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China's 13th Five-Year Plan. In Pursuit of a "Moderately Prosperous Society"

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Summary

Chinese reform is an endogenous process that feeds on its own contradictions, and creates its own way through stages, interspersed by crises that are part of the reform. The Directives paper issued by the central committee of the CCP at its third plenum in November 2013 is a theoretical compendium of a strategic view of the reform. The 13th Five-Year Plan (2016-2020), adopted in March 2016 by the People's National Assembly of China, is the most articulated document to date and explains the objectives and their implementation over the next five years.

In order to understand the Plan, this paper focuses on six paramount objectives from this long and detailed document: shift from capital accumulation-led growth to innovation-led growth; integrated urban-rural development; green development; inclusive development; finance and State-owned Enterprise-(SOE) reform; opening up to the world.

The process of reform is acknowledged to be under way. The paper analyzes the objectives identified and their content and it highlights their interdependencies to underline the comprehensive "new normal" strategy.

Quantitative targets:

• Bottom line: 6.5% annual average growth GDP from 2016 to 2020 to double 2010 GDP per capita .

• R&D expenditure: 2.5% GDP in 2020 from 2.1% in 2015.

• Urbanization rate: 60% of population in 2020 from 56.1% in 2015

• Green development: by 2020 to reduce emissions per unit of GDP by 40, to 45% compared to 2005 levels. Increase the share of non-fossil fuel energy to 15% by 2020.

• Social welfare: lift 55.75 million more people out of poverty by 2020. One-child limit increased to two children per couple. Extend coverage of urban welfare services to all residents.

• Financial targets: merge 106 SOEs under central government ownership into 40 world-class groups in strategic industries. Achieve full Yuan convertibility by 2020.

1 Introduction: the 13th Five-Year Plan (2016-2020) in the "new normal"

In November 2013, the central committee of the Communist Party of China (CPC) issued a Directives Paper at its third plenum of the 18th Congress. The Directives Paper defines priorities for the next 20 years and provided a roadmap to a harmonious society. The resulting fundamental decisions were debated and approved by the National People's Congress (NPC) at its March 2014 session.

The reform agenda stated that the economy was entering a new era based on the principle of separation between market and state under the predominant unifying law. Major economic and social transformations should ensue. The 13th Five-Year Plan (2016-2020) is critical, because it is aimed at launching the first stage in the new reform trajectory.

The Plan was drafted in 2014 by a task force answerable to the National Development and Reform Commission (NDRC). In 2015 extensive consultations took place prior to the 5th CPC plenum, which approved the formal proposals. The draft was then discussed and approved by the State Council and the final Plan was adopted in March 2016 by the People's National Assembly of China.

To assess the Plan, it is necessary to understand the starting conditions and the 2020 objective of doubling GDP per capita from its 2010 level, to achieve full "national revival" by 2049, the hundred year anniversary of the People's Republic of China. The 13th Five-Year Plan is a long document which is split into 20 parts and 80 chapters. It is complex and difficult to understand. However, the objectives are clearly defined and are woven together logically. This paper categorizes the objectives into six broad fields:

- The first and most important objective is *the shift from capital accumulation-led growth to innovation led-growth* in order to enhance total factor productivity (TFP) and release the huge potential of consumer spending. The strategic industrial policy induced by this objective was revealed in the "Made in China 2025" report, which was published in May 2015. Innovation has increased in the last two years under the banner of supply side reform.
- The second objective is *spatial development*. The aim is to integrate urban and rural development. To make progress in this direction, the plan prescribes a reform of the social welfare system to equalize basic public services among regions and among rural and urban areas. Great importance is attached to promoting regional coordinated development to define economic axes and narrowing the gap between all regions.
- The third objective *is green development*. This encompasses resources conservation and use, environmental protection to preserve and restore natural development, and a low-carbon economy. This last involves a shift to renewable energy, recycling, low-carbon transportation systems, and tighter regulation and supervision of emissions.
- The fourth objective is *inclusive development*. Core reforms in that direction are the universal social insurance system, improved public health through medical reforms, lifting an additional 55.75million people out of poverty, and the implementation of a two-child policy to counter the ageing population.
- The fifth objective is *financial and SOE reform*. The twin priorities are resolution of the problem of over indebtedness to strengthen the banking system, and reform of state-owned enterprises (SOEs). Creating broad, deep, and resilient bond and equity markets are longstanding goals to rebalance the financial system from an over reliance on banks.
- The sixth objective is *opening up*. This involves a dual strategy of attracting foreign investments and encouraging Chinese enterprises to invest abroad and become global competitors. Also, China is promoting an alternative concept of economic integration through the "Belt and Road initiative" and the building of multilateral development banks. This financial strategy must be supported by full convertibility of the Renminbi as a world currency.

Before analyzing these objectives within the perspective of the comprehensive "new normal" strategy, we need to examine their origins and to dispel some myths about China's economy, because both the pattern of development and the fast change since the Directives were enacted are often overlooked. Key contradictions faced by China currently are discussed also.

2 Myths and realities about the Chinese economy

In 2015 during and after the turmoil in the stock and foreign exchange markets, some in the West held the view that China's past economic successes had spread the seeds of imminent collapse[1] because, in their opinion, it has not established the basis for a sustainable economy. Nothing could be further from the truth.

... China has followed a development pattern consistent with the trajectories of the East Asian economies.

The State Council's Development Research Center (DRC) highlights that China has followed a development pattern consistent with the trajectories of the East Asian economies[2]. All those countries exhibited sustained decline in the share of consumption in GDP during their high growth phase. This share then leveled off and increased when GDP per capita reached around $11.000 of purchasing power parity (PPP). This is precisely what has occurred in China. The share of consumption in GDP reached its lowest level in 2010 and then started to rise, while real investment growth gradually slowed. With the fast rise

(1) Woetzel Jonathan points to the "five myths about the Chinese economy", McKinsey Quarterly, November 2015.

(2) Task force on monitoring macroeconomic situation, "reconstructing new balance through structural adjustment", DRC, Macroeconomic review 2015 and outlook 2016.

in real wages, the contribution of consumption to GDP growth has surpassed investment since 2012 while retail sales growth has hovered at around 10% a year since 2010. The share of services has changed the structure of production, reaching 48.2% of GDP in 2014 and 50.5% in 2015. The shift in the production structure was enough to create 13 million jobs annually from 2012 to 2015 - more than enough to maintain high employment in urban areas, while industrial growth halved from 12% in 2012 to 6% in 2015. Despite this massive structural change, China contributed a little more than 25% to world economic growth in 2015. So what might preclude the so-called soft landing of the Chinese economy from continuing?

The main problem related to such an ambitious transition is the massive surplus production capacities in the heavy industries. The utilization ratio has fallen to 71% in steel, 70% in aluminum, 67% in cement, 72% in glass, and 76% in the car industry. Since the threshold for earnings growth is 78% to 80%, there has been a collapse in earnings yields. Oversized and over-indebted SOEs are in dire financial conditions, endangering the banking system's financial balance sheet. Corporations are vulnerable, while gross profits on sales are becoming lower than debt servicing (contractual interests + reimbursement of the maturing debt).

The "new normal" is decelerating to an average of 5% growth, a steady increase in average income, and reduced inequalities due to a restructuring of the production system towards domestic demand, innovative industries, and development of formerly backward regions.

The transition has been brutal because the major structural changes in China are interacting with large disturbances worldwide in the aftermath of the systemic financial crisis, followed by subpar growth of the world economy, a sharp slowdown in world trade, and deflation in world production prices. Therefore, the previously stable relationships between macro variables have become volatile. This explains why the forecasters, who still use the same advanced indicators, are making erroneous forecasts of Chinese growth rates. Estimating China's GDP growth on the basis solely of industry sales, energy consumption, electricity production, and other physical indicators, ignores the fast growth of new sectors due to structural changes, and is likely to be inaccurate.

