

## **A Comparative Study of China's Township and Village Enterprises and India's Information Technology Industry**

Tashi Phuntsok

Vidyasagar College, University of Calcutta, Kolkata, India  
tashi09@gmail.com

Manoj Kumar

Centre for Economic Studies & Planning, School of Social Sciences (SSS-II),  
Jawaharlal Nehru University, New Delhi, India  
manojdiwakarstat@gmail.com

### **Abstract**

The comparative study of China and India is focused on two sectors, which had an important role in the process of their respective socio-economic transition, namely the township and village enterprises in China, and information technology (IT) sector in India. Analysis includes the literature review that highlights the achievements on both sectors, development of both sectors and its relevance to the countries' economy as also present the institutional framework that has supported the development of China and India.

**KEYWORDS:** China, India, Township, Village, Enterprises, IT Industry

### **Introduction**

China and India, the two Asian giants, started amid similar economic conditions during the reform period and but over a period, their development strategies and paths differed. China, on its part, experienced a very successful agricultural revolution that was successfully and efficiently transmitted to rural industrialisation and eventually to the urban industry. Overall, China's manufacturing industry followed the success of the agricultural sector. On the other hand, Indian economic reforms in agriculture did not achieve enough success to have an impact on the manufacturing industry. It was the digital revolution that placed the Indian economy on the path of success and continues to do so.

In this process of transition, two sectors in particular, have stood out to play an important role in China and India. These sectors, which are the focus of this paper, are township and village enterprise (TVEs) for China and information technology (IT) industry for India. IT would include specifically software development — and IT-enabled services (ITES, e.g.,

business process outsourcing, customer service, medical transcription, and financial research). The broad objective of this paper is to understand how these two sectors played an important part in the economic development and growth during the post reform period for both the economies.

The analysis is structured in five parts. The first part highlights the literature on the contribution of both these sectors. Following this is the objective and the methodology. The second section provides justifications to the logic behind the comparison of China and India and their relevance in comparison. Third and fourth section look at the overall development of TVEs and IT industry and shows their respective contribution to each country's economy, respectively. The final portion is a comparison between China and India'.

### **Literature Review**

The performance of the TVEs' in the manufacturing industry has been widely regarded as the reason for the success of the Chinese economy and its acceptance is evident from many research papers in which TVEs have been quoted (Chang, 2008; Dani, 2008; North, 2008). Cheng (1996) states that "China's township and village enterprises (TVEs) are widely regarded as one of the major successes of the economic reform". Weitzman & Xu (1997) says "the driving force in the Chinese model is the so called TVE".

With the improvement in the performance of TVEs, the nature of TVEs have also changed – they got bigger in size and expanded in the urban areas. Due to these phenomenal changes in their nature, accompanied with spectacular performance, their performance in the external sector has also improved.

According to Wu & Cheng (1999), in 1993 TVE's export was US\$ 25 billion which was 41 per cent of China's total export. Their analysis, TVEs export has witnessed a steady increase and plays an important role in this external sector. The paper by Peng (2001) not only acknowledged the performance of TVEs but it also shows how it outperformed State Owned Enterprises (SOEs) in terms of growth rate and productivity. It also provides three explanations to the reason for the TVEs performance. They are (i) informal or ambiguous private property rights of TVEs (ii) the advantage of small size and scale which allows easy monitoring of TVEs and (iii) it follows a strict market discipline.

The rate at which progress is taking place is very-well highlighted by Zhu (2008). According to him, in 1978, the rural share of China's industrial production was 7 percent, and by 1992, it had touched 50 percent, with an average annual increase of 26 percent throughout the 1980s. As for India, post-1990 the performance in the service sector has been marked with a new phase because of various factors (Eichengreen and Gupta, 2009). India's economic

reform and the reform that followed played a huge role in integrating India into the global economy, accompanied by increasing trend in services across countries and India's advantage in its demographic dividend, skilled with knowledge of information technology and English (Chandrasekhar, 2001). It can be said that from 1990-91, the service sector led the economy, if we look in terms of percent of GDP which was 41 per cent (Rakshit, 2007).

The success of the service sector and more specifically the IT sector can be characterised as low investment and resources which are knowledge based and universally available (Chandrasekhar, 2001). According to the According to World Economic Forum (2003), India's IT industry is expected to grow at a compounded annual rate of 38 percent to reach \$77 billion by 2008—contributing to 20 percent of India's anticipated GDP growth in this period and 30 percent of its foreign exchange earnings. Uniquely, the contribution of IT in the service sector is not only great but it also has a multiplier effect on the other sectors thereby having a greater role in the economic performance of India (Reserve Bank of India, 2008). The scope of expansion of IT sector has been there since 2000 with increasing flow of Foreign Direct Investment (FDI). The flows of FDI to India has been increasing by 24 percent between 2002 and 2003. The credit of this change also goes to the performance of the IT sector because of improving economic performance, continued liberalisation, and the growing competitiveness of Indian IT industries (IBRD, 1995).

### **Objectives**

The above literature demonstrates the kind of role the two sectors have played. There are two objectives behind the comparative study. First, to understand the nature of contribution of these two sectors in their respective countries. Second, to understand how different or similar the nature of their success and failure.

### **Methodology**

The comparative study lays down the grounds under which they can be compared (discussed in the following section). Second, we will then understand the kind of role the two sectors have played. For China, we investigate the performance of TVEs in terms of productivity, number of enterprises and gross output value. These parameters are compared with respect to other kinds of ownership. The study of TVEs is for the limited period till late-1990s because of structural transformation of ownership of TVEs that happened because of regressive privatisation that had followed. For India, we also look at the productivity of the IT sector, role of IT sector in distribution of service export, rate of growth of service sector and share towards GDP. The latter two parameters help us to indirectly understand the role of IT sector because of its dominant presence in the service sector.

In addition, for a comprehensive comparative study, these two sectors are perceived as an institution. Institutions here is defined according to North (1993:7) in a broad sense as a set of formal rules (constitutions, statute and common law, regulations), informal norms (norms, conventions and internally devised codes of conduct) and the enforcement of both. It is the various combination of rules, norms, and enforcement factor that determines economic performance of a nation.

To compare the role of the two institutions in their respective sector and economies, we investigate the following factors.

