In recent times, both China and India have been variously described as ‘emerging superpowers’, ‘transitioning economies to watch’, and the like. Both countries are witnessing unprecedented inflow of foreign direct investment.

China and India, A Software Industry Perspective, by Dr John McManus, Dr Mingzhi Li & Deependra Moitra
Both China and India have achieved remarkable GDP growth rates in the last few years. And, while China’s prominence on the global landscape can primarily be attributed to its manufacturing industry, India has emerged on the world map because of its superior software capability and a growing software services industry. Increasingly we are seeing a convergence, with China achieving a rapid growth in its software industry and India in the manufacturing sector. China and India have assumed such critical dimensions that these days every boardroom meeting invariably includes a discussion on China and India strategy. This paper is an attempt to present the structure and dynamics of the software industries in China and India and what implications both countries hold for the global software industry, and how they can strengthen their growing dominance.

**Early beginnings**

For the last three decades, the United States of America (US) has maintained a dominant position within the global software industry at all levels, however, the increasing attractiveness and importance of the global software industry to developing economies such as China and India cannot be denied. Irrespective of country of origin, all firms have to start their business somewhere and it takes only a single company, as Microsoft proved, to jumpstart an entire industry. The US dominance of the software industry is attributed to its early advantages in research and development, and the investment made in emerging technologies. One of the hidden lessons from the many studies on international business is that investment does not happen by accident. Investment activities are organised and managed by firms and often by multinational firms. The multinational firm exists because it is able to carry out trade and investment at lower cost than its competitors and because it is able to exploit better the differential capabilities of nations.

In broad terms three market classifications may be noted within the global software industry. These are suppliers of professional services (eg EDS and Fujitsu), software products (eg Microsoft, Oracle and Sybase), and integrated systems (eg IBM and SAP). This broad structure has profoundly affected the shape of the software industry over the last 20 years. This rapid growth has created problems for the industry. The industry remains chronically short of skilled manpower. In Europe alone, it is estimated that the industry is short of some half a million skilled workers. Japan and the US are also severely short of computer service personnel. This shortage provides opportunities for countries to take up this slack and provide skilled people to fill the gap. The international spread of the industry has not only resulted in capturing new markets, but also in providing opportunities to draw upon untapped pools of skilled workers. Although, 90% of the world’s exports in software is from the US and Europe, evidence would also suggest that outside the US, UK, and Japan the new and emerging countries within the software industry are China and India.

**Emerging tigers**

The rise of both China and India as potentially high technology software competitors and important participants in the world’s software industry has seemingly come as a big surprise to many foreign observers. While there are many important distinctions to be made between the Indian and Chinese cases, they are similar in that the development of software and technological capabilities in both countries has long been a goal of political, administrative, and industrial elites, and both countries have records of policy intent, planning, and resource commitments for meeting that goal. In this context both China and India are now getting increasingly integrated with the global economy as they open up their markets to international trade and investment inflows (foreign direct investment FDI).

A common worry for developing countries like China and India is FDI impact on domestic markets. As far as the labour market is concerned, the main question here is: does FDI create or destroy jobs? The question is complex, being not just related to job demolition, but also to job creation. In the category of job demolition, the negative effect on employment can result from a reduction in domestic output or it can originate from the existence of rigidities (poor mobility or excessive segmentation) in the labour market itself, which come into play when there is a shift in the composition of output.

In the provision of software, two focal dimensions can be identified: market location (sales to export and/or domestic markets) and output type (sales of software products/or services). Both China and India have experienced substantial gross domestic product (GDP) growth rates of late.

Growth in these countries has been led by a national strategy to promote their software industries generally and software exports in particular. The presence of a national software strategy for exports is therefore recognised as a vital part of software success. Critical to the success of each country has been a vision of what software could achieve for the country; a vision shared by a relatively small but committed group of government officials, CEOs and private entrepreneurs.

**Notes:**
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A Chinese perspective

In the last two decades, China has undertaken major restructuring and reforms of its markets. FDI as stated above was one of the main pillars of reform. The Chinese government has gradually liberalised its restrictions on FDI in order to reap the rewards of foreign investment in technology transfer, modern management skills, and foreign exchange. The results of the reforms have been breathtaking. Thousands of multinationals firms have invested in China, bringing with them billions of dollars in foreign investments. Many global software organisations have taken advantage of China’s market reforms and investor confidence. Many software organisations that have expanded into China have taken advantage of its cost structure and 1.3 billion consumers to enhance profits and shareholder returns.

