



MASSEY UNIVERSITY
COLLEGE OF BUSINESS
KAUPAPA WHAI PAKIHI



MASSEY UNIVERSITY
SCHOOL OF ECONOMICS AND FINANCE
DISCUSSION PAPER: 11.02
MAY 2011

SRIKANTA CHATTERJEE

**THE LONG MARCH OF CHINA AND INDIA TO
PROSPERITY: THE PROGRESS SO FAR AND
SOME CONSTRAINTS**

This series contains work in progress at the **School of Economics and Finance, Massey University**.
Comments and criticism are invited. Quotations may be made on explicit permission of the author(s).

The Secretary
School of Economics and Finance
Massey University
Private Bag 11222
Palmerston North 4442
NEW ZEALAND
Phone: 06 356 9099 Extn 7744
Fax: 06 350 5660

Discussion Paper 11.02
ISSN 1179-0474 (Online)

The Long March of China and India to Prosperity: The Progress So Far And Some Constraints

Srikanta Chatterjee*
School of Economics and Finance
Massey University
Palmerston North

Abstract

The economic performance of the world's two most populous countries – China and India - in recent decades has transformed their own economies, as well the world economy, in a manner that is unprecedented. Their economic growth has helped lift millions of people out of dire poverty already and, if it can sustain itself, rapid economic growth will help improve the living standards of many more people both within these countries and elsewhere around the world. The factors and forces underlying these two countries' economic performance have been the subject of many studies. The question whether the recent fast pace of economic growth can sustain itself has perhaps not received quite as much attention. This article starts by exploring analytically the development experiences and achievements of China and India since the late 1970s and early 1990s respectively. It then addresses the issue of longer term sustainability of the two economies' march to prosperity via economic growth and transformation. . Any study involving the future is, by the very nature of the exercise, somewhat speculative, and the current discourse is no exception. It uses the analytics, mainly of economics, to understand the processes of growth experienced by China and India and to prognosticate how these processes might play out for the two countries over the longer term.

Keywords: China, India, sustainable development.

JEL classification: F14, F15, D20, 01

* Corresponding Author:

Email: S.Chatterjee@massey.ac.nz; Telephone +64 6 3569099 Ext. 2315; Fax +64 6 3505660

1. INTRODUCTION AND OBJECTIVES

After a long period of slow growth and policy-induced relative isolation from the world economy, both China and India initiated market-oriented reform programmes in the late 1970s and early 1990s respectively. The changes that have come in their train have begun to change the face of not just the two giant economies, but of the world as a whole. Understanding the underlying forces that have contributed to this remarkable transformation is therefore a worthwhile exercise in itself; it may also have lessons that other developing economies could emulate or avoid to achieve faster growth with its attendant benefits. These aspects of the economic transformation of China and India have, quite understandably, attracted a lot of attention in both the academic literature and the general media (see Bardhan 2007, 2010, Chatterjee 2009, Srinivasan 2005, 2006 and 2009). The issue which is perhaps yet to receive a systematic treatment concerns the long term prospects of these two giant economies. What factors and forces might limit the growth of these economies is an interesting question, even if any answers have to be largely speculative. Analysing the two countries' economic growth to date, and then addressing the issue of their long term prospects are the major motivations of this article.

After a brief introduction to the subject with some relevant factual information, the article goes on to examine the nature and sources of the two economies' observed growth performance to date, and identify the strengths and weaknesses implied in these findings. The question as to whether the two economies can continue along their recent fast growth paths is addressed next and, again, the influences, both domestic and external, that are likely to affect the growth outcomes are identified. One important caveat in this investigation needs to be stated at the outset: the analysis here is confined only to the 'economic' factors behind the growth performance. There are admittedly other factors, such as environmental and socio-political for example, that may affect a country's long term growth prospects. These are not however within the scope of this article.

2. THE TWO ECONOMIES AT A GLANCE

It is helpful to start by looking at a few broad features of the two economies to gain some idea about the nature and dimensions of the issues involved in studying them. Table 1 over presents some factual details on the current state of the economies of China and India.

Table 1: The two giants in perspective

| | China | India |
|--|--|------------------|
| Population (2008) | 1.33 b | 1.18 b |
| Pop. growth rate (2000-2008) % | 0.7 | 1.6 |
| GDP PPP (2008) in 2009 US \$ | 8.08 trillion | 3.34 trillion |
| GDP per capita; average annual growth 1990-2008 | 6,020; 9% | 2,972; 6% |
| GDP share by sector (%) 2008 | | |
| Agriculture | 11 | 17 |
| Industry | 49 | 28 |
| Service | 40 | 55 |
| Labour force size | 812 m. | 509 m. |
| Sector share of employment (%) 2008 | | |
| Agriculture | 40 | 52 |
| Industry | 27 | 14 |
| Service | 33 | 34 |
| Trade share of GDP (2008),% | 52 | 41 |
| Adult Literacy (%) 2008 | 93 | 66 |
| Percent of population < US\$1.25 a day 1992- 2007 | 16 | 42 |
| Income share of top decile to bottom; Gini index (%) | 4.7 (2005, urban only); 41.5 (2007) | 8.7; 36.8 (2007) |

Sources: *World Development Indicators 2009*, Washington, World Bank
 UNICEF – India Statistics. http://www.unicef.org/infobycountry/india_statistics.html
 UNICEF - China Statistics. http://www.unicef.org/infobycountry/china_statistics.html
 (Both accessed on 22/03/10)
 CIA World Factbook, China Economy 2010; and India Economy 2010.
http://www.theodora.com/wfcurrent/china/china_economy.html
http://www.theodora.com/wfcurrent/china/china_economy.html
 (both accessed 22/03/10)

A few quick comments on the table are pertinent:

- China's per capita income is over twice that of India's in price-adjusted (PPP) terms.
- India's population growth rate is over twice that of China's - a reflection mainly of China's one-child policy.
- Industry is a significantly bigger contributor to China's GDP than India's, while the service sector contributes more to India's GDP.
- Income inequality in (socialist) China is higher than in India, but the ratio of the income share of the top income decile to the bottom is higher in India.
- India has a much higher proportion of its population in poverty than has China.
- The proportion of literate persons in the adult population is a lot higher in China.
- China's economy is much more open than India's, as measured by their trade, i.e. exports plus imports, as a proportion of GDP.