- Background to the informal institution formation
- Role of Government- formal institution support
- Contribution towards economy
  - Institutional role
  - Productivity
- Accommodating gradual change

### **China and India**

China and India's comparison is not a new discourse; it has been happening since 1960s (Baark & Sigurdson, 1980). But more recently there has been a greater focus on China and India with regards to their performance. Some of the areas of focus for the study are GDP growth or FDI inflow, poverty, inequality, their role in global economy, etc. Hence, all these debates broadly question whether it was investment in infrastructure, economic reforms or institutional factors that contributed to the economic prosperity of China and India. This section provides the justification for the comparison of the two economies.

Firstly, the comparative study of the two economies would not only look at the initial conditions but also the process these two countries imbibed. Under many common factors, the comparative study of China and India could be a lesson for other developing countries. These two countries in the 1950's were very similar in their per capita GDP, share of labour force in agriculture, industry and other sectors and their share in agriculture, manufacturing, small-scale manufacturing and production in total output was the same (Saith, 2008). Besides, their size and population are quite similar both then as well as now. These factors justify the comparison between the two. Of course, these countries had their differences as well. Political, historical, and institutional backgrounds have played a major role in the process of development of their economies and thus their differences.

Secondly, another important factor justifying the comparative study is the period of comparison. A common period under study is considered important for any comparative study. In this regard, though China's economic reform began from 1978, the TVEs flourished during in 1980s and the IT industry in India opened for private entrepreneurs with internal deregulation during the mid 1980s (Evans, 1992; Yang, 2010).

Finally, China and India have had a very different growth and development trajectory since the reform, and the TVEs and the IT industry had a major role to play. But today, after half a century or more, these two countries couldn't be more different. In the year 2003, China's per capita income stood at twice that of India's; poverty level in both countries has come down but it's much better in China's case; China's life expectancy stands at 71, six years more than that of an average Indian; its adult literacy rate is 91 per cent compared to 65 per cent in India (Saith, 2008); India also lags behind China substantially on all key determinants of Total Factor Productivity (TFP) growth as suggested by the cross country evidence (Kuijs, 2012). Therefore, the comparative analysis of China and India's experiences may provide a great deal of useful insights into understanding the process of development.

### **China- Township and Village Enterprises (TVEs)**

TVEs as an institution in China are a unique phenomenon in the sense that the emergence of rural entrepreneurs in this form has not been experienced in any other country on such a large scale and at such a rapid pace. TVEs are a product of evolution over a period and analyses of their emergence need to take into consideration the social, political, and economic influences on the formation TVEs. This is because the development of TVEs is not the outcome of any carefully designed policy or plan by the government. Nor is it a product of experiments conducted by the government.

The question as to what exactly is TVEs or a clear definition of a TVEs is a matter of great conflict because the concept of TVE contains an ownership dimension, a management dimension, and a locational dimension. Most TVE's industrial output is produced by firms that are controlled by local township and village governments. Despite the "collective" label, TVEs themselves were never wholly worker cooperatives. This is because the laws governing TVEs do not exclude privately-owned enterprises from that definition which function under a 'red cap'. This would mean that these enterprises are pretending to be a collective enterprise when they are private owned enterprise. According to Wu and Cheng (1999), as per the circular issued by the State Council of China (1984), the "TVEs include four types of enterprises: enterprises owned by townships, enterprises owned by villages, cooperatives formed by groups of rural residents and private family businesses". TVEs, which constituted one of the most

dynamic sectors in the Chinese economy, has had a major contribution to the above development. Broadly, the contribution of TVEs performance can be investigated in three important aspects: its productivity, its number or strength and its gross output.

### Productivity of TVEs

It has been argued that enterprise with clearly defined property rights are the preconditions for economic prosperity and ‘proper functioning of a capitalist market economy’ (Weitzman & Xu, 1997). In other words, an absence of well-defined private ownership is seen to adversely affect performance, leading to low productivity. According to this perspective, Private-Owned-Enterprises (POEs), i.e., the firms that are owned and controlled by domestic or foreign entities or individuals as sole proprietorships, private partnerships or private shareholding corporations, would outperform enterprises characterised by any other form of ownership such as Collective-Owned Enterprises (COEs) or SOEs.

Since TVEs are characterised by a form of collective ownership, in which the structure of the enterprise is such that the ownership and right to residual earnings are not clearly outlined, their performance, too, is expected to result in low productivity. But according to several surveys conducted by different scholars (Table 1), the collective sector, especially the TVE sector, has had a consistently a higher level of productivity not only than that of the SOEs, but also of the POEs. As a result of its high productivity, enterprises in the collective sector, especially the TVEs, have contributed greatly to the economy and economic growth in China since 1978.

Table 1: Relative efficiency of various ownership statuses

Empirical Evidence	POE	COE/TVE	SOE
Zhang et al., 2001 ● Technical Efficiency	66.78	68.77	55.34
Jefferson et al., 2000 ● TFP	3.2	3.1	1.9
Dong and Putterman, 1997 ● TFP		13.3 – 20.9% higher than that of POE	
Jefferson et al., 2000 ● TFP Growth in 1988-1992	2.11	3.13	2.11
● TFP Growth in 1992-1996	3.14	4.29	-1.11
Zhang and Parker, 2002 ● TFP Growth in 1990s	11.0	20.8	9.8

Source: Li, 2005.

Note: Technical efficiency is a measure of efficiency in terms of the difference between the real output and the potential output based on a stochastic production frontier model.

## Number of TVEs

The increase in the number of TVEs is one of the indicators of the growth of the TVE sector, but this could not be sufficient as the size of the TVE sector would matter more in terms of output and employment generation. Nevertheless, we will investigate the TVE sector's growth in terms of enterprises, to get some idea as to how TVEs have grown or spread over a period. The Yearbook of National Bureau of Statistics of China provides us with a chapter on agriculture, which has data on number of TVEs from the year 1978 to 2002 and with distribution by number of enterprises under different ownership (see Table 2).