If China is to attract further inward investment additional reform will be needed. In addition, the Chinese government recognises that entry into the World Trade Organisation (WTO) is the most effective way to encourage change and bring China into the global market place. After two decades of steady but halting reforms, Beijing is racing to dismantle the last vestiges of a command economy. Although China as made significant progress in the past two decades, there is still a long way to go before their economy can be characterised as market driven and open.

What next?

In spite of the opportunities available for attracting FDI, several challenges remain to be met in order for the economy to sustain an even higher rate of growth and enhanced competitiveness. China has gained some competitive advantage in technology-intensive goods, and has improved its capability in production and exports of components. China currently has an advantage over the majority of its competitors in other developing countries due to its low wages (and its ability to add value at the margin). If China is to attract further FDI and preserve its competitive position, it will be absolutely crucial to maintain a low-cost strategy and build capacity (and capital reserves) in high technology sectors. The information, communications and technology markets have proven very lucrative for India, and China is now looking to attain comparative advantage in this area.

However, responding to this reality requires skilful execution in a global economy where established standards already provide a framework for successful economic activities. Skilful execution of a technology strategy under conditions of globalisation will require steering between extremes of a narrow technonationalism likely to cause friction and resentment from trading partners and a possible marginalisation of China’s industry, and a technoglobalism insensitive to national economic interests. The key here is a mixture of expanded state commitments and public private partnerships enthused with openness towards foreigners in national technology programmes, and greater commitment to international rule making and policy coordination.

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An Indian perspective
India did not begin to liberalise its economy until a decade later than China. India’s market-oriented economic reforms, undertaken in 1991, were directed towards increased liberalisation, privatisation and deregulation of the industrial sector, and to re-orient the economy towards global competition by reducing trade barriers, and gradually opening up its capital account. This has increasingly led to India becoming a favourable destination for foreign investors. With a consumer market of approximately 1.1 billion people, the increased globalisation of the Indian economy has opened up significant business opportunities for investors throughout the world. These opportunities are increasingly opening up for the services sector, whose share in the economy has been rising significantly. The Indian economy has been relatively successful in increasing its trade openness and attracting investment inflows, and also in promoting the services sector as an engine of future growth.

Although China has benefited more from inward investment, India remains attractive as a destination for FDI with its increased liberalisation of trade and investment policy regime. There has been a progressive liberalisation of the capital account, which has contributed to an increased flow of two-way investments both in and out of India. Before the economic reform in the 1990s, FDI was heavily concentrated in manufacturing activities, which was due to import substituting industrialisation that encouraged tariff-jumping investments to capture the protected domestic market. The trend in recent years has changed towards an increase in foreign investment in the tertiary sector that encompasses mainly service activities. These include the information and communication technology (ICT) sector (comprising of telecommunication, computer software, consulting services, etc), as well as power generation, and hotel and tourism.

What next?
In spite of the opportunities available for attracting further investment in India, several challenges remain to be met in order for the economy to sustain a higher growth path, and enhance competitiveness in order to position itself favourably in the global competition for FDI. The main challenge to sustaining globalisation in the Indian economy at the domestic level lies in the successful implementation and continuation of the second-generation reforms.

These reforms are directed towards reducing structural impediments to higher growth and are designed to focus on fiscal consolidation, institutional reforms, poverty eradication, and provision of adequate social safety nets, infrastructure development, enhancing manufacturing sector efficiency and attracting growth enhancing investment in the country. Such wide ranging reforms would enhance India’s capacity to engage effectively in international competition, thereby providing greater opportunities to harness its growth potential.

There is some evidence to suggest that the competition among states is intensifying and could act as a lever to utilise growth-oriented policies across the country. It is, however, important to ensure that inter-state competition in attracting domestic investment is healthy and promotes all-round development of the economy, a clear challenge for the Indian political class.

Conclusion
China’s accession to the WTO provides an important challenge for India’s global competitiveness. India’s strategy should be to avail itself of the opportunities that are offered by China’s domestic market. This would require a long-term economic investment strategy. One mechanism for Indian firms would be to partner Chinese firms in their domestic markets, particularly in software, wherein Indian firms have already established a comparative advantage.

Such a partnership would be helpful for Indian firms to draw lessons from their Chinese counterparts, and improve upon their capabilities. This implies that apart from attracting inward investment for development of domestic market capabilities, India would need to encourage further outward investment as well, in order to compete more effectively in the global market.

About the Authors

Dr John McManus, Dr Mingzhi Li & Deependra Moitra are the authors of China and India: Opportunities and Threats for the Global Software Industry, 2007, Chandos Publishing, Oxford, United Kingdom. ISBN 1843341581.