The Chinese government is expecting an L-shaped adjustment with GDP growth stabilizing around 6.5% in 2016-2020. Also, many of the problems that are plaguing China are also affecting the advanced economies.

This is the case of high total indebtedness relative to GDP in non-financial sectors (2014 year end): 217% in China against 230% in Korea, 213% in the US, 222% in Canada, 213% in Australia, and 188% in Germany[3]. China has a level of debt comparable to the advanced economies and substantially higher than the average in the developing countries. However it has much larger resources, more effective institutions, and a much longer political view than other developing countries as can be seen from analysis of the 13th Plan. Moreover China is heavily leveraged in the financial sector: 65% of GDP against 70% in Germany, 60% in Australia and Canada, but only 36% in the U.S. where banks were heavily capitalized with public money as early as 2009. The troubled assets relief program (TARP) injected $700bns into bank balance sheets. Discussion of the fifth objective will reveal what is being done in China to implement the plan.

Another crucial problem is the mounting social inequalities, poverty in rural areas and exclusion of the population from the social benefits available in urban areas, and the concentration of wealth in tiny minorities. This pattern of distorted income distribution has become almost universal and is threatening the existing social order. The remedies to this dangerous drift are examined in discussion of the fourth objective.

Another prejudice in some Western media is that environmental degradation in China has reached the point of no return. It is completely mistaken to suggest that the Chinese people are encouraging a dirty environment and that the political authorities do not have the will to clean it up. True, China like other countries moving from an agrarian to an industrial economy, do not consider the environment to be a priority. Recall that in 1980, China was still 90% rural. However, there is now a social activism aimed at air and water pollution which is pushing government to make green development a priority as discussed below. China is already spending heavily on green development and this effort will be intensified during the period of the 13th Plan which will focus on pollution abatement and adaptation. Green development is one of the priorities of the 13th Plan.

3 First objective: shift to innovation-led growth

What is the steady growth rate in the "new normal"? The "new normal" is the label China's leaders use to describe the growth regime they are aiming for, with a growth rate decelerating to an average of 5% in the decade of the 2020s, a steady increase in average income, and reduced inequalities due to a restructuring of the production system towards domestic demand, innovative industries, and development of formerly backward regions. Standard macroeconomic analysis suggests that further rebalancing requires a continuing deceleration of investment. Is this so or is it that the model of innovation-led growth needs some reorientation from inefficient to sensible investment, from low-return to higher return investment? In 2013 total capital per worker in China was a quarter of that in Korea and a fifth of the level in the U.S: average GDP per worker (PPP) in China was 4.5 times lower than in the U.S.

(3) Source: MGI country debt database, McKinsey Global Institute.

Consider Harrod's formula:

GDP growth rate = Δ(GDP)/GDP = (Net invest/GDP)[Δ(GDP)/net investment]

GDP growth rate = (Net invest/GDP)/ICOR

where ICOR = Net invest/Δ(GDP) is the incremental capital per unit of output or the inverse of the net marginal productivity of capital.

The net marginal return on capital associated to the growth rate is given by the following accounting breakdown:

Net marginal return on capital = gross marginal productivity of capital + (share of investment in GDP)/ICOR – depreciation rate + real capital gain or loss

Therefore, a large increase in ICOR entails both a decline in the overall growth rate and a slump in the return on capital. The rise in ICOR is based on the excessive stimulation plan undertaken in China (about as large as the U.S. plan) following the 2008 financial crisis in the advanced countries. Most of the rise in ICOR is directly or indirectly related to a housing bubble. ICOR increased from 3.4 on average in 1990-2010, to 5.4 in 2010 to 2014. In parallel, the contribution of TFP to GDP growth plummeted from 50% in 1990-2000 to 30% in 2010-2014[4]. This shows that rebalancing means reducing ICOR dramatically or increasing the productivity of capital. It vindicates the all-important supply side policies in the 13th Plan.

There are four ways to lower ICOR:

- Changing the production structure in the direction of sectors with lower capital requirements; ICOR in services is estimated to be 20% lower than in the aggregate;
- More efficient industrial production;
- More efficient capital allocation in industry;
- Increasing labor productivity through the improvement of skills and enhanced mobility.

All of these are related to innovation in one way or another.

3.1 The main drivers of innovation

The McKinsey report identifies four types of innovation:

- *Customer-focused* innovation which depends on identifying customer needs to discover new products based on known consumer functions;
- *Efficiency-driven* innovation which relies on improving the production process, product design, and supply-chain management to reduce costs and delays in bringing products to market;
- *Engineering-based* innovations which involves incremental innovation using accumulated know-how, and integrating from suppliers and partners;
- *Science-based* technologies to produce entirely new commodities.

Only the last category refers to radical innovation which is not based in existing knowledge but is built on new scientific concepts or principles to produce new uses and value.

What are China's comparative advantages? Chinese companies have shown that they perform well in the first two categories. In customer-focused type innovation, the country's competitive advantage is undoubtedly the size of its customer market. This allows a sharply rising learning curve which enables rapid and large scale commercialization of new products. However, the result is short-lived rents from innovation, rapidly decreasing prices, and fierce competition. Internet services are a major source of customer-focused innovation. Serving the needs of the Chinese market positions companies as global leaders (Alibaba, Tencent, Baidu). Modernizing the services sector through privatization and introduction of modern management methods will result in huge productivity in mobilizing the Internet of Things technologies.

In efficiency-driven industries, Chinese entrepreneurs are entering higher-value segments in construction machinery and electrical equipment. Thanks to their vast network of firms in manufacturing, open manufacturing platforms can support startups and small and medium sized enterprises (SMEs) in developing new models based on flexible automation coupled with online design.

In engineering-based innovation, success is based on learning with the support of government to develop the strategic industries identified in the industry plan "China 2025". China could become an innovation leader among emerging market economies through the spread of its model of low-cost and frugal innovation in competition with India[5]. The traditional organization in engineering is sequential. Each upstream step must be completed before a move to a subsequent stage. Accomplishing some steps in parallel in order to speed up the process is being advocated; however, implementation of simultaneous engineering is hard to coordinate. Nevertheless Lenovo has succeeded in halving the time of the new product development cycle by applying simultaneous engineering to the entire innovation process from R&D to marketing and services[6]. Also, industrial organization of simultaneous engineering is being used in China to develop new Internet Services.

Heavy public investment is underway in R&D and higher education. Research institutions and research capabilities are being built.

China still lags in science-based innovation which explains the emphasis on catching up in the 13th Plan. Heavy public investment is underway in R&D and higher education. Research institutions and research capabilities are being built. Based on its large stock of scientists and engineers, Chinese companies are innovating to bring new ideas to market. The classic radical

(4) "The China effect on global innovation", McKinsey Global Institute, October 2015.

(5) Radjou Navi, Jaideep C. Prabhu, Ahuja Simone (2012), "Jugaad Innovation: Think Frugal, Be Flexible, Generate Breakthrough Growth"-Random House India.

(6) "Accelerated innovation; the new challenge from China", Summer 2014 Research Feature Magazine, April 23, 2014.

innovation process involves starting from the inventor creating a start up with a small team and the help of a business angel, then obtaining venture capital from by private equity funds to fund product development and commoditization, and finally innovation accompanied by the sale of the firm or an initial public offering (IPO) on the NASDAQ or some other specialized equity market. Some Chinese companies are challenging this conventional view to accelerate the innovation process. They are applying the assembly line principle and exploiting their large pool of skilled technicians and engineers to reduce costs. They divide the innovation process into a number of small steps and assign teams to work simultaneously on each stage. The approach is used in the pharmaceuticals and biochemical sectors where the discovery and testing of new molecules can take years. It was used by the company WuXi AppTec to develop a new drug to treat chronic hepatitis C.