Table 2: Number of TVEs under Different Ownership (Unit: 10,000)

Year	Number of Township Enterprise	Collective Owned Units	Private Enterprises	Self Employed Individuals
1978	152.43	152.43		
1980	142.47	142.47		
1985	1222.50	156.90	53.30	1012.30
1989	1868.63	153.51	106.94	1608.18
1990	1873.44	145.39	97.88	1630.17
1991	1908.74	144.23	84.90	1679.61
1992	2091.96	152.72	90.18	1849.06
1993	2452.93	168.52	103.85	2180.55
1994	2494.47	164.10	78.64	2251.73
1995	2202.67	162.02	96.02	1944.63
1996	2336.33	154.89	226.42	1955.02
1997	2014.86	129.19	233.24	1652.43
1998	2003.94	106.58	222.20	1675.15
1999	2070.89	94.98	207.58	1769.23
2000	2084.66	80.21	206.06	1798.39
2001	2115.54	66.88	200.71	1847.95
2002	2132.69	73.15	229.79	1829.74

Source: China Statistical Yearbook, National Bureau of Statistics of China

Looking into TVE's growth in terms of number of enterprises for the period after reform till 2002, (Table 2) we get to see a unique movement in the number of TVEs. The data provided in Table 2 includes only enterprises at township and village level for 1978-1980, and it's only after 1985 that all types of TVEs are included (including collective owned units,

private enterprises and self-employed individuals). The data shows a huge jump in the number of enterprises from 1.52 million in the year 1978 to 12.23 million in the year 1985, which amounts to an increase of 702 per cent. Of course, we cannot attribute such a huge increase in the number of enterprises to the exclusion of certain TVEs. Such a great change in the number of TVEs must be attributed to the ‘household contract responsibility system’ (HCRS), initiated in the 1970s. Under this system, TVEs started operating under the contract responsibility system which encouraged setting up of small production brigades.

As compared to the 1978-85 period, the number of TVEs grew steadily for the period from 1985 to 1994, and thereafter the numbers tend to fall gradually. Surprisingly, to a large extent, the growth of the TVEs was neither planned nor anticipated. Such businesses neither received funding nor technological aid from the central government like the SOEs did in the beginning. However, they were also free of the extensive regulation by the central government typically associated with state businesses. This gave the TVEs the independence to decide as to what to produce and enjoy greater benefit from the outcome which acted as an incentive to work. Such performance greatly relieved the government, which was burdened by the failure of many SOEs, which were seen as the form of enterprise that would guarantee self-sufficiency.

### **Gross Output Value**

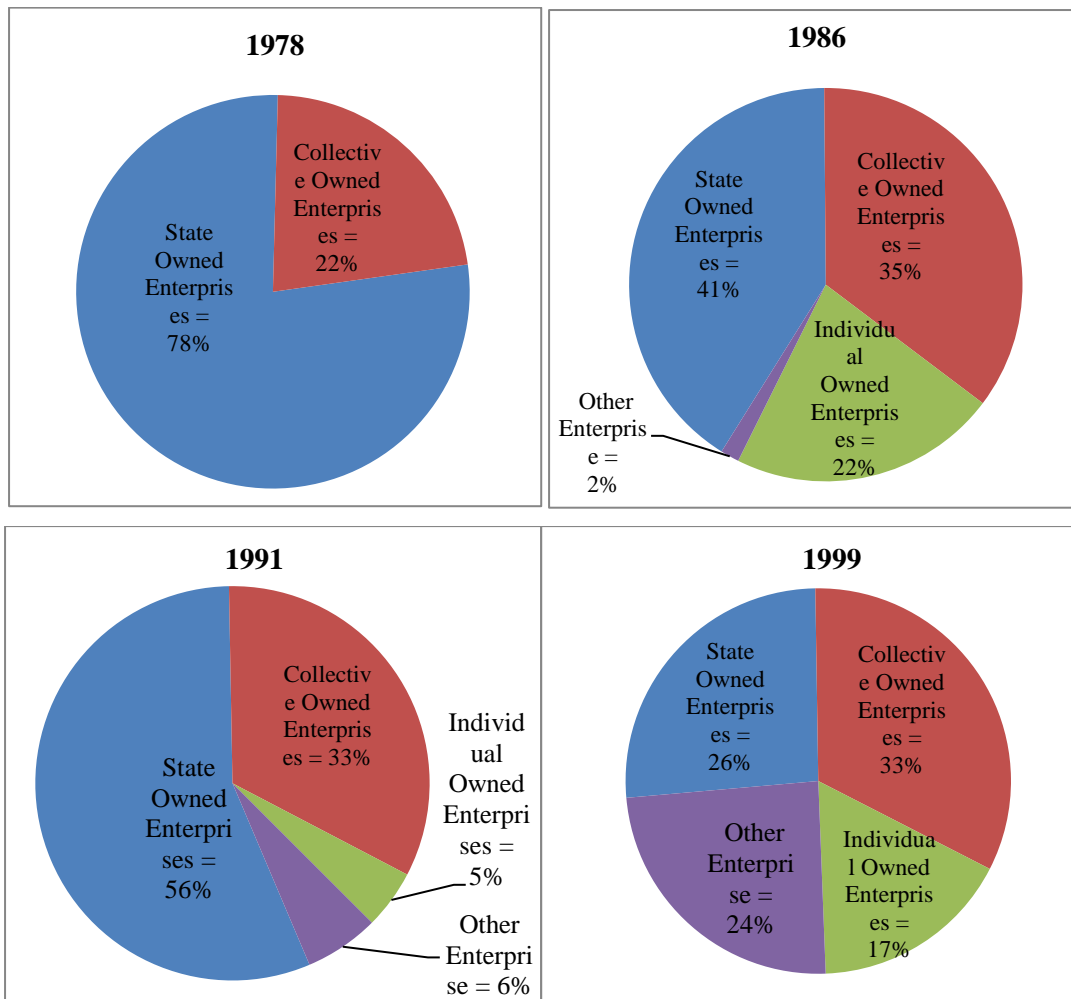
This section deals with the role of TVEs in the manufacturing industry in terms of output and its comparative performance relative to other enterprises. But the data for gross output values, specifically for TVEs, are only available for some initial years. Hence, for this section we treat the performance of ‘collective owned enterprises’ as a group being indicative for the performance of TVEs. There are two reasons why this may be justified. First, TVEs are by nature collectively owned enterprises. Second, a stronger reason would be that, for the limited period for which the data for TVEs is available in terms of value of gross output, the share of TVEs in the total number of collective enterprises is higher than 50 per cent and this is also true in terms of the number of enterprises.

Figure 1 shows the share of each type of enterprise and how these have changed over the years 1978, 1991 and 1999. The figures for the year 1978 and 1999 show that there has not been any drastic change in the share structure. The SOEs had been the dominant shareholder with 78 per cent and COEs with 22 per cent in the beginning of the reform. The figures for the year 1986 and 1991 show some change in the composition. The SOEs share has come down to around 50 per cent whereas COEs share has gone up to around 30 per cent



from 22 per cent. However, things take a completely different turn when we look at the pie chart figure for year 1999, with the share of traditional enterprises such as SOE and COEs share coming down to 26 per cent and 33 per cent, respectively, for that year. On the other hand, the ‘individually owned enterprises’ and ‘enterprises of other types of ownership’ which together constituted 11 per cent share in 1991 have seen an increase to 17 per cent and 24 per cent, respectively, in the year 1999.

