

Structural change and economic development in China and India.
(Preliminary draft, not to be quoted)

Vittorio Valli (University of Turin)¹

1. Introduction

China since 1978 and India since 1992 have passed through a phase of very rapid economic growth accompanied by very important structural changes in the productive systems and severe and largely unresolved social problems.

The aim of this paper is to evaluate and compare some aspects of the different growth patterns of the two economies analyzing in particular the relations between structural change and economic development.

In doing so, we will utilise two concepts: Gerschenkron's "relative economic backwardness"² and "the fordist model of growth"³. The first concept is well known and stresses the fact that an emerging backwards economy may benefit of some advantages, such as the adoption of modern technologies coming from more advanced countries and the possibility of transferring large masses of labour force from low productivity sectors (agriculture and traditional tertiary activities) to sectors with a higher productivity (industry and modern services).

The second concept, which is not to be confused with the more general, concept of "fordism" of Gramsci or of the French regulationist school,⁴ is mainly associated to a phase of strong growth of some interlinked industrial and service sectors where scale economy and network economies are of crucial importance.

¹ Professor of economic policy (vittorio.valli@unito.it). The paper belongs to a Vittorio Alfieri research project on the Chinese and Indian economies financed by the CRT Foundation. I thank G. Balcet, M. Deaglio, S. Dalmazzone, C. Grua, L. Sau and D. Saccone for comments on the first draft of this paper.

² See Gerschenkron (1962) and Fua (1980)

³ See Valli (2002), (2005)

⁴ While my concept of "fordist model of growth" mainly regards the core of economic transformation, the concept of fordism of the French regulationist school (Boyer and other authors) is much wider and regards also the relations of the economic aspects with socio-political and institutional changes, the organization of labour and of production in the firms and the social conditions of workers. Their approach, which is partly a derivation of Gramsci's concept of fordism, is fascinating, but it is probably overly ambitious, since it implies the existence of a fully integrated social science.

2. The third wave of the fordist model of growth

The US has experienced the first wave of the fordist model of growth for some decades since 1908. West Europe, Japan and the four Asian tigers have passed through its second wave in the 1950s and the 1960s. Since the late Sixties the US, Western Europe and Japan have experienced the crisis of the fordist model and have entered the post- fordist phase. On the other hand China and India have entered the third wave of the fordist model of growth respectively in the 1980s and the 1990s, benefiting at the same time of some aspects of post-fordism and of several advantages of relative economic backwardness.

In the US the crucial sectors of the fordist model of growth were the automobile industry with all its interlinked sectors (steel, oil, tyres, car assistance and repairs, construction of roads and motorways, etc.). When in 1908 the Ford motor corporation launched, as a mass production good, the new T model, which was much less expensive than the pre-existing cars, it greatly accelerated the demand and the diffusion of the automobiles in the US market, and stimulated a rapid expansion of the steel industry, the tyre industry, the oil industry, road building, etc. In the 1980s in China, in a very different economic and socio-political context, the crucial sectors of the fordist model of growth were instead the electrical domestic appliances and their interlinked sectors (steel, plastics, electricity, etc.). In the 90s, there was in China the addition of microelectronics, telecommunication, energy. Finally, since the 2000s, there was also a rapid growth of the production of industrial vehicles, motorcycles and automobiles. In India, since 1992, machinery, household electric appliances, steel, pharmaceuticals, and, more recently, software services, telecommunication, motorcycles and automobiles and air communication have been the crucial sectors.

3. Structural transformation

Most empirical analyses about structural transformation have two severe shortcomings.

They often consider only the changes between the three great productive branches: agriculture, industry, services, while great importance have also the changes among the different sectors of industry and services. It is usually overlooked or underestimated also the chance given to young school leavers not to remain unemployed or underemployed in agriculture, but to find a job in industry or in the services, which in general pay higher wages than agriculture, or to find a job in in modern industrial or service sectors which in general pays higher wages than the traditional ones.

Moreover, most empirical studies do not adequately consider the five main “virtuous circles” contained in the “fordist model of growth”.

The first virtuous circle, can have a huge importance and consists in the fact that the rapid growth of production may generate economies of scale or network economies, higher productivity, higher profits, higher investment, further increase in productivity and production (see **Chart 1**). This feedback is associated to the rapid growth of industrial sectors where economies of scale are important, such as TV sets, refrigerators, washing machines, automobiles, steel, chemicals, PCs, mobile phones, etc. This effect is particularly strong in the period in which the internal demand for these goods rises very fast because several families buy their first TV set, or refrigerator, or their first PC, or mobile phone, etc.

The effect becomes much weaker when economies of scale are fully exploited or when the sectors become mature, with almost only substitution demand, trend which finally brings to the post-fordist phase.

The second important “virtuous circle” operates through aggregate demand. The rapid increase in productivity makes possible a rapid increase in unit wages, without reducing profits margins. This trend, if accompanied by a rise in employment, determines a fast increase of total wages and thus of consumption, which can favour, together with the increase in total profits, a substantial increase in investment. The rise in consumption and investment leads to a rapid increase in internal demand. After some years the improvement in productivity leads also to an increase in external competitiveness and exports and in the attractiveness of foreign direct investment, so that the internal demand-led growth gradually can become an export-led growth, as it has already happened in China, but not yet fully in India.

