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Can China's Miraculous Economic Growth Continue?

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ABSTRACT *This paper analyses the growth trajectory of China and related structural change to assess China's capacity to continue its rapid growth over the next decade. The evidence demonstrates that the multi-path approach undertaken has enabled China to transform its economy from low value-added towards high value-added activities through structural change from low to high value-added industries, as well as upgrading within industries. In doing so, China did not follow the neo-liberal advocacy of freeing markets. Selective state interventions facilitated China's transformation from an agricultural to an industrial economy over the last few decades. Upgrading towards higher value-added activities and the continuing strength of macroeconomic indicators, such as balance of payment and capital account surpluses, and low trade intensity of GDP and debt service along with significant deepening in human capital and R&D activities, suggests that China will continue to grow relatively rapidly over the next decade. To do this China needs to find solutions to growing deficits in power and water supply, and potentially dangerous political upheavals if growing economic inequality problems are not solved.*

KEY WORDS: China, economic growth, structural change, growth strategies

The dramatic rise of China as an economic power has been scrutinised extensively. Rasiah (2005) and Lall and Albaladejo (2004) showed the extent to which China's economy could potentially impact on Southeast Asia and the developing world, respectively. Using purchasing power parity (PPP) as the basis, the International Monetary Fund (IMF) in its World Economic forecast of 2011 reported that China would overtake the USA as the largest economy by 2016 (IMF 2011). However, there is considerable debate over whether the instruments used for such a forecast are rational. First, some claim that the PPP measure is not a good deflator for inter-country price differences, arguing that the instrument introduces measurement errors or transaction costs (Davutyan and Pippenger, 1990). Secondly, some argue that real per capita incomes are a better measure of the economic power of a nation, which would obviously mean that none of the largest economies (the USA, China, Japan and Germany) will qualify as the strongest economic powers, as smaller countries,

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such as Norway, Sweden and Switzerland, enjoy higher per capita incomes (Rasiah 2000).

Instead of targeting this paper to address such a contentious way of ranking countries economically, the focus is on whether China can continue its fast growth rates annually over the next decade.[1] Political instability, which has been pointed out by several commentators, may pose potential problems in the future. Petras (2006), in particular, has raised serious concerns over the progress achieved by China, arguing in the process that the social spending to solve the rising political and economic contradictions is too little and too late.

Hence, despite the massive expansion of infrastructure to connect all corners of its massive span of lands, it is reasonable to assume that China's quest to grow rapidly over the next decade depends very much on whether it can continue to enjoy rapid GDP growth and structural shift from lower to higher value-added activities, while at the same time demonstrating a strong ability to keep political problems, the economic problems of inflation, unemployment, economic inequalities and ecological problems low (see Petras 2006; Heinemeyer 2011). The rest of the paper is organised as follows. Section two presents the theoretical considerations. Given its dominance in economic thinking, the neo-classical position of economic convergence is examined first before arguments are advanced on why China's growth sustainability has veered on to a different set of paths. Section three discusses growth and structural change experienced by China. Section four analyses China's structural change drive into higher value-added activities. Section five presents the conclusions and implications.

Theoretical Considerations

Arguably the most common criterion used to rank countries economically is the size of GDP. The world's largest economy is that of the USA. The path taken by the USA to stimulate growth is primarily through technical change, achieving competitive advantage in a wide range of industries by continuously driving a shift from low to high value-added activities (Abramovitz and David 1973). After all, Marx (1960) and Schumpeter (1934) had established that technical change is the driver of long run growth.

Whereas Abramovitz and David (1973) and Kaldor (1957) had argued strongly over the significance of increasing returns industries in driving rapid economic growth, neo-classical economists discouraged such strategies by claiming that it would require price-distorting interventions by governments who could undermine its potential benefits by serious failures. Instead, Friedman (1977) and Hayek (1982) promoted free trade on the basis of specialisation that is led by relative factor endowments. Dropping the capital immobility condition from the Heckscher-Ohlin model of free trade, Bhagwati (1979) and Bhagwati and Brecher (1980) showed how economic convergence can be quickened as capital flows out from capital-surplus and labour-scarce countries (USA) to labour-surplus and capital-scarce countries (Mexico). Extrapolating this argument to cover a wider range of countries, we get the famous economic convergence thesis posited by neo-classical economists, as presented by Myint and Rasiah (2012). Convergence is achieved when there is an equalisation of interest rates and wages as capital flows out from capital-rich

countries to capital-poor countries seeking to hire labour at lower wages. Convergence would mean that per capita incomes of the countries will be equal. However, this sequential relative price theoretic does not address the Schumpeterian argument that rents are important to stimulate participation in innovative activities, while Rosenberg (1976) provided evidence of the importance of deliberate firm-level strategies in driving technical change. Contrary to neo-classical modellists who use technical change as an exogenous residue, Lall (1987) showed that firms actively introduced costly strategies to learn and innovate.

The neo-classical relative price logic of capital-surplus countries exporting capital-intensive goods and importing labour- and natural resource-intensive goods was shattered when Leontief (1971) provided evidence of the opposite occurring in reality. Popularly known as the Leontief paradox, these findings kicked off a plethora of responses from neo-classical economists who used various exercises to refute Leontief's findings (see Yotopoulous and Nugent 1973). Although none of the neo-classical efforts actually analysed the problem within the Heckscher-Ohlin framework of perfectly substitutable flows of capital and labour within borders and its complete absence between borders to actually test the tenets of free trade, the neo-classical paradigm assumed leadership as it came in the wake of a collapse in Keynesian economics in the 1970s.The great financial crisis of 2008–09, with its epicentre in the USA, arising from the pursuance of unbridled market policies by Alan Greenspan (see Krugman 2009; Stiglitz 2010), is the latest convincing evidence of the deleterious consequences countries will face if markets always dictate resource allocation.

