

The Key Obstacles to Success in Economic Catching Up by China

Wing Thye Woo*

1. The New Normal of Sustainable Development or the Middle-income Trap?

In 2014, after China's GDP had grown by 7.7 per cent in both 2012 and 2013, President Xi Jinping noted that China's economy had entered into a 'new normal' with a trend growth rate of about 7 per cent per year. This was a new trajectory compared to the period between 1978 and 2011, where average annual growth was around 10 per cent. Of course, growth of 7 per cent is still very high by international experience.

Historically, China's growth rate has generally been higher than announced growth targets. Since 1978, economic growth has only once been below target for two consecutive years, and these two years were in the politically challenging period of 1989 and 1990. Right now, China seems to be heading towards setting a new precedent in a rare underperformance in growth. The 2015 growth rate of 6.9 per cent was below the target of 7 per cent and, in April 2016, the International Monetary Fund (IMF) predicted that China's growth would be 6.5 per cent in 2016, 6.2 per cent in 2017, and 6.0 per cent in 2018, 2019, 2020 and 2021.¹

If these IMF predictions were to be realised, then China would just miss its announced target of doubling income growth between 2010 and 2020 (which would require average growth of 7.18 per cent). But if the downward trend of 2011–18 were to continue instead of stabilising at 6 per cent from 2018 onward, could one rule out the scenario that China's growth rate would continue to decline to, say, 4 per cent? In such a case, the development gap between China and the United States would remain practically unchanged between now and the end of the 21st century. While unfortunate, such a scenario is not unprecedented. China would be repeating the experience of Argentina in the 20th century.

The focus of this paper is on how China could avoid having the same fate as Argentina. That is, how could China avoid being caught in the middle-income trap? What does China have to do in order to succeed in closing the development gap between itself and the United States and Western Europe? Can China repeat the successful catch-up experiences of Japan, South Korea and Taiwan?

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¹ See the IMF's World Economic Outlook Database, April 2016 edition, available at <<http://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>>.

The paper is organised as follows: Sections 2 and 3 propose a way to classify economies as low, middle or high income; Section 4 discusses the main economic challenges that China would have to overcome to become a high-income economy; and Section 5 proposes solutions to these growth obstacles.

2. Classifying the Income Status of an Economy

There are two major considerations when classifying an economy as high income, middle income, or low income (Woo 2012a). The first consideration is how these categories could be defined to have an analytical meaning appropriate to the research topic. The second consideration is where to draw the boundaries of these income categories in the distribution of country income levels.

The definition of income categories must have a built-in dynamic element to take account of the fact that the incomes of the world's richest economies have been rising steadily over the past 200 years due to factors like technological progress and institutional innovation. Therefore, the boundaries of the income categories should not be drawn on the basis of an absolute level of income.

I propose that income categories be defined by the per capita income level of the economy as a proportion of the level of the per capita income in the United States, which is commonly accepted to have been the economic leader of the world, at least since 1920, with per capita income measured in purchasing power parity units to ensure comparability in the standard of living across economies. This share – the catch-up index (CUI) – is constructed using GDP per capita data from the Maddison Project.

After matching the CUI with the generally accepted notion that most Western European countries are high-income economies, and that most sub-Saharan economies are low-income economies, I define:

- high-income economies as those with a CUI greater than 55 per cent
- middle-income economies as those with a CUI between 55 per cent and 20 per cent
- low-income economies as those with a CUI less than 20 per cent.

3. Comparing the Largest Regional Economies

It is useful to compare China with other economies that are similar in scale but are at different stages of growth in order to identify potential barriers to continued high growth in China. I compare China with three regional groupings:

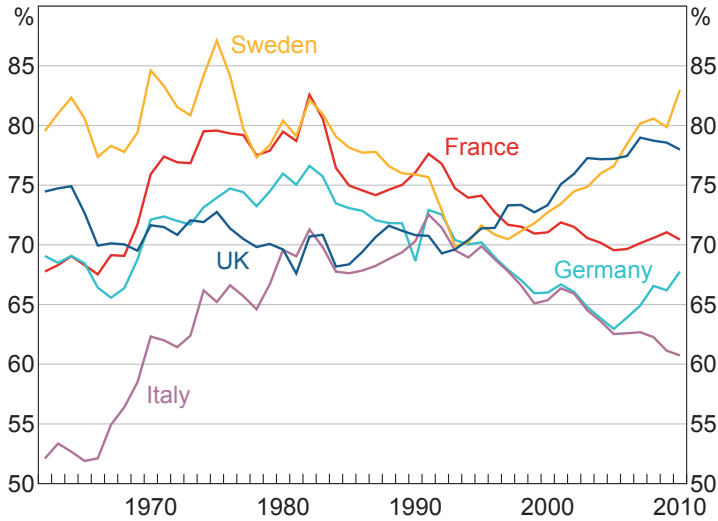
- Europe: France, Germany, Italy, Sweden and the United Kingdom
- Latin America: Argentina, Brazil, Chile, Mexico and Venezuela
- Asia: India, Indonesia, Japan, Malaysia, Philippines, South Korea, Thailand and Taiwan.

The dispersion of the CUI of the high-income European economies narrows from the start of the sample until the mid 1990s, then begins to widen (Figure 1). More amazingly, this group of high-income economies maintained an average value of about 70 per cent throughout this 50-year period.