To sum up, by 2025 the first two types of innovation could contribute between 1 trillion and 2.2 trillion per year in value to the economy according to McKinsey. How can they contribute to rebalancing the production structure to 2020?

3.2 Changes to the production structure

Applying industrial organization methods to innovation, Chinese companies could benefit from expansion of their customer markets. China's middle class will grow from 100 million to 200 million by 2025, due to the new urbanization effort. Because they have learned to scale up new products and services, Chinese companies will be able to supply products which are as good as global brands, at cheaper prices. This is described as frugal and endogenous innovation which is being pioneered by both Indian and Chinese innovative companies.

Upgraded consumption and better allocation of more efficient investment can be achieved in tandem. Based on the objective of 6.5% GDP growth with an increase in TFP allowing a sharp recovery in the return on capital, the three economic macro sectors of agriculture, industry, and services can improve together as their relative share in GDP evolves.

Implementing the logic of simultaneous engineering to agriculture will lead to integrating farming, processing, and agricultural productive services to guarantee the safety and improve the quality of agricultural products. The Plan prioritizes farmer cooperatives linked to research institutes to breed new professional farmers. Mechanized production will be facilitated through more concentration of land and the migration of farmers to cities thanks to the hukou reform, and agricultural services platforms will connect production and marketing. The Plan emphasizes inclusive financial services for agriculture and the creation of village and township banks and establishment of a credit guarantee policy.

Supply side reforms in industry and services are ambitious in order to implement the types of innovation described above and thereby accelerate the development of new models in manufacturing. In this context, the most pressing aim is upgrading traditional industries and strengthening the development of quality brands. To achieve will require a reduction in excess capacity through a special fund to incentivize mergers and debt restructuring, manage bankruptcies, and finance the reconversion of labor. Meanwhile, strategic emerging industries will be developed to achieve the "Made in China 2025" objective and high efficiency in communication networks for the Internet of Things, Big Data platforms and data centers, new energy vehicles, biotechnologies, and high-end equipment and materials.

The link to spatial development, will be a modern transportation infrastructure network for people and freight, linking all regions of China and the "Belt and Road" project.

The link to the second objective, spatial development, will be a modern transportation infrastructure network for people and freight, linking all regions of China and the "Belt and Road" project. The Plan discusses the need to develop what has already been achieved with high speed rail and interconnection of gas and oil pipelines. Transport hubs will be created, not only Beijing-Shanghai and Guangzhou, but also in western regions of China (Chongqing-Chengdu). In the multi-modal transport system, priority will be given to public transportation and urban rail transits to encourage green transports.

4 Second objective: spatial development

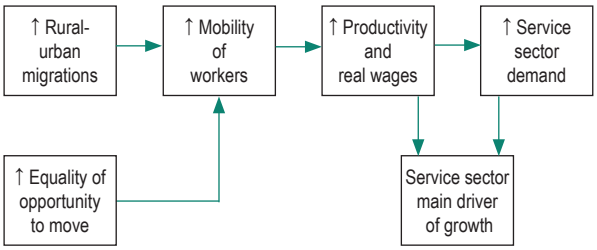
This objective encompasses a complex web of intricate changes: reform to the social welfare system, rural land reform, and coordinated regional development.

4.1 Reforming the social welfare system

The main challenge to achieve this objective is the reform of China's social welfare system. Specifically, China's social welfare system suffers from two main problems both of which impinge on more equalized spatial development. The country lacks a unified national scheme for financing social welfare provision. Social contributions are pooled in local funds which typically are managed at the provincial level. This fragmented system not only impedes horizontal transfers from the social welfare fund from affluent to poorer regions, it also obstructs the portability of social welfare benefits if people migrate[7]. Portability of benefits is an important condition to help to reduce precautionary saving and boost consumption, and to redirect growth towards the pattern depicted in Figure 1.

(7) Roach S. (2016), "China's 13th five-year Plan: solving the rebalancing puzzle", comments for the China Economic Forum, Beijing, March.

Figure 1 – Impact of *hukou* reform and public services



Source: from the authors.

The other drawback to China's current social welfare system is that the availability and quality of social services across China is vastly unequal among regions. The social services which require equalizing are: basic education, public health programs, and basic medical care. Although the *hukou* system, a household registration system, no longer prohibits labor mobility, residing in a region without a local *hukou* still implies discriminated rights to social services. The most acute problems that migrant families face are related to school attendance for their children, and access to affordable housing or real estate purchase in general.

It is estimated that more equal social service provision would increase the fiscal costs by about 1.5% of GDP, which China can afford but would require an overhaul of government sources of revenue. Both the tax structure and the tax-sharing system would require reform and central government would need to increase its direct expenditure on social welfare provision. Accountability of local government to its citizens should be enhanced by stronger linking of local expenditure to local taxes levied on residents. The local tax that would provide the most stable source of revenue would be the property tax related to housing. It would provide an incentive to develop unused or underused land. However, over a several years transition period it would not yield sufficient money to replace fully the windfall gains from land capture and would need to be complemented by other local revenue including a rise in the cost of urban services (mass transit, water, waste water, electricity and gas) which current are extremely low:. This would launch the process of adjusting the prices of those services to their social marginal cost including the environmental impact of their use. Overall, according to the DRC and World Bank Report, a progressive increase of all local taxes, accompanied by appropriate subsidization for those on low incomes, could raise 2% to 5% of GDP[8].

4.2 Rural land reform

Land reform is the cornerstone of the urban model for sustainable development and is an opportunity that should not be missed. The implementation of urban design would result in long-term infrastructures allowing path dependency in land use, transportation and resources allocation.

(8) "Urban China", DRC and World Bank Report, March 2014.

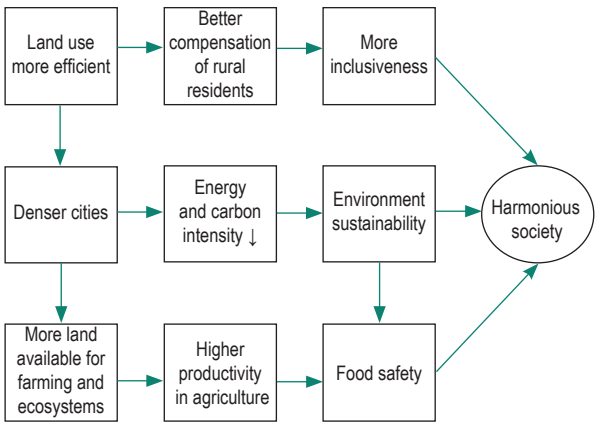
Following the 1998 reform of urban land use, many Chinese cities showed worrying trends during the 2000's including the destruction of ecosystems, waste of valuable farmland, and congestion and deadly pollution as a result of an explosion in car ownership. Reversing this trend will be critical to avoid jeopardization of China's sustainable growth and low-carbon objectives. The new urban model should be spatially compact and mirror those of Hong Kong and Singapore. Megacities should be restructured to form multi-polar, high density cities linked by mass transit systems, where economic activity and residence are not separated.

Fiscal tools and deep bond markets would provide local authorities with the means to finance investments in building and transport to create and restructure cities. A prerequisite of this new urban model is land reform combined with social services and taxes to allow more productive use of both rural and urban land.

The decisions made during the third plenum which will be implemented by the 13th Five-Year plan provide a suitable framework. The rural land rights of farmers will be clarified, extended to 99 years, and similar to urban land will be renewed automatically under the law. They will be registered, which implies a thorough inventory of land parcels, and guaranteed via certified written land leases. Arrangements will be made for the transfer of rural land to migrants. Market mechanisms will be organized for transacting land use values; land management will become an input of a modernized urban planning.