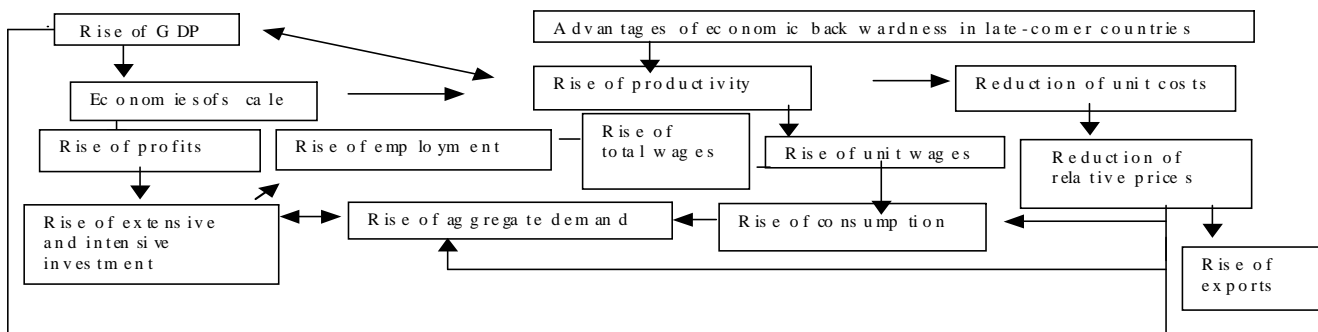
The third “virtuous circle” operates through total profits and investment: The rapid increase in labour productivity permits a great rise in total sales and then in total profits, provided that profit margins remain relatively stable. This determines a rapid rise in both intensive and extensive investment. The former improves labour productivity, while the latter leads to an increase of employment and thus to a rise in total wages, consumption and aggregate demand.

The fourth “virtuous circle” regards relative prices and the demand of selected goods and services. The very rapid increase of productivity in scale -economy industrial sectors or network -economy service sectors can contribute to reduce the prices of their goods or services relatively to the average level of prices. The fall in relative prices of these goods or services may boost their demand, already fuelled by the fast increase of the income of a part of the population. The rapid increase of demand spurs a rapid rise in profits and investment in these goods and services,

heavily contributing to the overall growth of the economy and then to further increases in productivity, relative prices reduction, etc.

The fifth virtuous circle rests on the increase of taxation which accrues to the state and local authorities due to the rapid rise in production and sales and which can permit financing schools, research and development expenditure, transport and communication facilities etc, thus creating the condition for a continuation of the rapid growth of the productive system. Unfortunately, there is no comprehensive theory which can account for all these virtuous circles⁵, but the scheme depicted in **Chart 1** may provide a framework for the interpretation of some important aspects of the “fordist model of growth” as it operates in the two great emerging Asian economies.

Chart 1. The fordist model of growth



See Va lli (2005)

Naturally, the positive effects of these virtuous circles are accompanied also by negative effects such as the greater division and fragmentation of labour and the increase of labour intensity and alienation in big factories. There is, moreover, the rapid increase of urban congestion and pollution due to the fast rise of the circulation of automobiles and other vehicles and to the upsurge of energy consumption due to the growing industrialization and tertiarisation process and the greater diffusion of vehicles, PCs and domestic electrical appliances.

⁵ Pasinetti (1981) with his multisectoral growth model gives probably the most comprehensive theoretical approach which can explain both the changes in relative prices and part of the effects of technical progress on productivity growth and sectoral demand, while the neo-classical Solowian growth models and most endogenous growth models, being aggregate, do not explain the changes in relative prices. Neo-kaldorian approaches stress the importance of economies of scale and the relation between product and productivity growth (Verdoorn’s law), but overlook the important effects associated to the long -run changes in relative prices.

4. Structural change and growth in China since 1978

After the 1978 economic reforms China has experienced a very rapid economic growth. In terms of GGDC estimates of total GDP in purchasing power parities China had a partial, but impressive, catching up towards the US (see **Chart 2**), rising from the 22.9 % of the US GDP in 1978 to 98.1 % in 2007 ⁶.

While the first wave of reforms regarded mainly agriculture, the second wave of reforms in the 1980s and 1990s involved mainly industry, the services, property rights and institutions, while the third wave of reforms in the late 1990s and 2000s regarded mainly banking, finance and international economic relations.

In 1978 China was a predominantly agrarian economy, with 70.5 % of employed labour force and 27,9.% of internal GDP formed in agriculture, forestry and fishing, In 2005 the situation had completely changed as China experienced a rapid and widespread industrialisation and tertiarisation process. The primary sector percentages on employment and value added went down to 44.8 and 12.6 while the secondary sector (industry and construction) increased to 23.8 and 47.5 and the tertiary sector went up to 31.4 and 39.9 (see **Table 1**),

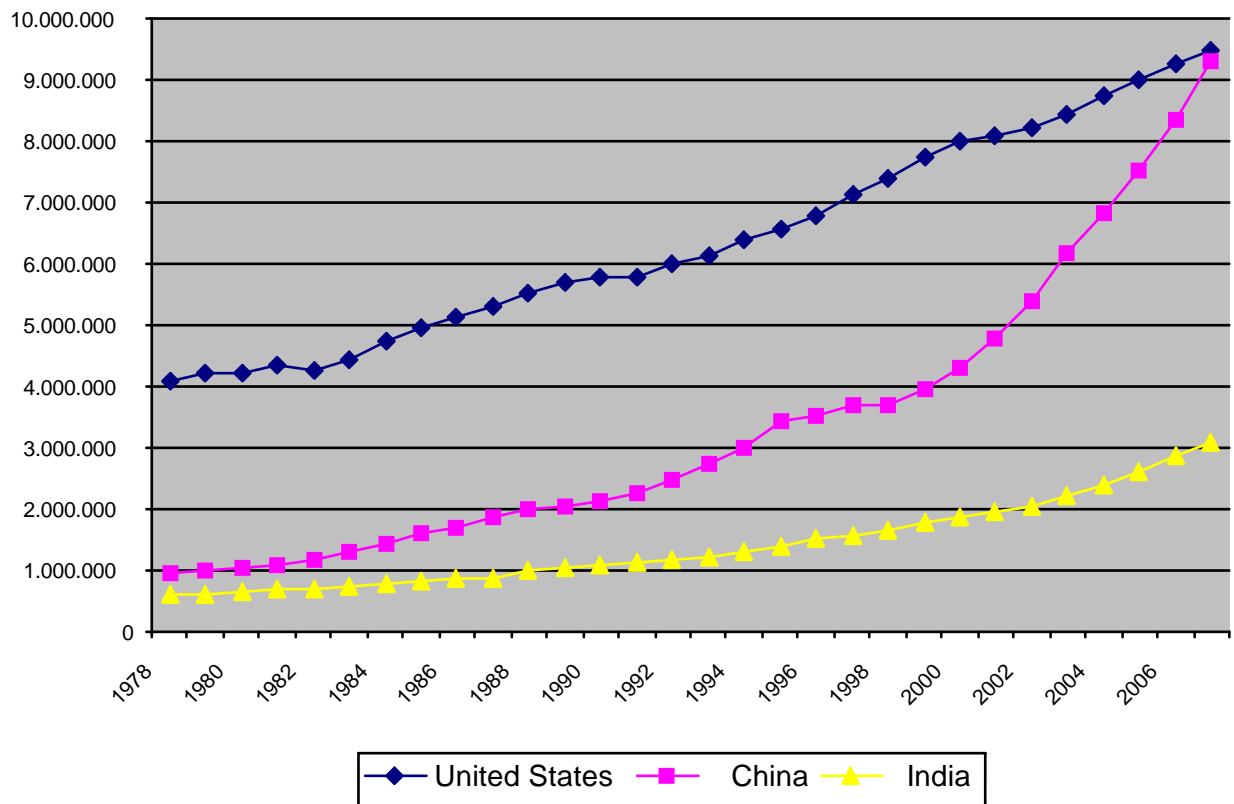
Table 1. Employment and value added by sector in China (% of total)

