually a horizontal supply of labour—meant that China could expand output rapidly with stable average costs. Because China had a high rate of saving and was for a time able to attract more foreign investment than any other nation except the U.S., the means were there for rapid expansion of capital and output. The Open Door Policy helped by bringing in foreign investment as well as technology that was new to China, along with modern management methods. China was able to use her status as a developing nation and a reforming former STE to gain access to export markets without reciprocity. This was a key to successful export-led growth.

This helped to create a demand for the released labour, and domestic demand also rose with rising incomes. At the outset of reform, China faced a highly-elastic demand for her exports—a nearly unlimited market—which at first consisted mainly of labour-intensive products. To promote export-led growth, China devalued her currency, the renminbi, which became under-valued. Before reform, it had been over-valued, as is typical of a Soviet-type economy, the purpose being to subsidize imports for those few firms, government bodies, and individuals who were allowed to buy abroad.

By setting a much lower value of the renminbi, China enabled thousands of firms to export profitably. Once established in export markets, Chinese firms could expand rapidly because both export demand and domestic labour supply were highly elastic. Elastic labour supply made long-run product supply elastic as well. In these conditions, expansion leads to a roughly constant ratio of profits to wages, but the real wage of each worker remains largely the same, whereas ownership of the profits becomes more concentrated as successful firms re-invest and expand faster than others.

Following the onset of reform China gained export market share rapidly, making use of low wages, an undervalued currency, and imported technology, which was also acquired at relatively low cost. Entrepreneurship was channeled outward, in part to protect the state sector from too much competition. The incentives to adopt new technology and to use it efficiently enabled China to combine intensive growth of type (b) with extensive growth. By raising the marginal product of capital, the former offset the tendency for diminishing returns to capital to set in as the capital-to-labour ratio rose.

The early years of reform, 1979-85, saw rising rural incomes, which grew faster than those in urban areas, causing rural-urban inequality to fall. However, the years after 1985 saw urban incomes rise more rapidly, as prices and the tax/welfare system were manipulated to favour people living in the cities. The government has always feared losing support in urban areas more than it has feared losing rural support, and as a result, rural incomes are now far lower on average than urban incomes.

Chinese growth came to depend on three main factors: a high rate of investment, including foreign investment, the transfer of millions of workers from farming to low-

wage jobs in industry, both locally and as migrant workers, and the transfer of technology and modern business methods to Chinese firms (and joint ventures) from abroad. One could also add improved incentives to work hard and be creative, as state rights to income and use of capital retreated to make way for greater private and collective rights.

Eventually, however, things began to change. The space for growth began to shrink, and the basic compromise within the party started to make growth more expensive. By 2008-2009, the labour surplus was used up, and demand in export markets was no longer unlimited. It was around this time, that China began to expand her use of robots at an explosive pace to become the world's leading user of robots by 2016, after having very few robots in 2007.

By the time of the financial crisis and Great Recession in the West, the Chinese economy had come to a crossroads. After years of rapid growth, the limits to growth had begun to appear, and the Great Recession sharpened these limits by reducing the demand for Chinese exports. Twenty million workers were laid off in the export sector. The Chinese response was the major stimulus package referred to earlier, which was designed to re-employ these workers on infrastructure projects. In this way, China confronted a limited, more inelastic demand for labour by replacing the disappeared export demand with government-financed demand. Despite the rapid growth in use of industrial robots, demand became the main constraint on employment and growth.

Since then supply constraints have also appeared. The number of rural migrant workers (about 170 million) is now near its peak, as is China's labour force as a whole. Labour has become scarce, and increases in labour demand now push wages upward

since the supply of labour is upward-sloping instead of horizontal. In addition, legal minimum wages have been rising in some areas, and collective action in the form of strikes is fairly common—Chinese workers have become less docile than they were when reform began. Together with upward pressure on the value of the renminbi, this has eroded China's cost advantage in export markets. Upward pressure on the renminbi comes from China's trading partners, notably the U.S., and from China's own fears of capital flight (or people taking money out of the country), should expectations of a falling renminbi take hold.

In these conditions, China had to begin upgrading its exports in terms of their technical sophistication in order to sustain rapid export growth. Whereas the smaller East Asian economies derive their cost advantages largely from inexpensive human capital, China still relies more on labour-intensive products, although the sophistication of her exports has been growing.