In Latin America there is a narrowing of the spread of CUIs from a range of about 60 percentage points in 1962 to about 25 percentage points in 2010. This has involved convergence of the

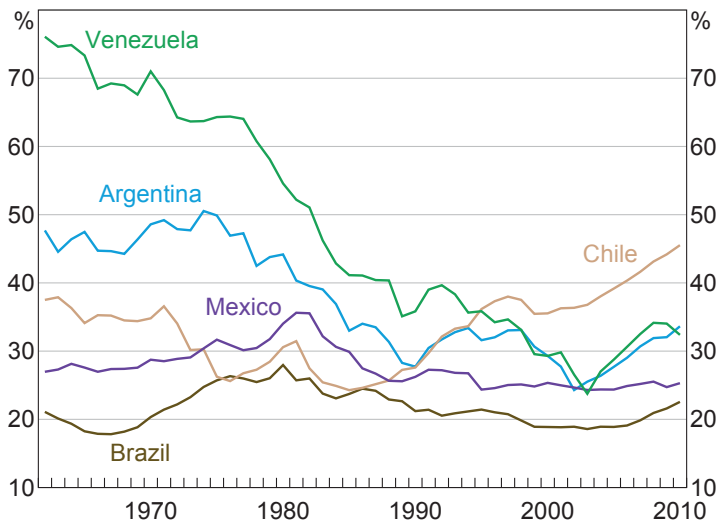
higher-income economies towards the levels of the lower-income economies (Figure 2). The group average CUI is around 40 per cent in 1962, but is 32 per cent in 2010, which means that, as a group, Latin America has fallen further behind the United States.

Figure 1: Europe – Catch-up Index
Share of US GDP per capita



Source: The Maddison-Project, <http://www.ggdnc.net/maddison/maddison-project/home.htm>, 2013 version

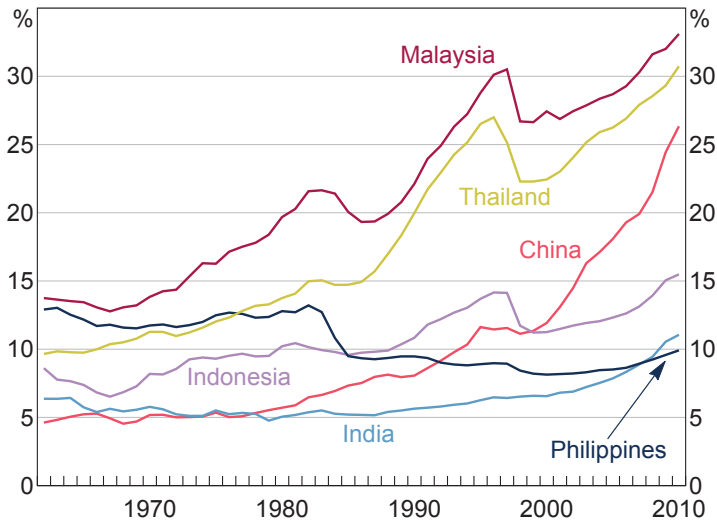
Figure 2: Latin America – Catch-up Index
Share of US GDP per capita



Source: The Maddison-Project, <http://www.ggdnc.net/maddison/maddison-project/home.htm>, 2013 version

Figure 3 shows the CUIs of the developing members of the Asian group: India, Indonesia, Malaysia, Philippines and Thailand, along with China. With the exception of the Philippines, these economies had a higher CUI in 2010 than in 1962, moving the average CUI of the group from 9 to 21. Unlike in the European and Latin American groups, the end result is a widening in the dispersion of CUIs because there were three economies that had very high growth: Malaysia, Thailand and China.

Figure 3: Developing Asia – Catch-up Index
Share of US GDP per capita



Source: The Maddison-Project, <http://www.ggd.net/maddison/maddison-project/home.htm>, 2013 version

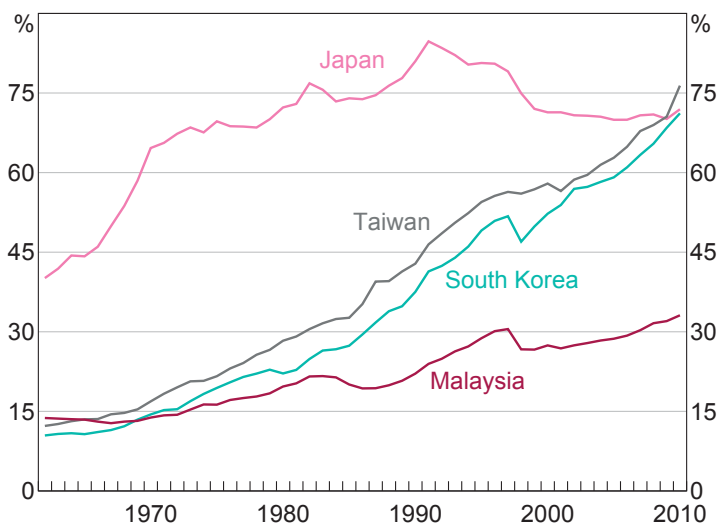
Malaysia has been the star performer of the group: it not only had the highest CUI value in this group throughout the 50 years, but also had one of the biggest increases in CUI, from 14 per cent in 1960 to 33 per cent in 2010. Thailand has also been a strong performer, with CUI rising from 10 per cent in 1960 to 31 per cent in 2010. It is for these reasons that the World Bank (1993) described them as miracle economies. More recently, China has broken away from India, Indonesia and the Philippines and closed the gap with Malaysia and Thailand, with its CUI at 26 per cent in 2010.

