
The integration of China and India into the world economy: a comparison¹

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Abstract

China and India have successfully integrated into the world economy. Once specialised in textiles, they have developed new export-oriented sectors linked to the information and communication technology (ICT), taking advantage of the globalisation process which has enlarged access to new technology, capital and markets. China has become a global export platform for electronic goods and India a global centre for ICT services. They have followed different paths of specialisation. China is heavily involved in the international segmentation of production processes in manufacturing, which is not the case of India. China is heavily specialised in mass exports of cheap goods, while India focuses on niches. Both countries are in a process of technological catch-up but in different industries. By the middle of this decade, the pattern of development followed by each of them seemed to have reached its limits and even before the shock of the global crisis in 2008, there was a debate about the changes necessary to make growth sustainable. The crisis has made clear that their long term growth will depend on their ability to build on their large domestic markets.

JEL Codes: F14, F15, O33, O53, O57

Keywords: China, India, foreign trade, technology

Introduction

The rapid economic rise of China, followed by that of India, has led to a new balance of power in the world economy. Their rise has driven attention to other developing and transition economies which also have a high actual or potential growth, based on cheap labour, opening up to foreign technology and capital, economic liberalisation and market regulation. The emergence of these new players is challenging the supremacy of the old economic powers (US, Europe and Japan) which used to dominate the international trade of goods and services and control financial resources.

Since the end of 2008, all emerging economies have been hit by the global meltdown. The hypothesis of “decoupling”, which considered that a centre of autonomous growth had emerged in Asia, has been short-lived. However, India and China, thanks to their large domestic market, have retained growth rates which are still

¹ Paper prepared for the 10th bi-annual EACES Conference at the Higher School of Economics, Moscow, August 28-30, 2008.

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high compared to those of advanced economies. Thus, paradoxically, during the crisis, catch-up is still happening.

The paper aims at understanding how China and India have succeeded in enhancing their role in international trade and how they react to the global crisis. It highlights the similarities and the differences in their strategies. The first section presents a classification of emerging economies and sketches out China's and India's rise against this backdrop. The second section is devoted to a detailed analysis of their international trade in goods and services, providing a qualified assessment of the technological and quality levels of their exports and imports. Finally, the third section considers the impact of the global economic crisis on their performance and tries to assess whether it challenges the sustainability of their growth strategies.

1. The come-back of giants

1.1 Who are the “emerging economies”?

Developing countries used to be considered as the “periphery” of the world economy, but in the last 15 years many of them have been leading world economic growth and international trade (Lemoine and Ünal-Kesenci, 2007). “Emerging economies” have become a hot topic in economic literature, media, and business circles. Reports, essays and articles emphasise the importance of this turning point in the world economy, but they do not provide a clear-cut and common definition of this category of new players.

The term “emerging economies” was first coined at the beginning of the 1980s by Antoine Van Agtmael (working at the International Finance Corporation of the World Bank) to characterise fast growing economies with rising financial markets and which offered new opportunities to international investors. Since then, the term has referred to various and often blurred groupings (see Box 1, and for a discussion of this question, Gabas and Losch, 2008). Sometimes it is used to point out the four “BRICs” (Brazil, Russia, India and China) or a group of “fast growing economies”, and sometimes it refers to all developing countries. To make things more confusing, the category of “developing economies” itself corresponds to various groupings. The World Bank (World bank 2007b) sets a threshold of income per capita (11 100 current US dollars in 2006) to distinguish rich countries from others, but according to the UNCTAD classification, for instance, the group of “developing countries” includes economies which are above this threshold: Asian new industrialised economies (Taiwan, Hong Kong, Singapore and South-Korea) which have already emerged and the oil exporting countries which also have now an income per capita above the threshold.

Box 1 - From Developing countries to Emerging economies

Institution/publication	Wording	Coverage
World Bank, 2007b (WDI)	Developing countries	Countries with GDP pc below \$11 000 in 2006
World Bank 2007a (Global Economic Prospects)	Emerging economies	“China, India and Other”
UNCTAD (World Investment Report, 2007)	Developing & transition economies	All countries excluding EU27 and other Western Europe, North America and other developed
IMF (World Economic Outlook, 2007)	Other emerging markets and developing countries	Countries outside the group of advanced economies (G7 and Euro area, Asian NIEs, ANZ)
Ernst & Young , 2008	Emerging countries	Argentina, Brazil, China, India, Mexico, Russia, Saudi Arabia, South Korea
BCG (Boston Consulting Group), 2007	Fast growing economies	Argentina, Brazil, Chile, China, Egypt, Hungary, India, Indonesia, Malaysia, Mexico, Poland, Russia, Thailand, Turkey
Goldman Sachs, 2005	BRICs + the next eleven “large developing economies”	Bangladesh, Brazil, China, Egypt, India, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Russia, Turkey, Vietnam
Price Waterhouse Coopers, 2008	BRICs+16 other emerging markets	Argentina, Bangladesh, Brazil, China, Egypt, India, Indonesia, Iran, Malaysia, Mexico, Nigeria, Pakistan, Philippines, Poland, Russia, Saudi Arabia, South Africa, Thailand, Turkey, Vietnam

The dividing line between emerging and non-emerging economies is quite imprecise and emerging countries present characteristics which widely differ from one country to another. The term of “emerging economies”, as vague as it is, implies not only a rapid growth of GDP per capita or an increasing presence in world markets, but also entails several important ingredients of political economy. These countries have pursued a process of economic liberalisation, have promoted market orientation and have opened up to international trade in goods, services and capital and this process has

been associated with the building up of institutions and the search for strong state regulation (Sgard, 2008). This model of “emerging economies”, which aims at combining private interests and market economy with a strong public policy, profoundly differs from that of countries which can be considered as “rentiers” as their economic rise is based mainly on exports of natural resources.