Incentives provided by such a thorough land reform will redirect industrial activities to secondary cities where land and labor are cheaper, and allow the big cities to become specialized in high-value services and innovation to attract higher-skilled labor. Figure 2 depicts the positive macroeconomic interrelations resulting from such land reform and the explicit policies announced in the Plan, described by our macroeconomic analysis.

Figure 2 – Benefits from land reform



Source: from the authors.

To root those relationships in the new growth regime will require greater supply of affordable housing. The shanty towns in megacities must be overhauled to ensure quality of residential accommodation and convenient daily travel conditions. The availability of rental housing must be increased, accompanied by subsidies for eligible poor households.

4.3 Coordinated regional development

Joint development refers to the strategy of creating or strengthening economic axes to narrow the gaps among regions. Leaving aside regional zones, the priorities are the vertical Beijing-Tianjin-Hebei axis extended via Hubei to the Pearly River delta, and the horizontal Yangtze River economic belt. The "Go West" strategy will be strengthened via links to the "Belt and Road" priority. The new high-speed rail transport to Lhasa in Tibet, and Urumqi in Xinjiang, will help to integrate remote and underdeveloped regions. Western regions such as Sichuan, Yunnan and Guizhou will thrive on processing agricultural products, encouraging cultural tourism and focusing on environmental protection.

Complementary goals include revitalizing the old industrial bases in the north east of the country, and promoting the rise of the central areas. In the north east, old manufacturing facilities can be updated with the incorporation of advanced technical equipment. Central areas have the advantage that they are at the junction of the vertical and horizontal axes. They are building clusters for advanced manufacturing and high-tech industries.

5 Third objective: Green Development

The previous two sections show that the change in the growth regime driven by predominance of services, high-tech industries and innovation-driven spatial development, has the potential to lower ICOR and raise the return on capital. Improvements to energy efficiency are part of this transformation.

China's commitment to environmental issues has been stepped up with the new leadership of the CCP following the November 2013 directives and the State Council's March 2014 declaration of a "war on pollution". Soon after the Global Commission on the Economy and Climate (GCEC) launched an in-depth study on the new climate economy[9].The results can be illustrated in a comparison of two scenarios: continued, and accelerated emissions reduction scenarios (table 1)

China's official GHG emissions and clean energy development targets will require a reduction in the energy intensity of economic growth of 40% to 45% below 2005 levels by 2020. The final goal should be achieved by 2030 although the

(9) "China and the new climate economy", GCEC, 2014.

Table 1 – Two scenarios of CO^2 abatement linked to energy intensity reduction

Variables	2010	Continued emission reduction		Accelerated emission reduction	
		2020	2030	2020	2030
Total energy consumption (bn tons of ~ coal)	3.25	4.92	6.25	4.75	5.9
Energy intensity of GDP (2010 = 100)	100	73.4	54.6	70.6	51.6
CO^2 emissions from energy(GT)	7.25	10.4	12.7	9.68	10.6
CO^2 intensity of GDP due to energy (2010 = 100)	100	69.6	51.1	64.8	41.5
Proportion of non-fossil energy (%)	8.6	14.5	20	15	23
Total GHG emissions (GT CO2eq)	9.4	13.5	16.5	12.6	13.8

Assumption: GDP growth : 7.3% on 2010-2020 and 4.8% on 2020-2030.
Source: GCEC, p. 82.

November 2014 joint Sino-U.S. announcement about climate change envisages that this could be achieved even earlier.

This accelerated scenario is an absolute imperative since 10.6 GT of CO^2 emissions from energy is tantamount to below 14 GT total emissions However, the global goal is to maintain average temperatures at 2°C or 35 GT CO^2eq in 2030. If the goals declared at COP21 are achieved this would represent 38% above what is needed to reach the global goal. China is unlikely to achieve less than 12GT CO^2 and less than 10GT for emissions from energy alone.

However, the combination of a slower growth path, a change in the production structure and the emissions reductions already achieved make Green and Stern optimistic in their latest report.[10] It seems that China will surpass the accelerated new climate economy (NCE) scenario. The peak in emissions might be reached earlier than 2030 at a lower level than projected in the NCE study.

To upgrade the pollution targets, China is in an advantageous position in that it has strong leadership and an elite that understands that taking the lead on climate issues will contribute to the development of new tech industries, and reinforce the country's innovation-led growth pattern. For this reason the process is already underway. Total energy demand has decreased faster than economic growth since 2012. It declined in absolute terms from +8.8% annual growth in 2001-2011, to -3.9% in 2013, and -2.5% in 2014, due largely to an overall growth slowdown. This slowdown was based on a shift in the production structure from industry to services (industry is 6 times more electricity intensive than services), and is estimated at +3.7 in 2013 and +2.6% in 2014. This ambitious plan also includes other dimensions of the ecosystem.

(10) Green F. & Stern N. (2015), "China's new normal : structural change, better growth and peak emissions", Grentham Research Institute on climate change and the environment, and Institute on Climate Change and the Environment, Policy Brief, June.

5.1 Policies for an environmentally-friendly growth pattern

The Plan emphasizes the importance of so-called "functional zones" where construction will be strictly controlled and where red lines will be identified and monitored to protect agricultural and ecological areas. Key ecological functional zones should be free from industry activity. The national parks system will coordinate the establishment of ecological experimental zones. Early warning mechanisms will be set up to assess the environmental resources carrying capacity of functional zones in relation to the soil quality, and conservation of water and mineral resources. Restrictions will be imposed on regions that have exceeded or are approaching their carrying capacity. Notably total water usage will be limited to 670bn cubic meters by strict adherence to the constraints for industry access and a quota-based management of water usage in use in areas with limited water supply.

Conservation of resources and recycling will be priorities and will contribute jointly to urban-rural development. Restoration of natural ecosystems will be prioritized in functional zones to stop and reverse desertification and soil erosion, especially along the main rivers. Since the ecosystems to be restored may be cross regional, trans-regional environmental institutions will be established to monitor progress.

The total investment needed to achieve the green targets in the 13th Five-Year Plan is estimated at more than Rmb2trns, or about $320bns.

Strenuous efforts in this direction will be worthwhile; the National Development and Reform Commission (NDRC) estimates that the magnitude of environmental degradation and resource depletion taken together costs 9% of gross national income. A green development path would reduce this to less than 3% by 2030[11]. Part of the investment required will come from a financial fund dedicated to financing green growth as advocated by the Green Finance Task Force (GFTF), and part will be in the form of improvements in social welfare and ecological health due to lower levels of pollution.

The total investment needed to achieve the green targets in the 13th Five-Year Plan is estimated at more than Rmb2trns, or about $320bns. Capital must be redirected from high polluting, energy-intensive sectors to innovative high-tech industries. This will require a dedicated system to finance green investments. For this reason in 2014, the State Council ordered the setting up the Green Finance Task Force (GFTF), chaired by the People's Bank of China (PBoC), to make recommendations related to a green finance system to be included the 13th Plan, in order to provide incentives for green investments[12]. The main themes in the summary report are discussed below.

The GFTF adopted a dual bonus/malus approach of increasing the returns on investment for green projects, and reducing the returns on investment in polluting projects. According to the GFTF, markets do not internalize environmental externalities. Hence, the rate of return for green projects is lower than the financing costs ,which will dampen green investments. Enhancing the availability of funds should lower these costs and provide a higher expected rate of return for investors. Conversely, the return on investment for polluting projects can be reduced by raising financing costs and compliance hurdles. A green finance system will impose mandatory environmental disclosure requirements on financial institutions and enterprises, and will build an active green investor network.