While Malaysia's performance looks good, the growth of the high-income Asian economies of Japan, South Korea and Taiwan are even more impressive (Figure 4). In fact, Malaysia was richer than Taiwan until 1965 and richer than South Korea until 1969. Malaysia has had respectable, but not outstanding, economic growth and its CUI has only increased gradually over the past 13 years, from 31 per cent in 1997 to 33 per cent in 2010. The Malaysian CUI has not moved far from 30 per cent for more than a decade – a level that the Latin American economies have been at since at least 1960.²

² Woo (2011) gives the reasons for this outcome in Malaysia. The race-based and over-centralised policy regime was incompatible with globalisation because it enabled inept governance and rent-seeking, while generating a massive brain drain and enormous capital flight. Efforts are being made to address these problems.

So, while China has had remarkable growth in its CUI, it remains to be seen whether China can escape the Malaysian malaise of the middle-income trap.³

Figure 4: Asia – Catch-up Index
Share of US GDP per capita



Source: The Maddison-Project, <http://www.ggdc.net/maddison/maddison-project/home.htm>, 2013 version

4. What Could Cause China to Fall into the Middle-income Trap?

A good guide to the probability of continued high growth in China is found in the discussions of the annual Plenum of the Communist Party of China (CPC) that concluded on 11 October 2006. From 1978 through to 2005, every plenum had ended with the resolution that the primary task of the CPC in the following year was ‘economic construction’, which has been widely interpreted as GDP growth. The 2006 plenum broke with tradition and passed a resolution to commit the CPC to establish a harmonious society by 2020. An obvious implication from this resolution is that the present social, economic and political trends within China might not lead to a harmonious society or, at least, not lead to a harmonious society fast enough.⁴

What led the CPC to change its primary focus from ‘economic construction’ to ‘social harmony’? I like to use the analogy of China’s economy being like a speeding car. The CPC saw that the car could crash in the near future because there were several possible failures that might occur and

³ Thailand is another likely case of being mired in the middle-income trap. Its CUI rose from 27 per cent in 1996 to 31 per cent in 2010, a 4 percentage point rise over 14 years compared to the 12 percentage point increase in the preceding 14-year period of 1982–96 indicating a loss in economic dynamism.

⁴ The proposed harmonious socialist society would encompass a democratic society under the rule of law; a society based on equality and justice; an honest and caring society; a stable, vigorous and orderly society; and a society in which humans live in harmony with nature.

trap China in middle-income status. To be specific, I think there are three classes of failure that could occur that I call hardware failure, software failure and power supply failure.

A *hardware failure* refers to the breakdown of an *economic mechanism*, a development that is analogous to a broken steering column in the car. Probable hardware failures include a banking crisis that causes a credit crunch that, in turn, dislocates production economy-wide, or a budget crisis that necessitates reductions in important infrastructure and social expenditure (and also possibly generates high inflation as well as balance of payments difficulties). When the steering column is broken, it doesn't matter how much you turn it, the car is still going to crash.

A *software failure* refers to a flaw in *governance* that creates widespread social disorder that disrupts production economy-wide and discourages private investment. This is like a car crash that results from a fight among the people inside the speeding car. Software failures could come from the present high-growth strategy – which has increased inequality and corruption that, in turn, might generate severe social unrest and dislocate economic activities – or from the state not being responsive enough to rising social expectations, hence causing social disorder.⁵

A *power supply failure* refers to the economy being unable to move forward because it hits either a *natural limit* or an *externally imposed limit*, a situation that is akin, respectively, to the car running out of petrol or to the car smashing into a barrier erected by an outsider. Examples of power supply failures are an environmental collapse, or a collapse in China's exports because of a trade war. Inability to prevent a climate disaster is a science policy failure and a trade war is a foreign policy failure.

The fact that the CPC chose to emphasise the danger of social disharmony suggests that it regards software failure as having the highest probability of occurrence. The post-2006 emphasis of the government on generating inclusive growth supports this interpretation. However, the global financial crisis (GFC) in 2008 and the prolonged economic stagnation of the G7 economies that followed have made macroeconomic management in China much more challenging and greatly strengthened the protectionist sentiments within the G7. These two developments have raised the probability of hardware and power supply failures. In the following sections I discuss each class of failure and likely precipitating events further.

4.1 Hardware failures

At present there are two hardware failures that are likely, both of which have been exacerbated by the CNY4 trillion stimulus package that the government announced in response to the GFC. The first is the possibility of a rapid increase in non-performing loans (NPLs), which could in turn cause a fiscal crisis as a result of bailing out state-controlled banks (SCBs). A fiscal crisis could then necessitate a reduction in government expenditure in areas such as infrastructure, which have typically supported growth.

As long as the state is perceived as willing and able to bail out the SCBs, depositors would most likely retain their confidence in the SCBs regardless of the actual state of their balance sheets. China began the recapitalisation of the SCBs in 2003 and brought the capital adequacy ratio of the four largest SCBs to about 8 per cent by the end of 2004. However, it is unclear how many more rounds of bank recapitalisation China can afford without generating a fiscal crisis. The simple fact is that fiscal sustainability lies at the heart of whether a banking crisis would actually occur.

⁵ In Marxian terminology, a hardware failure is the breakdown of an important component of the base structure; and a software failure is the breakdown of a key part of the superstructure.