Employment				
	1978	1989	1997	2005
Primary (agriculture, forestry, fishing)	70.5	60.1	49.9	44.8
Secondary (industry and construction)	17.3	21.6	23.7	23.8
Tertiary (Services)	12.2	18.3	26.4	31.4
Total employment	100.0	100.0	100.0	100.0
Value added				
Primary	27.9	24.9	18.1	12.6
Secondary	47.9	42.9	47.5	47.5
Tertiary	24,2	32.2	34.4	39.9
Total value added	100.0	100.0	100.0	100.0

Source: National Bureau of Statistics of China (2007), p. 34

⁶ See GGDC (2008). The recently revised estimates of the World Bank for China and India are significantly lower, but the methodological bases of such large revisions vis-a-vis the old World Bank estimates are controversial.

**Chart 2. GDP in the US, China and India
(Billions \$ 1990 in PPPs, Source GGDC, 2008)**



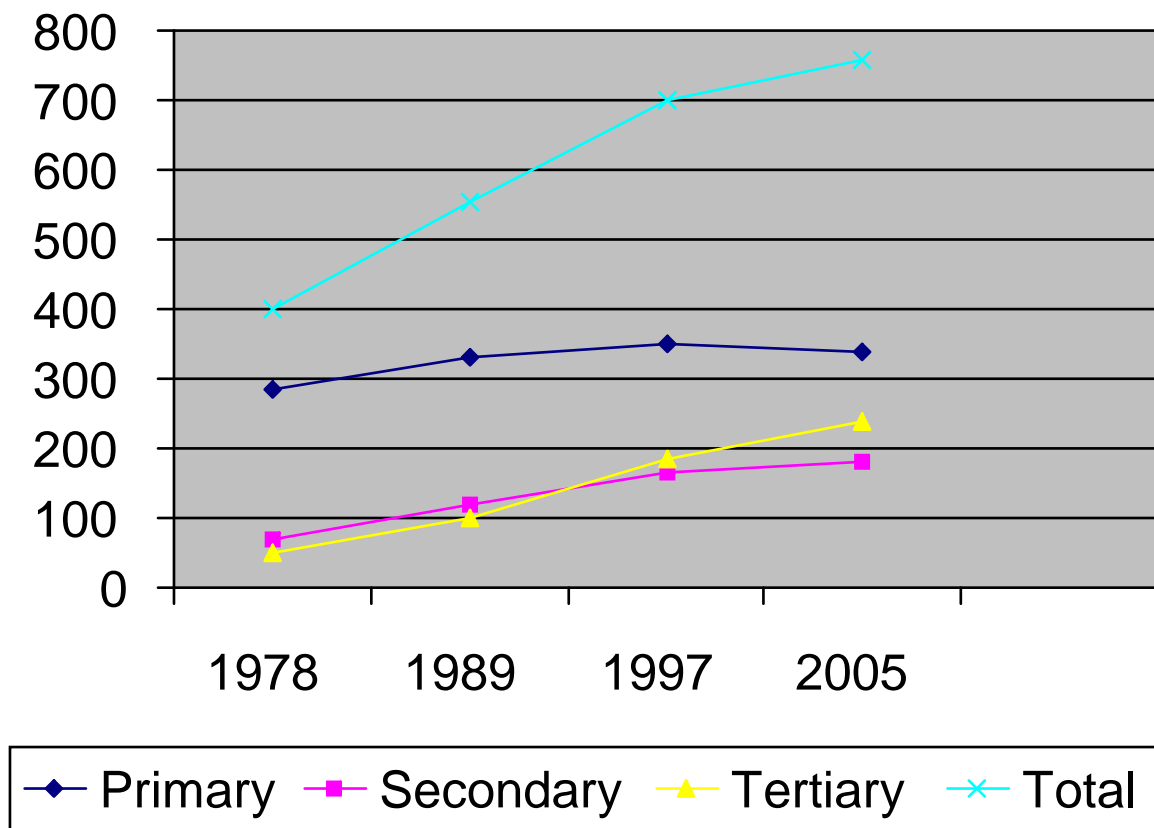
It must be stressed that in 1978 the labour productivity of industry (including construction) and of services were respectively about 5.1 and 4.9 times the labour productivity of agriculture⁷, while in 2004 the gap in productivity with industry rose to a ratio of 7.2, and for services it slightly diminished to 4.5⁸. Therefore the transfer of many employees from agriculture to industry and services, has contributed to the rapid economic growth,⁹. Even more important was the possibility of young school leavers to enter industry or services, rather than remaining unemployed or underemployed in agriculture, thus gaining much higher

⁷ See Maddison (2006), p. 90

⁸ See National Bureau of Statistics of China (2007), pp. 61,125

⁹ According to Maddison (2007, p. 70) in the 1978-2003 period the impact of redistribution of employed labour force among the three great branches could be estimated to 2.01 % points of average annual rate of growth of real GDP, equal to 25.6 % of the overall rate of growth (+ 7.85 %). See also IMF (2006), Herd and Dougherty (2007) and Bosworth, Collins (2008), for other estimates.