With assumptions that markets will always clear and that irrespective of their orientation economic agents will always make rational decisions, Lucas (1978) strengthened further what Friedman (1977) had started to argue that economies will move to their natural path of growth (along the natural rate of unemployment) towards achieving economic convergence if governments just confined their function to market-enabling roles. There has been little discussion on the role of public goods, such as knowledge, that require subsidies or protection for its growth and diffusion to support rapid technical change and a shift from lower to higher value-added activities. In fact, taking the liberalisation path used by the developed countries of Western Europe and the USA since 1971 as depicting this theory, the IMF and the World Bank (under the advisory guidance of Anne Krueger) promoted free trade and investment flows as the basis to stimulate economic convergence in the developing countries.

However, as Dosi and Fabiani (1994) and Rasiah (2000) have demonstrated, the evidence shows that neither has there been economic convergence between the bulk of the developing countries and the developed countries nor have the successful developers of South Korea, Singapore and Taiwan achieved growth through free market policies (see Luedde-Neurath 1986; Deyo 1986). It can also be argued that the US supremacy for many years in the high technology activities of electronics and automotive relied considerably on heavy government investment in R&D through the military labs and universities (Malerba et al. 2008), though the American business model of entrepreneurial activity involving new start-ups was also instrumental in the expansion of such activities in the private sector (Best 2001). Like Korea, Taiwan and Singapore, where rapid economic growth and structural

change has not been driven by a strong emphasis on the military, China's expansion as an economic power has relied little on its strong military expansion. Unlike Korea and Taiwan, where Amsden (1989) and Amsden and Chu (2003) have argued persuasively that governments played a critical role in stimulating rapid growth and structural change by getting "relative prices wrong," as a large complex economy, China's ascendance as an economic power has been achieved through multiple paths. Whereas foreign direct investment (FDI) inflows and strong exports through connecting in low value-added segments of multinational value chains have been important in the neo-classical sense of specialising on the basis of relative prices, China's catch up in the critical industries of automotives and electronics has also been driven by a strong focus on stimulating technical change through selective government interventions. While the former is important in the creation of jobs, raising productivity in the agricultural sector through the Lewis-substitution effect and expanding market size (Lewis 1954),[2] the realisation of China's progress towards the largest economy in the world will depend strongly on the development of technological capabilities.

Hence, for China to demonstrate the capacity to sustain its income catch-up trend towards the USA, there should be evidence of the economy growing rapidly with strong trade performance and transition into high value-added industries. The policy focus should not be confined to enabling markets and letting relative factor prices shape the catch-up process *à la* economic convergence thesis demonstrated in Figure 1. Some industries inevitably follow market signals and, hence, will not require much government support as the large reserves of land and labour still make it attractive to produce low value-added goods, such as garments. However, contrary to the Heckscher-Ohlin framework – which posited perfect capital and labour mobility within borders and perfect immobility between borders – the key role of proximate sea shipment routes has led to firms relocating out of the saturated Eastern sea corridor of China to countries such as Vietnam. Also, where high knowledge content and lumpy investment are necessary, strong government co-ordination will be essential to quicken structural change, especially those dependent on public goods activities, such as R&D for technological catch up. Thus, for China to sustain per capita income growth it is essential that the country continues to undergo structural change into high value-added industries, such as integrated circuits, automotives, pharmaceuticals and machinery and equipment.

Because the focus is on aggregate change in the national economy, it is important to examine the sustainability of China's progress on three fronts. The first examines GDP per capita income growth rates. The second analyses current and capital account balances, and international reserves. The third assesses sectoral productivity growth. The paper assumes a typical heterodox argument of economic focus on GDP calling for a shift from agriculture to manufacturing and services with the change supporting productivity growth in all sectors. The argument that manufacturing possesses increasing returns was first posited by Smith (1776), and then by Young (1928) and Kaldor (1957), and a similar argument over further structural change with services taking over such a role was advanced by Rowthorn and Wells (1987).

Overall, three strands of arguments associated with technical progress and economic growth are important in attempting to assess China's capacity to sustain

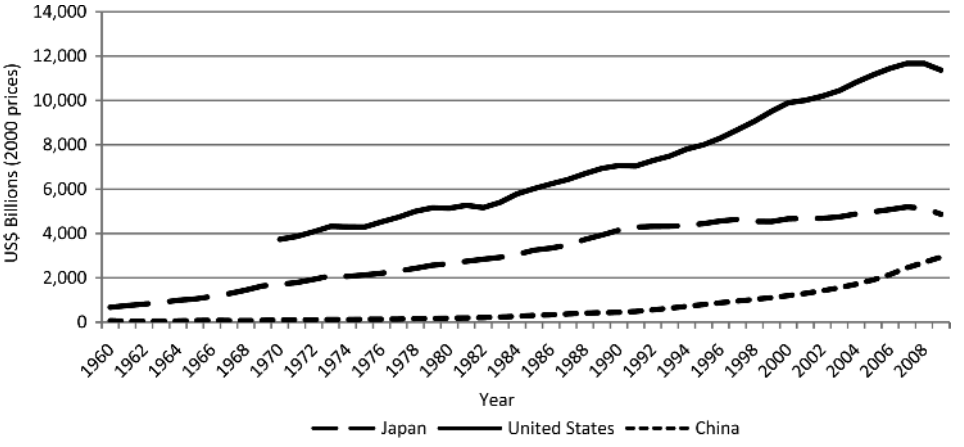

Figure 1. GDP of China, Japan and the USA, 1960–2009. *Note*: Data unavailable for the missing values. *Source*: Plotted using data from the World Bank (2010).

rapid economic growth and structural change. The first, advanced by Marx (1960) and, later, by Schumpeter (1934), is the significance of technology in driving economic progress. The second is the Keynesian argument about imperfections and asymmetrical relationships that characterise economies requiring regulation of markets (Keynes 1936; Stiglitz 2010). Hence, while recognising the importance of markets, government has an important role to play in co-ordinating economic progress, especially in insulating firms undergoing rapid technical progress from external shocks. Japan, Korea, Singapore and Taiwan became developed through effective government co-ordination of markets (Johnson 1982; Luedde-Neurath 1986; Hamilton 1983). Thirdly, the evolutionary argument on institutions advanced by Nelson (2008) is important to address the significance of social technologies as mechanisms with several co-ordinating modes playing important roles in delivering the physical technologies for achieving rapid growth, and the variances in each industry and the differences in the way they evolve over time and space. The social technologies articulated by Nelson (2008) also include the critical macro-micro co-ordination that Katz (2001) pointed out as important to insulate productive firms undergoing technological catch up from economic shocks. Indeed, China's multi-faceted paths to economic progress require the use of the inductive lenses advanced by Nelson.