In this respect, an important indicator of fiscal sustainability is the steady-state level of the debt-to-GDP ratio. If the steady-state level is too high it calls into question the sustainability of the current path. To put the issue formally, the evolution of the debt-to-GDP ratio is given by:

$$d(\ln[Debt / GDP]) / dt = r + [GDP / Debt] \cdot [f + b] - y$$

where

r = real interest rate on government debt

f = primary fiscal deficit rate = [state expenditure excluding debt service – state revenue]/GDP

b = NPL creation rate = [change in NPL in SCBs]/GDP

y = trend growth rate of real GDP.

As long as $y > r$, then $Debt/GDP$ will have a steady-state value that is non-zero when the sum of $(f + b) > 0$. Specifically,

$$(Debt / GDP)_{steady\ state} = (f + b) / (y - r) \text{ when } y > r$$

The average long-term growth rate (y) for the 1978–2011 period was a little more than 9.5 per cent. Since the growth slowdown began in 2012, the government has called this a ‘new normal’ economic era, which is usually taken to mean a long-term growth rate of about 7 per cent. The historical value for the primary deficit of the Chinese state budget (f) is 2–3 per cent of GDP. The real interest rate is in the historical range of 3–7 per cent. The NPL-generation process that led to the NPL ratio being 50 to 70 per cent of total loans in 1999 would imply an annual NPL creation rate (b) of 8 to 11 per cent of GDP.⁶ To be conservative, we assume that the historical value of b is 6 per cent of GDP.

In our simulations of the value of steady-state $Debt/GDP$, we also used $b = 3$ and $b = 1$ as scenarios where control of NPL creation has improved greatly from the past. The widely dismissed official estimate of the 1999 NPL ratio being 25 per cent implied $b = 3.9$. Drawing upon the target growth range of 6.5 to 7.0 per cent in the 13th Five-Year Plan (2016–20), we conduct two simulations: the *optimistic scenario* where growth is 8 per cent (higher than the upper limit of the target), and the *‘new normal’ scenario* where growth is 6.8 per cent (in the middle of the target range).

Under the optimistic scenario: $y = 8$ per cent, $f = 2$ per cent, and $r = 3.5$ per cent, we find

- $(Debt/GDP)_{steady\ state} = 178$ per cent when $b = 6$ per cent
- $(Debt/GDP)_{steady\ state} = 111$ per cent when $b = 3$ per cent
- $(Debt/GDP)_{steady\ state} = 67$ per cent when $b = 1$ per cent

6 Foreign financial firms like Deutsche Bank and Standard & Poor’s have estimated that the NPL ratio in the Chinese banking system was 50 to 70 per cent in 1999 (Chang 2001, pp 124). To estimate the average annual creation of NPL, we note that 1985 was a turning point in bank financing of the activities of enterprises. Before 1979, much of the expenditure of the state enterprises was covered by budgetary grants. In 1979, the government reduced grants to enterprises in some industries located in Beijing, Canton and Shanghai, and these enterprises were allowed to borrow more from the banks. In late 1984, the government announced that all enterprises in China would have their budgetary grants replaced by bank loans from the beginning of 2015 (the *bo gai dai* reform). If we assume that NPLs started appearing only from 1985 onwards, then the average creation of NPL (value of b) in the 1985–99 period would have been 7.7 to 10.8 per cent of GDP in each year. If we push the starting date for NPLs back to 1979, the value of b would have been 7.4 to 10.3. In the baseline scenario of our simulations, we have chosen the conservative assumption that $b = 6$ which has caused the NPL ratio in 1999 to be 39 per cent (if we take the starting date of NPLs to be 1985).

Under the 'new normal' scenario: $y = 6.8$ per cent, $f = 2$ per cent, and $r = 3.5$ per cent, we find

- $(Debt/GDP)_{steady\ state} = 242$ per cent when $b = 6$ per cent
- $(Debt/GDP)_{steady\ state} = 152$ per cent when $b = 3$ per cent
- $(Debt/GDP)_{steady\ state} = 91$ per cent when $b = 1$ per cent

In evaluating the results of these simulations, the EU debt-to-GDP benchmark of 60 per cent provides a useful guide. The simulations under the optimistic scenario reveal that the only time that the equilibrium government debt-to-GDP ratio is anywhere close to the EU benchmark is when b is 1 per cent, which is well below the rate recorded when NPLs rose sharply in the late 1990s. The simulations under the 'new normal' scenario emphasise that fiscal sustainability is not assured even with a relatively optimistic outlook for NPLs ($b = 1$) since the lower growth rate of 6.8 per cent has made it impossible for the debt-to-GDP ratio to converge to a prudent value near or below 60 per cent. In short, under the 'new normal' growth rate, the soft-budget constraint must be eliminated completely in order for fiscal sustainability to be possible.

The stimulus package introduced by the Chinese authorities in response to the GFC has increased the risk of a significant rise in NPLs. The central government only provided funding for around one-third of the total stimulus package. As such, Premier Wen Jiabao implicitly gave permission to the state-controlled enterprises (SCEs) to invest more and to the SCBs to extend loans to fund the approved projects. The strategy of using non-profit-maximising state-controlled production and financial units to boost aggregate demand proved successful in offsetting the slump in private sector spending. However, these policies may have increased financial vulnerabilities, particularly because managers of SCEs and the SCBs felt they would not be held responsible should the projects become financial busts.⁷ Therefore, some analysts are concerned that loans extended for unprofitable projects as part of the stimulus program would lead to a large increase in NPLs and that the resulting financial crisis would cause China to crash, as the United States and United Kingdom did in 2009 (e.g. Tasker 2009; Barboza 2010). Other analysts have suggested that the bailout of the SCBs by the government could cause a fiscal crisis that would require large cutbacks on important infrastructure and social programs.