**Chart 3. Employment by sector in China
(Millions, source: NBS, 2007, pp. 27,34)**



incomes or wages.

The Chinese government tried to hinder the possibility of moving from rural villages to urban centres by means of legal and administrative restrictions. However many workers left illegally the rural areas creating an enormous reserve of precarious jobs in the cities, although the government tried to improve the conditions of life in rural areas encouraging the expansion of industrial and services activities through locally controlled public firms (TVEs), private firms and joint ventures with foreign multinationals, all strongly contributing to industrialisation and to rapid economic growth.

The original source of capital formation for the rapid growth of TVEs was mainly due to the fast rise of productivity and surplus in agriculture, after the post 1978 reforms, followed then by large investment in industry and services, spurred by the fact the government's policy maintained prices very favourable to industrial and tertiary production compared with agriculture goods. The richer agricultural zones had thus relevant profits, which partly served to finance the use of fertilizers and machines in agriculture, and thus to increase agricultural productivity, and partly were devoted to the creation or expansion of TVEs, private firms and joint ventures with foreign firms both in industry and in the services. Moreover the rise of agricultural and industrial activities led to a further growth of the demand for modern and traditional services, for

residential and non-residential construction and for infrastructures (roads, bridges, electricity, railways, telecommunication, ports, airports, etc.). On the opposite, the poorest agricultural zones experienced a very low growth in industry, services and public infrastructure, so that regional inequalities tended to rapidly widen.

The expansion of TVEs, private firms and joint ventures with foreign multinationals made up for the decline of several state firms and led to a rapid increase in employment in industry and services, which contributed to almost 80% of the increase of total employment in the 1978-1995 period and to a substantial share of the increase in the 1995-2006 period. But in addition to the great transformation between the three main branches: agriculture, industry and services, in the last three decades there were also a dramatic structural transformation within industry and within the tertiary activities. **Table 2** gives an idea of the very rapid growth of the volume of output in some modern industrial and service sectors and of the consistent, but on average lower rate of growth of traditional sectors:

In 1980 the main industrial sectors were the traditional ones: textiles, clothes, food and beverage, bicycles, etc. with a limited presence of some scale intensive sectors such as steel, chemicals and fertilizers. Electricity and telecommunication services were poor and scanty and residential constructions were curtailed, with very small and crowded apartments in the cities.

In 1995 and much more in 2005 the situation had radically changed.¹⁰

While in 1978 textiles had been in China by far the most important sector in terms of the percentage of total value added, since the mid-90s the electrical and non-electrical machines and chemicals surpassed textiles. Also the growth in production quantities of the goods produced by modern industrial products such as Pcs and mobile phones was much faster than for textiles and most other traditional sectors.

Residential and non-residential constructions were booming, especially in big urban centres. Richer provinces built a relatively good network of public and private infrastructures, but pollution, congestion and energy dependence from abroad were also rapidly rising.

Since 1992 China became a net importer of oil and other energy sources, and its imports grew rapidly over time, partly contributing to the recent strong rise of world oil prices. Moreover, China continues to heavily rely on its abundant coal reserves, thus increasing pollution.

Table 2: Growth of the output of some industrial and service sectors in China (1978-2005) (quantities, 1978 =100)

¹⁰ See Maddison (2006), p.179, Wu (1997)

<i>Sectors</i>	<i>1978</i>		<i>1989</i>		<i>2005</i>	
		<i>Index</i>		<i>Index</i>		<i>Index</i>
Refined sugar, 10 000 tons	227	100	501	221	912	402
Cloth ,100 million m.	110	100	189	172	484	440
Electricity, 100 million Kwh	2566	100	5848	228	25003	974
Crude steel, 10 000 tons	3178	100	6159	194	35324	1112
Washing machines, thousands	0.4	100	8,250	2063	303.6	75888
Refrigerators, thousands	28	100	6710	23964	29870	106679
Color TV sets, millions	0.038	100	9.400	24737	82.83	217973
Telephones, millions*	2.14	100	6.84	319.6	312.6	146093
Motor vehicles, millions*	0.22	100	0.50	227.3	5.1	2318
of which automobiles*	0.10	100	0.30	300.0	2.3	2300
Pcs, millions **					45.1	
Mobile phones, millions**					233.0	
Fax, millions**					13.8	

* 1980, 1990, 2004, ** 2004

Sources: China National Bureau of Statistics, Statistical Yearbook (various years)

The rapid growth of household electrical appliances, telecommunication, and then PC, steel, means of transportation and finance led to the rise and consolidation of a middle and upper middle class, concentrated mainly in the great urban costal zones.

Thus social and economic inequalities increased strongly. In particular there was a marked increase in overall inequality indexes, such as the Gini index, which surpassed the levels of the US and of most industrialized countries, and a marked rise the regional inequalities among provinces¹¹.

5. Structural change and growth in India (1992-2007)

India had a marked acceleration of economic growth after the debt crisis of 1991 and the ensuing economic reforms of Prime minister Narasimha Rao of the Indian Congress Party.¹² According to several authors the bases of the period of rapid growth were introduced in the mid 80s, but it is true that after 1992 there was a sharp rise of the rate of economic

¹¹ See, for example, Galbraith, Kritynskaia, Wang (2004), Saccone (2008)

¹² According to F. R. Frankel (2005), p. 591, “ the government drastically cut back the number of industry reserved for the public sector, removed compulsory licensing on the private sector for starting and expanding new enterprises in virtually all industries; devalued the rupee; introduced current account convertibility to pay balances on the current export and import (trade) account ; removed quantitative quotas on import; steadily reduced tariff levels on import; lifted restrictions on majority foreign investment in a wide range of industries; allowed foreign companies to borrow funds in India, raise public deposits and expand their operations by creating new businesses, and permitted foreign financial institutions to make direct portfolio investment in India’s two stock markets”

growth In the 1992- 2007 period the rate of growth of real per capita GDP in PPA markedly increased, surpassing 5%.