Figure 1: Gross Output Value under Different Ownership



Source: Secondary data of Gross output value of China & linked to Table A.1 (Appendix)

This increasing share of ‘individually owned enterprises’ and ‘enterprises of other types of ownership’ only explains the diminishing share of the SOEs. By the latter half of 1990, the share of COEs, more specifically the TVEs, began to dwindle because of the massive drive of different forms of privatisation (Yusuf, Nabeshima, and Perkins 2006). Privatisation in the nature of corporatisation, Manager buy-out (MBO), joint-stock cooperation, etc., followed which ultimately saw the disappearance of TVEs (Lu, 2007; Naughton, 2006).

## **India: IT Industry**

The initial seed to IT revolution was sowed in the late 1960s when the Indian government discovered the strategic importance of IT and its future scope and environment then were closed, and protectionist policy followed by the government (Brunner 1991; Taganas and Kaul 2006). To meet the rising demand in the sector, the government handed the responsibility to a public sector enterprise, Electronics Corporation of India Limited (ECIL) in 1971, to produce indigenous computer. What followed created a difficult situation for India. When it first set up, ECIL promised to meet the domestic demand by 1976 but struggled to fulfil the promise (Brunner, 1991). Second, the only private companies that were in the IT business then were Tata Consulting Services (TCS) and Tata Burroughs Limited (TBL), both part of I.T.C. Limited (now ITC). Third, the multinational companies, IBM (International Business Machine) and ICL (International Computers Ltd.) which supplied the basic software and hardware need, met with controversy for supplying under graded technology (Subramanian, 2006). Because of this, it was decided to “expel” IBM and ICL from India in the year 1976. This added another problem to the existing under performance of ECIL. Also, the layoff of more than 1,200 IT professionals in IBM and more in ICL was something that the government was not prepared for (Kumar & Seith, 2005). It was under such circumstances that the New Computer Policy (NCP) and New Electronics Policy (NEP) were announced in 1984 and finally decided to opt for a policy shift from 1986 onwards (Taganas & Kaul, 2006). This change in policy allowed the existing private enterprise and new enterprise to finally enter the IT market with many relaxations in the domestic functioning and on the external front in terms of import of capital goods. It can be said that the coming of Tata Consulting Services (TCS) in 1968, Patni Computer Systems (PCS) in 1978 and other private IT entrepreneurs that followed set off the IT revolution.

But the path to the course was not smooth because of infrastructure problems and the high level of bureaucratic interference added to the complication. For instance, the basic requirement of finance (e.g., loan and raising capital from the market) and raw material (e.g., iron and coal) required dependence on government enterprise. This would mean building relationship with bureaucrats or a periodical visit to government departments, mostly in Delhi (Cheng, 1996; Murthy, 2000; Nilekani, 2008). Even starting a new business or expansion of business required undergoing the same problems because of the government’s dominance in finance and raw material sectors, and stringent rules.

It was under such an environment during the 1980s, where every aspect of business of the IT sector was controlled by the government and continuing difficulties in obtaining

hardware and software, along with the rising costs, that led to difficult circumstances. It was under such desperate circumstances that some entrepreneurial companies and computer professionals set up their own business to meet domestic demand and tap the future potential of the software industry (Kumar & Seith, 2005). It was during this period that Tata Consultancy Services (TCS) and TBL were joined by several other companies like Hinditron, Patni Computer System, Datamatics, Infosys and Wipro to exploit the opportunities in domestic and foreign markets. From the early 1970s till the time of the computer policy liberalisation, the India software export market was dominated by TCS and TBL, who accounted for 67 percent of India's software exports (Subramanian 2006, p. 39).

The only saving grace during that time was the very nature of the service sector (specifically IT sector) characterised by less dependence on capital, labour and infrastructure compared to other sectors and “universally available knowledge-base for innovation” which made establishment of IT business much easy (Chandrasekhar, 2001). So, the circumstances under which private players ventured and dominated the IT service was not only a matter of coincidence or accident but a product of frustration, desperation and desire for an alternative (Bhatnagar, 2006). A little relief also came in the form of reform, starting with internal deregulation in the 1980s and liberalisation of trade in services from 1991s (Panagariya, 2004). Government initiatives (discussed later) and the leadership of young Prime Minister Rajiv Gandhi also mattered in the path of development of the IT industry.

### **IT Industry’s Contribution to Indian Economy**

The success of the Indian software industry has had wide-ranging effects across the Indian economy, both qualitatively and quantitatively. In the process, the Indian diaspora has played a crucial role in building bridges between the Indian software companies in India and the IT industry abroad and in setting the standard of Indian IT industry (Bhatnagar 2006; Kapur, 2002). India’s image in the world changed quite substantially with the success of the Indian diaspora in the Silicon Valley. All this has created a brand name, wherein “India or Indian” is directly associated with software programmer quality just like “Japan or Japanese” are labelled for consumer electronics. This brand image of India’s IT talent has not just touched the US but has also spread to countries across the world wherever Indians have gone (UK, Germany, Finland, Japan and South Korea).

### ***Productivity of Service***

The productivity indicator in terms of Total Factor Productivity (TFP) explains how the IT sector has been growing since 1980 from Table 3. The TFP measure is conducted under the KLEMS project which estimates productivity in the Capital, Labour, Energy,

Material and Services (KLEMS) which is also applied in many countries across the world to enable database which helps to compare across countries and sectors.<sup>1</sup>

Table 3: Total Factor Productivity (TFP) and GDP Growth

Sector	1980-1986		1986-1991		1992-1997		1997-1995		1980-2005	
	TFP	GDP	TFP	GDP	TFP	GDP	TFP	GDP	TFP	GDP
Total Economy	2.2	5.3	1.6	5.9	2.6	6.5	1.7	5.7	1.9	5.7
Agriculture	2.5	3.7	2.4	3.8	3.0	4.8	-0.2	2.2	1.6	3.4
Industry	-0.3	6.2	1.6	7.2	3.1	7.3	1.4	5.1	1.4	6.0
Services	3.4	5.8	1.0	6.9	2.0	7.3	2.2	7.9	2.1	7.0

Source: Reserve Bank of India Annual Report

Except for two periods 1986-1991 and 1992-1997, the productivity of the service sector has been very impressive by being above the national average both in terms of TFP and GDP. The overall GDP for the period 1980-2005 also shows 2.1 and 7.0 for TFP and GDP, respectively, both above the national average. Further a study by (Goldar et al., 2017) for the period of 35 years from 1980 to 2014 also indicates the dominant performance of service sector productivity in the overall productivity growth of the economy for the period. The productivity performance explains the share of the service sector in GDP, the rate of growth of the IT sector and share of the IT sector in export (discussed below).