1.2 Emerging economies and rentiers: a proposed classification

This paper proposes a classification of countries into four categories, based on two criteria: the level of income per capita and the export performance during the recent period (1995-2006). The classification is as follows:

- *Emerging economies* are the countries which: 1) have a level of income per capita below the threshold set by the World bank (11 100 US current dollars in 2006), i.e. are outside the rich country club and 2) have been able to increase their share in world markets of manufactured goods or services by at least 0.05 percent point between 1995 and 2005. This criteria was meant to select the countries which were able to integrate successfully into the world economy and which play a significant part in international trade. The threshold level selected the exporters which enlarged their presence in world markets by a significant margin, excluding the dynamic but very small exporters. This makes sense in a study focused on the changes in international trade. According to these criteria, there are 25 emerging economies located in different parts of the world (see the list in Box 2).
- *Rentiers* are countries which have more than 40% of their exports made of primary products and which enlarged their share in world exports of primary goods by more than 0.05 percentage point. This group includes countries irrespectively of their level of income per capita. There are 23 rentiers (see the list in Box 2).
- *Rich economies* are countries which have an income per capita above the World Bank threshold and which are not rentiers (see below)³.
- The rest of the world (*Other countries*) encompasses economies which are neither rich, nor emerging nor rentiers.

It must be underlined that, given the criteria used, the category of “emerging economies” proposed here is based only on trade performance. The rate of economic growth is not taken into account, in spite of its fundamental importance, because the focus of the analysis is the international integration rather than growth. The category of “emerging economies” is relatively narrow compared to many other classifications. The proposed definition of rentiers is also relatively restrictive.

³ According to this criteria the group of rich countries includes EU15 member states, Andorra, Cyprus, Czech Republic, Hungary, Iceland, Liechtenstein, Malta, Slovenia, Switzerland in Europe; Israel in the Mediterranean; Bahrain in the Gulf; Canada and United States in America; Australia, Brunei, Hong Kong, Japan, South Korea, Macao, New Zealand, Singapore and Taiwan in Asia and Oceania.

Box 2 Emerging economies and Rentiers (for criteria, see text)

Emerging economies: 25 countries.	
In Europe and its periphery	Belarus, Bulgaria, Croatia, Estonia, Lebanon, Lithuania, Morocco, Poland, Romania, Slovakia, Turkey, Ukraine
In Asia	China, India, Indonesia, Pakistan, Philippines, Thailand, Vietnam
In America	Brazil, Chile, Costa Rica, Mexico, Peru
In Africa	South Africa
Rentiers: 23 countries	
In Europe and its periphery	Algeria, Azerbaijan, Kazakhstan, Libya, Norway, Russia, Turkmenistan
In the Gulf and sub-Saharan Africa	Angola, Saudi Arabia, Congo, UAE, Equatorial Guinea, Iran, Iraq, Kuwait, Nigeria, Oman, Qatar, Sudan, Chad, Yemen
In America	Venezuela
In Asia	Myanmar

In 2006, the emerging economies with 57% of world population accounted still for only 17% of world GDP in current dollars. Taken together, the emerging economies and rentiers accounted for less than one fourth of world GDP (Table 1).

The group of emerging economies has been catching up slowly, and in 2006, its average income per capita (PPP) was still only 13% of that of rich countries. The group of rentiers had an average level of income which was less than one third of that of rich country group, while the rest of the world was by far the poorest group. The balance of economic power, in terms of output and income, has been changing relatively slowly.

Table 1 - Population and GDP in 2006

	Population 2006 (% world)	GDP per capita 2006 (in 2005 PPPs US\$)	GDP in current US\$	
			2006 (% world)	1995-2006 change (in percentage points)
World	100.0	9 027	100.0	-
RICH	15.3	33 874	73.7	-7.4
EMERGING	56.6	4 518	16.9	+5.1
Mexico	1.6	11 434	1.7	+0.8
Brazil	2.9	8 730	2.2	-0.4
India	17.0	2 389	1.9	+0.7
China	20.1	4 493	5.4	+3.0
RENTIER	7.7	9 340	5.9	+2.3
Russia	2.2	12 746	2.0	+0.7
OTHER	20.4	2 778	3.5	+0.1

Note: European periphery includes Commonwealth of Independent States (CIS) and Mediterranean countries. Triad includes EU-15, USA and Japan. BRICM includes Brazil, Russia, India, China and Mexico.

Source: Authors' calculations from CEPII, CHELEM-GDP database.

1.3 The large emerging economies

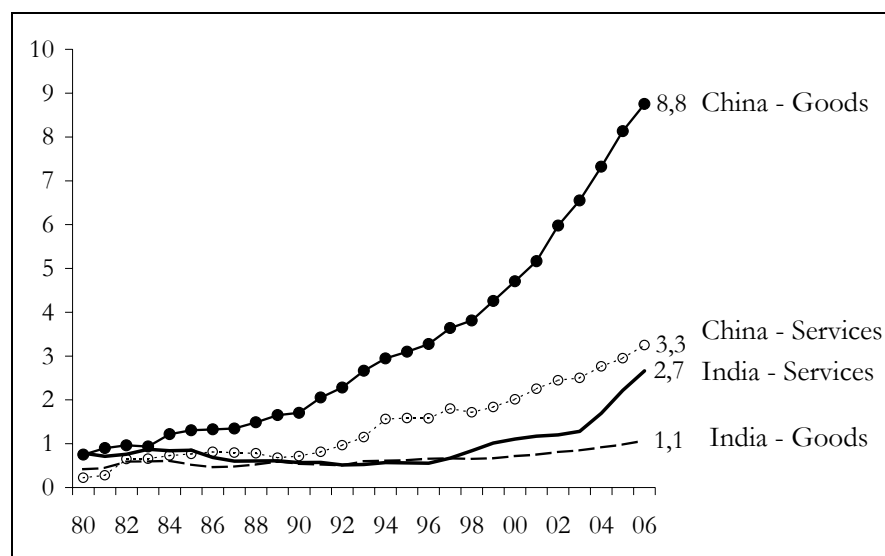
In the group of emerging economies there are four “large emerging economies” (LEEs) defined as those accounting for more than 1% of world GDP (in current dollars): China, India, Brazil and Mexico (South Africa is an emerging economy but accounts for less than 1% of world GDP). Among rentiers, Russia also accounts for 2.2% of world GDP. The five “BRIMCs” encompass almost half of world population and account for 14% of world GDP (current dollars) (Table 1).

India and China differ from the two other large emerging economies in several ways: their huge population has enabled them to become big economic powers long before getting rich. They are by far the two poorest large emerging economies. China already stands in the category of countries with an “intermediate” level of income per capita, while India is still in the low-income category, according to the World Bank classification (World Bank 2007b). Since 1995, economic growth in India and in China has outperformed that of other large emerging economy. The two countries accounted for almost all the increase of the BRIMC share in world GDP between 1995 and 2006.