Growth and Structural Change

China has recorded consistently high growth rates since the late 1980s, with external shocks hardly dampening its capacity to grow. Not only has GDP and GDP per capita grown rapidly, the country has also experienced considerable structural change to account for the rising rank in the share of global exports of manufactures. While the industrialisation approaches driving growth and structural change in China are too diverse to be captured in a single paper, it is possible to distinguish three broad industrial strategies that share fairly strong common ground, namely

(1) export-processing zones; (2) county- and state-led clustering driving industrial diversification and a shift to high value-added activities; and (3) science and technology parks targeting the production and development of knowledge-intensive industries (Kim and Mah 2009).

The first approach – which closely followed China's early transition to a market economy from the 1980s – facilitated the connecting of low value-added industries, such as electronics assembly and garment manufacturing by both domestic and foreign firms, with global value chains (Enright, Scott, and Chang 2005; Zeng 2010). The second either used this approach as the initiator or otherwise to promote economic synergies through clustering of firms with meso organisations (intermediary organisations, such as standards organisations, universities and R&D labs) using county and province-level co-ordination to promote technological catch up. Button manufacturing in Qiaotou is a classic example of this approach (see Rasiah, Kong, and Vinanchiarachi 2011). This approach has also included Chinese firms' hiring of returning human capital from abroad (Saxenian 2006) and the acquisition of foreign multinationals to access technology and global markets. Lenovo's acquisition of IBM computers is one good example. The third approach is driven by highly developed federal territories, such as Beijing and Shanghai, to target an agglomeration of high-tech organisations to stimulate knowledge-based activities in firms. All three approaches appear to have succeeded in driving technological catch up and structural change in China (Zhou 2005; Wilsdon and Keeley 2007; Altenburg, Schmidt, and Stamm 2008).

The three broad approaches have helped propel rapid economic growth in China. The large size of the country, and the diverse geographical and historical backgrounds, has left China to pursue growth strategies that are more varied and complex than those adopted by the East Asian economies.[3] Although China's GDP remains a distant second compared to that of the USA, the income catch up has been relentless. The gap between China, and the USA and Japan began to close from the 1980s as the Chinese economy grew by double digit figures over several years during the period 1980–2009 (see Figure 1).

The income catch up is particularly meteoric when viewed from PPP estimations (Figure 2). From being larger than China's GDP by 11.3 times in 1980, the difference has fallen dramatically to 6.4 times in 1990, 3.3 times in 2000 and 1.7 times in 2008.When viewed the other way around, GDP in PPP terms constituted 8.9%, 15.7%, 30.2% and 57.5% of the GDP of the USA, respectively in 1980, 1990, 2000 and 2009, catching up by almost twice the percentage share every decade.

China has undergone considerable inter-sector structural change since 1960 (Figure 3). Except for the crisis-affected year of 1960, agriculture contributed most until 1970 when industry expanded to become the leading sector in China's GDP. Industry has since remained the main contributor, while services overtook agriculture in 1985 to become the second most important contributor to China's GDP. Although its significance in GDP has declined systematically since 1970, agriculture has remained the main contributor to employment growth over the period 1985–2009 (Figure 4). Although the contribution of industry and services has increased over the period, agriculture contributed more jobs than both services and industry.

China's expansion in the global economy is demonstrated by the rising share of its exports in global manufactured exports. From 0.8% in 1980, China accounted for

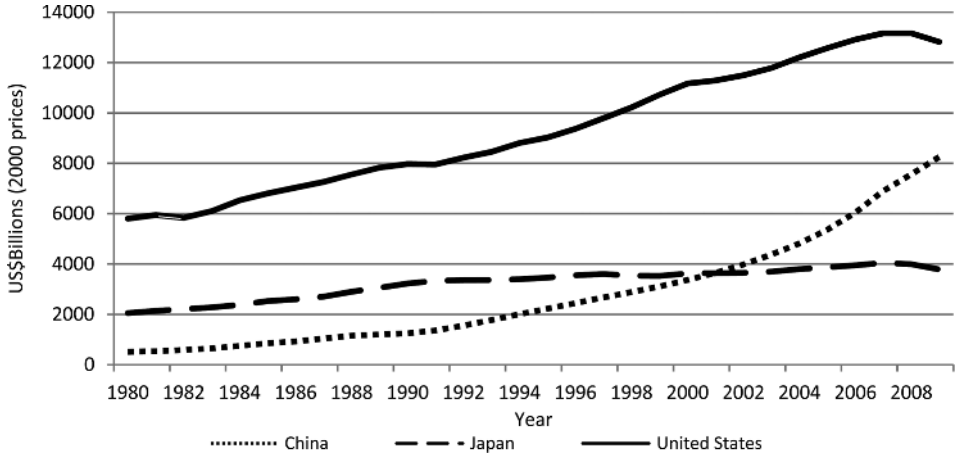

Figure 2. GDP by Purchasing Power Parity, China, Japan and the USA, 1980–2009. *Source*: Plotted using data from the World Bank (2010).