The phase of rapid growth in the Indian economy led, with less intensity and a delay of 14-15 years if compared with China, to a gradual decrease of the agricultural share in employment and value-added, and an increase in the share of industry and services. (see **Table 3**)

Table 3. Employment and value added by sector in India (% of total)

Employment	1978	1993	2004
Agriculture, forestry and fishing	71	64	57
Industry	13	15	18
Services	16	21	25
Total	100	100	100
Agriculture, forestry and fishing	44	33	22
Industry and construction	24	28	28
Services	32	39	50
Total	100	100	100

See Bosworth, Collins (2008), p. 49. Sources: India national accounts, Indian National Sample Survey Organization

The 1992-2007 period of rapid growth was accompanied by some features of the “fordist model of growth”.

But, while in China this model of growth was essentially based upon a large and increasing number of industrial sectors, in India it was delayed of 12-14 years and less based on industry, but more on services, such as banking, transport and telecommunication and especially on the production and export of a variety of software services. However, if we consider that India reached the 1995 GDP per capita level in PPA of China about 11-12 years later and began its period of rapid growth about 14 years later than China, it is not true that while China tends to become the “factory of the world”, India is becoming the “office of the world”. In India several industrial sectors such as machinery, chemicals, steel, pharmaceuticals, three-wheel vehicles, motorcycles and more recently, microelectronics hardware and automobiles, had a relevant and accelerated growth, although often inferior and delayed of some years with respect to the one registered in China. As we can see in **Table 3**, although in the period 1993-94/2006-7 a traditional sector (beverages, tobacco and related products) had the highest growth in manufacturing industries, modern economies- of scale- sectors such as transport equipment and parts, machinery, non-metallic mineral products, chemicals, had a strong and above the average dynamics.

Although in India a large mass of population remains very poor, and therefore unable to buy almost any durable consumption goods, the rapid

growth of the last 15 years made it possible for an increasing proportion of medium and high income people, mainly concentrated in urban areas, to have access to durable consumer goods, such as TV sets and other electric household appliances, scooters or three- wheels vehicles, and in

**Table 4. Index number for manufacturing industry in India
(base 1993-4 = 100, weights. industry = 100)**

R.	Industry group	Weight	1999-00	2004-05	2005-06	2006-07 P
1	Beverages, tobacco and related products	2,38	192,1	345,9	400,3	444,5
2	Transport equipment and parts	3,98	194,1	283,7	319,7	367,7
3	Machinery and equipment other than transport equipment	9,57	182,5	279,4	312,8	357,1
4	Non-metallic mineral products	4,4	220,8	244,3	271,1	305,8
5	Other manufacturing industries	2,56	142,5	221,2	276,9	298,4
6	Textile products (including wearing apparel)	2,54	156,1	219,6	255,5	285,0
7	Basic chemicals and chemical products (except products of petroleum & coal)	14,0	164,6	238,6	258,5	283,4
8	Basic metal and alloy industries	7,45	146,9	196,1	227	278,9
9	Wool, silk and man- made fibre textiles	2,26	197,8	249	248,9	268,4
10	Paper and paper products and printing, publishing and allied industries	2,65	180,5	230,7	228,6	248,6
11	Rubber, plastic petroleum and coal products	5,73	137,2	192,2	200,5	226,3
12	Food products	9,08	140,3	167,3	170,6	185,2
13	Metal products and parts (except machinery and equipment)	2,81	137,8	166,3	164,4	183,2
14	Cotton textiles	5,52	123,7	126,3	137	157,3
15	Leather and leather& fur products	1,14	135,5	156,9	149,3	150,2
16	Wood and wood products; furniture& fixtures	2,7	101,4	74,8	70,5	91
17	Jute and other vegetable fibre textiles (except cotton)	0,59	105	107,2	107,7	90,7
Manufacturing (Total)		79,36	159,4	214,6	234,2	263,5

P : Provisional.

Source : Central Statistical Organisation, Government of India.

the most affluent families, a Pc and an automobile. From 1988-89 to 1998-9 the “higher income groups” (middle and upper middle class households, with an annual income of at least 75001 Rs. in 1998-9 prices)

almost doubled in percentage of total households passing from 14% to 26%.¹³ However in 1998-99, they rose up to 47% of urban households, but only to 17% of rural households. Of these “higher income groups” about 150 million people lived in households with some purchasing power for durable consumer goods.

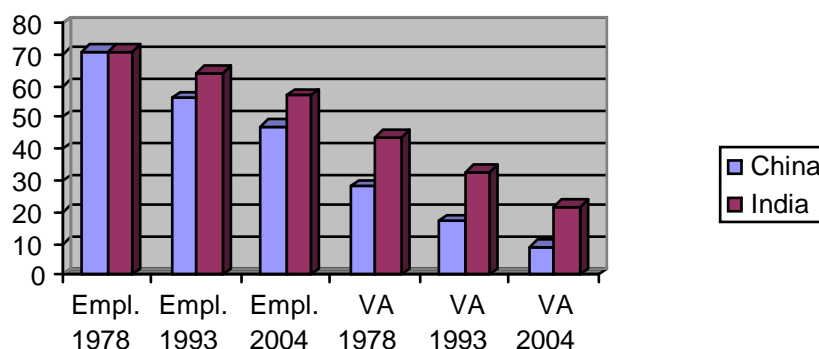
In any case, even though applied to a limited, although gradually rising, minority of the population, India had become the fifth or sixth world market for a substantial number of durable consumer goods and of services. These goods or services are partly imported, but in large part they are produced inland with relative prices steadily declining thanks to economies of scale or network economies.

However, although less than in China, pollution and congestion phenomena, as well as economic inequalities and the cost of decent housing have risen also in India and threaten to create growing social and economic tensions.