2. India’s and China’s integration into international trade

China began to open up its economy in 1978, and in thirty years considerably enlarged its share in world exports of manufactured goods. India started a process of economic liberalisation more than ten years later than China, by 1991, and has achieved its best export performance in the services sector. The role the two countries are playing in international trade reflects the time-lag and their different patterns of economic growth (Figure 1).

Figure 1 - Share of China and India in world exports of goods and of services (%)



Source: Authors' calculations from CEPII, CHELEM-GDP database.

2.1 Trade in goods and services

Comparing India's and China's integration into international trade shows that India lags far behind China. Their respective share in world exports of goods and services was 1.8% and 9.8% in 2006. The contrast results from their performance in exports of manufactured goods (Table 2). India's share in world exports of *manufactured* goods increased only slightly, while China's share more than trebled from 1995 to 2006. In services exports India is catching up to China.

On the import side, both countries have increased their demand for primary products since the end of the 1990s (see Table 2). Taken together they accounted for more than 10% of world imports of primary products in 2006 (against less than 3% in 1995). Their imports of raw materials and energy, linked to their rapid economic growth, have contributed to change the world balance. In 2006, China was the 3rd oil importer (after the US and Japan) and India the 7th.

Table 2 - Large Emerging Economies (LEEs): share in world trade by broad sector

EXPORTS	In % of total trade in goods and services 2006				Change from 1995 to 2006 (percentage points)			
	Total	Primary	Manuf.	Services	Total	Primary	Manuf.	Services
World	100.0	14.6	66.9	18.5	-0.0	3.7	-2.4	-1.2
Mexico	2.4	0.4	1.8	0.1	0.5	0.1	0.4	-0.1
Brazil	1.4	0.3	0.9	0.2	0.3	0.1	0.1	0.0
India	1.8	0.1	1.0	0.7	1.0	0.0	0.4	0.5
China	9.8	0.2	8.8	0.8	6.0	-0.0	5.7	0.4
Russia	2.9	1.3	1.3	0.3	0.8	0.7	0.0	0.0
LEEs	20.3	2.6	15.4	2.4	8.5	1.0	6.8	0.7

IMPORTS	In % of total trade in goods and services 2006				Change from 1995 to 2006 (percentage points)			
	Total	Primary	Manuf.	Services	Total	Primary	Manuf.	Services
World	100.0	14.6	67.1	18.3	0.0	3.9	-1.3	-2.5
Mexico	2.1	0.1	1.7	0.2	0.5	0.0	0.5	-0.0
Brazil	1.1	0.1	0.7	0.3	-0.3	-0.0	-0.2	-0.0
India	2.0	0.5	0.9	0.6	1.0	0.4	0.3	0.3
China	6.5	1.2	4.4	0.9	3.3	0.9	2.0	0.4
Russia	1.8	0.1	1.3	0.4	-0.0	-0.0	0.0	-0.0
LEEs	15.6	2.4	10.5	2.8	3.9	1.4	2.0	0.5

Source: Authors' calculations from CEPII, CHELEM-INT-BOP databases.

China's outstanding participation in international trade has been based on its large and dynamic manufacturing industry. As an exporter of manufactured industrial goods China stands far ahead all other large emerging economies.

Foreign trade (exports + imports) amounted to more than two thirds of Chinese GDP in 2006, a high ratio which resulted from the involvement of China's industry in

the international division of labour. More than half of China's trade is processing trade, i.e. processing or assembling of imported intermediate goods for exports, which tends to inflate trade figures, given that such exports have a large import content (Li, 2006). As shown in table 3, the ratio of industrial exports to manufacturing value-added has jumped since 2001 and reached 90% in 2005. China was thus on the same path as Mexico, also characterised by large-scale assembly industry (Maquilladoras) and where the ratio has almost reached 140%.

India's economy opened up more recently and is still a relatively closed economy compared to China. However the ratio of trade (exports+imports) in goods and services reached 40% of GDP in 2006, more than for Japan (27%) or Brazil (27%). The Indian manufacturing industry has opened up progressively. The ratio of exports to manufacturing value added rose from 20% in 1980 to 60% in 2006. The Indian manufacturing industry is now more export-oriented than the Brazilian (46%) industry. However the size of Indian manufacturing output is still too narrow to allow for a strong presence in world markets (Chauvin and Lemoine, 2005).

Considering services exports, India's performance is almost at par with China's and both countries are well ahead the other large emerging economies (Table 2). In contrast with China where manufacturing industry has been the engine of growth and of international trade, in India, the services sector has led domestic growth and opening up. India has rapidly developed its exports of services which in 2006 represented 17% of the value added of the sector, twice as much as in China (Table 3). International trade in services is relatively more important for India (it represents 6% of GDP in 2005) than for China's (4% of GDP). For India, exports of services were almost as large as exports of manufactured industrial goods in 2006.

Balance of payments statistics show that a large part of China's payments for services are linked to merchandise trade (transport, insurance, royalties, Table 4). In 2006, China accounted for 5% of the international payments for transport services and for 8% of payments for insurance services. India has taken a very strong position in computer and information services exports, with almost one fifth of world exports. Its payments for transport services also increased (to 3.7% of world total in 2006).

Table 3 - China and India: degree of economic openness

<i>In percent</i>	China		India	
	1995	2006	1995	2006
Exports of goods and services/GDP	23	40	11	23
Exports of goods/GDP	18	37	9	14
Exports of services/GDP	5	3	3	9
Manufactured exports/manufacturing value added	51	93	39	60
Services exports/services value added	8	9	5	17
FDI inflows/GDP	5	3	1	2
FDI outflows/GDP	0	1	0	1

Source: World Bank (2007b).