The recommendations cover four domains. The first is the creation of specialized institutions for green credit and investment. A support system will require funding from central and local governments plus institutional reforms within finance: creating green banks - the China Ecological Development Bank at the national level, and green banks funded by private capital at the local levels. Newly created international development banks with majority Chinese ownership (Silk Road Fund, AIIB, BRICs development bank) should establish an environmental risk management system, disclose environmental information and promote overseas green investment.

The second domain is providing fiscal and financial policy support through proper financial instruments: discounted green loans via government agency funding, incentive for banks and enterprises to issue green bonds to provide long-term, low-cost sources of financing for green investment, and green IPOs with simplified registration to allow green enterprise to reap profits from the equity market.

The third domain is a financial infrastructure to support green investments. This will encompass carbon trading markets, green rating to create a new asset class to encourage institutional investors to invest, green stock indices, a green database managed by the Ministry of the Environment to value green projects at lower cost, and a green investor network to monitor investment performance and foster asset managers' expertise.

The fourth domain is the legal infrastructure which is oriented to insurance: compulsory green insurance to limit investment in polluting projects, liability insurance to manage liability risks based on damage determination criteria, lender liability allowing victims of pollution to pursue collective legal actions against financial institutions that have funded pollution intensive projects, and compulsory disclosure by listed companies of environmental information to allow assessment of environmental risks.

Implementation of these recommendations will endow China with the most comprehensive financial system for sustainable growth at both the national and local levels. The 13th Plan also includes overhaul of the current tax system which is both distortive and excessively complex. The government has already decided important reforms based on extending VAT to the tertiary sector. It will reduce the business tax burden for those sectors which will benefit for climate mitigation. Moreover, tax credit will shift from an emphasis on promoting energy intensive-sectors to incentivizing prioritized sectors such as renewable energy and new energy vehicles. An environment tax including CO2 emissions is being constructed to complete the carbon trading market. The goal

(11) "China's policy and actions for addressing climate change", NDRC, 2013.
(12) Green Finance Task Force, Summary Report, 2014.

is simply to shift the tax burden from low-carbon to energy and carbon-intensive sectors.

In China's primary energy sources, the main problem is its heavy reliance on coal which makes changes to the energy structure difficult. At the start of the 13th Plan, coal accounted for two-thirds of primary energy use and three-quarters of electricity generation[13]. What China can do to accelerate a transition to conform to the accelerated reduction scenario is depicted in table 1. All the reforms discussed above have achieved results: growth of the consumption of coal has leveled off due to slower GDP growth, a shift in structural production from heavy industry, and substitution by other fuels.

To accelerate the changeover requires reform of the coal resource tax. The way that the tax was assessed at a fixed rate per ton with the proceeds going to local governments, encouraged coal production. In October 2014 the State Council decreed that the coal tax be shifted to a value-basis tax at a rate varying between 2% to 10% of the average sale price. In addition, local governments are trying to maximize their tax receipts by raising the price of coal which should restrain coal production by narrowing the gap with other forms of electricity production and reducing demand.

Meanwhile, fuel substitutes are becoming ever more available. The share of renewables including nuclear in the energy mix reached 11.4% in 2015 from 9.6% in 2013 with an objective for 2020 of 20%. The main obstacle to more rapid adoption of renewable-fueled power generation is the state grid monopoly and the reluctance to connect renewables as long as the NDRC allows it a higher margin on coal-based electricity. This is part of the problem of SOE monopoly power which the government must break in a wholesale reform to be examined as part of the fifth objective. A "moderately prosperous society" must be sustainable and inclusive.

6 Fourth objective: inclusive development

Inclusiveness means that all citizens improve their mode of living, so that they have a common interest to respect the institutions. Inclusiveness involves both increasing primary real incomes and reducing the inequalities in disposable income. Inclusiveness requires a sustainable growth regime and a new urban model and major energy transition. Therefore the fourth objective is directly related to the former ones. In the last few years, the connection between high growth in wages and fast expansion of services sectors has been established. Those early results are imputable largely to structural changes in the labor market. The high rate of growth of wages and social benefits in recent years is part of a long-run trend being encouraged by government. Wage increases are resulting in higher demand from consumers for better services. This is driving the relative prices of non-traded/traded goods upwards, raising the profit margins of firms in the services and consumer goods sectors. Demand for labor is being generated to substitute for reduced production capacity in oversized industrial sectors. Notably, the urban economy created about 13 million new jobs per year between 2013 and 2015, while industrial production halved from 12% to 6%.

The rise of the middle class is the most potent force for transforming the growth regime to the "new normal". Rising real income among the middle class diversifies the range of consumer goods and services to higher income elasticity products, boosting activity in skilled labor-intensive sectors.

However, this overall high employment does not preclude local labor conflicts in regions with rapid contraction of traditional industries such as coal mining in the north east Heilongjiang province where big SOEs are finding it difficult to pay wages because they are in a state of quasi bankruptcy. For the whole country, some estimates are suggesting that between 3 and 5 million jobs will be under threat in the next five years in mining, steel, aluminum and other heavy industries.

The combination of intense labor mobility due to rapid structural change, the scarcity of labor due to demographic shifts, and the rise of the middle class, is tilting the balance of power from employers to workers. Collective labor disputes are increasing as a result of mergers and acquisitions and firms' restructuring. Collective bargaining at sector level is the institutional solution to mediate conflicts and to reduce inequalities in wages. It is consistent with the transition from a model of low-cost manufacturing under pressure from middle class aspirations.

There is an emerging middle class in China . In the 30 years from 1980, the number of the absolute poor (with an annual income of less than $1000) has declined steadily. There were dramatic changes after 2003 (resolution of a severe banking crisis) with a large increase in the number of the low-middle class ($5000 to $15000). In the 13th Five-Year Plan (2016-2020) the categories of higher middle class income should rise substantially and widen the income inequality range.

Nevertheless, the 13th Plan will be the one of a notable inflexion from the extreme of inequalities that has accompanied the oversized stimulation plan from 2008 and its consequences between 2008 and 2012. Higher earnings affecting a larger population will reduce the informal economy and boost taxes to finance basic social welfare. The demand for better and for higher education will increase steadily. Better education opportunities and higher levels of education will improve inclusiveness and social cohesion and political stability.

The rise of the middle class is the most potent force for transforming the growth regime to the "new normal". It will have multi-faceted impacts throughout the economy. Rising real income among the middle class diversifies the range of consumer goods and services to higher income elasticity products, boosting activity in skilled

(13) Meidan M. & Yao R. (2015), "King's oal long, slow decline", China Economic Quarterly review, March.

labor-intensive sectors. With the help of financial reform, saving will also diversify, wealth will improve and the household saving rates will decline. The basic axes of the Plan to foster the structural dynamics outlined above include improving health and education on the one hand, and overhauling social welfare on the other.

6.1 The drive to better education and health

Modernizing and improving education to increase capabilities is a top priority for innovation-led growth. Standardizing public school compulsory education requires increasing investment in public education in the central and western regions to improve conditions in remote impoverished areas and areas inhabited by ethnic minorities. To achieve integrated urban rural development, the Plan has set a target of 95% of child enrollment in compulsory education, which will require inclusive pre-school education in rural areas.

The Plan's educational framework emphasizes vocational education and a major effort to create a modern university system in order to promote higher quality employment in order to reduce the income gap at the primary level.

Reforms to and extension of the system of health and medical care are also urgent needs to provide universal access to basic public services. A drastic reform is underway: separating hospitals and medicines; prohibiting hospitals from making a profit on the sale of medicines; granting legal status to public hospitals; and increasing their subsidization.