### ***Contribution in terms of Exports***

Since the economic liberalisation post-1991, the service sector has been the driving force behind the high economic growth. This demand for the service sector is predominantly from the external sector (Chandrasekhar et al., 2006). Due to the tremendous increase in the number of IT companies in and outside India, there has been an increasing demand for Indian IT services and software export. A big share of the export in the service sector is from the IT sector, especially from the US and Europe. Export from the IT sector is growing at an average rate of 40% from 1995-96 and this to explains the performance of the service sector (Table 4). In 2005-06, the share of exports of software and services was at \$17.7 billion, which is a fifth of India's merchandise exports and this is higher than export of textile and textile products (including carpets), the principal commodity of exports (Chandrasekhar et al., 2006).

<sup>1</sup> The framework of productivity estimates is given in Reserve Bank of India Annual Report 20009-10.

Table 4: Indian Services and Software Exports (US \$ million)

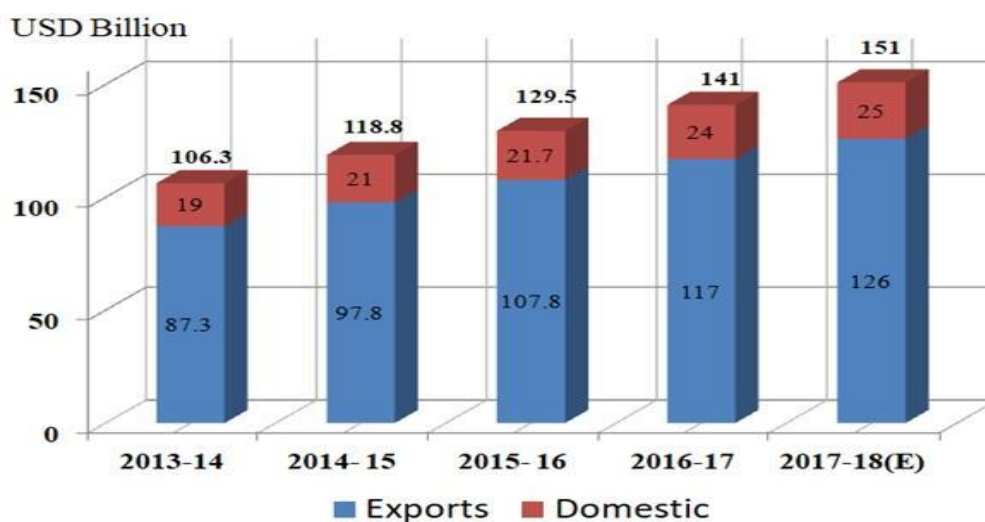
Year	IT Services Exports	ITES-BPO Exports	Total Software and Services Exports	Growth over previous year (percent)
1995-1996	754	-----	754	NA
1996-1997	1,100	-----	1,100	46%
1997-1998	1,759	-----	1,759	60%
1998-1999	2,600	-----	2,600	48%
1999-2000	3,397	565	3,962	52%
2000-2001	5,287	930	6,217	57%
2001-2002	6,152	1,495	7,647	23%
2002-2003	7,045	2,500	9,545	25%
2003-2004	9,200	3,600	12,800	34%
2004-2005	13,100	4,600	17,700	38%
2005-2006	17,300	6,300	23,600	33%
2006-2007	22,900	8,400	31,300	33%

Source: Compilation from various Reserve Bank of India Annual Report

Note: ITES: IT Enabled Services; BPO: Business Process Outsource

Figure 2 shows the consistency of performance of the IT sector in terms of revenue generated. For the year 2017-18E the revenue generated from the export is US\$ 126 billion which is more than 80% of total revenue generated

Figure 2: Distribution of IT sector revenue generations



Source: Government of India, Ministry of Electronics & Information Technology  
(E = Estimated)

### ***Distribution of Service Export***

Service sector productivity has been dominant in the overall productivity growth of the economy for the period 1980 to 2014 (Goldar et al., 2017). Table 5 shows the distribution of service exports. The software export constitutes the largest share (around 40%) of the total services export for the period the data is available. Not only is the IT industry growing at a great pace, but it has constituted the highest and major share of service export. The IT Service share of exports in the IT-ITeS sector has been increasing since 2013-14. The share of IT service is more than 55% for all the years from 2013-14 to 2017-2018 (Table 6). The Compound Annual Growth Rate (CAGR) for this period is more than 10 per cent. The ITeS-BPO holds the second largest share after IT service with a CAGR of more than 9 per cent.

Table 5: Structure of Indian IT sector Exports I (US \$ million)

Year	Amount (US \$ m)	Share in Total Services Exports (per cent)					
		Travel	Transportation	Insurance	G.N.I.E	Software	Miscellaneous
1970-71	292	16.8	49.7	5.5	13.7	-----	14.4
1980-81	2,804	43.5	16.3	2.3	4.0	-----	33.9
1990-91	4,551	32.0	21.6	2.4	0.3	-----	43.6
2000-01	16,268	21.5	12.6	1.7	4.0	39.0	21.3
2003-04	26,868	18.7	11.9	1.6	0.9	47.6	19.2
2004-05	46,031	14.1	10.4	2.0	0.7	37.4	35.4
2005-06	60,610	12.9	10.4	1.7	0.5	38.9	35.6

Source: Compilation from various Reserve Bank of India, Annual Report

Table 6: Structure of Indian IT sector Exports II (US\$ billion)

Year/ Segment	2013- 14	2014-15	2015-16	2016 -17	2017- 18 (E)	CAGR % (2013-18)
IT Service	49.2	55.3	61.0	66.0	69.3	10.07
ITeS-BPO	20.4	22.5	24.4	26.0	28.4	9.19
Software Products, Engineering Services, R&D	17.7	20.0	22.4	25.0	28.3	13.09
Total IT-ITeS	87.3	97.8	107.8	117.0	126.0	10.32

Source: Government of India, Ministry of Electronics & Information Technology

### ***Rate of Growth of service sector and share to GDP***

Finally, the increasing rate of growth of the service sector and its increasing participation in the growth rate of GDP since the 1990s reveal significantly that the Indian IT industry

contributes immensely to the growth of the service sector and eventually to the growth of GDP (Table 7). Service sector contribution to GDP for the 1990s decade stands a little more than 40 per cent. For the decade starting 2000, it is steadily increasing from 50 per cent to nearly touching 60 per cent share in GDP. And for most of the year after 1990-91, the rate of growth of the service sector is much higher than the GDP growth rate, also indicating that despite non-performance from the other sectors (agriculture and manufacturing), the good service growth record maintained a good GDP growth rate.