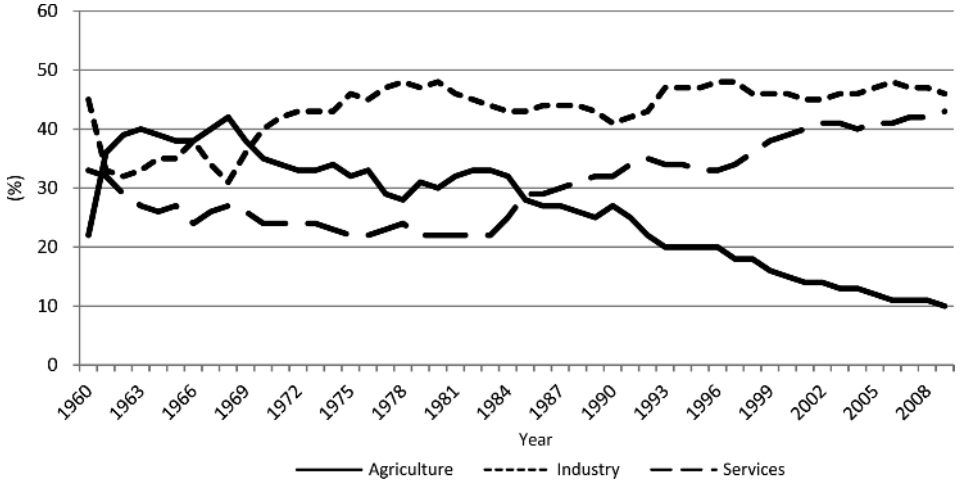

Figure 3. GDP structure, China, 1960–2009. *Source*: Plotted using data from the World Bank (2010).

1.9%, 4.7% and 13.5% of world manufactured exports, respectively, in 1990, 2000 and 2009 (Figure 5). By 2009 China had overtaken Japan and the USA as the world's leading exporter of manufactured goods.

The jump in Chinese exports of manufactured items in the global economy has been massive as it has grown exponentially over the last 30 years. Interestingly, the expansion has involved not just the eastern coastal provinces of Guangdong, Zhejiang, Shandong, Liaoning, Anhui, Guangxi, and the federal territories of Beijing, Shanghai and Tianjin, but also the inland provinces, such as Sichuan. In fact, heavy industries and electronics industries have grown rapidly in Sichuan. The border provinces of China, such as Yunan, Jilin and Heilonjiang, are also rich in

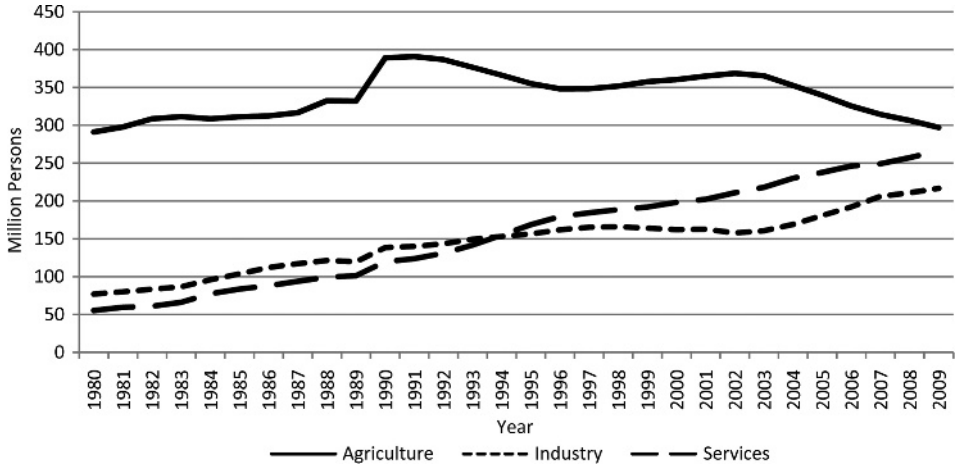

Figure 4. Employment structure, China, 1985–2009. *Source*: Plotted using data from China (2011).

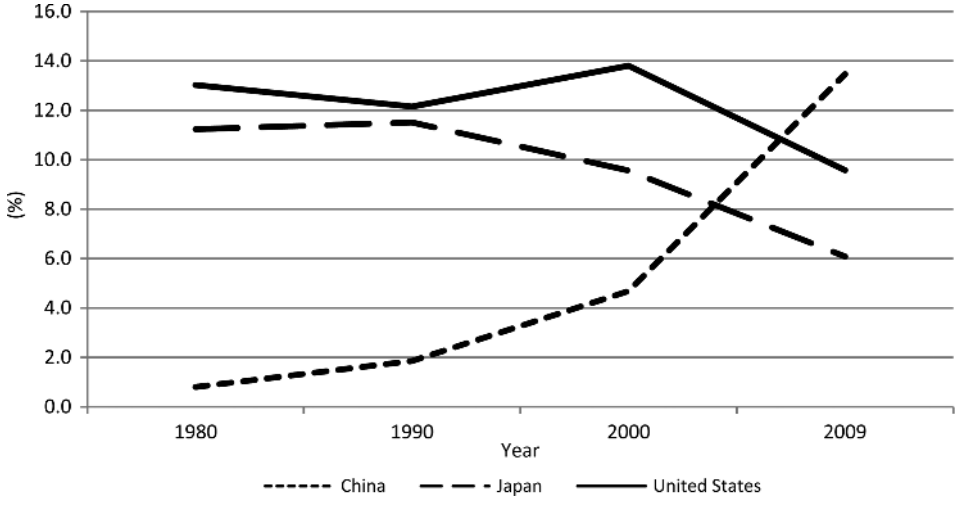

Figure 5. Share in world exports of manufactured items, China, Japan and USA, 1980–2009. *Source*: Plotted using data from WTO (2010).

minerals to provide a strong resource buffer to its basic and fabricated metal industries.

Within manufacturing, China's share in global exports rose sharply to account for 34.0%, 28.3% and 26.2% of world exports of clothing, textiles, and office and telecommunication exports in 2009 (Table 1). China's share of global exports also rose in the resource-intensive industries of agriculture and food, and the intermediate industries of iron and steel and chemicals, as well as the capital goods industry, such as automotive production.