A second possible hardware failure is lower productivity growth. The risk of low productivity growth has also been exacerbated by the stimulus program, with the concern being that SCBs were channelling the flood of liquidity to SCEs and neglecting the increased financing needs of the private sector.^{8,9} For example, pressed for working capital, two well-known large private companies, Rizhao (a steel firm) and Mengniu (a dairy), agreed to be acquired by their state-owned counterparts. As SCEs are generally less efficient and innovative than private firms, the expansion of the role of the state firms has raised the issue of whether Premier Wen's way

7 In testimony before the U.S.-China Economic and Security Review Commission, Woo (2009) predicted that 'The state-owned banks (SOBs) will be happy to obey the command to increase lending because they cannot now be held responsible for future nonperforming loans. The local governments and the state-owned enterprises (SOEs) can now satisfy more of their voracious hunger for investment motivated by the soft-budget constraint situation where the profits would be privatized and the losses socialized. The stimulus package will work well because of the collusion between the managers of the SOBs and SOEs to transfer public assets to themselves.'

8 Herrala and Jia (2015) found that bank loans to non-state firms were drastically curtailed from 2004 onward.

9 The bailing out of unprofitable SCEs by the state has created 'zombie firms' that reduce the fiscal space of the state and the overall efficiency of the economy; see Tan, Huang and Woo (2016).

of imparting the needed boost to capacity utilisation during the GFC would become a drag on future productivity growth (Wheatley 2010).^{10,11}

4.2 Software failures

One possible software failure may arise from inadequate governance. The satisfactory functioning of a market economy requires a wide array of regulatory institutions that range from straightforward law and order administration to complicated legal adjudication. China's strategy of incremental reform, combined with the fact that institution building is a time-consuming process, means that many of its regulatory institutions are either absent or ineffective. The result has been governance failures on many fronts. The most well-known of these are the consumer product scandals: the addition of poisonous substances to toothpaste, cough medicine and animal feed; the application of lead paint to children's toys; and the overemployment of anti-fungal and anti-bacterial agents in fish farming. Most of these abuses only received international media attention because these items were exported to other countries.

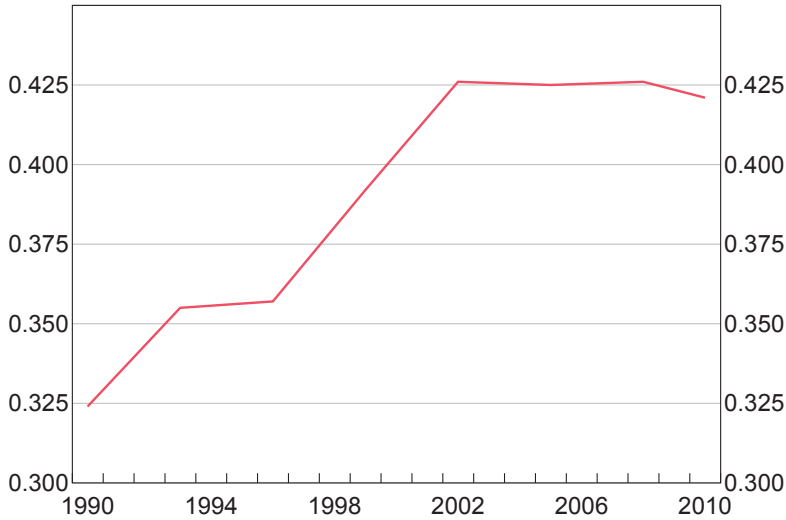
Another possible software failure may be brought about by heightened income inequality. Despite its ability to generate high growth, the present economic development strategy is now generating social tensions. This is because a noticeable rise in income inequality has accompanied the high growth (Figure 5). The Gini coefficient rose significantly through the 1990s and has been well above 0.4 – the level commonly thought to deem severe income inequality – since at least 2002.¹²

A third possible software failure could be caused by the opportunities for embezzlement of state assets, seizure of farmlands for industrial development, and corruption due to the absence of effective mechanisms to supervise government employees. These features certainly make social harmony hard to sustain. This is why '[t]wo days after taking control of the world's most powerful political party in November 2012, Xi Jinping warned his fellow Chinese Communist Party members that their six decades of rule was in jeopardy because of what he saw as endemic corruption eating away at the party's authority and effectiveness' (Forsythe 2016). A vigorous anti-corruption campaign has been in progress since then, and the highest ranked official caught to date is Zhou Yongkang, a member of the previous Standing Committee of the Political Bureau of the Communist Party of China.

10 This debate over the growth of the state firms at the expense of private ones is conducted under the heading of *guojin mintui* (the state sector advances, and the private sector withdraws).

11 Woo (2016) provides details of the appropriate supply-side structural reform programs and also argues for the importance of ending the soft-budget constraint practice of the state.

12 One major contributor is that the trickling-down mechanism in income diffusion has slowed down significantly, and is hence unable to reduce extreme poverty further and improve significantly the rural–urban income distribution and the regional income distribution; see Démurger *et al* (2002) and Woo *et al* (2004).