### **The challenges and way forward**

Given the list of advantages that India enjoys which greatly contributes to the success of the IT industry, there still lies challenges. The challenges are from intense competition, innovation, and patent rights (Dhar & Joseph, 2019). Most important of the challenge of patenting computer programmes. Since the inception of Patents Act, 1970, India's patent law has not been able to change the existing system which would give a great boost to the innovations. But lately, the Controller General of Patents, Designs and Trademarks and new Court ruling are helping to clarify the nature of computer programme (Dhar and Joseph, 2019).

### **Comparison between China's TVEs and India IT sector**

As of today, China and India are known to have performed exceptionally well in the manufacturing and service sector, respectively. Not only have these two sectors boosted domestic economy, but it has also played a dominant role in the world. China is known as the "factory of the world" or "manufacturer for the world" (Xiangguo, 2007) and India or Indian is associated as being the "software programmer" in the world. This final section helps understand how different roles have been played by these two institutions in the economic progress of these two countries both domestically and internationally.

### **Background to the Informal Institution Formation**

One similarity between China's TVEs and India's IT industry, is the circumstances under which these institutions were formed. In both the cases, not only was the economic scenario unfavourable for the private player to thrive, but it was also discouraging and following a communist and socialist policies respectively. It was only in 1978 when Party Secretary Zhao Ziyang and Wan Li in Sichuan and Anhui allowed local initiatives to farm uncultivated land, fix specialised contracts and task rates and contract production to work groups. All this shifted the production decision from the State to the household and this became the key source for the most important transformation in rural China. The formation of institutions mentioned was the outcome of desperate measures by individuals and groups,

without much support from the government. It was only later when the light of success began to shine that the government became more liberal and helpful in both the countries.

Table 7: GDP growth rate, service sector growth rate and service sector share to GDP at constant 2004-05 prices.

Financial Year	GDP growth rate	Service growth rate	Share to Total GDP at Current Prices (%)
1989- 1990	6.13	8.88	42.58
1990-1991	5.29	5.19	42.55
1991-1992	1.43	4.69	43.91
1992-1993	5.36	5.69	44.05
1993-1994	5.68	7.38	44.05
1994-1995	6.39	5.84	44.52
1995-1996	7.29	10.11	45.69
1996-1997	7.97	7.53	45.51
1997-1998	4.30	8.93	47.53
1998-1999	6.68	8.28	48.24
1999-2000	8.00	12.05	50.05
2000-2001	4.15	5.07	50.49
2001-2002	5.39	6.61	51.07
2002-2003	3.88	6.74	52.48
2003-2004	7.97	7.89	52.44
2004-2005	7.05	8.28	53.05
2005-2006	9.48	10.91	53.74
2006-2007	9.57	10.06	53.98
2007-2008	9.32	10.27	54.45
2008-2009	6.72	9.98	56.11
2009-2010	8.59	10.50	57.09
2010-2011	9.32	9.75	57.32
2011-2012	6.21	8.20	58.39
2012-2013	4.99	7.11	59.57

Source: Data Book, Planning Commission of India (2014)

Note: GDP and Service sector growth rate are at factor cost at constant price (2004-05 prices)



China and India have had a very similar kind of development in terms of manufacturing and IT industry boom, respectively. The institutional base to these sectors is the product of desperate measures (discussed before) by the people and it is only later when the impact of these institutions began to translate into economic development that we see some form of acceptance in terms of change in ruling government's ideology or the formalisation of institutions, starting with support from the state.

### **Role of Government - Formal Institution Support**

Just as China is known for its manufacturing power in the world, India's IT industry made it famous across the world as a service provider. As we have learned before, the institutional arrangement in India during the 1980s was such that private technological capabilities were stronger and it was the private entrepreneurs who were the initiators of technological change, while the government facilitated the process through deregulation or liberalisation which triggered the adoption of new technologies in nascent IT sectors. The government's role in China was also similar in nature, with reform measures only playing the role of facilitator (as discussed before).

Different government organisations, in some way or the other, played a supporting role for both the countries. Just as the Chinese government concentrated on its infrastructure investment for manufacturing exports in SEZs (special economic zones), very similar EPZ and STPs, under the Department of Electronics, were set up to provide much needed infrastructure: broadband communication networks, reliable infrastructure, tax relief, etc. (Kumar & Seith, 2005). In 1988, the Indian Commerce Ministry sponsored the formation of Electronics and Software Export Promotion Council and the NASSCOM (a software industry trade association) to promote the service and export of the IT industry. The setting up of IT training institutions and encouragement in creation of private engineering colleges were some of the initiatives taken by the Ministry of Human Resources Development, India. These institutions for learning, research, and development (in the field of hardware and software related services) ensured adequate supply and quality of the technical labour force. The Reserve Bank of India also adopted several measures to support the IT industry. It simplified the filing of Software Export Declaration Form (SOFTEX) and the process of acquisition of overseas parent company shares by employees of the Indian company and foreign exchange could be freely remitted for buying services (Bhatnagar 2006).

## **Contribution towards Economy**

### ***Institution Role***

The overall experimental nature of institution formation in China had a great impact on its economic performance. The experiment with HFs, contract responsibility system (CRS), shareholding system and most important of all the TVEs, greatly influenced the course of the Chinese economy. Particularly the contribution in terms of number of TVEs, gross output, productivity, and its implication on other types of enterprise through competition and development of rural poor has been well documented. TVEs had a very steady growth and its contribution to the manufacturing sector was immense until 1994, after which it started to steadily diminish with privatisation of different forms.

Like China's TVEs, the Indian IT industry also had a major impact on its economy. India's IT industry also grew immensely in number by attracting a great amount of foreign direct investment (FDI). The overall share of the service sector in GDP and its contribution in terms of software exports had a tremendous growth, and it had a great proportion of share in the total export of services. And most importantly, with the IT industry playing a great role in the Indian service sector, the share of the service sector in the GDP has immensely grown after the reform period and it continues to do so.