One particular feature of India's growth experience cited above is worth noting: it is the predominance of the service sector ahead of the more usual industrial sector. A low income developing country tends to be agriculture and primary activity dominated; the development process helps enlarge the industrial sector which attracts both labour and other resources away from agriculture and primary activities. It is only at a much later stage of development that the tertiary sector typically becomes the leading one. This is what one observes in the evolution of the Chinese economy too. India, however, with a larger agricultural sector than China's, and lower per capita income and adult literacy rate, has a significantly larger service sector share of its GDP. The relevance of this and other similar characteristics generally and in relation to the two economies have been addressed in the literature by several commentators (Bhagwati 1984, Bottlier 2007, Chatterjee 2009, Gordon and Gupta 2003, for example). This article also examines the role of sectoral growth to an economy's overall growth, but without particular emphasis on the service sector.

3. SOURCES OF ECONOMIC GROWTH

3a. *The major theoretical approaches in brief*

It is an observed fact that, historically, different economies have, at different times, grown at different rates. What factors and forces cause economies to grow is a question that continues to exercise economists and other social scientists.

Three broad groups into which the economist's theoretical approach to explaining long term growth falls are:

- The roles of savings and investment, the post-Keynesian approaches, as embodied in the Harrod-Domar models (1939, 1946), for example.
- The neo-classical models of Solow (1956, 1970), and Swan (1956) emphasising factor accumulation - particularly the accumulation of physical capital, deriving from investment - as the major determinant of income growth in the short term. This, combined with exogenously given technical progress, influences growth in the longer term.
- The 'endogenous' growth models- which treat technical progress as an endogenous (within-economy) process – emphasise knowledge accumulation, i.e. the formation of human capital, together with innovation and public infrastructure, as factors promoting growth, the Romer-Lucas type models, (Romer 1990; Lucas 1988, and Barro 1990).

It is not the purpose of this essay to discuss in detail the various theoretical approaches that explain observed growth patterns of countries. In analysing below the observed growth of China and India, relevant economic theory has however been used as appropriate.

Following the Keynesian analytics of macroeconomics, growth theorists have long emphasised the close relationship between investment in productive activities and the real income of a country. As savings act as the source of investment, a rise in the rate of savings can make the growth rate rise too. Savings can be of domestic origin or foreign. For a low-income developing country, domestic savings are usually low; so access to foreign savings in the form of direct foreign investment is helpful in raising a country's growth rate. The increased international mobility of capital in the post-war period has been a major influence on the observed growth processes of a number of countries – most recently of China and, to a lesser extent, India too.

The transmission channel between savings and income growth being investment, one can discern an induced effect which flows from increased income to increased investment, via increased savings. While these approaches to explaining growth have a longer history, the more recent advances in the growth-theoretic literature, such as the endogenous growth theories of Romer, Lucas and Barro alluded to above, for example, re-affirm the crucial role of capital accumulation, via increased investment, in the long run growth process of an economy.

This brief theoretical introduction to economic growth clearly underlines the importance of savings and investment, together with technological improvement, as the crucial determinants of growth. The interrelationships of these and other influences on economic growth can be explained further by identifying them as influences from the demand side and the supply side. This is attempted below, with reference to the contemporary experiences of China and India

3b. Demand, supply and growth: the China, India contrasts

Both demand- and supply-side factors influence a country's growth performance as do its political and societal institutions and practices. The demand factors are domestic consumption and investment spending by the private and the public sectors, while external demand is reflected in the size of the net export earnings, i.e. exports less imports. Among the supply-side influences are the availability and the quality of factor inputs such as labour and capital; capital formation, i.e. productive investment in physical and human capital, and what is known as total- or multi-factor productivity, i.e. enhanced output per unit of a composite of inputs used in the production of goods and services.

3c. Demand factors in Chinese growth

China's growth has been driven more by investment and net exports than domestic consumption, particularly since the late 1990s. China's high savings rate is a topic that has been widely discussed in the literature. Looking closely at this, one finds that the savings rate has gone through three identifiable phases: growing from 30% - 35% of GDP in the early 1980s to 40% - 45% by 1994; falling to around 37% by 2000, and then rising again to above 50% by 2008. This indicates an annual average savings growth rate of two percentage points of GDP a year, and a marginal propensity to save of around 60% (Ma and Yi 2010). This, together with large and steady overseas

investment flows, saw China's investment rate to, also, rise from 37% of GDP in 1998 to 45% by 2008. But, since even this high investment rate has still remained lower than China's domestic savings rate, China has had a large and growing current account surplus which has helped to swell China's foreign currency reserves from \$403 billion in 2003 to around US\$2.27 trillion in September 2009 (Morrison and Labonte 2009, p. 1). Much of China's domestic investment has been in infrastructure and industrial development which, while improving its industrial growth rate and export performance, has kept the level of consumption and its growth rate decidedly modest. The current account surplus and surging reserves have been putting upward pressure on China's currency, the Renminbi (RMB), or yuan, the base unit of the currency.

Since an appreciating yuan would dampen its net exports, China has been lending much of its external surplus to deficit countries like the US by acquiring US dollar assets. While this may have helped the process of China's export-led growth, it is potentially a highly risky strategy too. A decline in the value of a currency such as the US dollar could involve substantial capital loss for China. Likewise, the strategy of export-oriented industrial growth has made about 70% of the Chinese economy directly or indirectly dependent on the world economy. It is worth recalling that, over the initial period of China's economic transition, the US dollar/RMB exchange rate had steadily declined from 1:1.5 in 1980 to 1:8.62 in 1994. This depreciation, combined with China's large supply of cheap labour and high rate of capital formation, helped China increase its share of world export trade significantly – from 1.2% of GDP in 1983 to 8.9% in 2007 - which, in turn, helped its fast economic growth. Its imports also grew from 1.1% of GDP to 6.9% over the same period, which helped China's major trade partners around the world to achieve higher growth rates via rising exports (to China).