This sophistication is measured by the 'complexity' of exports, meaning how much collective knowledge exports embody that is beyond the knowledge of any single human being. Japan was the first East Asian nation to begin export-led growth by relying initially on labour-intensive products, after which she graduated to higher and higher levels of complexity. Today Japan's exports are the most complex in the world, according to the Atlas of Economic Complexity, even though Japanese growth has been low over the past 30 years. South Korea, which followed a similar path, has the world's 4th most technically sophisticated exports; Singapore is 12th; Hong Kong is 18th, and China was 19th as of 2014, rising to 17th in 2017. (It must be admitted that Canada is

39th on this list, as of 2014, but unlike China, Canada can rely heavily on exports of oil, natural gas, minerals, and agricultural products.)

To sustain growth over the long run, China needs to innovate more in order to switch to type (c) growth—a requirement repeatedly stressed by Chinese Premier Li Keqiang. As a result, China has sustained growth largely by subsidizing production, which has resulted in the more than doubling of her debt-to-GDP ratio noted above. In particular, the preference for state industry means that state firms are being subsidized, both directly and indirectly, in the latter case by keeping interest rates low on loans and obliging banks to lend more to state enterprises and to local governments than economic criteria alone would warrant. This restricts the availability of finance for innovation and technical upgrading outside the state sector. It also lowers the average return on investment.

In order to protect inefficient firms, notably in the state sector, moreover, competition is often suppressed, which also discourages innovation. In addition, governments in autocratic political systems feel more secure when they restrict freedom of association and control the movement of people, as well as their ability to communicate and to gain access to information more generally. This again discourages innovation. In recent years, the Chinese leadership has intensified its control over information under a new national security law, enforced by a new National Security Commission headed by President Xi Jinping.

Given the limits to expanding exports, future growth will have to rely more on domestic demand and specifically on domestic consumption. But achieving this will not be easy. Household consumption is now about 39% of GDP in China, a figure well

below the world average, as noted above. Investment is just under half of GDP, which is well above most other countries and a major reason for the high growth rate. China continues to rely on a high *quantity* of investment to generate growth because the average *quality* of investment is low, in the sense that it generates a low average return. One result is a high consumption cost of growth.

As noted earlier, the low share of consumption in GDP implies average consumption per capita that is more in line with a nation whose per-capita GDP is around 70% of that of China. It goes hand-in-hand with a share of savings that is even higher than the investment share. The high rate of saving is not because of high interest on savings deposits. Deposit rates have been kept at 3.3% or lower and are often below the rate of inflation. This allows interest rates on loans to state firms to be low, although Chinese state banks also enjoy relatively large spreads between deposit and lending rates. Instead the high rate of household saving results from the need of Chinese households, especially those living in rural areas, to finance retirement, health care, and education largely from own resources. The system of government pensions and social insurance has expanded rapidly in recent years, but as of 2013, still covered less than a third of the labour force, and pensions are often too low to live on.

Housing demand is subsidized through the Housing Provident Fund, which requires employees of participating enterprises to deposit 5-12% of their earnings into tax-free savings accounts. Money can only be withdrawn from these accounts for housing-related expenses until retirement, when the fund becomes a second pension, in effect. Also mortgage loans are subsidized for those who save through the Housing Provident Fund, but otherwise households have relatively low access to credit on official

credit markets, the counterpart of high access by state firms. In addition, social insurance funds are often under-funded because employers pay much less than their "obligatory" contributions into these funds—enforcement is low. Lacking adequate pension or health insurance, most households still have to rely heavily on their own savings. And the bottom line is that savings have to remain high in order to finance the high rate of investment required to maintain high growth.

Both state banks and state firms have soft budget constraints, which undermines financial discipline and ties up capital in a relatively inefficient part of the economy. The obligation to subsidize the state sector has caused Chinese state banks to accumulate a mountain of bad debt and forced the state to give soft budget constraints to these banks—all are probably “zombie” banks. This is why domestic savings have been poorly allocated and used, forcing non-state firms to rely heavily on foreign funds and on shadow banks or informal finance.

Much of the savings of millions of domestic savers in China is therefore invested badly. Many loans are non-performing. If savings would start to fall, there could be a financial crisis, since it would be hard for banks or shadow banks to reduce their lending in line with the decrease in savings. The need to keep the savings share high makes it hard to raise the consumption share of GDP (since the consumption share equals one minus the savings share). Chinese officials could try to close inefficient state firms, but if this became widespread, many jobs would be lost—as happened over 1996-2002—and this would violate the basic compromise outlined above. China did close 1200 “zombie” enterprises in 2017, and state firms owned by the central government earned

record profits in 2017, according to the People's Daily. At the end of 2015, there were 133,631 state firms in all.