6. China and India: a comparison

If now we come to a closer comparison of the relations between structural transformation and economic growth in China and India, we can observe (**Chart 4**) that, while in 1978 the share of agriculture in total employment in the two countries was practically the same (around 71%), China had a very sharp decline of the shares in the 1978-1993 period and a rapid

Chart 4: The % share of employment and value added on total in agriculture in China and India¹⁴



decrease in the 1993-2004 period, versus a slower and gradual decline in India, which only after 2004 reached the 1993 share of China. However, as regards value added, in 1978 the share of agriculture was already

¹³ See Frankel (2005), p. 596. The source of data is NCAER, Indian Market Demographics Report (2002)

¹⁴ The data of the charts are based on official statistics of the two countries.

consistently lower in China than in India and it remained much lower also in 2004.

While the reduction of the agriculture shares was in China due to the rise of both the industrial and services shares, the reduction of the Indian shares of agriculture was more associated to the increase of services than to the increase of industry. However, we must stress the fact that the increase of several of the more dynamic sectors of services is largely due to the rise of the demand from internal industry, though for the Indian software services also foreign demand played an important role.

Chart 5 The % share of employment and value added on total in industry in China and India

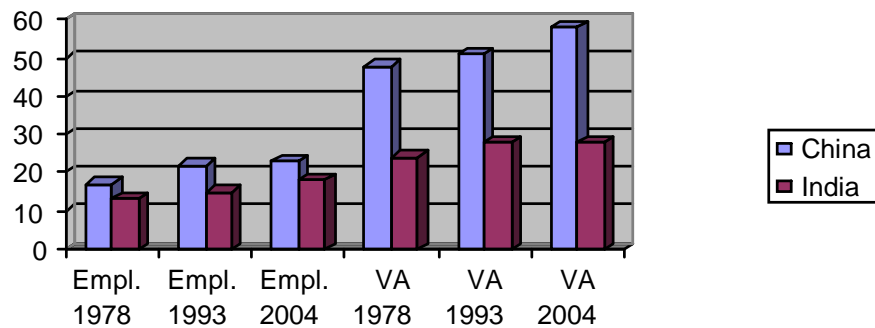
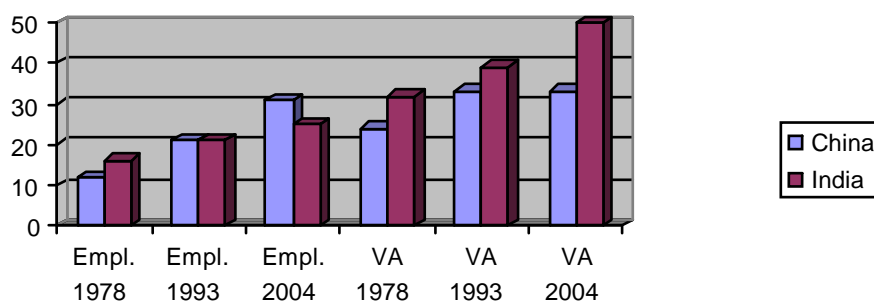


Chart 6 The % share of employment and value added on total in services in China and India



As we already remembered in paragraphs 4 and 5, the rise of industrial activities was anticipated in time, more intense and wider in scope in China than in India, where industry is nevertheless gaining momentum. Let's take three examples for steel, automobiles and components for the automotive sector in India.

The giant Indian steel corporation Mittal has rapidly grown and has recently acquired the control of two of the leading European steel corporations.

Moreover, the larger automotive sector in India has risen from 3.5 millions vehicles in 1995-6 (of which 2.2 millions scooters and motorcycles, about 350.000 cars and 129.000 buses and trucks) to 9.7 millions vehicles in 2005-6 (of which 7.2 millions scooters and motorcycles, about 1.1 millions cars and 219.000 buses and trucks)¹⁵.

After 1999 the production of passenger cars of China has surpassed the Indian production. However, although the major Indian car maker remains Maruti, which is controlled by a Japanese corporation (Suzuki), from the technological point of view there is probably no Chinese national car producer (distinguished from joint ventures with Japanese or Western firms) as strong as the Indian Tata, whose Nano project for small cars, the acquisition of Jaguar for luxury cars and the joint venture with Fiat in Latin America for pick ups, will probably lead to a very fast growth of output both inland and abroad¹⁶.

Finally, the Indian corporation Bharat Forge, which prepares components for cars and trucks, has rapidly grown in recent years and has invested massively abroad acquiring also the control of a leading German firm.¹⁷

There are, however, very important differences in the pattern of growth of the two countries, some of which are closely associated to the different timing and amplitude of structural changes.

Not only China has a much larger industrial sector than India, even discounting the fact that its rapid industrialization process began 12-15 years earlier than in India, but also its industrial activities are much less fragmented. India has an extraordinarily large number of micro-enterprises and a very vast “informal economy”, much wider than the one in China. Moreover, India has often a very large chain of furnishers, and sub-furnishers for production and of wholesale and retail traders. These long production and distributive chains may sustain employment and reduce labour costs, but decrease productivity and tend to greatly increase the spread between prices earned by producers and consumer prices.

In India in micro-electronics the software sector is more advanced than in China, although a relevant part of the work is made as sub-contractor of foreign companies, while the production of hardware is in India much weaker than in China.

Some of the differences in the productive structure are associated to differences in education in the two countries. India has a more bi-polar

¹⁵ See Richet, Ruet (2008)

¹⁶ See Balcet, Bruschi (2008)

¹⁷ idem (2008)

system. It has, in fact, a large mass of people illiterate or with a weak command of the more diffused national languages and no knowledge of foreign languages as English, and at the same time, a consistent and rapidly growing number of engineers, microelectronics experts and other University graduates with a good knowledge of English, while China has a less differentiated education system, with a more educated work-force, but increasing inequalities in the access to higher education and high quality schools¹⁸.

Owing to its earlier economic period of rapid growth and to its more centralized decision –making process, China has created, in its more economically dynamic zones, better transport and communication infrastructures than India. Greater transport and trading costs and inferior scale economies in some sectors have contributed to reduce the international competitiveness of India if compared with China:

Moreover, in China a part of agricultural goods is sold by the State at political prices, lower than the world market prices, thereby containing the cost of life, and some inputs, such as steel, are sold by subsidized State firms, thereby lowering the costs of inputs of Chinese mechanical firms and enhancing their international competitiveness.