More recently, however, China has faced a unique quandary. While its export-led growth strategy has benefited from a low exchange rate, China's traditionally low and steady domestic inflation has become more volatile, trending upwards, in the last few years. This has made currency appreciation a viable policy option to counter the inflationary pressure. Indeed, as inflation reached a peak of 8.7 % in February 2008, the yuan, too, had appreciated by just over 7% in the year to January 2008, as part of the 20% decline in its nominal rate against the US dollar since the floating of the yuan in July 2005. Inflation however started to decline steadily from March 2008, and remained negative over much of 2009. But it has again been trending upwards to reach 3.5% in August 2010. In the year to September 2010, yuan's nominal rate rose against the US dollar by about 13%, from 1:6.83 to 1: 6.74 (The Economist, Sept 18 – 24, 2010, p. 90). The floating of the yuan has thus been helpful in moderating the domestic inflationary pressure in China.

The exchange rate story however is more complicated than the nominal rates of the yuan might indicate (Morrison and Labonte 2009). Because the US dollar has depreciated against many major currencies in recent periods, and the Chinese yuan is still largely tied to the dollar, it too has depreciated against many currencies. The

Bank of International Settlements reports (Morrison and Labonte, p. 2) that China's real trade-weighted exchange rate had appreciated by 18% from January 2008 to February 2009, but over the following eight months - to October 2009, it depreciated by 9.5%. Thus China seems to be hesitant to use the exchange rate as a tool to control domestic inflation. It is seemingly trying to protect its net export advantage too, but the increased volatility in its exchange rate is also not a desirable development.

3d. Demand factors in India's growth

India's GDP growth has been mainly domestic (consumption) demand driven. India's savings and investment rates have been much lower than China's and its share of world exports in 2007, at around 1.8% percent, contrasted sharply with China's 8.9% percent as mentioned above. India's imports also grew over the period - from 1.1% to 1.8%, much less than China's. Strong and sustained growth in private consumption, and the public sector deficits, both at the central and state government levels, have been the features of India's economic transition over the decade since the mid 1990s. This has started to change in India in recent years, as we detail below.

The improvement in India's annual GDP growth figures in recent years has prompted the question as to whether it indicates a trend increase in India's GDP growth rate since the middle of 2003¹. If one breaks down the period 2000-2007 into two sub-periods, and examines GDP growth figures in quarterly terms, it emerges that the quarter-on-quarter growth rate crossed the 9 percent mark for the first time in quarter two (Q2) of 2003/04, and had remained above that level in 10 out of the 16 subsequent quarters. In the 13 quarters, starting in quarter one (Q1) of 2000/01, GDP growth rate was never above 6.7 percent, and was below 5 percent on five occasions. Using the current national income statistics with 1999/2000 as base, it would appear that Indian GDP growth rate had achieved a trend increase from an average of around 4.8 percent to around 8.8 percent between Q2 of 2003/04 and Q2 of 2007/08, an increase of some 80 percent on the quarter-on-quarter growth rate. This is in the 80 – 90 percent range of China's growth rate.

While this noticeable acceleration in GDP growth may have been reason for optimism amongst some observers, others felt that the period was too short for firm judgements to be made as to whether this was a cyclical upturn or a genuine structural break which could sustain itself into the future. This scepticism is understandable when it is recalled that something similar in respect of the GDP growth rate was observed over the period 1994/95 – 1996/97, only to be followed by a prolonged downturn in the growth rate (Jha and Negre 2007, p.7). The global recession that followed the financial crisis starting in 2007 however slowed India's GDP quarter-on-quarter growth down from 9.3% in Q3 of 2007-08, to 5.8% in Q4 of 2008-09. The growth rate has however registered a sharp increase in recent quarters to reach 8.2% in Q2 of 2010, which compares with China's 10.3% in the same quarter (The Economist September 4th – 10th 2010, p.97).

¹ Much of the statistical details used in this subsection are taken from various issues of *The Economic Survey* of the Ministry of Finance, Govt. of India; and *The Handbook of Statistics of the Indian Economy*, published by the Reserve Bank of India.

Turning now to the observed changes to the way income in India has come to be used up, we note that over the period 2001-07, India's accelerating GDP growth rate has been accompanied by a significant increase in gross domestic savings from around 32% percent in 2000 to over 39% in 2007 (World Bank 2009b). A less well-known fact about India's generally poor savings performance is that the savings rate of India's household sector, at 30% of disposable income in 2005, is even higher than China's 25% (Bottelier 2007, p.124). India's much lower national savings rate has historically been due largely to the corporate and public sector's low savings culture. This had started to change, the deficits falling to a low 2.7% in 2007-08, thanks to several reform measures aimed at improving fiscal responsibility adopted by the federal government in 2004, plus the reform of indirect taxation, including the introduction of a value-added tax at the state level. The onset of the global recession however has led the fiscal deficit to grow to over 6% in 2008-09. The corporate sector had more than doubled its savings rate from under 4 percent of GDP in 2001 to 8.7 percent in 2007-08, but the impact of the global recession has been to slow it down, albeit marginally, to 8.1 percent in 2008-09. The household sector's savings had, however, remained at the same level between 2007-08 and 2008-09.

**3e. *Impact of the global economic recession on the two economies:
a brief look***

As already noted, GDP growth declined in both China and India following the onset of the global financial crisis in late 2007, and recession in 2008. The direct impact of the global recession would flow through the channels of trade and of financial transactions. Both countries experienced decline in their export growth rates – China's real export growth fell from 23.3% in 2006 to 8.8% in 2008, and 21.8% in the first half of 2009. India's high export growth rate of 28.9% in 2007-08 fell to 12.8% in 2008-09 ((World Bank 2009). Thus, while both countries faced declining exports, as the economy with a greater export orientation, China's decline was more pronounced. In respect of import growth rate too, both countries have experienced significant decline. China's imports declined by 11.2% in 2009, after registering positive growth rates of 20.8% in 2007, and 18.5% in 2008. India's imports, too, which had grown by 35.5% in 2007-08 and 20.7% in 2008-09, registered a decline of 23.6% in 2009-10.