A crucial requirement of type (c) growth is an efficient financial sector that channels savings into their most productive uses and gives innovative borrowers relatively good access to funds, regardless of the competitive pressures that they end up putting on other firms in the economy. In China, such a financial sector has yet to appear, the main reason being that budget constraints for state firms and local governments remain soft as a means of protecting jobs and incomes there.

Reform Efforts.

At the third plenary session of the 18th Central Committee of China's Communist Party held in Beijing from Nov. 9th-12th 2013, the leadership of China adopted a comprehensive program of market-oriented economic reforms. Because reforms that would favour type (c) growth are politically difficult to carry out, however, progress in implementing them has been slow. Such implementation would require the central government to reduce the power of the vested special interests who benefit from the current system of preferences and who would therefore lose as a result of reform. The government needs the political support of these same interests. Thus, they are often assigned the task of carrying out the reforms that threaten their own incomes and jobs, with the result that not much reforming gets done.

For example, as Keyu Jin writes, 'the State Assets Supervision and Administration Commission of the State Council (SASAC) [is] the ministry-level government institution responsible for state-owned enterprises [SOEs]. Its task now includes eliminating the monopoly power of the SOEs. But reducing the SOEs' power

would also mean a diminished role for SASAC. As a result, efforts to fight monopoly are lagging [as are efforts to further reform the SOEs].... Similarly, the State Administration of Foreign Exchange (SAFE), the subsidiary of the People's Bank of China that controls the foreign-exchange transactions of commercial banks and households, derives its power from controlling financial inflows and outflows. Liberalizing capital flows in and out of China would mean the eventual end of SAFE, and little progress has been made here.'

Even limited liberalization of capital flows has led to massive capital flight, which is still a threat as of 2019. Between 2014 and 2016, foreign exchange reserves fell from over \$4 trillion to under \$3 trillion, as many Chinese took money out of the country.

China has \$30 trillion in financial assets that individuals could potentially move overseas; thus the threat to China's foreign exchange reserves is a real one.

Liberalizing capital flows could also lead to a movement of financial capital out of China big enough to deflate property values and asset prices, which are believed to be on a bubble.

Finally, in order to encourage innovation and type (c) growth, China is actively subsidizing entrepreneurship. Governments at all levels have set up venture capital funds using government money for the purpose of financing small enterprises. To qualify for subsidies or loans, proprietors must present acceptable business plans or demonstrate success potential through performance. According to Premier Li Keqiang, 12,000 companies a day were founded in 2015. The committees that allocate the venture capital funds are made up of business executives, financiers, and academics and are supposed to make awards solely on the basis of economic merit. Historically,

however, governments have used political criteria to allocate loans and grants, resulting in excess capacity and waste, and it is unclear whether the new venture capital funds can break with past practices. Premier Li still complains that innovation is too low.

Efforts to Sustain Growth.

Because progress on further economic reform has been slow, China is carrying out a 4-pronged drive to sustain growth in which reform does not play a major role, although acquisition of technology from abroad is still of crucial importance:

1. The first prong is the above-noted increase in infrastructural investment in inland regions, in order to create jobs and raise incomes there and give these areas greater access to foreign markets. This fits in with the massive 'belt and road' initiative, a \$1 trillion network of roads, railroads, ports, and other infrastructure designed to link China with Europe and Africa in a new global trade network. (This is also called 'China's New Silk Road.')
2. The second prong is a rapid expansion of Chinese investment abroad, which is designed to ensure a sufficient supply of key resources not available in sufficient quantities at home and to generate trade expansion, as well as to achieve political goals. This is discussed below.
3. The third prong is rapid forced urbanization. As of 2013, only 36 percent of the Chinese population had an urban residency permit or *hukou*. The remaining 64 percent had rural hukous, although 17 percent of the total population worked in urban areas with rural hukous—mainly the floating population of migrant workers. The hukou has served as an internal passport, preventing rural labour from

migrating permanently to the cities and creating a large living-standard gap in favour of the cities, since most investment has gone there.