Table 4 - China and India: share in world trade of services - In percent of world trade in each category of services

	DEBIT		CREDIT	
	1995	2006	1995	2006
CHINA				
Goods	2.2	6.6	2.5	8.5
Total services	2.0	3.8	1.6	3.3
Transportation services	2.6	5.0	1.1	3.8
Travel	1.0	3.9	2.2	4.9
Other services	2.3	3.2	1.4	2.5
Of which				
<i>Communication services</i>	0.9	1.4	3.4	1.1
<i>Construction services</i>	0.0	4.5	0.0	5.0
<i>Insurance services</i>	11.6	8.0	8.0	0.9
<i>Financial services</i>	0.0	1.1	0.0	0.1
<i>Computer and Information services</i>	0.0	3.1	0.0	2.4
<i>Royalties</i>	0.0	4.4	0.0	0.2
<i>Other business services</i>	2.7	3.6	1.4	4.6
<i>Government services</i>	1.0	0.5	1.5	0.9
INDIA				
Goods	0.8	1.5	0.6	1.1
Total services	0.8	2.4	0.6	2.7
Transportation services	1.6	3.7	0.6	1.4
Travel	0.3	1.2	0.7	1.3
Other services	0.7	2.3	0.4	3.9
Of which				
<i>Communication services</i>	0.0	1.6	0.0	3.4
<i>Construction services</i>	0.0	2.0	0.0	0.7
<i>Insurance services</i>	1.5	2.4	0.7	1.9
<i>Financial services</i>	0.0	1.6	0.0	1.1
<i>Computer and Information services</i>	0.0	4.0	0.0	23.3
<i>Royalties</i>	0.2	0.6	0.0	0.1
<i>Other business services</i>	1.0	3.7	0.8	3.7
<i>Government services</i>	0.4	0.5	0.0	0.5

Source: CEPII, CHELEM-BOP database.

2.2 Specialisation: from textile to new technology

China's export pattern underwent far-reaching changes in the past fifteen years. Changes in India's export pattern were less outstanding as far as goods were concerned but services grew dramatically. The importance of traditional exports such as textile and clothing diminished as both countries developed new export sectors.

The indicator used here to measure specialisation is based on trade balances in order to neutralise the effect of intra-industry trade flows and of assembly trade which tends to inflate exports and imports. The trade balance is calculated at the level of individual products and service categories and weighted by the overall trade of the country in goods and services ($(Xi-Mi)/(X+M)$). The indicator was calculated for 1995, 2000, 2005 and 2006. The index shows that China and India still share a similar specialisation in traditional industries. Textiles, clothing and footwear were still among the sectors which contributed to the largest trade surpluses of the two countries in 2006, but the relative importance of these trade surpluses has considerably declined over time (Table 5).

China's outstanding performance in international trade has been based on a rapid diversification of its manufactured exports. From 1995 to 2006, the relative importance of textile and clothing shrunk (from 35% to 18% of total exports) while that of machinery climbed from 27% to 53%. China has built up strong export capacities in industries related to new technologies and in 2006 recorded its top comparative advantages in computers and telecommunication equipment. China has also considerably increased its trade surpluses in consumer electronics, electrical equipment, household electrical appliances (Table 5).

In India's exports, the share of textile and clothing also decreased (from 35% in 1995 to 18% in 2006) while machinery and chemicals took a larger part. The textile sector ceased to be at the top of India's comparative advantage and in 2006 the largest trade surplus came from computer and information services; communication services also showed a strong positive trade balance. In manufacturing, India also built up comparative advantage in chemical industries: in the pharmaceutical industry and, more recently in oil refining, organic chemicals. Although the position of India in world markets for industrial products is still weak, it has improved its specialisation in some of the most dynamic sectors of world trade (Alessandrini *et al.*, 2007).

The two countries have thus in common the fact that, in the past ten years, they developed their strongest specialisation in sectors linked to information and communication technology (ICT): China in electronic goods, India in ICT services. These goods and services were very dynamic segments in international trade (World Bank, 2006). Between 1995 and 2005, world trade increased at an annual rate of 7.8% in electronic goods and of 23.9% in computer and information services, against 7.1% for overall goods and services. Both India and China substantially contributed to the rapid expansion of world supply in these areas.

Table 5 - China and India: evolution of comparative advantage^(a) between 1995 and 2006

CHINA	1995	2000	2005	2006
Computer equipment	1.9	5.6	11.9	11.8
Telecommunications equipment	-2.1	1.2	5.3	6.4
Miscellaneous manuf. articles	8.6	9.1	5.9	5.4
Leather articles	10.7	9.1	6.0	5.4
Clothing	9.1	6.6	4.9	4.6
Consumer electronics	2.5	3.7	4.7	4.4
Knitwear	5.7	5.3	4.0	3.9
Electrical apparatus	1.3	3.8	3.3	3.3
Metallic structures	1.3	2.7	2.9	3.0
Furniture	1.3	2.6	3.0	2.9
Domestic electrical appliances	1.6	2.1	2.2	2.1
Carpets	2.3	1.7	1.7	1.7
Yarn fabrics	-1.6	-0.5	1.4	1.5
Electrical equipment	0.3	1.3	1.2	1.2
Other business services	-2.3	0.3	0.9	0.9
INDIA	1995	2000	2005	2006
Computer & information services	0.0	6.2	12.0	12.6
Refined petroleum products	-8.0	0.4	1.3	5.1
Jewellery, works of art	3.1	3.9	2.9	3.2
Clothing	6.7	5.1	3.1	2.7
Knitwear	2.4	2.6	2.0	1.9
Carpets	3.1	2.9	2.0	1.7
Iron ores	0.7	0.6	1.9	1.5
Yarn fabrics	5.5	4.6	1.5	1.4
Leather articles	4.4	2.7	1.6	1.4
Pharmaceuticals	0.5	0.8	1.1	1.0
Meat & fish	2.7	2.2	1.0	0.9
Other business services	-1.4	-0.3	0.2	0.8
Basic organic chemicals	-1.2	0.7	0.4	0.6
Communication services	0.0	0.7	0.8	0.6
Cars & cycles	0.6	0.4	0.7	0.6

a) Sectoral trade balance/0.5 (total exports + imports)