It is interesting to note that the expansion in clothing and textile exports reflects China's strong labour endowments. However, the shift towards the high technology

Table 1. China's share of world exports, 1980–2009 (%)

	1980	1990	2000	2009
Clothing	4.0	8.9	18.3	34.0
Textiles	4.6	6.9	10.3	28.3
Office and telecommunications equipment	0.1	1.0	4.5	26.2
Chemicals	0.8	1.3	2.1	4.3
Automotives	0.0	0.1	0.3	2.3
Iron and steel	0.3	1.2	3.1	7.3
Food	1.4	2.5	3.1	3.6
Agricultural products	1.5	2.4	3.0	3.5

Source: Compiled from WTO (2010, various issues)

export of electronics and the gradual expansion into the heavy and capital goods industries of iron and steel, chemicals and office equipment and telecommunication products suggests that some locations in China have experienced structural change into medium and high value-added activities.

Will China's Rapid Growth Continue?

This section seeks to answer the question set out in the paper: can China's growth and structural change be maintained? We examine the state of China's per capita income growth, current and capital account balances and labour productivity growth over the longer period to see if trends support its sustainability. The country has demonstrated considerable resilience because of growth in the domestic economy and macroeconomic surpluses, which has been made possible through a multi-faceted approach to industrial catch up and selective government regulation and the maintenance of increasing savings and investment and a stable exchange rate. It will also be shown that China's capacity to support effective macro-micro co-ordination to insulate productive firms from economic shocks has been strengthened by its strong balance of payment surpluses and international reserves, and low debt service problems. These developments could nevertheless be derailed if China does not find solutions to growing deficits in power and water supply, rising pollution problems, and potentially dangerous social explosions if the regional inequality between the western and eastern provinces and between the rural and urban areas are not resolved (see Li and Lang 2010).[4]

Per Capita Income Growth

The growth of GDP per capita income has been steadier than that of Japan and the USA since the 1980s (Figure 6). China's per capita income is clearly much lower than that of Japan and the USA, but its consistent growth trajectory suggests that it could take a shorter period to become a developed country than the period taken by the other two.

In PPP terms, China's GDP per capita constituted 2.1% that of the USA in 1980. The dramatic expansion in the economy took China's GDP per capita to 3.4%, 6.7% and 13.2% of the GDP per capita of the USA in 2009 (World Bank 2010).

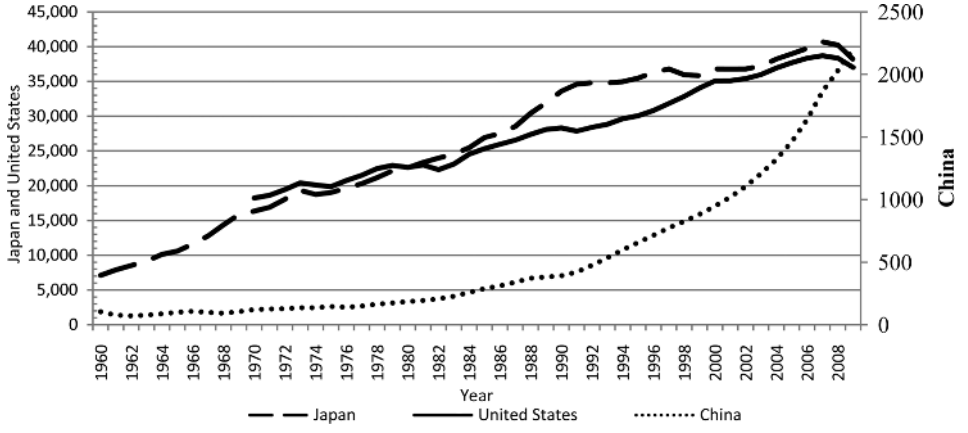

Figure 6. GDP per capita, China, Japan and the USA, 1960–2009 (US$ 2000 prices). *Note*: Data unavailable for the missing values. *Source*: Plotted using data from the World Bank (2010).

Against Japan's GDP per capita, China's constituted 3%, 4.2%, 8.9% and 18.3%, respectively, in the years 1980, 1990, 2000 and 2009.

The capacity of China to manage the income catch up with the USA and Japan will depend on its success in achieving structural change to higher value-added activities without seriously undermining its external balance of payments and debt service balances against its international reserves. We examine this below.

Growth in Labour Productivity

Agriculture, industry and services experience a rise in labour productivity over the period 2000–09. Consistent with the arguments of structural economists, industry enjoyed the highest labour productivity, which exceeded 7,000 yuan in 2009. Except for 1991–92 when severe short-term debt service affected the sector, industrial labour productivity rose the sharpest among the sectors. Interestingly the structural shift towards industry and services has been accompanied by continuous improvement in agricultural labour productivity exceeding 1,000 yuan per worker in 2008 and 2009 (Figure 7).

Agricultural labour productivity grew at an average of 4.3% per annum over the period 1980–87, dipping to 3.2% per annum over the period 1987–2002 before rising to 4.6% per annum over the period 2002–09. The commensurate labour productivity growth rates for industry and services over the period 1987–2002 were 12.5% and 6.4%, respectively. These are impressive growth rates that show that China's transition gradually to a high income economy is systematic and broad-based.

Manufacturing Structural Change

China has undergone considerable structural change in such a short period, which can be seen from its value-added expansion in all industries over the period 2000–08

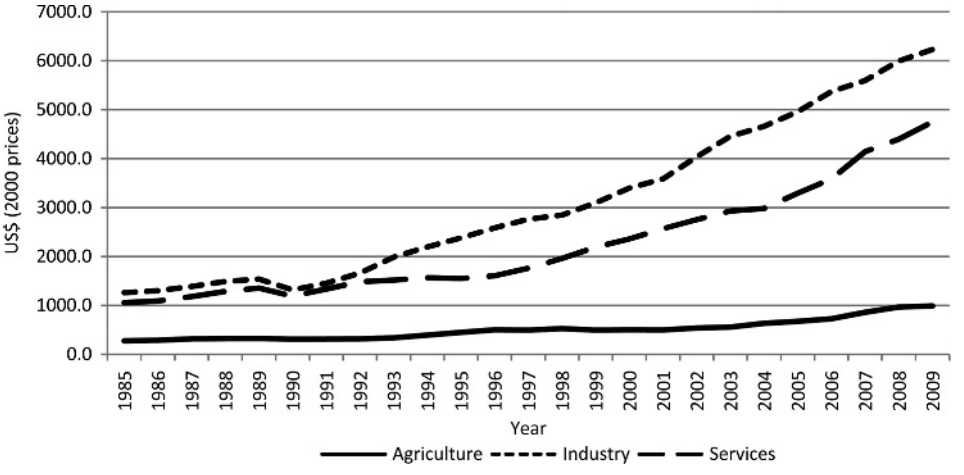

Figure 7. Sectoral labour productivity, China, 1985–2009. *Source*: Plotted using data from China (2011).