The medicine supply system should also be improved. New medicines should be covered by medical insurance after consistent assessment. Medical costs must be controlled so that the health insurance is affordable and the insurance fund sustainable. Health insurance coverage should reach at least 95% of the rural and urban population by 2020. To reduce costs, effective prevention of major diseases must be strengthened.

6.2 Reforming the social security system

Reform of the social security is the cornerstone of an inclusive society; at present it is both fragmented and inadequate as an instrument of social protection. Developments have been taking place and according to the OECD, total social public expenditures reached 9% of GDP in 2013 compared to 6% in 2007. However, this well below the OECD average (22% GDP in 2013). The system is a hodgepodge of disparate regimes for both retirement and health. The levels of contributions and benefits vary widely from one individual to another and are fragmented geographically. Inflows and outflows are managed at county level and depend on the fiscal capacity of the administrations responsible for social programs. The consequence of this fragmentation is lack of transferability of risks and rights. Overall, expenditure on health accounts for too much of household budgets and leaves rural retirees and migrants in precarious situations.

There is no doubt that the system requires a radical overhaul. The 13th Plan refers to universal coverage. To achieve this, financial mechanisms need to be improved, moderate levels of guarantees provided and administrative responsibilities assigned to administrative levels compatible with the available financial resources. To ensure portability of social rights, the system must become more centralized with responsibilities shifting to central government. The system also must adjust to the ageing population to improve benefits while remaining sustainable. The social security fund will be strengthened by funding transferred from the dividends paid by SOEs to the government as a shareholder.

The main axis of reform addresses population ageing. Government will modify family planning to keep the national population around 1.42 bn people based on one couple and a maximum of two children. The retirement age will be extended gradually, with old age activity encouraged, and women's involvement in the labor force increased, especially in high-competent jobs.

7 Fifth objective: financial and SOE reform

Is China's debt sustainable? This question is the most perplexing to foreign China watchers and opinions are generally not optimistic. Recently a widely circulated weekly magazine gave a definite judgment: "The coming debt bust"[14]. Is the drama already unwound? Or is a more sober assessment in order?

It is certain that China's indebtedness has increased since the stimulation plan in the aftermath of the 2008 systemic financial crisis, spurred by the stimulation plan. Nowadays, China has a debt outstanding akin to a developed country, not a developing one. However, China's central government also has ample financial resources and the country has a huge pool of domestic saving. Let us have a look at the figures.

There has been an increase in all types of debt and this accelerated between 2008 and 2014 (table 2a). There is also a peculiar corporate debt profile. In 2000, corporate China was affected by a "political loans" crisis which unfolded following the Asian crisis (1997-98). This was resolved by central government creating bad banks to extract non-performing loans from the balance sheets of the big commercial banks. Then 2002 to 2007 saw export-led growth (more than 10% a year on average). This resulted in a substantial decline in corporate debt/GDP.

In addition there is modest indebtedness in households and government. The problem is related to the link between the corporate and financial sectors. International comparison shows that the problem of local governments is more one

(14) The Economist, May 7th, 2016.

Table 2a – Structure and evolution of China's debt overtime
(% of GDP)

Economic agents	2000	2007	2014 (mid-year)
Households	8	20	38
Non fin Corporates	83	72	125
Financial institutions	7	24	65
General government	23	42	55
Total	121	158	282

Source: MGI country debt database, 2014.

Table 2b – Structure of debt by country in 2014 mid-year
(% of GDP)

Agents/countries	China	South Korea	US	Germany
Households	38	81	77	54
Non fin Corporates	125	105	67	54
Financial institutions	65	56	36	70
General government	55	44	89	80
Total	282	286	269	258

Source: MGI country debt database, 2014.

of rescheduling and converting debt than wholesale over-indebtedness.

Table 2b compares the structure of total debt for countries with similar levels of indebtedness. Outliers such as Japan with huge amounts of public debt, or the UK with extraordinarily high financial indebtedness, are excluded. Table 2b shows that it is difficult to understand the alarm being raised in western media and parts of the financial community's singling out of China. We are well aware that the world is addicted to debt, and that central banks have quite deliberately exacerbated the problem to eschew disorderly deleveraging after the world financial crisis.

To understand the structure of the problem better we need to examine the structure of China's indebtedness. What is striking is that debt in China is concentrated mainly in the corporate sector. A large part of it is in SOEs which suffer from overcapacity in the heavy industry sector, the other part is in real estate developers, both public and private as a result of the bursting of the urban housing bubble. Since heavy industries have provided input to construction, real estate was the main culprit. Over indebtedness due to real estate is a symptom of the malfunctioning of finance leading to the misallocation of saving, as has occurred in many advanced countries. The more general problem of misallocation of capital in relation to SOEs is due to their endogenous links with the big commercial banks.

There are two factors of resilience in China which are worth noting. First, contrary to the U.S. in the momentum leading to the subprime crash in 2008, households are relatively minimally indebted. This is why, following the housing price slump in 2nd and 3rd-tier cities, household consumption has been little affected. We have seen that it was the main driver of growth in the early stages of redeployment toward domestic demand. Second, not only is government debt much lower than in western countries, it is even lower for central government (22%) than local governments (33%). Furthermore, central government has huge amounts of assets, many of them liquid or negotiable.

There are two interrelated tasks: first cleaning the local government debt due to the speculative housing bubble in lengthening its maturities; second, reforming SOEs. They are intertwined because the potential impact from an eventual housing price downturn will strike property developers and companies that operate in related sectors, worsening overcapacities. In this task, the government will be forced to pursue its endeavor of reforming the financial system more generally.

7.1 Local government debt cleaning

The debt level of local governments according to the National Audit Office (33% GDP), underestimates their debt burden, because it excludes contingent debt (18% GDP) originating in implicit guarantees to business. The amount of their indebtedness stems largely from the inequality of the tax base amongst provinces and counties. To respond to the pressure to spend, local governments rushed to borrow, using obscure credit vehicles refinanced by commercial banks. To exclude this mechanism, central government has decided to reschedule successive tranches of debt by allowing local governments to issue bonds with a central government guarantee.

Local governments' levels of indebtedness, as a legacy of insufficient direct sources of revenue, were increased by the huge 2009 stimulation plan. Central government decided to tackle this problem prior to implementation of the 13th Plan. In 2014 the National People's Assembly adopted a revised budget law decreeing central government provision of more funding, and giving new taxation powers to local governments. The revised budget law also allows local government to issue municipal bonds subject to central approval in conformity with the objectives of the national plan. Meanwhile 1trillon RMB of local government liabilities is being rescheduled through the issuing of bonds, to get rid of the special vehicles through a type of shadow banking.

In addition, the creation of a bond market monitored by the National Development and Reform Commission (NDRC) is helping to reduce the excessive importance of banks in financing the economy, and contributing to the broader financial reform. Therefore, several improvements are expected from the development of bond markets. In the short run these include help to solve local governments' debt problems through rescheduling via long-maturity bonds; in the longer run they include better asset portfolio allocation of institutional investors, reduced importance of banks in economic financing, and increasing the opportunities for household wealth management, making

it easier to circumscribe the shadow banking. To extend the bond market beyond purchases by institutional investors, the PBoC might decide to offer incentives to banks to participate in accepting the bonds with NDRC certification as collateral for refinancing in the money market.

However, to help debt restructuring fiscal policy is of overriding importance. Fiscal reform needs to progress carefully in order to resolve the structural mismatch between the 85% share of public expenditure for which local governments are responsible, and the 45% share of their tax resources in total fiscal revenues. If these changes are implemented, aimed at compensating the most disadvantaged local governments, the reform package will reduce local budget shortfalls decisively. The set of scheduled measures is comprehensive: expanding VAT to include services, instituting new resources and property taxes, and introducing multi-year budgeting to manage debt prudently.