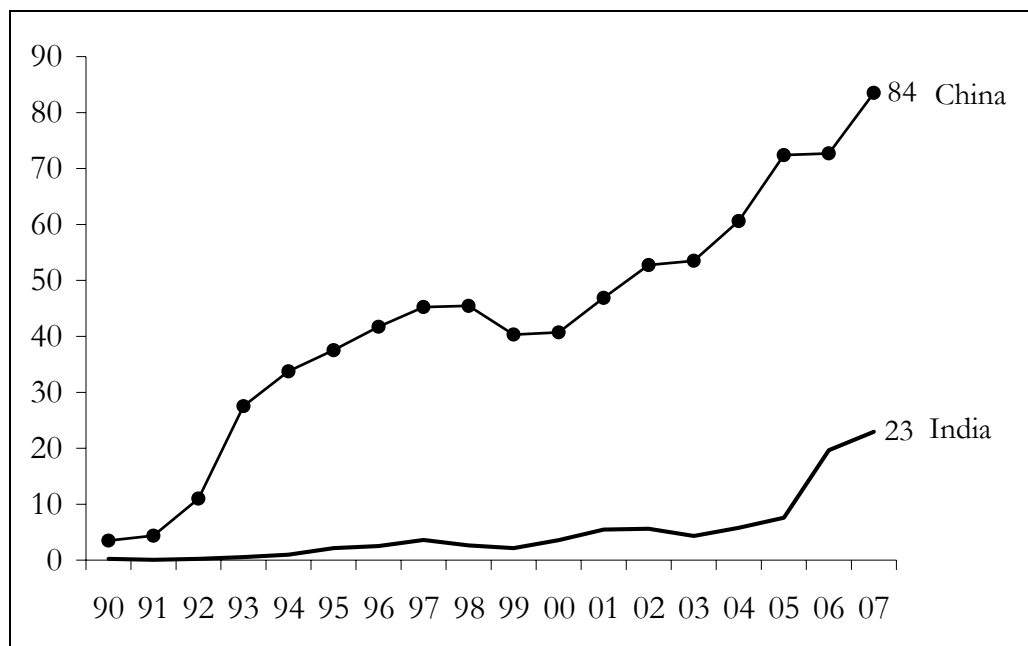
Source: CEPII, CHELEM-INT-BOP databases, authors' calculations.

2.3 Outward oriented sectors, offshoring and outsourcing

These new sectors are outward-oriented and their contribution to exports by far exceeds their share in GDP. In China, the electronics industry (manufacturing of computers, telecommunication and other electronic equipment) accounted for 8% of the total industrial value added or for 3.3% of GDP but for 29% of exports of goods and services in 2006. In India, information technology and business services represented between 1.8% of GDP in 2004 (Fernandez and Gupta, 2006) and 5.2% in 2007 (NASCOM-Deloitte, 2008), depending on the definition of the sector; their share reached 27% in Indian exports of goods and services in 2006.

Firms from advanced economies have been actively involved in the rise of these new competitive sectors in China and India, through outsourcing and offshoring. If one refers to the distinction between outsourcing, defined as “contracting out parts of the production process to foreign suppliers” and offshoring, defined as “moving production abroad by setting up foreign subsidiaries” (Denis *et al.*, 2006), it stands out that offshoring has been at the core of China’s exports of electronic goods; India’s success in services exports was initially based mainly on outsourcing but foreign firms are now diversifying their strategies, from outsourcing to offshoring (OECD, 2006a).

China has become a world manufacturing platform of electronic goods and is now the world’s leading exporter of these products, accounting for around one-fifth of world exports (Winters and Yusuf, 2006). This outstanding performance has been built on foreign direct investment (FDI). FDI inflows in China were huge and mainly directed to the manufacturing sector (Figure 2). They have created huge assembly lines of electronic products in the Chinese coastal provinces. In the early 2000s, firms with foreign capital were responsible for more than half of China’s total exports and for 80% of China’s exports of electronic products, most of which resulted from assembly of components imported from Asia. For instance, In 2007, China produced more than half of the world output of mobile phones (600 out of 1200 million units) and exported two-thirds of its output, most of which consisted of foreign brands (Nokia, Motorola, Samsung, Ericsson, etc.).

Figure 2 FDI inflows in China and India (billion US\$)

Source: UNCTAD (2007).

Due to differences in the methodology used, the data on FDI in the two countries are not comparable: the Chinese statistics tend to overstate while the Indian statistics tend to underestimate the actual amounts. Notwithstanding this observation, it is clear that FDI flows to India have taken off only recently and, up to now, have played a less important part in the economy. In fact, India's new specialisation in services has been based on its emergence as a global centre for outsourcing information technology and other enabling services. India has become the leading world exporter of IT services with almost one fifth of world exports in 2006. This sector derives 80% of its income from exports. In the 1980s, multinational companies (MNCs) have begun outsourcing computer services from Indian firms, and this movement accelerated in the 1990, stimulating the development of large Indian firms (Infosys, Wipro). More and more, MNCs are setting affiliates in India to provide these services (insourcing). FDI is playing an increasing part in the development of the most dynamic business services, and firms with foreign capital are responsible for one-third of India's exports of computer services and for two-thirds of its exports of other IT services (OECD, 2006b; World Bank, 2004).

Globalisation has thus provided the two countries with a short-circuit towards economic modernisation. The leap from traditional industries to sectors incorporating advanced technology shows that it proved less difficult and more rapid to create production capacities in new sectors than to renovate traditional industries burdened with old capital equipment and often located in highly regulated sectors. In China, FDI has provided local entrepreneurs the financing means they needed, together with technologies and export markets (Huang, 2003; Héricourt & Poncet, 2007). In India local entrepreneurs chose to develop activities in sectors with relatively low financial

requirements and which were less constrained than manufacturing by infrastructure bottlenecks and labour laws (Rakshit, 2007; Dougherty *et al.*, 2008).

At the core of China's and India's successes in these sectors lie the availability of labour force at low wages and the search for high productivity. In China, since the late 1990s, labour productivity in manufacturing industry has increased by more than 20% a year, and in electronic consumer goods by over 30% a year. In that sector, labour productivity stood at one fourth that of South-Korea and at par with that of Mexico already in 2000 (McKinsey, 2003). In India, labour productivity in software companies was then estimated at 44% of the US level (McKinsey, 2001).

Both countries have proved their capacity to adopt and use efficiently new technology. This explains why their comparative advantages are so strong in this sector and why they have been so attractive for MNCs and foreign capital. Their success as world leading exporters of ICT goods and services may illustrate Gershenkron's argument on the "advantages of backwardness" (Gershenkron, 1952). However, as noted by Aghion (2005), further catch up will require to make continuous investment either to adopt foreign technology or to develop their own innovation capacities, as imitation and innovation do not require the same institutions.

2.4 Technological-catch up: is India so far behind?

When comparing the technological level of countries' exports, studies generally focus on trade in goods and show that India lags far behind China.