(Table 2). China's rise has also been dramatic in the medium and high technology industries, as well as in the intermediate and capital goods industries.

As late as 2000, China ranked world number one only in the labour-intensive products of textiles and leather and footwear, and the natural resource-intensive product of tobacco. From being number ranked on the basis of value-added in three industries in 2000, China recorded the largest value-added in the world in ten industries in 2008. In addition to being number one in the labour- and resource-intensive industries of food and beverages, tobacco, textiles, wearing apparel and leather, China also ranked first in the intermediate industries of chemicals, rubber and plastics and non-metal mineral products, and the high-tech industry of electrical machinery and equipment in 2008. China has also achieved dominance in the production of light manufactured goods. For example, the town of Qiaotou accounted for an amazing 65% of the world's button production in 2007 (Rasiah, Kong, and Vinanchiarachi 2011).

The structural transformation into medium and high value-added industries is dramatic as China's world rank in all industries improved over the period 2000–08. Except for printing and publishing, where it was ranked fifth, China's rank in the remaining industries rose to at least third in 2008. China's rank in the knowledge-intensive industries of office, accounting and computing machinery, radio, television and communication equipment, and medical, precision and optical equipment rose to second in the world in 2008.

Two further indicators show that the shift towards manufacturing in China has taken place through technical change with rising value-added in gross output, and strong growth in real wages. The value-added share of gross manufacturing output rose from 26% in 2004 to 26.5% in 2007 (computed from UNIDO 2010, 267). The commensurate percentages for Singapore show a fall from 24.2% in 2004 to 22.1% in 2007. After adjusting for inflation, real wages rose from 13,905 yuan in 2004 to 15,463 yuan in 2005, 17,314 yuan in 2006 and 20,823 yuan in 2007, with annual

Table 2. China's share of world value-added, manufacturing, 2000–2008

Sector	2000		2008	
	Share (%)	Rank	Share (%)	Rank
Food and beverages	6.2	3	17.4	1
Tobacco	30.1	1	52.9	1
Textiles	16.8	1	43.2	1
Wearing apparel	11.2	3	38.7	1
Leather and footwear	14.3	1	43.2	1
Wood	2.8	8	12.4	2
Paper	4.8	4	15.3	2
Printing and publishing	1.6	10	4.4	5
Coke, petroleum and nuclear fuel	7.4	3	18.0	2
Chemicals	8.2	3	21.1	1
Rubber and plastics	7.5	3	20.9	1
Non-metal minerals	10.2	3	24.1	1
Basic metals	12.3	3	41.6	1
Fabricated metals	3.6	7	11.6	2
Machinery and equipment	4.9	5	14.7	2
Office, accounting and computing machinery	4.3	4	8.8	2
Electrical machinery and apparatus	8.0	4	27.8	1
Radio, television and communication equipment	5.2	3	9.9	2
Medical, precision and optical instruments	3.4	7	11	2
Motor vehicles, trailers and semi-trailers	5.2	4	9.9	3
Other transport equipment	4.6	7	13.6	2
Furniture	3.7	6	17.2	3

Source: UNIDO (2010: 60–70).

average growth rate of 14.4% over the period 2004–08 (computed from UNIDO 2010, 264).[5]

Demand Aggregates

China has demonstrated strong accumulation of savings and capital formation since the 1980s (Figure 8).[6] Given the underdeveloped status of China in the 1980s, the massive accumulation of savings and expansion in capital formation has provided the use of Keynesian-style demand management to raise resource exploitation and, with that, rapid economic growth. Final consumption in GDP has declined since 2000. Despite China's much smaller per capita incomes, the capacity of the USA to pressure China to liberalise has declined since its 2008–09 crisis as China's power and influence in the world seems to have grown significantly (Subramanian 2011). Hence, we consider that recommendations by Woo and Zhang (2010, 361–365) to liberalise and privatise the financial sector on the grounds that it will help avert trade pressures from the developed countries and provide a platform to bring back their investments from abroad to earn higher returns at home could actually reproduce the same destabilising problems seen in the USA. Also, Zhu and Kotz's (2011) arguments questioning the sustainability of China's growth because of dependence on exports and investment appears unfounded. As Rodrik (1994) observed some time ago,

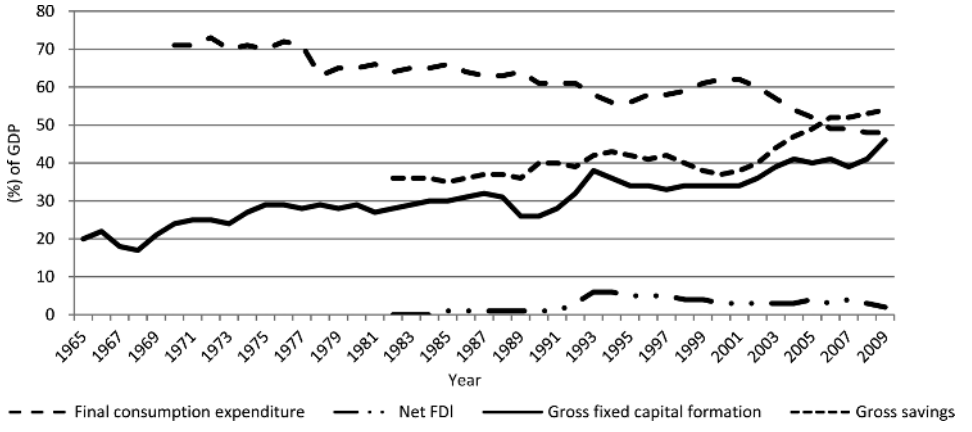

Figure 8. Demand aggregates, China, 1965–2009. *Note*: Data unavailable for the missing values. *Source*: Plotted using data from the World Bank (2010).

capital accumulation on the basis of export orientation propelled Korea and Taiwan to become successful industrial economies.