Now there is a grand design to urbanize China's population, which reverses earlier policies that kept people in rural areas. Villages are being razed, farmers are losing their land, and new apartment buildings are springing up, often in the form of standardized concrete towers. Construction of these buildings has been shoddy, in part because much of the money allocated for them has been skimmed into the pockets of local politicians. Peasants are supposed to be compensated for their land, but they cannot choose not to move.

The government's intention is to raise consumption by turning subsistence farmers into more prosperous city dwellers, whose spending will also increase, and who will need roads, schools, hospitals, and community centres. In short, the newly-urbanized peasants are supposed to help drive economic growth by generating domestic demand. The success of this program depends heavily on the ability of these ex-peasants to find jobs that pay more than subsistence wages.

Early indications suggest that this may be optimistic. Some former peasants have traded subsistence farming for low-wage urban jobs, without pensions or other benefits, or for unemployment. Creation of jobs for these people will be a challenge, in part because most lack the skills that good urban jobs require. State efforts to manage urbanization in other countries have led to slums and to an under-employed under-class rather than to prosperous middle-class consumers. In China, bringing millions of rural dwellers into the cities is likely to raise unemployment or to put downward pressure on

wages (or both), counteracting the upward pressures noted above, which result in part from other government policies.

In addition, according to Geoffrey West:

'Perhaps out of expediency, cities in China are being built without deep understanding of the complexity of cities and its connection to socio-economic success...we are told that many of these new cities, like classic suburbs, are soulless ghost towns with little sense of community. Cities have an organic quality; they evolve and physically grow out of interactions between people. The great cities of the world facilitate human interaction, creating that indefinable buzz and soul of the city, the wellspring of its innovation and excitement that is a major contributor to its resilience and success economically and socially.'

4. Under a program called "Made in China 2025," China is seeking to become largely self-sufficient by 2025 in many key industries, which include robots, aircraft, high-speed trains, and computer chips. Self sufficiency has already been achieved in solar panels and wind turbines. About \$300 billion in funding is available for the Made in China 2025 program, including low-cost, easy credit from state banks, investment funds to acquire foreign technologies, and large grants for domestic research. Most remarkable of all has been the rise of industrial robots, which virtually did not exist in China before 2008, as noted earlier. Almost overnight, China became the largest user of robots in the world and is now rapidly increasing her lead. China's production rose from less than 6,000 units in 2012 to 131,000 units in 2017 (or 22 times as many), according to Cheng, Jia, Li and Li. The Chinese government has heavily subsidized and promoted this increase, in part because of rising labor cost and growing labor shortage in some key areas.

The rapid growth in output of solar panels and wind turbines is going hand-in-hand with a rapid expansion of renewable energy output. China leads the world in production of these items, which are already major exports. She supplies nearly two-thirds of all solar panels worldwide and consumes about half, with nearly all production capacity having been installed since 2007. Installation has been financed by large, low-cost loans from state banks, who are also generous about forgiving repayment when borrowers get into financial difficulty.

One result has been a fall in the prices of solar panels by nearly 90% over 2007-2017, making them more affordable world-wide, but also bankrupting most of the industry outside China. Many of the firms that pioneered technological breakthroughs in this industry have either gone under or are in difficult financial straits because they don't have access to the deep government pockets that Chinese firms do.

In order to continue export-led growth, China must expand her shares of knowledge-intensive markets, and it will help if the industries that grow rapidly as a result of this also reduce pollution at home. However, unless Chinese firms in these and other high-growth industries replace the innovative potential they have displaced, the world as a whole will not benefit from China's success over the long run. Unofficial targets call for China to expand her renewable energy capacity to more than 30% of her entire capacity for generating electric power by 2020. However, most of this renewable capacity will likely be hydro, suggesting that virtually every river in China that can be dammed will be, and reminding us that renewables can also be a source of environmental degradation, as well as of displacement and dissolution of communities.

Each prong above embodies risky undertakings. The easiest growth has been realized, and the road ahead will be harder and more uncertain than that which has been travelled. This should not prevent us from acknowledging what has been a remarkable achievement over the past 40 years.