The two countries indeed display contrasting performance in exports of high-tech manufactured exports, and also different strategies. China's exports of manufactured products contain an increasing proportion of high-technology (HT) goods (31% in 2005), and China has become the world major exporter of HT products, having overtaken the US since 2004 (World Bank 2007b). In contrast, India's performance has stagnated, with a high-tech content of manufactured exports stable at around 5% (Table 6). As analysed, by Alessandrini *et al.* (2007), from this point of view, India's export pattern has made little improvement.

Given that ICT services involve the use of new technology, it makes sense to take these services into account when assessing the technological level of India's and China's exports. In this case, the gap between China and India is not so large. The share of high-tech (HT) in India's exports of goods and services was 14% in 2005, a share which was close to the corresponding share for China, 18% (Table 6).

Table 6 - High-tech products and of computer & information services in China's and India's exports

	2000	2001	2002	2003	2004	2005
High tech goods in % of manufactured exports						
China	19	21	23	27	30	31
India	5	5	5	5	5	5
High-tech products and of computer & information services in % of exports of goods and services						
China	13	14	15	16	18	18
India	10	14	14	16	15	14

Source: WDI and CEPII, CHELEM-INT-BOP databases, authors' calculations

China now records a trade surplus in high-tech goods. This outstanding performance was achieved through an increased dependence on foreign affiliates, which accounted for 80% of these exports in 2003 (Lemoine and Ünal-Kesenci, 2005). If foreign firms' exports are excluded, the HT content of China's exports was only 7% and not so different from that of India. Most of China's high-tech exports are located in electronic exports and their technological content reflects their large import content in HT parts and components. China's dependence on foreign technology is further illustrated by the fact that China now ranks the third in world net payments of royalties. These payments still represent a small fraction of China's high-tech exports (less than 5%) but explain the efforts made by the Chinese government to develop national standards. Although HT exports are still dominated by foreign affiliates, Chinese firms have been enlarging their position in the domestic market, taking advantage of the presence of foreign suppliers of parts and components and sourcing their inputs from these global supply chains.

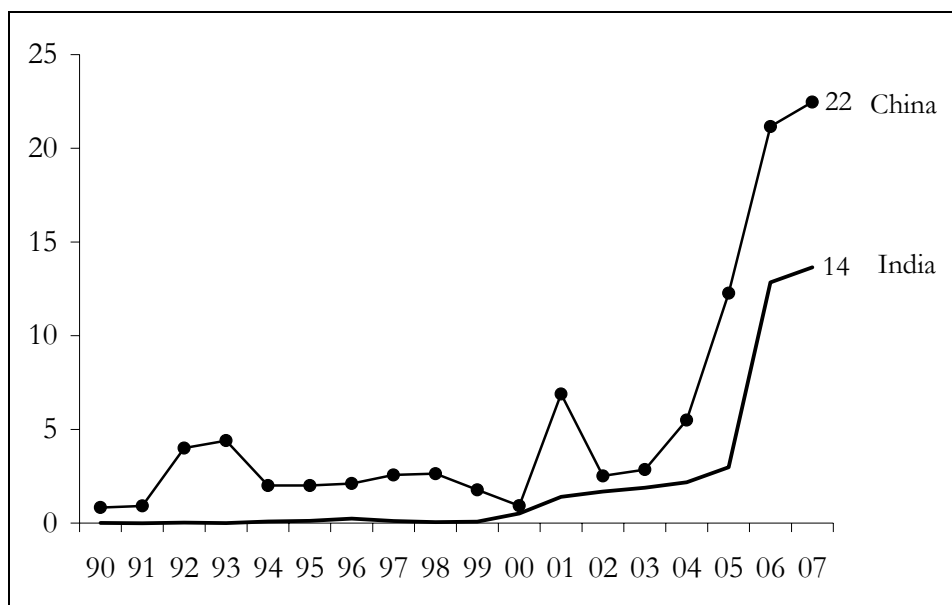
Indian HT manufactured exports are concentrated in pharmaceutical goods. In the wake of legislation passed in the 1970s, which ended the application of international legislation on patent replacing it by legislation aimed at facilitating the acquisition of foreign technology, India has developed powerful domestic companies in pharmaceutical sector, with a strong presence in both domestic and foreign markets. India's pharmaceutical industry ranks 4th in the world in terms of volume, and 13th in terms of value (FICCI, 2005). Although Indian pharmaceutical exports still account for only 1% of its global exports, India has become the world's top exporter of generic medicines. The pharmaceutical industry is based on highly-qualified personnel integrated into international networks, high quality public research institutions and benefits from the large domestic market. The local pharmaceutical industry (including both national and foreign companies) exports about 40% of its production.

In 2005, Indian patent law was revised and put into line to the TRIPs agreement, which obliged pharmaceutical firms to change their business model. Indian industry had to switch from imitation to innovation. The new legislation is expected to stimulate the development of R&D and innovation in Indian firms, to spur their acquisition of foreign firms and laboratories with the aim to enlarge their patent resources. It should also increase the attractiveness of India for foreign pharmaceutical firms (for investment and subcontracting).

Despite China and India's progress in exporting new technology goods and services, both countries still stand far behind advanced economies in terms of invention patents. The number of patent applications by China increased but is still low: in 2005, it represented less than 1% of the total triadic patents (0.2% in 2000) and India was even farther behind. China considerably increased its R&D expenses, from 0.9% of GDP in 2000 to 1.3% in 2005 and targets 2% in 2010. In India this proportion is still under 1%.

Since the mid-2000s, both countries have rapidly expanded their investment abroad. One of the goals of the large Chinese and Indian firms which have pursued this strategy is to acquire advanced technology (through mergers and acquisitions).

Figure 3 - Direct investment abroad by China and India (billion US\$)



Source: UNCTAD (2007).

2.5 New challenge: quality upgrading

In order to better understand their respective positions in international competition, it is helpful to analyse China's and India's manufactured exports according to their composition by price/quality range. The analysis relied on the CEPII data base BACI, which makes it possible to calculate the unit values of traded goods at the most detailed level of classification.