Despite overtaking the USA as the largest destination for FDI, its share in overall fixed capital formation has always been low. With high savings rates, FDI never accounted for over 6% of GDP in China. With such low levels of FDI inflows, China has managed to engender development without much dependence on FDI. In addition, rather than targeting scarce capital, FDI is seen as a source of technology transfer, and for generating employment in populous provinces, such as Guangdong.

Final consumption expenditure has shown a falling trend as necessary consumption as a share of GDP has grown slower than gross fixed capital formation. With agriculture releasing workers slowly to be absorbed by industry and services, and interest rates, inflation, exchange rates and unemployment managed carefully with a focus on technological catch up, the transition in the economy to higher value-added activities appears successful.

China's current and capital account surpluses and its debt service have remained low since the early 1990s (Figure 9). Short-term debt service was a problem in the mid-1980s and in 1992–93 but it has remained low since the turn of the millennium. China's international reserves to finance imports also rose to 25 months in 2009 (World Bank 2010), which is incredible for a country enjoying a twin surplus in both the current and capital accounts. Along with its political reach on economic management, the surpluses easily helped to overcome the 16% contraction in exports in 2009 (Woo and Zhang 2010, 352).

Unlike the smaller economies of East and Southeast Asia, such as Singapore, Korea, Malaysia, Thailand and Taiwan, which are highly reliant on export markets, China's large economy absorbs much of its production and, hence, is less susceptible to external shocks. Exports reached 38% of GDP in 2008, its highest share, while imports reached its maximum share of GDP of 32% in 2005 (Figure 10). Furthermore, the share of both exports and imports in GDP has fallen gradually thereafter, following expansion in domestic demand as the global financial crisis led to a contraction of exports to the major Western markets.

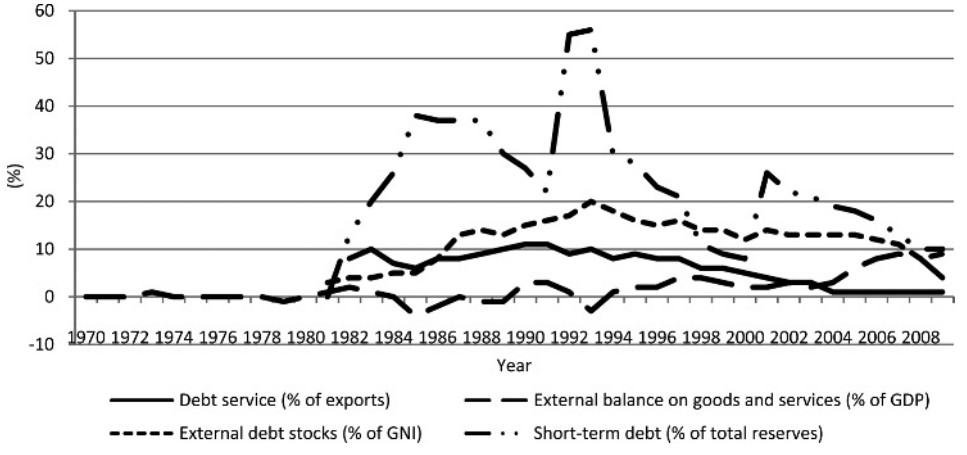

Figure 9. Debt service and external trade balance, China, 1970–2009. *Note*: Data unavailable for the missing values. *Source*: Plotted using data from the World Bank (2010).

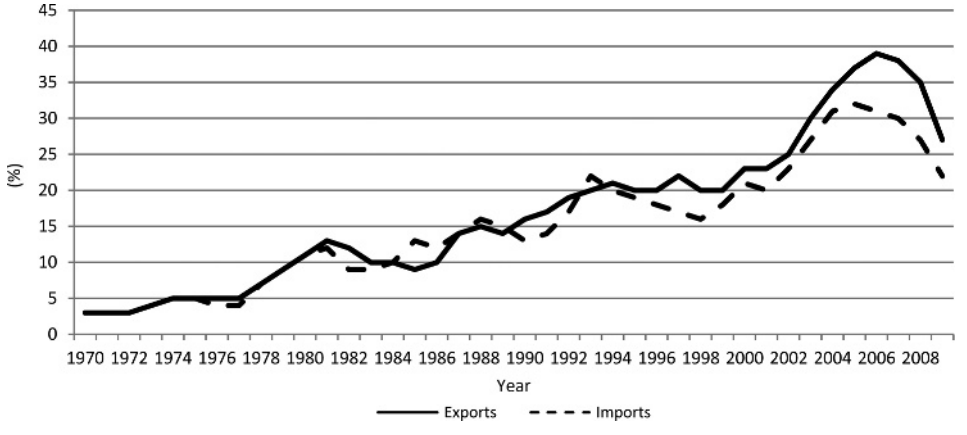

Figure 10. Exports and imports in GDP, 1970–2009. *Source*: Plotted using data from the World Bank (2010).

Human Capital Development

China's capacity to sustain rapid growth and structural change into high value-added activities will depend strongly on the development of human capital, which is the only factor of production that can create new value. We utilise data from the World Bank from 1971 and from UNICEF from 1996 for this exercise.

Interestingly China has enjoyed universal access to primary education over the period where data are available (since 1975). Access to secondary education fell over the period 1978–82, but it has since risen in trend terms to 78% in 2009. Access to tertiary education has also risen in trend terms to 25% in 2009 (Figure 11).