Both countries used monetary and fiscal measures to provide stimulus to their economies in an effort to minimise the impact of the global recession. In the Indian case, because the share of domestic consumption and investment expenditure is high, at more than 80% of gross domestic expenditure, the scope for domestic expansion to compensate for falling export growth is somewhat limited. China's domestic demand - being a lot lower, at 68% of gross domestic expenditure, has been able to provide stronger demand stimulus. As a proportion of GDP, China's stimulus package has been around 4.4% over the period 2008-10, which compares with India's much weaker package of around 0.5% of its GDP. The measures adopted by China have transformed its fiscal budget from a surplus of 0.6% in 2007 to a deficit of 0.4% in 2008 and over 4% in 2009. In India's case, the central government's fiscal deficit has grown from 2.7% in 2007-08 to around 6.8% in 2008-09, and higher still if the deficits of the states are included.

4. SUPPLY FACTORS IN ECONOMICS GROWTH

4a. *Factor-use and factor productivities: China and India compared over 1993-2004*

An extensive literature exists on the relative shares and growth patterns of the major sectors, viz. agriculture, industry and services of China and India (see for example Srinivasan 2002 and 2006); Jha 2007; Virmani 2004 and Bosworth and Collins 2007). Therefore these issues are not gone into here; instead, we explore the influences the supply-side factors have had in the observed growth of the two economies for the period up to 2004 first, and for the more recent years next.

An economy grows by employing factor inputs like capital and labour in larger quantities, and by achieving efficiency gains, captured as total factor productivity². Therefore, by using the information on the growth in labour employment and in output per worker, it is possible to explain the observed growth. One can go on then to compute the relative contributions of the two major ingredients of GDP growth, viz. the use of physical capital per worker and improvement in factor productivity.

Table 2: Decomposition of Observed GDP Growth 1993 -2004 (%points)

| | Output | Employment | Output per worker |
|--|------------------|---------------------|-------------------|
| China | 9.7 | 1.2 | 8.5 |
| India | 6.5 | 1.9 | 4.6 |
| Sources of Output Growth per Worker 1993 -2004 (% points) | | | |
| | Physical capital | Factor productivity | |
| China | 4.2 | 4.0 | |
| India | 1.8 | 2.3 | |

Source: Bosworth and Collins 2007

² Total or multifactor productivity is a composite of both labour and capital ; it measures part of the output growth that cannot be attributed to the growth in labour and capital input in the production process. It reflects growth due to improvement in the efficiency of a firm's operation which may come from technological advance, innovation in management system and so forth that enable producing more output with identical labour and physical capital.

Table 2 presents the information on these statistics for the total output of the two countries for the period 1993 – 2004. Although several studies (See Virmani 2002; Srinivasan 2005; Jorgenson and Vu 2005, for example) have examined the performance of the two economies over earlier periods, the main reason for choosing

Figure 2a:

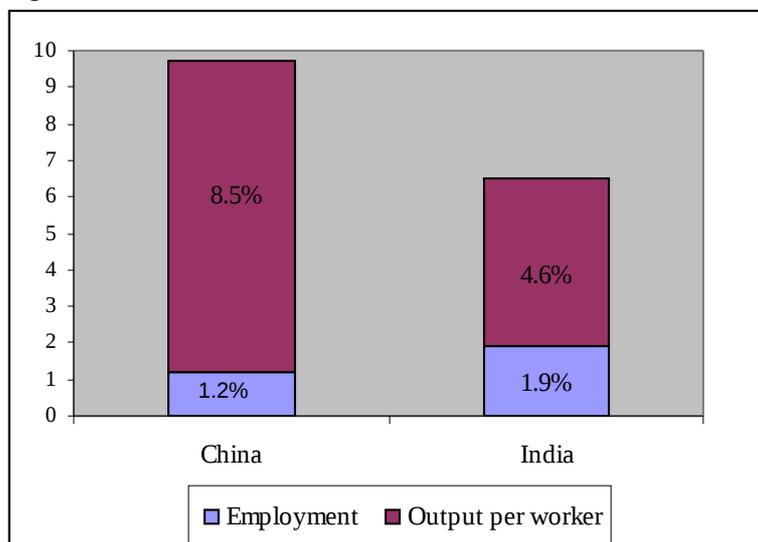
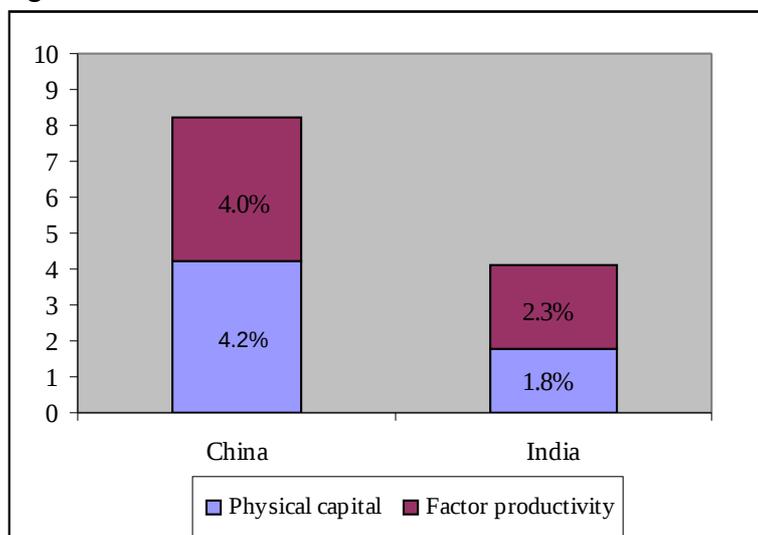


Figure2b:



this period here is that it was in the 1990s that India launched its major reform programme, following the ‘economic crisis’ of 1991, while China continued with its own reforms begun earlier. The impact of these reforms on a major macroeconomic aggregate, viz. the GDP of the two economies since the early 1990s is therefore of particular relevance.

The results, based on the more recent and revised estimates of Bosworth and Collins, cited under the Table, show that labour employment growth contributed more to India’s GDP growth than it did to China’s; while it was the opposite with output per

worker, China showing higher contribution from labour productivity. The next logical step of course is to decompose the labour productivity growth by examining how much physical capital used by labour contributed to the output growth, and how much an improvement in the overall efficiency of production, i.e. total factor productivity (TFP), did. The results, reported in bottom part of Table 2, clearly show that the contributions of both physical capital and TFP growth are higher for China and than they are for India.