Therefore, fiscal policy is at the core of the issue through the introduction of new local taxes, and the transfer of government revenues from rich to poor regions. This reorientation of fiscal policy will have substantial social consequences for the redistribution of income and will face resistance from vested interests within the Communist Party. The debate is ongoing, which is the reason why the 13th Plan does not spell out in detail the whole package of reforms that will be needed to achieve a comprehensive fiscal system to support the objective of a harmonious society.

Under the fourth objective, we have pointed out that central government has been overly parsimonious in its social expenditure. If this were to expand from 13% to 18% of GDP by 2020, and include the construction of social housing, this would enable the doubling of per capita income in the decade 2011-2020, even in the case of lower growth at 6.5% per year in 2016-2017.

7.2 SOE reform

At the end of 2013 there were 155,000 SOEs in China; 52,000 were owned by central government and 103,000 by local governments. SOEs accounted for 25% of industrial production, 33% of fixed capital investment and 16% of urban employment[15]. Nonetheless, the share of SOEs in the global economy has declined dramatically since the mid 1990s.

SOEs have created a massive disequilibrium in the economy based on the low-cost financing from the banks and implicit guarantees from the State. The banks have been allowed to grant credit irrespective of firms' prospective returns and risks. The share of bank credit to SOEs (46% in 2013) is out of proportion to their importance in the national economy and represents a massive misallocation of capital, creating overinvestment, production overcapacities and deflationary pressures. Moreover, the less profitable the sectors dominated by SOEs, the more credit they have received. The stimulation plan has aggravated those deficiencies hugely; average return on assets (ROA) in manufacturing plummeted to 3.9% in 2014 against 6.8% in 2007. As a consequence, insolvency risks in SOEs located in real estate and heavy industries have nurtured non-performing loans in bank balance sheets.

The weakness of SOE balance sheets in heavy industries is a serious concern. The ROA of private firms is roughly double that of SOEs, while their profit margins are similar. This is due to their asset turnover. Private firms generate more revenue from a given asset base because of the redundant capacity in SOEs.

Overleveraged SOEs based on overcapacity are financially vulnerable if the ratio of their gross operating profit/scheduled flow of debt service is <1. Real interest rates rises exert additional stresses along with weaker consumer price inflation and a decline in the producer price index. This is the main reason why the PBoC pursues a low-interest rate policy despite its limited impact on new credit. However, more efforts are needed to alleviate their financial vulnerability. Overcapacities will be reduced by corporate restructuring: size reduction through consolidation, injection of private capital through mixed ownership, and state ownership transferred to public financial holding companies with a duty to reform corporate governance. PBoC and CBRC will manage the process to avoid large insolvencies and the potential for systemic risk. They will instruct the commercial banks to roll over corporate debt but forbid them from issuing net new credit to SOEs which have not reduced their overcapacities by a specific percentage according to the magnitude of their vulnerability and the economic situation in their sector of activity.

Overcapacities will be reduced by corporate restructuring: size reduction through consolidation, injection of private capital through mixed ownership, and state ownership transferred to public financial holding companies with a duty to reform corporate governance.

This restructuring process will not entirely avoid losses, which emphasizes the importance of a huge pool of financial resources held by central government. During the 1998-2002 debt crisis, central government bailed out the main commercial banks and bad banks which had extracted huge amounts of non-performing loans from the big banks.

Reform of the SOEs is vital to strengthen Chinese industry. Central government's aim is to merge 106 SOEs under its ownership into 40 groups, while local governments are acting in a similar direction. In addition to the objective of creating competitive groups in strategic industries, the government has made it clear that it wants to reduce overcapacities drastically by closing non-profitable firms. It will improve the governance of restructured SOEs and encourage mixed public private ownership in non-strategic sectors. This part of the reform is urgent for local governments and must be monitored at the provincial level.

(15) Deslandes J. & Jie Pan B. (2016), "Les enjeux de la réforme des entreprises d'État chinoises", Bulletin Economique Chine, DG Trésor, n° 80, Janvier-Février.

However, the process of reducing overcapacities should be carried out with caution. Overcapacity is a relative concept. It refers to productive capacity relative to need. China is still in a process of rapid urbanization and has large regional disparities. Many parts of China are in need of materials for the construction of infrastructure and housing. Those activities will affect a number of industries considered to be suffering from overcapacity. If China can identify the appropriate tools to finance the direly needed construction related to the process of urbanization and for poorer regions, it will be able to manage regional development and simultaneously alleviate the immediate pressure on decreasing productive capacities in certain industries.

However, the task of identifying truly non-profitable enterprises is not straightforward. In recent years, there have been huge fluctuations in raw materials prices on the international market and otherwise, healthy enterprises can exhibit large debt ratios in such a market environment. The closing and consolidation process must be based primarily on the evaluation of productive efficiency and technological capabilities rather than financial results alone.

The Chinese authorities believe a multi-polar monetary system should be the basis for an alternative model of financial globalization able to support multilateral infrastructure projects such as the "one belt, one road" project.

8 Sixth objective: opening up the financial system

The 11th part of the Plan deals with building a new setup for a comprehensive opening. The opening sentence refers to "one belt, one road" which is a guiding principle. In the financial opening which is underway, it is important to distinguish the long-run view from the short-term turmoil nurtured by the collective pessimism of international investors and exacerbated by financial speculators.

8.1 The long-run view: a competing system of financial globalization

This objective preceded the 13th Plan. The 2013 directives referred to financial reform to promote the Yuan to the status of an international currency by 2020. The government has been successful in its push to introduce the Yuan in the SDR basket. The logical consequence of this is a decoupling from the dollar. Introducing a new currency tightly correlated to the dollar would not constitute progress towards the more multilateral SDR-based currency system which the Chinese government is keen to promote for the future. The Chinese authorities believe a multi-polar monetary system should be the basis for an alternative model of financial globalization able to support multilateral infrastructure projects such as the "one belt, one road" project.

The grand design behind this objective is future transformation of the International Monetary System (IMS) into a multilateral system whose architecture would be based on institutionalized monetary coordination under the auspices of a reformed International Monetary Fund (IMF) on the one hand, and upgrading of the SDR as the ultimate reserve asset on the other. This objective was set out in March 2009 by Zhou Xiaochuan, the PBoC governor, when the financial crisis was in full swing. Under this framework, the IMF would become the international lender of last resort, the quota system would be reformed radically, and the issuance of SDRs would become endogenous to countercyclical needs to manage the global financial cycle. With an international lender of last resort which is both equitable and open to all countries, the saving wasted by many countries in accumulating large amounts of dollar reserves for insurance would be reallocated to productive investments.

This evolution of the international monetary system is perceived by Chinese authorities to be the monetary basis of a global finance transformation with public development banks as prominent financiers. Investing in infrastructure throughout Asia where it is much needed, would reduce overcapacities in China's heavy industries, and would promote the Yuan as the core regional currency. Furthermore, according to energy and climate experts, over the next 15 years, the world should invest $90 trillion in infrastructure for sustainable development, mostly in developing countries[16]. This will be difficult since the world economy is suffering low growth and colossal lack of infrastructure despite huge amounts of saving. Therefore, the financial system must be overhauled[17], and in particular, the capacity of public development banks to invest in infrastructure must be massively increased.

Discussion of the third objective shows that China has already determined the design of a restructured financial system through the work of the GTF. It is well known that financing long-term infrastructure projects involves risks which market finance cannot manage. Infrastructure finance requires capital immobilizations over long periods of time, which entail large upfront costs along sequential stages of investment. Such processes can be plagued by underestimates which make them difficult to insure, and such investments are aimed at producing positive externalities for the economy. Their social returns are higher than their private financial returns, which is why such investments are not emphasized within a market finance logic.