Figure 5: China – Gini Coefficient

Source: World Bank

Wang and Woo (2011) found that urban residents have substantial unreported (hidden) income (Table 1). The official income per capita and 'true' income per capita in the richest 10 per cent of households in 2008 was CNY43 614 and CNY139 000, respectively; official income being one-third of true income. Total household disposable income in 2008 was CNY14.0 trillion according to the official data but true income was estimated to be CNY23.2 trillion. Since 63 per cent of unreported income went to the richest 10 per cent of urban households, the income of the richest 10 per cent of Chinese households is estimated to be 26 times that of the poorest 10 per cent, compared with the 9 times according to the official data.

The data on social unrest are consistent with the hypothesis of rising social disharmony. The incidence of public disorder, labelled 'social incidents', rose steadily from 8 700 in 1993 to 32 500 in 1999 and then to 74 000 in 2004; and the average number of persons in a mass incident has also risen significantly, from 8 in 1993 to 50 in 2004. The number of mass incidents would have been lower and governance would have been better if the government's actions had been monitored closely by an independent mechanism and the government had also been held more accountable for its performance. The introduction of the Harmonious Society program in 2006 and the launch of the vigorous anti-corruption campaign in 2012 by CPC are acknowledgements that inclusive growth (a more equitable income distribution) and good governance (rule of law) are both necessary to ensure the social stability that will keep the economy on the high growth path.

Table 1: Disposable Income per Capita for Urban Residents – 2008
By income category

Category	Per cent of residents	Official income	'True' income	Distribution of hidden income
		CNY	CNY	
Lowest income	10	4 754	5 350	0.4
Low income	10	7 363	7 430	0.0
Lower middle income	20	10 196	11 970	2.3
Middle income	20	13 984	17 900	5.1
Upper middle income	20	19 254	27 560	10.9
High income	10	26 250	54 900	18.8
Highest income	10	43 614	139 000	62.5
All	100	16 885	32 154	100.0

Note: Hidden income equals total 'true' income less total official income

Source: Wang and Woo (2011, Tables 5 and 6)

4.3 Power supply failure

4.3.1 Environmental collapse

Environmental issues are one possible cause of a power supply failure. The present mode of economic development has given China the dirtiest air in the world, is polluting water resources and is possibly changing climate patterns within China.

The air quality in China is a key concern, from both a health and an economic perspective. The Organisation for Economic Co-operation and Development (OECD) estimates that around 905 000 premature deaths were caused by outdoor air pollution in 2010, with that figure projected to rise to at least 2 million by 2060 (OECD 2016). The OECD also estimates the economic costs of air pollution – due to reduced labour productivity, additional health expenditures and crop yield losses – will be around 2.5 per cent of annual Chinese GDP by 2060.

Water shortages in the north of China are another major environmental threat to China's continued high growth. In 2002, the government began implementation of Mao Zedong's 1952 proposal that three canals be built to bring water from the south to the north: an eastern coastal canal from Jiangsu to Shandong and Tianjin, a central canal from Hubei to Beijing and Tianjin, and a western route from Tibet to the north-western provinces.¹³ This massive construction project has been, and will continue to be, technically challenging, fraught with environmental risks and politically sensitive. For example, the enlargement of the Danjiangkou Dam (in Hubei) to enable it to be the source of the central canal displaced 330 000 people (Cheung 2003).¹⁴

Effective environmental policymaking is a very difficult task as much of the relevant science is unknown. Despite this, the uncomfortable reality for China is that unless ecological balance is

¹³ Information about the South-to-North Water Diversion Project can be found at <<http://www.nsb.gov.cn/zh/english/>>.

¹⁴ A lower estimate of 300 000 is given in Eckholm (2002).

restored within the medium term, environmental limits could choke off further economic growth. And the uncomfortable reality for the rest of the world is that the negative consequences of large-scale environmental damage within a geographically large country are seldom confined within that country's borders.

There is no doubt, however, that the Chinese Government is trying to improve its performance in sustainable development. As noted by Jeffrey Sachs, Special Advisor to United Nations Secretary-General Ban Ki-moon, the newly unveiled 13th Five-Year Plan for 2016–20 is 'highly aligned' with the 17 Sustainable Development Goals that were adopted by the global community in September 2015 (China Daily Asia 2016). The environmental targets for 2020 outlined in the 13th Five-Year Plan include:

- water consumption is to be 35 per cent lower than in 2013
- total consumption of primary energy is to be less than 5 billion tonnes of standard coal equivalent units
- energy consumption per unit of GDP is to be 15 per cent lower than 2015 levels
- carbon dioxide emissions per unit of GDP is to be 40–45 per cent lower than 2015 levels (King & Wood Mallesons 2016).

4.3.2 Foreign relations

A second possible cause of a power supply failure is antagonistic foreign relations. The list of US grievances generated by the large US–China bilateral imbalances has expanded from the loss of US jobs to include the meltdown of the US financial market in September 2008 (Guha 2009). *The New York Times* (2010) indulged in some oxymoronic rhetoric, calling the *fixed* CNY–USD exchange rate 'a textbook example of the beggar-thy-neighbour competitive *devaluation*' (emphasis added). Parallels with the Opium Wars of the 19th century are also being drawn, only with the identities of the aggressor and the victim reversed. According to Lardy: 'The United States is the addict. We are addicted to consumption ... China is the dealer. They're supplying the credit that makes it possible for us to over-consume' (quoted within St. Cloud State University (2009)).

China–US trade tensions have reached a dangerous level as exemplified by the recent accusation by presidential candidate Donald Trump that China was using unfair trade practices (BBC News 2016).