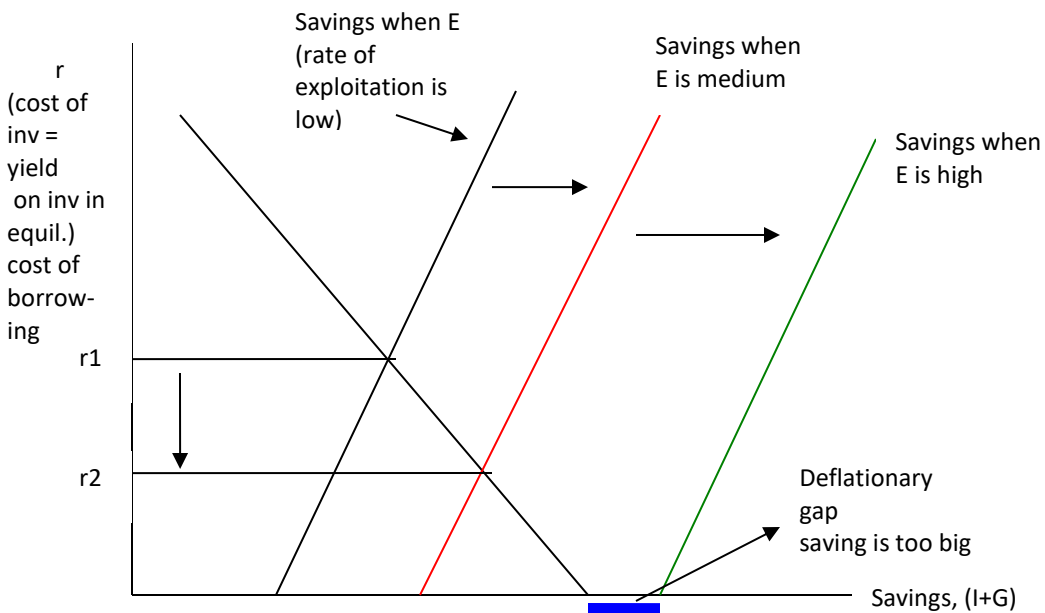
Finally, suppose that China succeeds in increasing her reliance on domestic demand, with the result that production shifts away from exports, and that net exports decline in consequence. How would this affect production and investment in the rest of the world? Alternatively, we could ask whether China's rapid growth has been a 'growth engine' for the rest of the world, as is often claimed, and how shifting production away from exports would change this.

Here the answer depends on what is limiting investment in the rest of the world. If investment is limited by the supply of savings, China is helping to promote growth elsewhere by being a large net supplier of savings. This is a consequence of her export-led growth, which has led to large trade surpluses, mirrored in China's surplus of domestic saving over domestic investment. This would be a conventional economic view, namely that China is now a growth engine and that reducing her net savings by switching her production toward domestic demand would curtail growth elsewhere.

By contrast, the Marxian view is that investment is constrained, not by savings, but by a shortage of investment demand. Many present-day economists, who are not Marxists, believe that a surplus of intended savings over intended investment—sometimes referred to as a "savings glut"—characterizes the world economy of the 21st century. To this extent, they agree with the Marxian view. Moreover, the savings glut

emerged during a time of growing inequality within nation states—those with higher incomes tend to save larger percentages of their incomes.

To see the difference between the two views, refer to the figure below, a copy of Figure 5.2 on p. 152 of the text (*Market and State in Economic Systems*). The conventional view holds that the supply of savings is like SA_1 , the supply when the Marxian rate of exploitation or E is low. Here savings are constraining investment; an outward shift of savings supply will raise investment. The Marxian view holds that the savings supply is now more like SA_2 , the supply when E is high (since inequality is now relatively high). In this case, there is too much saving, and investment is constrained by a shortage of investment demand. By reducing net exports, China would shift product demand to other countries, which would lead to a higher production and investment demand in the rest of the world. According to this view, China is not a growth engine now, but could become one if she shifted her production toward domestic demand, thereby reducing her trade surplus.



Vulnerability of the Chinese Banking and Shadow Banking Systems.

Although the Chinese economy has been the fastest growing major economy in the world over the past 38 years, it has points of vulnerability, the most important of which is the financial sector and, in particular, the banking and shadow banking systems. 'Every nightmare scenario for the Chinese economy begins with a banking crisis,' wrote an economist in 2003, and Chinese banks are now sitting on a much larger mountain of bad debt relative to GDP than they were then. This debt is mainly in the hands of the Big 5 state-owned banks, which account for 70% of all deposits in Chinese financial institutions.