Public development banks are prominent financial actors in funding large sized and long maturity projects which will

(16) Stern N. (2015), "Keeping the climate-finance promise", Grantham Research Institute on Climate Change, LSE, November 12.

(17) UNCTAD (2015), "Long-Term International Finance for Development: challenges and possibilities", chap. VI, 2015 Report, pp. 153-179.

Table 3 – Two models of financial globalization

Washington consensus + US$ key currency	Integration via infrastructure finance + SDR with multilateral currencies
Key concept: market efficiency	Key concept: systemic resiliency
• Financialization of the firms (shareholder value)	• Stakeholder firms as going concerns and importance of public ownership
• Globalization through capital flows linking all asset markets worldwide via arbitrage and speculation	• Globalization through global public goods and >0 externalities. Finance structured through long-term investments
• ntermediation through market making under the dominance of investment banks	• Intermediation through development banks (national and multilateral)
• International LOLR through Fed's swap network	• International LOLR through IMF's SDR account
• Developing countries forced to accumulate $ reserve as self-insurance	• Collective insurance releases saving for productive investment
Major shortcoming: inability to break the tragedy of the horizon, therefore to finance real LT investments	Major shortcoming: risk of political conflicts in selecting, monitoring and exploiting investment projects

Source: from the authors.

generate positive externalities. They have the mandate to back up such projects. Their liabilities are defined by public authorities; they are long-term and are aligned to their mandate. Their capital is owned by financially credible sovereign entities, both national and international. Subsequently, they can borrow from the international bond markets at low cost.

Development banks are involved in the governance of investment projects because they have expertise in selecting, evaluating and monitoring complex projects. They are natural partners during the choice of techniques, amounts and localization of infrastructure investments. They attract other lenders and leverage their resources. Their unique characteristics make them core intermediaries in an alternative global finance model (table 3).

In emerging countries, development banks linked to central banks will become the preferred tools of sustainable development. From a multilateral perspective, development banks, which manage the risks involved in coordination, can finance infrastructure projects which integrate whole regions of the world. One such bank is the Asian International Infrastructure Bank (AIIB), created under China's leadership with public shareholders in more than 40 countries. It is essentially an inter Asian institution with 75% of its capital held by Asian countries. Other examples are the Silk Road banks which are dedicated to financing new economic routes from China to Europe: the sea belt through East Africa, and the continental road through Central Asia. National development banks also play countercyclical roles in protecting financially vulnerable developing countries against external shocks and natural disasters.

The large national development banks, such as the CDB and the Ex Im banks in China have acquired an international scope. To become pioneers in the transformation of global finance, development banks must be able to change the criteria of private capital allocation and must introduce new financing practices for inclusiveness and sustainability.

8.2 Short-run turmoil and adjustments

The new strategy of China's financial opening is leading to massive outflows of capital from China in the form of direct investments. Meanwhile, the redeployment of domestic production to domestic demand, and the related increase in labor costs are reducing the trade surplus which has contracted to around 2% GDP, accompanied by a decrease in the dollar reserves invested at low yield in U.S. Treasury bonds.

This structural change was challenged in 2015 and early 2016 by disturbances stemming from the stock market and the opening to capital flows. FX reserves shrank more than $500bn in 2015 and two first months of 2016. Capital outflows were structural and speculative. Structural outflows are financing infrastructures in Asia and beyond, and the internationalization of Chinese firms. Speculative outflows were caused by unanticipated Yuan depreciation, and the expectation of a further Yuan depreciation because the currency had appreciated by 10% in real effective terms between March 2014 and July 2015. Between August 11 and 22, the Yuan depreciated 4.2%, exacerbated by the stock market selloff which triggered portfolio outflows. The State Administration of Foreign Exchange (SAFE) estimated that the valuation effect of those speculative moves, *e.g.* the magnitude of the change in the dollar price of assets sold, reached $170bn. To this must be added foreign debt repayments and foreign currency holdings by private domestic agents.

With the impact of those forces, the balance of payments structure has changed dramatically. To offset the outflow of money in the absence of a large current account surplus, China will need steady capital inflows. This is why the development and efficient regulation of domestic capital markets is so crucial. The monetary counterpart of such an ambitious restructuring in finance is internationalization of the Chinese currency decoupled from the dollar, and a foreign policy advocating evolution of the IMS to multilateralism. China's government must decide about how it proceeds to convertibility in order to accommodate the long-run objective of a new pattern of globalization and the challenge of transition.

China's monetary authorities are confronting a well-known problem in international monetary economics related to choosing a currency regime: Mundell's trilemma[18]. In a world of competing sovereign nations, the first best is impossible for organizing international monetary relations. The first best would be compatibility between fixed exchange rates inducing stability in capital markets, free capital flows inducing a presumed efficiency in the allocation of world saving, and full autonomy in national monetary policy to pursue relevant domestic objectives.

(18) Mundell's impossibility theorem is discussed in Mundell (1968).

Since these three objectives are incompatible, one of them must be abandoned. When China instituted a single exchange rate in 1994 and granted the central bank the mission to organize a unified monetary policy in 1994, the government chose a strict peg on the dollar up to July 2005. Afterwards the government inaugurated a crawling peg, although returning to the fixed peg during the financial crisis. Capital controls remained an essential pillar until the new leadership stated its objective of financial opening. Then Mundell's trilemma re-emerged.

The long-run solution is clear. China's ambition requires both free capital flows and an independent monetary policy. Therefore, a flexible exchange rate regime is the logical consequence, once a broad, deep and resilient domestic capital market has been established and tested. In the meantime, a mix of capital controls should be retained, together with a managed exchange rate regime against a currency basket to preserve the autonomy of monetary policy as much as possible. Nonetheless, the monetary policy position must be understood by both market participants and observers. It is not just a question of transparency; the monetary authorities must persuade the market that they know how to resolve the trilemma, and also convince it that the monetary policy decisions in the face of the many shocks that arise in everyday life, are compatible with the stance chosen.

9 Conclusion: China and the world

The transformation of China's economy over the next 20 years is likely to change the pattern of globalization. In its 2014 update, the OECD report Shifting Wealth points out that globalization is entering a new stage driven by redeployment of EME growth onto their domestic markets. In Asia, this new momentum will probably lead to deeper integration with the support of massive infrastructure investment.

China's assertiveness in world markets and world politics stems from this huge incipient regime change. However, the resistance of Western powers to any change in post world-war II international institutions makes the transition perilous. China's politics has had to acknowledge systematic blockage of the U.S. Congress to any change in global governance. It also has to acknowledge that its economic success, supporting its rise to world power, is provoking mixed feelings among its Asian neighbors. In the most recent years, the State Council has taken the initiative to organize a web of trade and financial links in the emerging and developing world, based on China's international financial institutions.

However, China has no interest in overthrowing the principle of an open multilateral economy; it supports this principle. China needs western markets as much as the western nations need the huge Chinese consumer market. China wants to take the lead in climate change policies, and to secure its energy and transport supply routes. It wants to be restored to its historical central role in Asia, all perfectly legitimate goals in soft power. To achieve these long-term objectives will require sustainable economic growth accompanied by political stability.

China is more than a nation state. It is a millenary civilization which has created the institutions of a unitary imperial state. The empire has collapsed many times over its two millennia history. However, unlike other empires, it has always reunited. China has no desire and no need for global hegemony, because its founding culture does not pretend to adhere to universal values. Along with the rest of the world, China wants to develop economic, financial, technological and cultural relationships, and to cooperate politically to secure the global public goods on which our common security depends.

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