India's greater reliance on labour employment relative to China's appears to be in line with the demographic trends of the two countries. India's working age population, at 60% of total population in 2005, is projected rise to 61% by 2050, and the dependency ratio (ratio of working to non-working populations) to fall from 67% to 64% (UN 2006). China's working age population, at 67% of total population, by contrast, is projected to fall to 53.3% by 2050, and the dependency ratio to rise sharply from 57% to 88%. These trends would suggest that China will need to learn to rely less on increasing labour employment than would India to contribute to its growth process. The evidence cited in Table 2 would indicate that this is already happening. We examine this issue again later in the article.

Going on now to the decomposition of the observed growth of the three broad sectors viz. agriculture, industry and services, the following observations based on the findings reported in Table 3 are pertinent: first, China achieved faster output growth in all three sectors than India; secondly, its growth was sourced more from improved labour productivity, and less from labour employment in both agriculture and industry, but labour employment in the service sector was higher, and TFP significantly lower than India's. India's performance in agriculture was particularly poor in all respects relative to China's; in respect of labour productivity and TFP its growth rates were less than one-third of China's. It is only in the service sector that India's performance compares favourably with China's. India achieved high growth in this sector with less additional labour and less capital per worker than did China.

A somewhat broad measure of the efficiency of capital use in production processes at the aggregate level is the incremental capital-output ratio (ICOR), i.e. the ratio of additional capital investment to the increase in GDP. The lower the ratio, the more efficient is the utilisation of capital. Taking the five-year period 2003-08, a period immediately preceding the transmission of the global recession to the two economies, one observes that the Chinese economy grew at an annual average rate of 10.8%, and its gross fixed investment was an average of 40.7% of GDP. This gives an ICOR of 3.7%, which implies that for a 1% growth in GDP, 3.7% of GDP had been invested. So, with the other growth factors unchanged, if China can either maintain its level of investment at such high levels, or improve its efficiency in the use of capital, i.e. lower the ICOR, its economy can continue along the recent double-digit annual growth rates.

Table 3: Decomposition of Growth by Major Sectors 1993- 2004 (Annual percentage change)

| | Output | Employment | Output per worker |
|--|------------------|---------------------|-------------------|
| Agriculture | | | |
| China | 3.7 | -0.6 | 4.3 |
| India | 2.2 | 0.7 | 1.5 |
| Industry | | | |
| China | 11.0 | 1.2 | 9.8 |
| India | 6.7 | 3.6 | 3.1 |
| Services | | | |
| China | 9.8 | 4.7 | 5.1 |
| India | 9.1 | 3.7 | 5.4 |
| Sources of Output Growth per Worker 1993 -2004* | | | |
| | Physical Capital | Factor Productivity | |
| Agriculture | | | |
| China | 2.1 | 1.8 | |
| India | 0.7 | 0.5 | |
| Industry | | | |
| China | 3.2 | 6.2 | |
| India | 1.7 | 1.1 | |
| Services | | | |
| China | 3.9 | 0.9 | |
| India | 1.1 | 3.9 | |

Source: Adapted from Barry Bosworth and Susan Collins, Accounting for Growth: Comparing China and India, January 2007. NBER Working Paper No 12943, Cambridge, Massachusetts

Note: *Contributions of other factors such as land etc have been left out.

Turning to the Indian economy over the same period, one observes that the average growth rate of GDP had been 8.5% a year, and the share of fixed investment in its GDP was 31%, giving an ICOR of 3.7%, which is exactly the same as China's. With a rising savings rate, and a modest deficit in the balance of payments, India's capital investment can improve to levels that would see its GDP growth rate potentially also to rise to double-digit levels in the not-too-distant future to match, if not exceed, China's.

5. LONG-TERM CONSTRAINTS FACING THE TWO ECONOMIES

5a. *Changing demographics and long term growth prospects*

The issue of sustainability of the recent high growth rates of China and India can now be addressed in the light of the growth-promoting factors discussed above.

The availability and quality of the factor inputs – capital and labour – in particular, have a major influence on a country's economic growth. Looking at labour first, the shrinking labour supply of China has been discussed above. The possibility of 'surplus' agricultural labour to migrate to the industrial areas is more limited in China as the scope for significant further productivity gains in agriculture is unlikely to be particularly large. This shortage will put pressure on the real wage in the industries,

and diminish, if not eliminate, China's advantage as a low-wage, labour-surplus economy, specialising in labour-intensive manufactured goods for exporting. These have been the industries that attracted the bulk of the expatriate investment in the Foreign Invested Enterprises (FIEs) accounting for over one-half of China's exports and imports. Their contribution to China's economic growth had been as high as 40% in 2003 and 2004, despite their share in China's GDP being only 20%. The possible decline in export growth resulting from the forces alluded to above, would tend to reduce the importance of the FIEs and their contribution to the growth process (Xian and Whalley 2010). Any structural shift away from low-skill to higher-skill manufacturing, or to non-manufacturing, service, sector will therefore need to draw more on domestic savings for their required investment. Whether domestic savings can increase from its already high rates would remain to be seen.

The structure of China's population is old, with the population below the age of 15 being around 22%, and falling. As its rate of population growth is slow, the population is aging faster. This will further reduce the availability of labour as a 'cheap input', as China will graduate out of being a classic Arthur Lewis labour-surplus economy (Lewis 1954). On the other hand, China's labour force is generally healthier and more literate, which gives it an advantage that many other developing countries, including India, do not enjoy to the same extent. In the initial phase of China's economic transition, however, the quality of its human capital, as measured by the proportion of the population with a tertiary qualification, was lower, at 1.7%, than India's, at 5.3% (Li and Zhang 2008). This has changed significantly since the early 1980s as China has surged ahead with its investment in human capital and scientific and technological infrastructure (IMD). This has had the effect of transforming China's production structure to more skill-intensive activities.