High levels of indebtedness are the counterpart of high levels of excess capacity in some sectors of the economy, such as real estate, iron and steel, and cement. Because demand for these products has been low, the loans that financed the building

of this capacity have never been fully paid back. Chinese savers have entrusted a large share of their savings to state banks, in part because of limited alternatives. Bank solvency requires either that these savings be wisely invested or that the banks have access to state bail-out funds. The former is doubtful since state banks still lend heavily to inefficient state firms, to local governments, and for questionable projects, such as office and apartment buildings with low occupancy rates, as well as for vanity projects and little-used infrastructure. (Many successful hi-tech industries, such as robots and solar panels, also benefit from high access to low-cost loans.)

Monetary policy has been stop-and-go, but mainly go. Periodic tightening of money and credit to combat inflation leads to crises in the form of shortages of liquidity. These shortages threaten growth and employment, and soon lead to a new loosening of monetary policy. Then the appearance or threat of inflation causes the cycle to repeat. Even when credit is tight, politically powerful borrowers continue to have their loans 'ever-greened'—that is, renewed or rolled over—regardless of whether borrowers pay principal and interest owing on them.

Meanwhile non-state firms have lower access to loans from state banks. Their expansion is often constrained by a shortage of finance, especially when money is tight. It is in part to serve their needs, that 'shadow banking' has emerged in China, playing much the same role as did the second economy of a Soviet-type economy. Since 2008, the expansion of shadow banking has been officially tolerated—although this may now be changing—and this sector has grown rapidly in recent years.

Shadow banks do not take in savings deposits, as banks do. Instead they sell savings products to the public and lend out the proceeds for investment. 'Wealth

management products' are the largest source of shadow bank financing in China. Instead of putting money into a savings account, a saver can buy such a product. The buyer is told what interest rate the product will pay and in rather vague terms how the money will be invested.

Shadow banking interest rates are freer of state controls and usually much higher than official deposit rates, although savers also take on greater risk. However, these are market-determined interest rates, and a wide availability of wealth management products could eventually cause interest rates on savings deposits to rise in order to allow these accounts to compete successfully for savings. Thus, the appearance of these products could herald financial liberalization (or market-determined interest rates and access to loans), although it is still too soon to say whether this will be the case, and there are strong forces working against liberalization as we have seen.

Shadow banks usually have close ties with real banks, since they are vehicles for banks to evade government ceilings on interest rates and the regulatory floor on required reserves (which is higher in China than in North America or Europe). Shadow banks are the main lenders to small and medium-sized firms with low access to bank credit. Because state banks allocate their loans partly according to political criteria and get a low economic return, shadow banks finance investments that account for a large part of China's growth.

However, shadow banks have also funded many projects of doubtful economic value, notably in real estate development, little-used infrastructure, and unproductive prestige projects. This sector does not benefit from access to the subsidies that keep state banks solvent. If many shadow banks would fail, this would cause many of

their borrowers to fail as well, which could ignite a recession. Moreover, it is unclear how much protection, if any, the savers who buy wealth management products would have in such circumstances.

To summarize, state bank interest rates have been kept low in China, a kind of tax on savers, which is used to finance subsidies for state firms and local governments. There have been many proposals to liberalize interest rates and financial markets more generally, but this would put an extra burden on state firms and make the precarious financial condition of the banks more obvious.

Ultimately the problem of bank solvency arises because state banks are obliged to subsidize inefficient production for political reasons—zombie state banks lending to zombie state firms, whose loans are constantly renewed even though the firms in question lack the ability to pay them back. A second cause is corruption by local officials, who pocket parts of the loans their governments receive. Bank officials also get paid for arranging loans, regardless of whether or how the loans perform. These conditions will be hard to change because they benefit many insiders, who receive the rents that the present system generates as a reward for their political support. This makes it difficult to switch to a system in which lending criteria reflect only economic factors, namely rate of return and risk.

The banking crisis may become more evident as the Chinese population ages and net savings fall, forcing the banks either to reduce their lending or to rely even more on government subsidies. When banks lend to prosperous borrowers, they are able to charge bribes so that the effective interest rate is higher than the official rate. Thus, interest rates are lowest for the least efficient borrowers.

Around the turn of the century, the Chinese government re-capitalized the banks, injecting about US\$530 billion, and moved non-performing loans to "asset management companies," which are similar to bad banks. An effort was also made to reform Chinese banks, but this was partly stymied by the political considerations referred to above. The problem of zombie or insolvent banks is a worldwide problem, although it appears to be more severe in China than in many other countries. Much debt is in the form of under-performing bank loans and in bonds that are rarely traded and worth less than their book value.