While the Indian banking and financial markets appears to be more advanced and sophisticated than the Chinese markets, the latter has grown much more rapidly and has greatly benefited from the return under the control of China of the great and sophisticated financial market of Hong Kong.

Finally, since 1978, pollution and income and wealth inequalities among families and among regions have increased both in China and in India, but much more markedly in China. Although absolute poverty has diminished in both the countries, it remains very large in India and consistent in various zones of China.

Bibliography:

¹⁸ See, for the Chinese case, Saccone (2008)

- Amighini A. (2005), *China in the International Fragmentation of Production: Evidence from the ICT Industry*, in “European Journal of Comparative Economics”, n. 2
- Balcet G. Bruscheri S: (2008), *Technology transfer, joint ventures and the emergence of Indian multinationals. The case of the automotive industry*, Turin (forthcoming)
- Basu K. (2007) (ed.) *The Oxford Companion to economics in India*, Oxford University Press, Oxford
- Bosworth B., Collins S.M. (2008), *Accounting for Growth: Comparing China and India*, in “The Journal of Economic Perspectives”, vol. 22, n.1, pp. 45-65
- Chiarlone S., Amighini A. (2007), *L'economia della Cina*, Carocci, Roma
- Frankel F.R. (2005), *Indian's Political economy: 1947-2004*, Oxford University Press
- Fua G. (1980), *Problemi dello sviluppo tardivo in Europa*, il Mulino, Bologna
- Galbraith J.K., Krytynskaia L., Q.Wang, *The Experience of Rising Inequality in Russia and China during the Transition*, in “European Journal of Comparative Economics”, 2004, n.1
- Gerschenkron A. (1962), *Economic Backwardness in Historical Perspective*, Harvard University Press, Cambridge, Mass.
- GGDC (2008), Groningen Growth and Development Center, *Total Data Base*, in <http://www.eco.rug.nl/ggdc>
- Herd S., Dougherty R.(2007), *Growth Prospects in China and India Compared*, in “European Journal of Comparative Economics”, June, 2007
- IMF (2006), *Asia rising: paterns of economic development and growth*, in “World economic Outlook”, chapter 3.
- Maddison A. (2007), *Chinese economic performance in the long- run*, OECD , 2 nd edition, Paris.
- Maddison A (2007), *Contours of the World Economy. I-2030*, Oxford University Press, Oxford.
- Malle S. (2006), *Profili macro-economici della Cina*, in “Il Politico” , Sett:-Dic- , pp. 194-216
- National Bureau of Statistics of China (2006), <http://www.stats.gov.cn/english/>
- National Bureau of Statistics of China (2007), *China Statistics Yearbook*
- OECD (2005), *OECD economic Surveys: China*, Paris
- OECD, (2007) *OECD economic Surveys: India*, Paris
- Pasinetti L. (1981), *Structural Change and Economic Growth*, Cambridge University Press, Cambridge.
- Richet X, Ruet J, (2008), *The Chinese and Indian Automobile Industry in*

Perspective: Technology Appropriation, Catching-up and Development (forthcoming)

Saccone D.(2008), *Apertura economica, istruzione e diseguaglianze nei paesi in via di sviluppo*, PH.D. thesis, Torino

UNDP (2007), *Human Development Report*, Oxford University Press, Oxford

Valli V. (2002), *L'Europa e l'economia mondiale* (Europe and the world economy), Carocci, Roma

Valli V. (2005), *Politica economica. Introduzione all'economia dello sviluppo*, Carocci, Roma

World Bank (2007), *World Development Indicators*, Washington D.C.

Wu H.X.(1997), *Reconstructing Chinese GDP according to the National Accounts Concepts of Value Added . the Industrial Sector*, COPPAA paper, n. 4, Griffith University, Brisbane

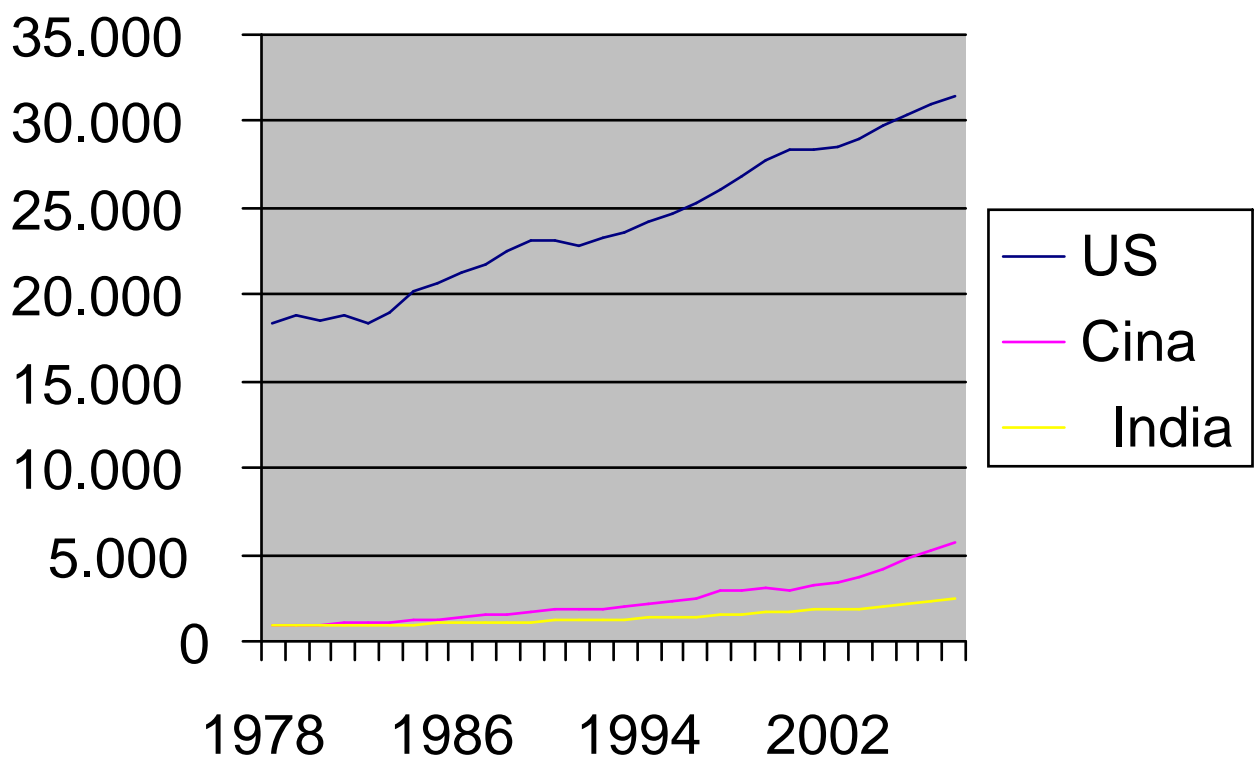
A1: GDP in PPPs US \$ 1990 Geary Khamis (Source: GGDC, 2008)