China is heavily specialised in low-price/quality goods. Table 7 shows that in the early 2000s, more than 70% of China's exports of manufactured goods still belonged to the low-price/quality range, 17% to the medium-price/quality range and 11% to the high range. Interestingly, this distribution has not changed since the mid-1990s, thus indicating that China has not succeeded in upgrading its position on the quality ladder. Among the other emerging economies, only Mexico had such a strong concentration of manufactured exports in low-price/quality range in 2004 (73%) (Lemoine and Unal-

Kesenci, 2007). More recent data, available for China's trade with the EU15, confirm the position of China's exports at the bottom of the price/quality ladder at the end of the 2000s.

The low unit values of Chinese exports can be explained in several ways. The lower quality level is only one of the possible explanations; another reason is that the Chinese prices are indeed lower (for similar products) due to low production costs and fierce competition between producing firms. Outward-oriented industries are likely to put strong downward pressures on prices, as the cost of switching away to another supplier may be relatively low in the case of standardised or modular products (Dimaranan, 2007). Finally, Chinese exports may be concentrated in the less sophisticated varieties of goods. China's exports of high-price/quality products are especially small compared to any other emerging economies, and especially to India.

India's export distribution by quality range is less biased towards down-market products. In the early 2000s, half Indian exports of manufactured goods (56%) belonged to low-price/quality range and 26% to medium-price/quality range; 18% belonged to the high range, which was relatively more than for China. In contrast with China, India has followed a strategy aimed at supplying higher quality goods or "customised" products and services. Indian exports to the EU15 showed a trend towards price/quality upgrading up to end of the 1990s.

Table 7 - China's and India's exports by price/quality range

	1995	2000	2003	1995	2000	2007
CHINA	Total exports			Exports to the EU15		
High	10	14	11	4	8	4
Medium	20	19	17	27	30	30
Low	70	67	72	69	62	66
Total trade	100	100	100	100	100	100
INDIA	Total exports			Exports to the EU15		
High	15	21	18	8	10	10
Medium	29	32	26	27	37	37
Low	56	47	56	65	53	53
Total trade	100	100	100	100	100	100

Source: Authors' calculations from CEPII database BACI and from Eurostat, Comext database.

It is interesting to note that the specialisation of both countries in down-market products is even stronger in high-tech exports, than in non-high-tech exports. In the mid-2000s, about 77% of China's high-tech exports belonged to the low-price/quality level (against 72% for other exports), and 71% of India's high-tech exports (against 55%

for other exports) (Lemoine and Ünal-Kesenci, 2007). The technological upgrading of China's exports observed above (section 2.4) was thus quite dissociated from the evolution of its position on price-quality ladder. The most plausible explanation is that in this high-tech category, the Chinese exports are concentrated in the less sophisticated varieties (Gaulier *et al.*, 2007). This suggests that foreign affiliates which play a dominant part in high-tech good exports confine their local production to the less sophisticated varieties. The relatively low unit value of India's and China's high-tech exports has several implications. It suggests that to enter into the world markets for such products, these new-comers had to rely on an especially strong price competitiveness; but also that India and China do not export the same varieties as advanced countries do. They are specialised in the lower segments (no brand name, standard varieties, etc.). As China and India remain positioned in price/quality segments different from that of advanced economies, their technological upgrading would not imply an increased direct competition with advanced economies (Fontagné *et al.*, 2007).

In 2004, China recorded a trade surplus in HT goods but this surplus was entirely located in the down-market segment. China seems to have succeeded in improving its position in high-tech trade but at the cost of an adverse performance in price/quality ladder (Table 8). India recorded a trade surplus only in non high-tech goods and its deficit was relatively evenly distributed among other price/quality ranges.

Table 8 - China's and India's trade balance by technological level and price/quality range 2004 (billion US\$)

	Low	Medium	High	All
CHINA				
High-tech	66	-4	-19	43
Non high-tech	280	9	-56	234
All products	346	5	-74	276
INDIA				
High-tech	-3	-1	-2	-6
Non high-tech	15	-5	-6	4
All products	13	-6	-8	-1

Source: CEPII, BACI database.

3. Prospects: the impact of the crisis and beyond

3.1 The impact of the global crisis

The impact of the global crisis on China and India has been severe. Nevertheless, both economies have resisted to the shock better than most other economies and they have continued to grow in 2009 (Table 9).

From 2004 to 2007, economic growth reached record levels in China and India so that at the end of 2007, both countries had adopted economic policy aimed at cooling down the risk of inflation associated with this very fast growth. The effects of the restrictive policies had begun to be felt during the year 2008 and economic growth was expected to slowdown, even if the global crisis had not occurred. The crisis hit China and India at the beginning of a cyclical downturn and has hastened and aggravated this downturn. The expected “soft” landing has become “hard”.

The two countries have suffered from the *indirect* effect of the financial crisis. The Chinese and Indian banking sectors were not *directly* affected by the subprime crisis. The presence of foreign banks was limited and the domestic banks had a low exposure to derivatives and a small level of toxic assets. In 2007, however, the two countries had been host of large foreign capital inflows, and as foreign investors felt the need for cash (deleveraging) in 2008, they repatriated their funds. As foreign capital flowed out, the stock exchanges collapsed in 2008; the corporate sector was adversely affected by the sudden shortage of domestic and external financing.

The decline of world demand was another blow which hit China’s economy in the fourth quarter of 2008 and revealed the importance of the export sector for the whole economy. Chinese exports which increased at the average pace of 30% per year (value terms) between 2002 and 2007, came to an halt in the last quarter of 2008 and fell by 20% in the first quarter of 2009 compared with the same period of 2007.

Indian merchandise exports have also recorded a steady decline since October 2008. In January 2009, they dropped by 15% compared to January 2009. It is more difficult to assess the impact of the crisis on Indian trade of ICT services.

As a consequence, economic growth slowed markedly in both countries in the last quarter of 2008 and forecasts for 2009, indicate that GDP growth could be cut almost by half compared to 2007.

Table 9 - China and India: economic growth, 2007-2010 (GDP growth in percent of previous year)

	2007	2008	2009	2010
China	13.0	9.0	6.7	8.0
India	9.3	7.3	5.1	6.5
Advanced economies	2.7	1.0	-2.0	1.1
World	5.2	3.4	0.5	3.0

Source IMF, 2009

In response to the economic slowdown, both countries have shifted their policy stance from monetary tightening to monetary easing in 2008. In November 2008, China adopted a stimulus package aimed at boosting domestic demand in order to make up for the waning external demand. The Chinese authorities have a substantial room of manoeuvre, given the low level of government debt and fiscal deficit. The Indian government also announced stimulus measures, although of a smaller scale.