5. The Reform Agenda

5.1 The hardware reform agenda

The potential hardware failures identified in the section above were exacerbated by the authorities' large-scale stimulus package. As a result, different strategies should be used to address the present slowdown in growth. I propose two new interrelated growth drivers that would minimise the trade-off between full utilisation of existing production capacity and viable long-term growth of production capacity. The policies are: the creation of more private entrepreneurs; and urbanisation according to the principle of future home ownership.

First, the authorities could encourage entrepreneurship by mobilising the inland migrant workers (*nongmin gong*) laid off from the coastal provinces. Many of the *nongmin gong* have sufficient work experience to start their own factory or workshops to take advantage of the increased cost competitiveness of the inland provinces, created by the explosive extension of the national transportation network during the GFC. Because the availability of credit is the primary barrier to the emergence of this group of owner-operators, the government should encourage the development of small and medium-sized private banks, which have comparative advantage over the four large state banks in catering to the needs of new entrepreneurs.¹⁵ Farmland should also be privatised so that the new businesses can access collateral. The creation of a large new group of private entrepreneurs will bring three major benefits: expenditure by this new group will support aggregate demand; private firms are likely to have higher productivity growth than SCEs; and these small and medium-sized private enterprises will be more labour intensive than SCEs.

Second, the authorities could encourage further urbanisation based on the principle of affordable future home ownership. The fast growth of the real estate sector over the past decade reflected not just speculative demand but also genuine pent-up demand for housing.¹⁶ The bulk of the new arrivals from the countryside do not qualify for bank mortgages, and so many investors have been buying multiple housing units to rent to the new arrivals with the intention of raising the rents over time in line with the income growth of the renters. In this sense, much of the housing demand has been speculative.

China could study the low-cost public housing schemes in Hong Kong and Singapore and establish a national housing program where the new arrivals rent homes for seven years and then have the first right to buy these units at a price based on construction costs. China can afford a massive public housing program because the expensive part of such programs in other countries is the cost of land, not the cost of the structures, and land in China is mostly owned by the state.

This proposed future-ownership form of urbanisation would support China's growth in three ways: the maintenance of real estate investment to supply required housing and to help maintain the existing level of aggregate demand; the redirection of bank loans to new rural migrants, with a new housing agency acting as an intermediary, to prevent the appearance of NPLs; and the redistribution of income to rural migrants, which helps to reduce the threat of software failure.

These new growth drivers would be mutually reinforcing. The new enterprises of the former rural migrants would inevitably be located in or near towns and cities to take advantage of infrastructure and positive spillovers from higher population density. The institutional adjustments needed to underpin both growth drivers are also the same: privatisation of farmland; termination of the household registration system; and liberalisation of the financial system.

¹⁵ The system of prudential supervision must also be strengthened.

¹⁶ If speculative demand had been the overwhelmingly dominant cause for the property boom, then house rents would not have risen substantially (because the speculative investors would tend to rent out their extra units). Instead, rent in Beijing in March 2010 was 19.6 per cent above March 2009, see Liu (2010).

5.2 The software reform agenda

I agree with the CPC that the probability of a software failure is higher than the probability of a hardware failure. For most hardware problems, China can learn from the experiences of the rest of the world, especially those of the richer economies in east Asia, as long as ideological constraints on methods of economic management continue to wither. The 1868 insight of the Meiji reformists, that success in economic catch-up largely involves a willingness to adopt and adapt to 'best international practices', will continue to apply to China until its per capita GDP converges with that of Japan and Western Europe.

Dealing with software failure is harder than dealing with hardware failure for two major reasons. The first is that policymaking in China has become more challenging because expectations of administrative performance have risen dramatically with income growth and increasing knowledge of the outside world. In this new situation, the greater use of democratic procedures, the establishment of an independent judiciary and the restoration of a free press might be inevitable if China is to successfully accommodate and mediate emerging differences in rising social expectations. A Chinese government that consistently fails to deliver progress towards the Harmonious Society vision fast enough to catch up with the rise in social expectations runs an increasing risk of social instability.

The second reason that fixing software failures is difficult is that successful reconfiguration of institutions requires highly developed political skills, favourable circumstances in the domestic political arena and a benign international environment. What happens in the future will depend on whether the CPC is politically skilful enough to lead the transition to a democratic, equitable and law-based harmonious society and emerge afterwards as the most important political force. The practical issue is whether the CPC can do a better job in political transition than the Kuomintang did in Taiwan during 1983–88.

5.3 Dealing with power supply failure

5.3.1 Failure caused by environmental degradation

Effective environmental policymaking is a very difficult task because much of the necessary science is not yet fully understood. A systems approach to policymaking is necessary because interaction between the different sectoral policies could generate serious unintended environmental damage. A sustainable development policy would require a complete rethinking about the location of population centres and the types of enhanced international cooperation on global environmental management.

In discussing the environmental aspects of the water transfer plan it is important to note that there is public controversy in China involving a key government infrastructure project and that this controversy is not limited to members of the technocracy. The very public nature of the controversy, and the involvement of those outside the fields of science, engineering and economics, reveals how far social attitudes have progressed. The important point is that this change in social expectations will require any government in China to live in harmony with nature. However, any government will have great difficulties in doing so, even if it wants to, because a green growth policy involves a systems approach and scientific understanding of many ecological sub-systems and the nature of their interactions is still rather incomplete.