The government's efforts to strengthen the scientific content of its human capital are further reflected in significant deepening in its R&D indicators. The number of

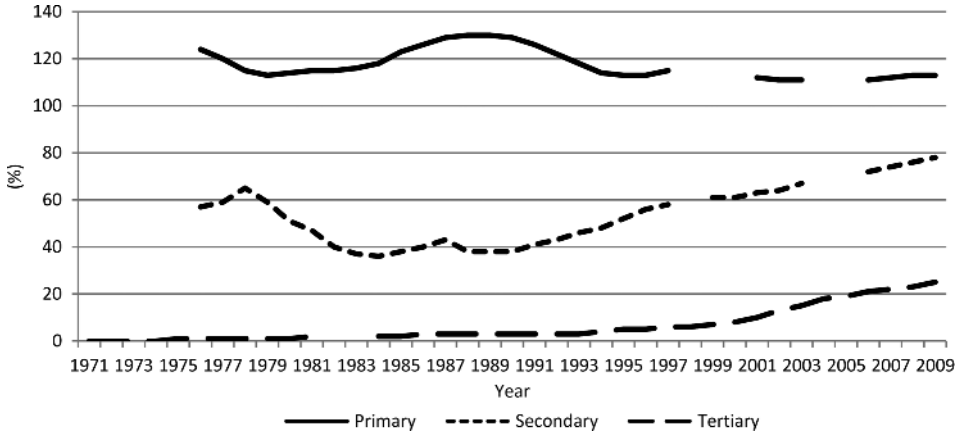

Figure 11. Gross enrolment in education, China, 1971–2009. *Note*: Data unavailable for the missing values. *Source*: Plotted using data from the World Bank (2010).

R&D researchers in China rose from 548,000 in 1996 to 811,000 in 2002 and 1,423,000 in 2007 (UNESCO 2010, table 19). As a share of per million population, R&D researchers in China rose from 448 in 1996 to 630 in 2002 and 1,071 in 2007. As a share of per thousand of the labour force, R&D researchers rose from 0.79 in 1996 to 1.10 in 2002 and 1.83 in 2007 (UNESCO 2010, table 25). R&D expenditure in constant 2005 PPP prices rose from US$13.9 billion in 1996 to US$42.5 billion in 2002 and US$96.6 billion in 2007 (UNESCO 2010, table 26). As a share of GDP, China's R&D expenditure rose from 0.57% in 1996 to 1.07% in 2002 and 1.44% in 2007.

This development of human capital leaves China in good stead to quicken structural change into high value-added activities through technological deepening. Not only is the share of enrolment into secondary and tertiary education been rising rapidly, investments and researchers engaged in R&D have also been increasing sharply.

Overall, all signs show that China's expansion will be continued over the next decade. Not only has its external balances been strong and positive, China has continued to experience structural transformation into higher value-added activities. In addition, the critical variables of human capital in the population and R&D expenditure in GDP have continued to grow strongly. China's surge in technological deepening is further demonstrated from a continued rise in the value-added share of gross manufacturing output and has even overtaken Singapore's share since 2004. However, although we do not think that technological shortcomings will inhibit progress, as already noted, there are serious concerns over regional inequality and political uncertainty associated with the Western provinces, and growing shortages in water and power, and rising pollution problems caused by rapid growth. These are problems that China will have to contend with to sustain its impressive growth rates.

Conclusions and Implications

The evidence produced in the paper suggests that China's impressive growth and structural change will continue over the medium and long run. Not only has the

country recorded rapid GDP growth consistently, it has also experienced rapid structural change into higher value-added activities in manufacturing. In addition, China's rank in both overall global value-added, and in export markets has been rising swiftly. Indeed, using PPP measures China's GDP and GDP per capita has already reached around two-thirds that of the USA. Hence, whatever the definitions one uses to rank countries economically the persistence of growth and structural change enjoyed by China suggests that it demonstrates the potential to continue it so long as it can prevent growing deficits in power and water supply from becoming chronic and avoid potentially dangerous upheavals from regional inequalities arising from slow growth in the Western provinces.

The Chinese economy has demonstrated a growing resilience with a healthy accumulation of current and capital account surpluses and international reserves. These surpluses provide the buffer for China to be insulated from the US-style crises arising from chronic deficits and government overspending. In addition, domestic demand still accounts for the major source of growth of China demonstrating that the country will be less exposed to global crises than other Asian industrialised locations, such as South Korea, Singapore and Taiwan.

Structural change into manufacturing, including into medium and high value-added activities, such as chemicals, fabricated metals, machinery and equipment, electronics and medical and optical equipment, in which China's value-added rank in the world rose substantially to either first or second demonstrates that the country is likely to record further expansion in GDP and GDP per capita. This is underpinned by rapid deepening of the labour force with human capital. Enrolment rates in secondary and tertiary education, and the share of R&D researchers in the economy has grown rapidly over the last two decades. China's R&D expenditure as a share of GDP has also grown substantially in this period. However, despite the glowing account the country faces real threats in its capacity to sustain requisite expansion in power and water supply and reverse growing problems of pollution and economic inequality. Also the capacity to sustain the impressive growth rates will also depend on how the leadership manages to prevent potentially dangerous political problems that could unravel from the much slower-growing Western provinces (see Petras 2006). Nevertheless, the multiple strategies used by the government with strong province-level drivers shows that selective interventions rather than unbridled markets is the way to stimulate structural change into high-end activities in large economies starting with low-end activities.

Acknowledgement

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Notes

[1] As Keynes (1936) had noted it is not very useful to examine too long a period as too many variables change without much clue. It is difficult to predict the movement of the critical change variables as we go too far into the future.

[2] Lewis (1954) demonstrated using a dual sector model by showing how surplus labour (disguised unemployment) from agriculture moves to industry to clear the marginal differences in wages between the two sectors, keeping all other factors constant.

[3] Our position here differs somewhat from that of Baek (2005).
[4] China has other issues that may impact economic development. Heinemeyer (2011) has criticised China's poor record of human rights, religious freedom, demographic renewal and protection of intellectual property rights.
[5] This evidence supports the findings of Song and Zheng (2010).
[6] Overall savings rather than domestic savings were preferred here because of a significant share of Chinese savings being deposited abroad.

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