### ***Productivity***

The performance of any economic sector is greatly dependent on the efficiency with which the resources have been used. And there are various methods used and one such method is TFP which is commonly used to check the performance. The performance of TFP of respective sectors of the two economies have been analysed. And it has been found in both these cases that the reason for their exceptional performance has greatly to do with the productivity in terms of TFP. From the various studies done on the performance of TVEs vis-a-vis other kinds of ownership, their performance stands out. Similarly for the IT sector too, in the Indian case core of the service driven economy can greatly be attributed to the performance of IT especially in terms of TFP and when compared with other sectors. This also explains the reasons for the high rate of growth of the IT sector and having a dominant share in the GDP.

### **Accommodating Gradual Change**

Another similarity in China and India was in terms of speed at which TVEs and IT evolved from the start. It has been very gradual in nature, taking each step very cautiously. The theoretical rooting and the success in the gradual policy applied have some differences if looked carefully. In China, the foundation of gradualism lies in the dual-track system (DTS).

Under this system, the new and old systems coexisted during and after the reform until the old system was completely overtaken by the new (Gang, 1994; Ma, 2008). Dual pricing, exchange rate, ownership, and output, are some of the examples experienced in China. In the shock therapy, the old systems are destroyed or abandoned with the establishment of the new system.

Ownership has been one of the most important forms of DTS (Gang, 1994). TVEs is one of the initial experiments with the ownership which became very successful. Furthermore, the practice of other forms of ownership such as private, shareholding enterprises, foreign joint-ventures, and individual business are examples of practice of gradualism through DTS in ownership.

Gradualism in India's case is logically based on the political ideological inclination and macroeconomic conditioning. It has been a cautious measure taken with the intention of hurting the least and moving further. That is also the reason why sectors such as industry, labour, agriculture, insurance, etc., were less reformed or reformed slowly because of 'mass politics' involved in it (Sach et al., 1999). For a variety of reasons, the gradualism in IT performance has been natural and not planned. First, the economic philosophy that guided the government during the 1980s and macroeconomic problems that were slowly accumulating which eventually led to the economic crisis in 1991 and the series of reforms that followed played an important role in laying down a much more conducive environment than one in the pre-1980 period. Second, the international factor also played an important role in assisting the IT sector through the flow of FDI in this sector.

Finally, as mentioned before, the "universally available knowledge-base for innovation" which made the transfer of knowledge from West to India easy because of NRI who were already there. More recently, because of the presence of various educational and research institutions, IT companies and technical and English-speaking youths, the growth of the IT industry has been endogenously generated.

## **Conclusion**

This comprehensive study of two institutions in China and India since the reform period presents a wide array of institutions that have played an influential role in the overall development of these countries. Though the process and the result might be different for both, the impact of institutional role cannot be denied. For instance, institutional participation or association was completely different in these two countries. China's TVEs reached more to the masses, particularly in the rural areas, cutting down inequalities, whereas in India, the IT

boom only touched certain sections of the urban rich, thereby amplifying India's inequalities (Chandrasekhar, 2001).

The major difference also lies in the long-term achievement. TVEs, an institution with 'Chinese characteristics', were more in the nature of a temporary substitute, which played a great role during a particular period but slowly perished over time. But in India's case, the IT industry was perennial in nature, whose success only grew with lasting impact on the Indian economy. So, one significant difference between China's TVEs and India's IT industry is longevity. India's IT boom, unlike China's TVEs, was more permanent in nature, whose impact on the Indian economy is still prevailing and flourishing further.

The experiences of these two nations, representing different blocks of Asia, are an exemplary demonstration of heterogeneity of economic development for many developing countries. This is especially true because their mammoth size, heterogeneity and their social, political, and economic backgrounds could be a great example for many smaller countries that are in the process of development.

## References

- Baark, E., & Sigurdson, J. (1980). *India-China Comparative Research: Technology and Science for Development*. Curzon Press Ltd.  
<https://www.perlego.com/book/1487083/indiachina-comparative-research-technology-and-science-for-development-pdf>
- Bhatnagar, S. (2006). India's Software Industry. In V. Chandra, *Technology, Adaptation, and Exports: How Some Developing Countries Got It Right*. World Bank.  
<https://doi.org/10.1596/978-0-8213-6507-6>
- Brunner, H.-P. (1991). Small-Scale Industry and Technology in India: The Case of the Computer Industry. *Small Business Economics*, 3(2), 121–129.
- Chandrasekhar, C. (2001). ICT in a Developing Country Context: An Indian Case Study. *Undefined*. <https://www.semanticscholar.org/paper/ICT-in-a-Developing-Country-Context%3A-An-Indian-Case-Chandrasekhar/1b9bee3c014f9061a9ca6cd8ddf481f6ed159e6a>
- Chandrasekhar, C. P., Ghosh, J., & Roychowdhury, A. (2006). The 'Demographic Dividend' and Young India's Economic Future. *Economic and Political Weekly*, 41(49), 5055–5064.
- Chang, H.-J. (Ed.). (2008). *Institutional Change and Economic Development*. United Nations University Press.

- Cheng, H. (1996). Promoting Township and Village Enterprises as a Growth Strategy in China. In M. Guitian & R. Mundell, *Inflation and Growth in China: Proceedings of a Conference Held in Beijing*. International Monetary Fund.
- Dani, R. (2008). Goodbye Washington Consensus, hello Washington confusion? In S. Chari & S. Corbridge (Eds.), *The Development Reader* (1st edition). Routledge.
- Dhar, B., & Joseph, R. K. (2019). India's Information Technology Industry: A Tale of Two Halves. In K.-C. Liu & U. S. Racherla (Eds.), *Innovation, Economic Development, and Intellectual Property in India and China: Comparing Six Economic Sectors* (1st ed. 2019 edition). Springer.
- Evans, P. B. (1992). Indian informatics in the 1980s: The changing character of state involvement. *World Development*, 20(1), 1–18. [https://doi.org/10.1016/0305-750X\(92\)90133-G](https://doi.org/10.1016/0305-750X(92)90133-G)
- Gang, F. (1994). Incremental Changes and Dual-Track Transition: Understanding the Case of China. *Economic Policy*, 9(19), 100–122. <https://doi.org/10.2307/1344602>
- Goldar, B., Krishna, K. L., Aggarwal, S. C., Das, D. K., Erumban, A. A., & Das, P. C. (2017). Productivity growth in India since the 1980s: The KLEMS approach. *Indian Economic Review*, 52(1/2), 37–71.
- IBRD. (1995). *Bureaucrats in Business: The Economics and Politics of Government Ownership*. World Bank, Oxford University Press,. <http://digitallibrary.un.org/record/175584>
- Kapur, D. (2002). The causes and consequences of India's IT boom. *India Review*, 1(2), 91–110. <https://doi.org/10.1080/14736480208404628>
- Kuijs, L. (2012). Economic Growth Patterns and Strategies in China and India: Past and Future. *Undefined*. <https://www.semanticscholar.org/paper/Economic-Growth-Patterns-and-Strategies-in-China-Kuijs/19446642a2c01a4946aeadcb3749a4506960f1f>
- Kumar, R., & Seith, A. K. (2005). *Doing Business in India: A Guide for Western Managers* (First Edition edition). Palgrave Macmillan.
- Li, P. P. (2005). The Puzzle of China's Township–Village Enterprises The Paradox of Local Corporatism in a Dual-Track Economic Transition. *Management and Organization Review*, 1(2), 197–224. <https://doi.org/10.1111/j.1740-8784.2005.00009.x>
- Lu, Z. (2007). *Essays on Corporate Governance in China's Transition to Market Economy: A Study of Township-Village Enterprise (TVE) Sector*. The Johns Hopkins University.