India, by contrast, has the advantage of having a younger population structure, with 33% of the population below the age of 15, and a lower dependency ratio, both at present and into the future, as observed earlier in this article. India's rural sector, including agriculture, and other low-productivity activities still employ a large share of its labour force. The ability of the economy to transfer labour to higher-productivity activities therefore is potentially stronger. These advantages, India's so-called 'demographic dividend' (Lee and Mason 2006), can potentially be harnessed by a growing, labour-biased, industrial sector. A major structural shift will however be needed to increase the share of the industrial sector, especially the manufacturing sector, which alone can possibly absorb the bulk of India's large and growing labour force. This, in turn, will require improved infrastructure, both physical and human, as well as changes to India's labour and bankruptcy laws, which have hindered the transformation of this sector by discouraging fresh investment in it (Srinivasan 2006, 2009).

5b. Savings, investment and capital formation

China's high savings rate, around 53% of its GDP in 2008 (Ma and Yi 2010), has contributed to its high investment rate, as has been observed earlier in this article. Over the period 1998-2008, China's investment as a proportion of GDP increased from 37% to 45%. Over the same period, India, too, experienced a sharp rise in its

investment rate – from 24% to 40%; its savings rate being around 39% (World Bank 2009b). A striking difference between the two economies, as alluded to earlier, is China's large current account surplus which reflects the excess of its savings over investment. India, on the other hand, has a modest current account deficit. China's international transactions have swung, in a single decade, from a net debtor position of some 10% of GDP in 1998 to net creditor position of 37% by 2008, making China a significant capital exporting economy. India is in an unusual position of being also a capital exporter, despite its persistently negative current account balance. Thus, while China lends abroad out of its savings, India does so by borrowing offshore. India also relies more on its domestic savings to finance domestic investment than does China, as noted above.

This highly investment-intensive domestic demand structure has seen China's private consumption as a share of GDP decline from 47% to 36% over a decade ending in 2008. India's private consumption share also declined from 64% to 55% over the same period. However, both economies have been experiencing increased private consumption *growth* in recent years. A rapidly rising GDP makes this possible, despite the declining share of consumption in it. This is likely to continue with rising average levels of affluence, and contribute to the growth process to a greater extent than has been the case so far.

The changing demographic structure of China, with a large section of the population beyond the working age, together with a declining number of potential inheritors within households, is likely to reduce the bequest motive for saving. After an exhaustive survey of the savings behaviour of the Chinese economy Ma and Yi (2010) observes that "China's savings rate is likely to plateau before long and may ease off noticeably from the current 53% or even higher levels over the next 10 years" (p.24).

India's savings and investment surge, as observed earlier, has occurred much more recently. The increased savings have come from all three major sectors, viz. the household, private and the public sectors. Even though the onset of the global recession has had a dampening effect on savings generally, the private sector still had a positive balance of savings over investment in 2008-09 (Economic Survey 2010, p.10).

The demographic factors are likely to see India's savings improve as a younger population has a greater savings incentive out of both lifecycle reasons and precautionary motives. Although the inflow of foreign direct investment into India is still decidedly modest in comparison with China, the inflow of funds into portfolio and bonds is significantly larger, reflecting perhaps India's more efficient financial system and better organised financial institutions (Huang and Khanna 2003). Both economies are thus likely to continue experiencing changes to the ways they finance their growth as the structure of their economies continue undergoing changes, but neither is likely to face severe constraints on the financial front at least.

5c. GDP growth, inputs and TFP

The contributions of factor inputs, labour productivity and total factors productivity to the observed GDP growth of China and India over the period 1993 - 2004 have been discussed in section 4 above. Taking a somewhat longer period, for purposes of comparison, Ross (2010) has updated the findings of Jorgenson and Vu (2005) to calculate the changes in the contributions of capital input, labour input and TFP to the observed growth of China and India. The three periods chosen are 1989 -1995, 1995-2000 and 2000-2005. Let us label the three periods sequentially as period 1 (P1), period 2 (P2) and period 3 (P3).

The gap in India's annual GDP growth, relative to China's, narrowed steadily over the successive periods, from 49% in P1 to 68.6% in P2 and 75.9% in P3. Exploring the factors behind this narrowing, the findings show that India's annual rate of growth of labour input relative to China's had been 141.2%, 129% and 158%; while its use of capital input relative to China's had been 58.6%, 58.2% and 65.1% in the three periods respectively. Thus, India maintained the stronger labour bias in its production structures; indeed the gap with China in the use of labour increased by the end of the period. In respect of capital, the gap has narrowed, but only marginally.

It is in respect of the TFP growth that the gap has narrowed significantly. India's annual growth of TFP relative to China's having been 23.6%, 59.2% and 64.1% in the three periods. Clearly, the improvement in the growth rate had been very strong from P1 to P2, the improving trend continued, although weakened, over P2 and P3; so, the catching-up process remained on track.

India's progress has been much slower in respect of capital input, again a vital growth ingredient. Combining the annual growth in labour and TFP, Ross (2010) calculates India's growth to have been 45% of China's in P1, 78% in P2 and 84.6% in P3, further confirming the progress India has achieved in the direction of growth-rate convergence with China.

These findings seem to suggest that India lags behind China in respect particularly of its (lower) capital investment as a proportion of income. As observed earlier, India has made significant progress in respect of both its savings and investment performance over the last few years. It would need to continue this trend if the gap in its growth performance is to be narrowed further.

6. FROM GROWTH RATES TO PER CAPITA INCOME CONVERGENCE

6a. Per capita GDP trend over time

In the light of the discussion above, an interesting question in regard to the recent growth performance of these two populous countries must be whether their per capita GDPs, not just their annual growth rates, can converge in the foreseeable future? By its very nature, of course, the answer to the question must largely be speculative. China has the advantage of its earlier start (1978) in respect of economic reform, and

therefore already at a higher level of per capita income when India embarked on its major reform programme in 1991. This higher base has then progressed with higher annual growth rates; so the compounding mechanism has made China gain even more ground in the “race”. Where each country will be at any particular point in the future will depend on many variables, among them, as elaborated above, would be the growth rates of inputs like labour and capital; TFP growth and catch-up, and the diffusion patterns of technology from developed to the developing countries. One study that has attempted this task, with various assumed scenarios with regard to the factors just mentioned, projects China’s GDP to overtake North America’s in 2022 and Europe’s in 2027, and India’s in 2042 and 2043 respectively (Guest and McDonald 2007, p.15). With India’s population projected to rise well into this century, it looks distinctly unlikely, in this scenario, that India will catch up with, let alone surpass, China’s per capita income in the foreseeable future.