To what extent the global crisis will impact their development strategy? In the two countries, economic growth is likely to remain subdued as long as the global economy will not recover, but their strength lies in their large domestic market. Both countries have succeeded in reducing extreme poverty at home but they are facing rising inequality, large unemployment and underemployment, which hinder domestic demand. They have to shift to “inclusive” economic growth.

3.2 Beyond the crisis: India cannot skip the industrialisation phase

A serious short-coming in the Indian growth pattern in the past twenty years has been that the modern sector of the economy has not been able to create enough jobs. The modern, organised sector still employs a small fraction of the labour force (about 10%) and its development has been based on capital investment and productivity gains. The nineties were a decade of almost jobless growth, and, since the beginning of the new century, employment has increased substantially but jobs have been created only in the informal sector of the economy (small firms and individual enterprises) which is characterised by low labour productivity.

In the coming years, India has to create a large number of jobs for low-skilled workers, as the working-age population is going to increase up to 2035, and as workers have to move out of agriculture. For twenty years, India has had a service-driven growth but the country cannot skip the industrialisation phase, in order to cope with this demographic wave. India cannot afford bypassing mass manufacturing production (Banga, 2005; Rakshit, 2007; World Bank, 2004; Alessandrini *et al.*, 2007; Dasgupta and Singh, 2005 and 2006; Dougherty *et al.*, 2008).

A strong manufacturing sector is also necessary to cater to the domestic market and avoid the risk of inflation and of balance of payment deficit. At India's low level of per capita income, the income elasticity of demand for manufactured products is high and will remain high for a long time.

The Indian 11th five-year plan (2007-2012) reckoned that “India cannot afford to neglect manufacturing” and targeted an average growth of 12% for manufacturing compared to 9.9% for services (Planning Commission, 2006). To alleviate the obstacles to industrial growth, the Plan emphasised the need to phase out the reservation of many labour-intensive industries to the small-scale sector, to improve skill formation and physical infrastructure as a condition for an industry-led growth (Rakshit, 2007). The investment rate, which rose from 24% in 2000 to 35% in 2006 was expected to stabilise at this level and a large share of investment (more than one fifth) should be devoted to infrastructure (road, rail, and water transport, power generation and distribution, telecommunication, water supply).

Nevertheless, India will not become a “hub of mass manufacturing”, given the low level of R&D, the lack of skilled personnel (high wage of skilled labour may impede the development of the labour-intensive sector itself) and the relatively low level of FDI (Kumar and Gupta, 2008; Kochhar *et al.*, 2006). Moreover, this model is associated with heavy energy and environmental costs as well as with social strains which seem incompatible with the Indian democratic system.

In fact, industry and services should be viewed as complementary in Indian economic development. Services cannot replace industry and there is evidence that industry (informal and formal) has played and will play an important part in Indian growth (Dasgupta and Singh, 2006). The outsourcing of services by manufacturing firms is one of the reasons underlying the rapid growth of services in India. According to Rakshit (2007) and to Gordon and Gupta (2003), “splintering” of industrial activities has resulted in an increase of input demand for services and in the services sector growing faster than the other sectors.

3.3 China has to shift towards a more balanced growth

In China, the adverse effects of an outward-oriented and industry-led growth were fully recognised well before the present crisis. Since the early 2000s, Chinese and foreign experts had underlined the costs of such a strategy and expressed concerns about its sustainability. They underlined the need to shift to a more balanced economic growth (Yu, 2007; Blanchard and Giavazzi, 2005).

The boom of industrial production had been associated with a rapid increase in energy intensity and had caused severe damages to environment. Moreover, cost competition had led to downward pressures on the wages of unskilled labour and had contributed to aggravate income inequality and to create social tensions (Gaulier *et al.*, 2007). Since the end of the 1990s, investment and net exports had been the most powerful engine of China's growth, while the contribution of household consumption had tended to decline. Finally, the decline of the working age population after 2015 was expected to play in favour of an increase in real wages and to reduce China's comparative advantage in labour-intensive production.

The deterioration of China's terms of trade reveals the hidden weakness of China's position in international trade and illustrates the analysis by Acemoglu and Ventura (2001) according to which countries which accumulate capital faster than average supply more of the goods they specialise in to the world and experience worsening terms of trade. According to our calculations, China experienced a continuous deterioration of its terms of trade between 1995 and 2007 (by more than 25%) as its export prices barely increased, while the prices of imported oil and raw materials skyrocketed.

The 11th Chinese five-year plan acknowledged the need to rebalance the economy in favour of services, of higher value-added production and of domestic consumption. The target was to lower energy intensity by 20% between 2005 and 2010, and this could be achieved only if the structure of production was shifted in favour of services, as savings from technological changes were rather limited.

Indeed, policies have been implemented in favour of living standards (rise in minimum wages, reduced tax on peasant households, efforts to build up a social security

system). In January 2008, the phasing out of preferential tax treatment to foreign invested firms, indicated that export-oriented production at any cost was no longer on the agenda. However in 2008, there was still little evidence that the economic and social imbalances had been significantly reduced (World Bank, 2008).

The collapse of external demand in late 2008 has forced the Chinese authorities to take more drastic measures to boost domestic demand. A stimulus package (amounting to 8% of GDP in 2009 and 2010) was launched which provided funds to be directed mainly to investment in infrastructures. The biggest challenge is to now to stimulate household consumption. The measures taken to extend the social security net are a critical step in that direction. A plan to extend basic health services to all citizens by 2020 has been adopted as a part and parcel of policies which aim at reducing household precautionary savings.

4. Conclusion

India and China display different economic size and level of income per capita, and contrasting international specialisation. During the past two decades, both have successfully integrated into the world economy. They have changed the balance of international supply and demand in primary products, manufactured goods and services. The development of their new specialisation has enhanced their positions in international trade negotiations.

They have taken advantage from the globalisation process, which has provided them with new technologies, capital and large export markets. The global economic crisis has had an adverse effect on their economic performance since late 2008, showing that they are vulnerable to their international environment. Their advantage more than ever lies in the large size of their domestic market. To build upon this strength, they have now to address the challenges posed by rising inequality, large unemployment or underemployment, and to raise living standards through enhancing private consumption and social services.

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