- Ma, S. (2008). China's Privatization: From Gradualism to Shock Therapy? *Asian Survey - ASIAN SURV*, 48, 199–214. <https://doi.org/10.1525/as.2008.48.2.199>
- Murthy, N. R. N. (2000). Making India a Significant IT Player in this Millennium'. In R. Thapar, *India: Another Millennium* (200th ed.). Viking, Penguin Books.
- Naughton, B. J. (2006). *The Chinese Economy: Transitions and Growth* (Illustrated edition). The MIT Press.
- Nilekani, N. (2008). *Imagining India: Ideas for the New Century* (9th edition). Penguin India.
- North, D. C. (2008). Institutions and the Performance of Economies over Time. In C. Menard & M. Shirley (Eds.), *Handbook of New Institutional Economics*. <https://doi.org/10.1007/978-3-540-69305-5>
- Peng, Y. (2001). Chinese Villages and Townships as Industrial Corporations: Ownership, Governance, and Market Discipline. *American Journal of Sociology - AMER J SOCIOL*, 106, 1338–1370. <https://doi.org/10.1086/320820>
- Reserve Bank of India. (2008). *Annual Report, 2007-08*.
- Sach, J. D., Varshney, A., & Nirupam, V. (Eds.). (1999). *India in the Era of Economic Reforms*. OUP India.
- Saith, A. (2008). China and India: The Institutional Roots of Differential Performance. *Development and Change*, 39(5), 723–757. <https://doi.org/10.1111/j.1467-7660.2008.00503.x>
- Subramanian, R. (2006). India and Information Technology: A Historical & Critical Perspective. *Journal of Global Information Technology Management*, 9(4), 28–46. <https://doi.org/10.1080/1097198X.2006.10856431>
- Taganas, R. A. L., & Kaul, V. K. (2006). Innovation Systems in India's IT Industry: An Empirical Investigation. *Economic and Political Weekly*, 41(39), 4178–4186.
- Weitzman, M. L., & Xu, C. (1997). Chinese Township-Village Enterprises as Vaguely Defined Cooperatives. In J. E. Roemer (Ed.), *Property Relations, Incentives and Welfare: Proceedings of a Conference held in Barcelona, Spain, by the International Economic Association* (pp. 326–355). Palgrave Macmillan UK. [https://doi.org/10.1007/978-1-349-25287-9\\_12](https://doi.org/10.1007/978-1-349-25287-9_12)
- World Economic Forum. (2003). *Global Information Technology Report 2002–03*. New York: Oxford University Press.
- Wu, C., & Cheng, L. K. (1999). The Determinants of Export Performance of China's Township-Village Enterprises. In *LICOS Discussion Papers* (No. 8299; LICOS

Discussion Papers). LICOS - Centre for Institutions and Economic Performance, KU Leuven. <https://ideas.repec.org/p/lic/licosd/8299.html>

Xiangguo, C. (2007). *Is China the Factory of the World?* (Occasional Paper No.07-4; p. 19). Ritsumeikan Center for Asia Pacific Studies (RCAPS), Ritsumeikan Asia Pacific. <http://www.apu.ac.jp/rcaps/>

Yang, Y. (2010). *Economic Reform and Institutional Innovation* (1st edition). Gale Asia.

Zhu, Z. (2008, August 8). *Who Created China's Household Farms and Township-village Enterprises: The Conscious Few or the Ignorant Many?* Academy of Management Annual Meeting, Anaheim, California.

## Appendix

Table A1: Gross Output Value of Industry (Unit: 100 million Yuan)

Year	Total	State Owned	Collective Owned	Individual Owned	Other Enterprise
1978	4237	3289	948	----	---
1980	5154	3916	1213	1	24
1985	9716	6302	3117	180	117
<b>1<sup>st</sup> Period: 1978-1985 increase</b>	<b>129.31%</b>	<b>91.61%</b>	<b>228.80%</b>	<b>180%</b>	<b>117%</b>
1986	11194	6971	3752	309	163
1987	13813	8250	4782	502	279
1988	18224	10351	6587	791	495
1989	22017	12343	7858	1058	758
1990	23924	13064	8523	1290	1047
<b>2<sup>nd</sup> Period: 1986-1990 increase</b>	<b>113.72%</b>	<b>87.41%</b>	<b>127.16%</b>	<b>317.48%</b>	<b>542.33%</b>
1991	26625	14955	8783	1287	1600
1992	34599	17824	12135	2006	2634
1993	48402	22725	16464	3861	5352
1994	70176	26201	26472	7082	10421
1995	91894	31220	33623	11821	15231
<b>3<sup>rd</sup> Period: 1991-1995 increase</b>	<b>245.14%</b>	<b>108.76%</b>	<b>282.82%</b>	<b>818.50%</b>	<b>851.94%</b>
1996	99595	36173	39232	15420	16582
1997	113733	35968	43347	20376	20982
1998	119048	33621	45730	20372	27270
1999	126111	35571	44607	22928	32962
<b>4<sup>th</sup> Period: 1996-1999 increase</b>	<b>26.62%</b>	<b>-1.66%</b>	<b>13.70%</b>	<b>48.69%</b>	<b>98.78%</b>

Source: China Statistical Yearbook, National Bureau of Statistics of China

a) Figures in this table are at current prices

b) Figures for 1949-1957 of other ownership refer to state and private joint ownership enterprises and private ownership enterprises.

c) Figures for state-owned industrial output value exclude 460 billion Yuan earned by state-owned holding company.