Years	United States	China	India
1978	4.089.548	935.083	625.695
1979	4.228.647	1.007.193	594.510
1980	4.230.558	1.041.142	637.202
1981	4.336.141	1.103.378	675.882
1982	4.254.870	1.186.387	697.705
1983	4.433.129	1.287.034	753.942
1984	4.755.958	1.447.262	783.042
1985	4.940.383	1.596.691	814.344
1986	5.110.480	1.703.670	848.990
1987	5.290.129	1.883.027	886.154
1988	5.512.845	2.016.024	978.822
1989	5.703.521	2.051.813	1.043.912
1990	5.803.200	2.123.852	1.098.100
1991	5.791.931	2.263.794	1.109.780
1992	5.985.152	2.483.921	1.170.599
1993	6.146.210	2.724.344	1.226.409
1994	6.395.858	2.997.060	1.308.016
1995	6.558.151	3.450.084	1.407.023
1996	6.803.769	3.521.141	1.513.355
1997	7.109.775	3.706.647	1.574.713
1998	7.406.631	3.717.352	1.672.244
1999	7.736.163	3.961.441	1.795.778
2000	8.019.378	4.319.339	1.868.299
2001	8.079.583	4.780.797	1.965.601
2002	8.208.732	5.374.025	2.038.852
2003	8.414.751	6.187.983	2.209.952
2004	8.720.920	6.812.969	2.393.931
2005	8.988.533	7.521.518	2.614.943
2006	9.246.669	8.326.321	2.859.541
2007	9.459.342	9.283.847	3.102.603

Source: GGDC 2008 1

PIL pro capite in \$ 1990 Geary Khamis

Years	United States	China	India
1978	18.373	853	889
1979	18.789	894	937
1980	18.577	978	966
1981	18.856	1.039	895
1982	18.325	1.061	938
1983	18.920	1.110	977
1984	20.123	1.186	985
1985	20.717	1.258	1.043
1986	21.236	1.396	1.060
1987	21.788	1.519	1.079
1988	22.499	1.597	1.101
1989	23.059	1.737	1.125
1990	23.201	1.830	1.216
1991	22.849	1.834	1.270
1992	23.298	1.871	1.309
1993	23.616	1.967	1.296
1994	24.279	2.132	1.342
1995	24.603	2.312	1.376
1996	25.230	2.515	1.441
1997	26.052	2.863	1.518
1998	26.824	2.892	1.605
1999	27.699	3.013	1.642
2000	28.403	2.993	1.715
2001	28.347	3.162	1.811
2002	28.535	3.421	1.854
2003	28.982	3.759	1.920
2004	29.761	4.197	1.971
2005	30.394	4.803	2.105
2006	30.983	5.258	2.248
2007	31.412	5.772	2.421



Source: GGDC 2008.1

Indicators of sectoral growth performance: China 1952-2006

	1952-78	1978-2003	2003-2006
Agricultural GDP	2.20	4.52	
Agricultural employment	2.02	0.51	
Agricultural labour productivity	0.17	3.99	
Industry and construction GDP	9.76	9.76	
Industry and construction employment	5.84	2.83	
Industry and construction labour productivity	3.70	6.74	
Tertiary sector GDP	4.18	7.60	
Tertiary employment	3.20	3.65	
Tertiary labour productivity	0.96	3.81	
Whole economy GDP	4.39	7.85	
Total employment	2.57	1.89	
Aggregate labour productivity	1.78	5.85	
Impact of sectoral employment Shift on aggregate GDP growth	0.88	2.01	

Source: Maddison (2007), table 3.10, p. 70, updated (to be completed)

See also p. 145 (Wu's estimates) for more detailed sectoral industrial estimates (1952-2003)

Indicators of sectoral growth performance: China 1952-2006

	1952-78	1978-2003	1978-2005
Agricultural GDP	2.2	4.5	6.2
Agricultural employment	2.0	0.5	0.2
Agricultural labour productivity	0.2	4.0	6.0
Industry and construction GDP	9.7	9.7	
Industry and construction employment	5.8	2,8	
Industry and construction labour productivity	3.9	6.9	
Tertiary sector GDP	4.2	7.6	
Tertiary employment	3.2	3.7	
Tertiary labour productivity	1.0	3.9	
Whole economy GDP	4.4	7.8	
Total employment	2.6	1.9	
Aggregate labour productivity	1.8	5.9	
Impact of sectoral employment Shift on aggregate GDP growth	0.9	2.0	

Source: Maddison (2007), table 3.10, p. 70, updated (to be completed)

BS China (2007), p. 29

China: Structural indicators (%)

Employment				
	1978	1989	1997	2005
Primary	70.5	60.1	49.9	44.8
Secondary	17.3	21.6	23.7	23.8
Tertiary	24.2	32.2	34.4	39.9
GDP				
Primary	27.9	24.9	18.1	12.6
Secondary	47.9	42.9	47.5	47.5
Tertiary	24,2	32.2	34.4	39.9

BS China (2007), p. 35

India

	Agriculture	Industry	Services	Total
Employment				
1978	71	13	16	100
1993	64	15	21	100
2004	57	18	25	100
Value added				

1978	44	24	32	100
1993	33	28	39	100
2004	22	28	50	100