In some respects, China is copying the experience of Japan, where zombie banks also lend to many zombie firms that are bankrupt, but continue to operate because of high access to low-cost credit and 'evergreening,' or constant renewal of loans that the borrowers would not be able to repay if called on to do so. Thirty years ago, Japan was coming to the end of her own economic miracle and was the envy of the Western world. Since then, Japanese economic growth has stagnated—despite the high technological sophistication of her exports—and one reason for this is a poor allocation of bank finance.

In China, economic growth has been achieved without a maturing of the Chinese financial sector. This sector remains under-developed, inefficient, and prone to instability, as well as a channel through which households and small to mid-sized firms are unofficially taxed, via low interest rates on savings and low access to loans, and state enterprises are unofficially subsidized via low interest rates on loans and high access to credit.

Chinese Investment Abroad.

The traditional "Open Door" policy had 5 basic components:

1. The creation of special investment zones, where rules and conditions governing foreign investment were initially more favourable to foreign capital than was the case elsewhere in China. These zones were cordoned off from the rest of China and can be seen as an example of the "experimental" or "model" approach to reform, since at first most investment from abroad went into them. In the early years of economic reform, the zones were also necessary to induce hardliners within the Communist Party to accept foreign investment.

Since then the Open Door Policy has been extended to most of China, and the zones have become an anachronism. Acceptance of foreign investment has become widespread, and many areas (albeit mainly within the Eastern coastal regions) have made successful efforts to attract it. Improving infrastructure is now making inland regions more attractive to foreign investors as well, and these regions stand to benefit from the "One Belt, One Road" initiative in which trade goes westward from China rather than eastward (see below).

2. The attraction and efficient use of foreign capital more generally. Only the United States has received more foreign investment than China.
3. The expansion of foreign trade and greater Chinese access to foreign markets. Internal deregulation enabled China to rise from virtually no foreign trade to her present position as the world's leading trading nation in terms of

the volume of imports plus the volume of exports, as well as the world's leading exporter in terms of export volume. Trade has expanded faster than GDP, despite record growth of the latter. At one point in the 1960s during the Cultural Revolution, only eight firms were allowed to engage in foreign trade. Today restrictions on trading rights are supposed to have been largely removed.

At the same time, China has expanded scientific, technical, cultural, and educational exchanges, and many Chinese have gone abroad to study, both within and outside the framework of such exchanges. This has become easier since China's entry into the WTO.

In the period before reform, China kept her currency over-valued, as is typical of a Soviet-type economy. After reform, her currency became under-valued, in order to penetrate export markets and, for a time, to gain market share rapidly. More recently, the renminbi has risen in value relative to many Western currencies, and some economists believe that it is no longer under-valued. As noted above, China now has a problem with financial outflows (capital flight), which increase when the expected future value of the renminbi falls. This gives an incentive to maintain its value.

4. The importing of modern technology, as well as of modern business methods. This may be the most important component of the Open Door Policy. Even though China's growth has been export-led, China's political system has been less favourable to innovation than would ideally be the case—hence the

need to import technology, although vigorous efforts to increase innovation are now underway.

5. Chinese participation in international economic organizations and forums.

Since the start of reform, China has joined the IMF, the World Bank, and the WTO, along with many other organizations of lesser importance. She has become a full participant and a major player in the world economy, into which she is more closely integrated than at any other time in her history.

We can now identify a 6th component:

6. Massive Chinese investment abroad, consisting of Chinese direct investment and Chinese purchases of and partnering with foreign firms. Outward foreign investment now exceeds foreign investment into China. The largest Chinese takeover of a foreign firm to date is the purchase of the Canadian energy firm, Nexen, by Cnooc, the Chinese state-owned oil company, for \$15.1 billion. By 2020 China's investment abroad is expected to exceed U.S. \$1 trillion, making her the world leader in both inward and outward foreign investment. China is actively undertaking and financing investment around the globe and is already lending more money abroad than is the World Bank. The money for this foreign investment comes from China's export surplus—and thus indirectly from the millions of Chinese workers who are employees of export firms, as well as from the savings of hundreds of millions of Chinese households.