6b. Some institutional factors

Development practitioners have long observed that a country needs to have an ‘enabling institutional structure’ to facilitate the growth process. The institutional structure includes a wide framework of arrangements such as the political and legal systems, private property relationships, intellectual property protection, rules of societal engagement with the government, the environment to foster entrepreneurship and innovation, and the freedom with which individuals and organisations are permitted to operate in society and in the market, for example.

From the early 1950s to the late 1970s, both China and India used central planning as their major development path, although India had a large and thriving private sector, and an established culture of private entrepreneurship. Both countries used inward looking policies over this period in an effort to promote ‘self-sufficiency’ as a primary national economic goal, and both achieved only modest economic growth. Under Deng Xiaoping’s leadership, China embarked on a largely market-oriented reform of its economy in 1978. While neither country has abandoned planning as an instrument of development – China is into its 11th Five Year *Programme*, and India its 11th Five Year Plan - both have systematically increased the role of the market. Indeed, China now calls itself a *socialist market economy*. Two major government departments – the State Planning Commission and the State Economic Commission – no longer exist in China; they have been re-constituted into organisations that would facilitate the process of market-oriented growth and integration into the global economy. India too has drastically removed much of the protective structure around its domestic economy and its international trading and investment links since the early 1990s. Thus, both economies have a mixed structure, with an enhanced emphasis on the private sector, especially in China which is in transition from a socialist economic structure.

On the political front, India is a democracy, China is not. Khanna and Yasheng Huang (2003), in a broad-ranging analysis of the institutional aspects of the two economies, consider India to have an advantage over China. This advantage, they argue, stem largely from India’s (a) established culture of private entrepreneurship and innovation; (b) more developed, open, and relatively transparent financial sector, and

(c) better governance practices in the private corporate sector. The study points to the fact that India has a larger number of companies that compete internationally with those of more technologically advanced countries. Many of these firms are engaged in business in the most knowledge-based cutting-edge industries. China is yet to make a noticeable presence in this area.

China has been much more successful in attracting foreign direct investment over a long time than has India, as observed earlier. A large proportion of this has come from the large and wealthy Chinese diaspora, numbering some 40 million, as Tarun Khanna and Yasheng Huang (2003) points out. India has started tapping into its own diaspora much more recently, both for FDI and for their skill and knowledge. This late start, which may be considered to have been India's lost opportunity, might also enable India to avoid some of China's experience in this area. For example, by allowing the expatriate Chinese to acquire the assets of the loss-making state-owned enterprises, China was able to delay reforming the sector. India has also been slow to resolve this problem, but the experience of China would be helpful to both the investors and India's policy-makers.

India's democratic political system may make its legal framework somewhat more transparent than China's and that, in turn, might make for better protection of property rights, including intellectual property rights, in India than in China. However, as revealed in the various reports of the corruption monitoring body Transparency International (www.transparency.org/publications), entrenched corruption at all levels continues to characterise both Chinese and Indian economic, social and political institutions. The inefficiency and wasteful use of resources that corruption engenders must affect the growth process adversely in both countries.

7. CONCLUDING OBSERVATIONS

The article has examined a large number of issues relating to the growth and development patterns of the world's two most populous times in recent times, and their future prospects. The findings help explain the factors and forces that have shaped the two countries' economic performance. They also highlight some of the constraints the two giants face as they continue along their growth paths. The two economies, despite their admittedly remarkable achievements in promoting economic growth, have a long way to go to lift their large populations out of the many deprivations they still suffer, as elaborated in Mishra and Ray (2010), for example. There are some obvious lessons to be learnt from the experiences of China and India both by the two countries themselves and by other developing countries.

There are many issues the article has not addressed such as for example the impact on the world's resources, particularly non-renewable resources, as the two large economies keep absorbing larger proportions of them. Likewise, what are the likely consequences of these two giant economies' rapid development on the world's physical, social and cultural environments? The present geo-political configuration of

the world must also alter to accommodate the two Asian countries in the interest of world peace and harmony.

References

- Bardhan, P. (2010), Awakening Giants, Feet of Clay: Assessing the Economic Rise of China and India, Princeton University Press, Princeton and Oxford.
- Bardhan, P. (2006), 'Awakening Giants, Feet of Clay: A Comparative Assessment of the Rise of China and India', *Journal of South Asian Development* 1:1, 1-17.
- Basu, K. (2009), 'China and India: Idiosyncratic Paths to High Growth', *Economic and Political Weekly*, XLIV (38), 43-56.
- Barro, R. (1990), 'Economic Growth in a Cross-section of Countries', *Quarterly Journal of Economics* 106: 407-443.
- Bhagwati, J. (1984), 'Splintering and Disembodiment of Services and Developing Nations', *World Economy* 7: 133-143.
- Bottelier, P. (2007), 'India's Growth from China's Perspective', *Journal of Applied Economic Research* 1:119-138.
- Bosworth, B. and Collins, S. M. (2007), 'Accounting for Growth: Comparing China and India', National Bureau of Economic Research *Working paper no. 12943*, Cambridge Massachusetts.
- Chatterjee, S. (2009), 'Anatomy of the Growth and Transformation of the Economies of China and India', in Development Macroeconomics: Essays in Memory of Anita Ghatak, edited by Subrata Ghatak and Paul Levine, Routledge, London and New York, 26-48.
- Domar, E. D. (1946), 'Capital Expansion, Rate of Growth and Employment', *Econometrica*, 14, 137-147.
- Harrod, R. (1939), 'An Essay on Dynamic Theory', *Economic Journal*, 49, 14-33.
- Gordon, J. and Gupta, P. (2003), 'Understanding India's Service Revolution', Paper prepared for the IMF-NCAER Conference, *A Tale of Two Giants: India's and China's experience with Reform, November 14-16, 2003*, New Delhi, India.
- Government of India (various issues), *The Economic Survey*, Ministry of Finance, New Delhi.
- Guest, R. and McDonald, M. (2007), 'Global GDP Shares in the 21st century – An Equilibrium Approach', *Economic Modelling* 24(6): 859-877.
- Huang, Y. and Khanna, T. (2003), 'Can India Overtake China?' *Foreign Policy*, July/August, 74-81.