The global environment is an important area in which China can help to build a harmonious world system.¹⁷ Important progress was made on this front between the United States and China at the 2016 G20 Summit in Hangzhou when 'President Obama and President Xi Jinping of China formally committed the world's two largest economies to the Paris climate agreement ... cementing their partnership on climate change and offering a rare display of harmony in a relationship that has become increasingly discordant' (Landler and Perlez 2016).

5.3.2 Failure caused by trade protectionism

It should be noted that a trade imbalance reflects the economic situation in two countries: China could not have over-saved if the United States had not under-saved. US profligacy is just as much to be blamed for the trade tensions as Chinese thriftiness. Even today, the US Government does not have a credible plan to reduce its budget deficit upon the recovery of the economy. The straightforward implication is that a fair solution to any desired reduction in the trade imbalance would require corrective measures to be implemented by both China and the United States.

There are quite a number of China-centric explanations for China's persistent trade surplus.¹⁸ The two that seem the most important are: the *financial market theory*, which attributes the imbalance to the inability of China's largely unreformed financial system to intermediate all savings into investment; and the *industrial policy theory*, which attributes the trade imbalance to China's promotion of exports and suppression of imports.

The failure in financial intermediation comes from two main sources. First, the legal status of private enterprises was, until recently, less secure than that of the state enterprises. Second, there was no reliable way to assess the balance sheets of the private enterprises, which were naturally eager to escape taxation. The upshot was that the residual excess savings leaked abroad in the form of the current account surplus. Inadequate financial intermediation has made China a capital-exporting country and put it in conflict with its trade partners (Woo 2008).¹⁹

The industrial policy explanation describes China's chronic trade surplus as the unintentional outcome of the overriding economic and political priority in China to create jobs, and the widespread belief in the efficacy of infant industry protection. The resulting export subsidies, import barriers and undervalued exchange rate worked together to accelerate the simultaneous growth of export firms (which increased exports) and import-competing firms (which decreased imports), and hence kept the trade balance in surplus.²⁰

17 See McKibbin, Wilcoxon and Woo (2008) for an example of an efficient global CO₂ emission compact that China and the rest of the world could adopt.

18 Such explanations are considered 'China-centric' because they ignore the obvious fact that the current account balance is also determined by US conditions.

19 Savings behaviour is not independent of the sophistication of the financial system. An advanced financial system will have a variety of financial institutions that would enable pooling of risks by providing medical insurance, pension insurance and unemployment insurance; and transform savings into education loans, housing loans, and other types of investment loans to the private sector. Other things being equal, the more sophisticated a financial system, the lower the saving rate.

20 The industrial policy theory has been challenged on the grounds that its microeconomic plausibility is at odds with economy-wide constraints. Specifically, in a two-sector general equilibrium model of exportables and importables there could not have been simultaneous growth of the exportable sector and the importable sector because labour would flow from one to the other depending on the relative size of the effective export subsidy rate and the effective import tariff rate. Hence, the trade balance would not be affected by the industrial policy. However, this theoretical reasoning about industrial policy does not hold for China because of the existence of surplus labour in the countryside, which could move into both the exportable sector and the importable sector, and because of the existence of a sizeable non-tradeable sector, for example low value-added service activities and subsistence agriculture, that would release labour to the 'policy-favoured' tradeable sector.

Both factors are likely to have contributed to China's persistent trade surplus and undertaking actions to address these concerns is likely to enhance China's welfare and help prevent a trade war with the United States. Potential policy initiatives to continue developing the financial sector include opening China's capital account further and domestic financial deregulation. To address industrial policy concerns, export incentives and import barriers could be slowly unwound.

US–China trade tensions would be lowered substantially if both countries undertake corrective policies rather than if China acts alone, and the two countries should work together to prevent the World Trade Organization (WTO) free trade regime from weakening. Specifically, China has benefited immensely from the WTO system, but has played a very passive role in pushing the Doha Round negotiations forward. By default, Brazil and India have assumed the leadership of the developing economies in the trade negotiations.

With the United States weakening in its resolve to protect the multilateral free trade system, China should now become more active in the Doha Round negotiations to deregulate world trade further. Such a role will be very much in China's interest because Brazil is now bypassing multilateral trade liberalisation by entering into free trade agreement negotiations with the European Union. A growing number of nations like Brazil 'are increasingly wary of a multilateral deal because it would mandate tariff cuts, exposing them more deeply to low-cost competition from China. Instead, they are seeking bilateral deals with rich countries that are tailored to the two parties' needs' (Miller 2007). It is the time for China to show that it is a responsible stakeholder by joining in the stewardship of the multilateral free trade system. Such a stance in foreign relations would also reduce the threat of this type of power supply failure to China's own growth.

6. Final Remarks

China has achieved middle-income status through the marketisation and internationalisation of its economy. My assessment is that the continued high growth rates that will enable China to catch up with high-income economies can be generated only if China adopts a new development strategy. This new development strategy is based on the recognition that comprehensive supply-side structural reform has to be implemented, that Chinese society has come to possess more and more of the middle-class aspirations common to the industrialised world, and that China has now become an important shaping force of the global economy (McKibbin and Woo 2003).

China should therefore adopt the harmonious society ideal as the primary internal objective and the harmonious world ideal as the primary external objective. The administrative software that will allow the achievement of a harmonious society will require an increasing use of free elections, monitoring by a free press and adjudication by an independent judiciary. China should start adopting the global perspective that is required of a world leader who will work for the protection of the global environmental commons, the global trading system and global security in order to ensure that China's transition to high-income status is not foiled by the physical environment or the international political environment.

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