The investment in question has both political and economic aims. The economic goals are to secure supplies of raw materials and energy where China has a deficit—in

the sense that domestic consumption exceeds domestic production—and to acquire technology by partnering with foreign companies that are world technological leaders. The political goal is to extend Chinese political influence around the world and to mute foreign criticism of Chinese government actions and policies.

The 6th component is an aspect of state capitalism in China, and China gains from being able to bring several large state companies to bear on a project. This is true with respect to Chinese investment in Greenland, for example, which is believed to have major deposits of oil and other resources that China needs; however, Greenland does not have a single highway. To exploit Greenland's resources, China must build infrastructure before mining and drilling can occur, which will require a massive investment and co-ordination of companies operating in several different industries. The agreement also allows Chinese companies to pay their workers less than the Greenland minimum wage (which is relatively high).

Finally, as noted earlier, China is reviving the ancient Silk Road after six centuries of dis-use. This will allow exports to move westward from China to Central Asia, the Middle East, Africa, and eventually to Europe, with a rail line linking Beijing and London that could revive the Orient Express. Imports will enter western China from these regions, and exports will move westward from them. This is the “One Belt, One Road” initiative, which is planned to involve U.S. \$1 trillion in Chinese investment abroad. (Whereas ancient traders carried silks, spices, jewels, and jade, however, the modern cargo is more likely to consist of electronics components and parts and machinery—the romance is gone.) Some Belt and Road Projects have been of low quality and overpriced to recipient countries, leaving these nations with excessive debt

that they will probably never be able to repay. In this sense, the belt and road initiative has proved to be a 'debt trap' for these countries.

Chinese investment abroad represents an effort to exploit a new arena of growth at a time when the growth of export demand is slow. However, the return on this investment is partly political, in terms of Chinese influence on foreign governments to whom she is lending large amounts of money. Some of these governments are finding the loans in question hard to repay. Given that the return is partly political, a question arises as to whether China will earn a good economic return on her foreign investment.

Concluding Comment.

The main problem facing the Chinese economy is a low average return on investment, which requires high growth to come from a high investment share of GDP. To finance this investment, the savings share of GDP is even higher, which requires the consumption share to be low. Living standards are lower than the level of GDP per capita would indicate, an outcome that is reinforced by air and water pollution. A further consequence of low investment returns is a high and growing debt-to-GDP ratio, which is probably not sustainable. Additional issues are the problem of capital flight, the problem of corruption at lower levels of government, and the problem of inequality—East vs. West, Urban vs. Rural, and Party vs. non-Party. China is trying to address these issues. In particular, there is a vigorous, albeit selective, campaign against corruption, as well as a huge investment in 'green' industries, which are rapidly growing. Coal is still the source of over 60% of China's energy consumption, however, and China

is still the world's largest producer and consumer of coal, although coal output is now falling, and China is a signatory to the Paris Climate Accords.

Economic reforms that might raise the average return on investment and make it possible to increase the consumption share of GDP have stalled because they threaten to undermine the networks of privileges built into the present economic system, which generate the rents that are rewards for political support. Nevertheless, China continues to grow rapidly via growth of types (a) and (b), and China has expanded her production of technically sophisticated products at an explosive pace. The focus on technology is stronger than ever. To explain this, Cheng, Jia, Li and Li quote the Chinese State Council from the 2016 National Plan:

'One important reason why China fell into backwardness and took beatings in the modern era is that the previous industrial revolutions slipped through our fingers, leaving us with weak technology and a weak state. To realize the great rejuvenation of the Chinese nationhood that is the Chinese Dream, we must make genuine use of science and technology, this revolutionary force and lever of power in the highest sense.'

* * * * *

NOTE: The Keyu Jin quote above is from Keyu Jin, "China's Reform Stalemate," *Project Syndicate*, Jan. 26, 2015, pp. 1-2. This is online at www.project-syndicate.org/commentary/china-reform-vested-interests-by-keyu-jin-2015-01?barrier=accessreg.

The Geoffrey West quote is from Geoffrey West, “The Growing Importance of Megacities,” THE BLOG, March 27, 2014. This is online at www.huffingtonpost.com/geoffrey-west/the-growing-importance-of-megacities_b_4665457.html.

The reference to Cheng, Jia, Li and Li is Hong Cheng, Ruixue Jia, Dandan Li, and Hongbin Li, “The Rise of Robots in China,” *Journal of Economic Perspectives*, Spring 2019, vol. 33, no. 2. Quote is on p. 78.