- Jha, P. and Negre, M. (undated), 'Indian Economy in the Era of Contemporary Globalisation: Some Core Elements of the Balance Sheet', Centre for Economic Studies and Planning, Jawaharlal Nehru University, New Delhi, India.
- Jha, R. (2007), 'The Indian Economy: Current Performance and Short-term Prospects', *Working Paper 2007/04*, Australia South Asia Research Centre, Australian National University, Canberra, Australia.
- Jorgenson, D. and Vu, K. (2005), 'Information Technology and World Economy', *Scandinavian Journal of Economics* 107(4): 631 -650.
- Lee, R. and Mason, A. (2006), 'What is the Demographic Dividend?' *Finance and Development*, IMF: Washington DC.
- Li, Y. and Zhang B. (2008), 'Development Path of China and India and the Challenges for their Sustainable Growth', *Research paper No. 2008/37*, United Nations University, World Institute of Development Economic Research, Helsinki, Finland.
- Lewis, W. A. (1954), 'Economic Development with Unlimited Supplies of Labour', *The Manchester School*, 22, 139- 191.
- Lucas, R. (1988), 'On the Mechanics of Economic Development', *Journal of Monetary Economics* 22: 3-42.
- Ma, G. and Yi, W. (2010), 'China's High Savings Rate: Myth and Reality', *BIS Working Papers No. 312*.
- Mishra, A. and Ray, R. (2010), 'Multi Dimensional Deprivation in the Awakening Giants: A Comparative Study on Micro Data', *Discussion Paper 53/10*, Department of Economics, Monash University, Melbourne, Australia.
(www.buseco.monash.edu.au/researchpapers/2010/5310dimensionalmishrray.pdf).
- Morrison, W. M. and Labonte, M (2009), 'China's Currency: A Summary of the Economic Issues', Congressional Research Service 7-5700. (Website: www.crs.gov) RS21625 (accessed on 15 September 2010).
- Reserve Bank of India (various issues), *The Handbook of Statistics of the Indian Economy*. Mumbai, India.
- Romer, P. (1990) 'Endogenous Technological Change', *Journal of Political Economy* 98: S71-S102.
- Ross, J. (2010), 'Key Determinants of the Different Growth Rates in China and India', <http://www.istockanalyst.com/article/viewarticlepaged/articleid/4079906/pageid/1>).

- Solow, R. M. (1956), 'A Contribution to the Theory of Economic Growth', *Quarterly Journal of Economics*, 70, 65-94.
- Solow, R. (1970), Growth Theory: An Exposition. Oxford: Clarendon Press.
- Srinivasan, T. N. (2005), 'Productivity and Economic Growth in South Asia and China', paper presented at the Annual Conference of the Pakistan Society Development Economics, Islamabad, Pakistan, December 19-21, 2005.
- _____ (2006), 'China, India and the World Economy', *Working Paper No. 286*, Stanford Center for International Development, Stanford University.
- _____ (2009), 'China and India in the Global Economy: Development Strategies, Economic Reforms and responses to the Global Economic Crisis and Recession', Conference on Institutions and Economic Development, China Center for Economic Studies, Fudan University, Economic Growth Center, Yale University, 11-12 August 2009, Shanghai, China.
- Swan, T. (1956), 'Economic Growth and Capital Accumulation', *Economic Record* 36.73, 55-66.
- Virmani, A. (2004), 'Sources of India's Economic Growth: Trends in Total Factor Productivity', *Working Paper No. 131*, Indian Council for Research on International Economic Relations, New Delhi. (Website: www.icrier.org).
- Whalley, J. and Xin, X. (2006), 'China's FDI and Non-FDI Economies and the Sustainability of Future High Chinese Growth', National Bureau of Economic Research, Cambridge MA. (Website:www.nber.org/papers/w12249). Accessed on 20 September 2010.
- World Bank (various years), *World Development Indicators*, Washington D.C.: World Bank.

LIST OF RECENT DISCUSSION PAPERS

2011

- 11.01 James E. Alvey, *Plato Part III: Overall Comments on Plato's Ethics and Economics*, April, 2011.

2010

- 10.14 James E. Alvey, *Plato Part II: The 'Late' Dialogues (with a focus on the Laws)*, December 2010.
- 10.13 Kevin Heagney, *The politics of tax: New Zealand 1844-45*, August 2010.
- 10.12 Kevin Heagney, *New Zealand's fiscal inheritance: An assessment of the development of Direct Taxation in the Mother Country. Part IV 1801-50*, August 2010.
- 10.11 Kevin Heagney, *Australasian taxation, Schedule E: A precursor of New Zealand's institutional framework?* August 2010.
- 10.10 Kevin Heagney, *New Zealand's fiscal inheritance: An assessment of the development of direct taxation in the Mother Country. Part III 1801-50*, August 2010.
- 10.09 Kevin Heagney, *New Zealand's fiscal inheritance: An assessment of the development of direct taxation in the Mother Country. Part II 1701-1800*, August 2010.
- 10.08 Kevin Heagney, *New Zealand's fiscal inheritance: An assessment of the development of direct taxation in the Mother Country. Part I 1601-1700*, August 2010.
- 10.07 Kevin Heagney, *Tax Law New Zealand 1844-1845 – The property rate, the property rate amendment and the dealers' licensing ordinance*, August 2010.
- 10.06 James E. Alvey, *Plato Part I: The 'early' and 'middle' dialogues*, August 2010.
- 10.05 Hans-Jürgen Engelbrecht, *Natural capital and life satisfaction across countries: A different perspective on natural capital abundance and dependence*, June 2010.
- 10.04 James E. Alvey, *Ethics and economics in Socrates and Xenophon*, May 2010.
- 10.03 Hans-Jürgen Engelbrecht, *Knowledge-based economies and subjective well-being*, May 2010.
- 10.02 James Alvey, *The context of ancient Greek ethics and economics*, March 2010.
- 10.01 Srikanta Chatterjee, *Some economic dimensions of higher education within and beyond national frontiers*, January 2010.