
China and India - a Note on the Influence of Hierarchy vs. Polyarchy on Economic Growth¹

Michael Keren²

Abstract

This note tries to apply two versions of Sah and Stiglitz's "The Architecture of Economic Systems: Hierarchies and Polyarchies" model (S&S) to highlight some important differences between the development paths of India, the largest democracy, and China, the largest of the few remaining communist ruled economies. It argues that the original S&S model is applicable to private organisations but not to governments, to which a revised model is applied. It is the reliability of the government's decisions and the ability of the investor to rely on them that the modified S&S model tries to capture.

As a communist country, China is as centralized as a huge polity of its size can be. A decision of the central authorities, a contract or promise confirmed by Beijing, can be relied upon. This provides a degree of security to the investor that his contract will be honoured and she will not be dispossessed. In the Indian federation the investor has to assure herself that all authorities involved agree to support her project, because any agency that has any say may be able to derail it. These differences are accounted for by the adjusted Sah and Stiglitz model. These differences affect not only the total quantity of investments but also their composition.

Clearly, no claim is made or implied that the models introduced below provide *the* explanation for the differences in the development paths of these two Asian giants in the past few decades. They merely add a new perspective to the economic systems dimension of the development process.

JEL codes: P51, O53, O57, L19, D23.

Keywords: Hierarchies vs. polyarchies; Indian development; China's development.

1. Introduction

Communist countries seem to have an advantage in the early stages of development: they seem to be able to shake up their atrophied social structures and mobilize all resources and start upon a fast lane of growth. However, this strategy puts up inflexible structures and soon meets obstacles it cannot overcome. As a result the frontrunners are overtaken by the former laggards, the open market economies that were slower to take off. This, at least, was how post World War II European experience appeared, where Communist states have managed to sprint into development and growth faster than similarly placed democratic market economies: see Table 1. Yet all European communist economies arrived at a ceiling that stopped their growth and let the market economies overtake them and leave them far behind.³ Most of them tried to change course and introduce more decentralization and flexibility into their economy - without weakening their centralized political structures - but failed. They found it impossible to change their economic regime without ditching the communist party's centralized control. The question arises: can a communist economy leave its economic

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² The Hebrew University of Jerusalem

³ The sharp decline in growth is more difficult to document without at the same time throwing doubt on the claim of the initially faster rate. See Appendix A.

trajectory, open up and join the new fast lane, without giving up its political institutions? On the face of it the comparison of the paths taken by China and India would seem an ideal response to the riddle, with a resounding positive answer: Yes, the communist development model can be left at will at a convenient junction and transition to market-led growth may be costless. It seems that such a switch by a communist state is much easier than a policy change and an opening up in a democratic country, the largest one that exists, India. My aim in this note is to examine the role of system and policy in this story, where arguably the most important policy decision is the decision about system change. Clearly, the factors discussed below may add to existing explanations of the paths taken by these two countries, and cannot claim to comprehend the myriad of factors that have shaped their development.

Table 1: Output growth, main capitalist and socialist economies, 1956 to 1970s (Annual. percentage compound rate of growth)

Country	Output (GDP at 1963 prices)		
	1950-1952 to 1967-1969	1930-1952 to 1955-1960	1958-1960 to 1967-1969
Capitalist Market			
Industrial western Europe	4.6	4.5	4.7
Southern Europe	5.9	5.3	6.3
United States	3.7	2.8	4.6
Socialist world			
Eastern Europe	7.0	7.6	6.5

Source: UN-ECE, *Economic Survey of Europe, 1972, Table 1.2.*

China, as a communist state, the first to liberalize its economy without letting go of the tight political control, has become a role model for the few remaining socialist countries. Ever since the accession of Deng Xiaoping to China's leadership slow, hesitant yet consistent steps were taken to permit the entry of non-state entrepreneurship, and later even allowing the privatization of large chunks of its state-owned sector (Economist, 1996d, 1997a, 1997c, 2000; Boltho, 2009). The response of the economy has been remarkable, with an accelerated and enviable rate of growth. A comparison with India may lead to the idea that its success can be credited to the centralized control of the Communist Party of China that may have given it advantages that India lacks because of its democratic and federal structure.

India among the non-communist states is also an exception. It did not follow the development paths of the group of Asian states to its east. India's original growth model relied on import substitution in a closed economy and on an effort to preserve traditional sectors and technologies, while some of its neighbors, the Asian tigers, opened their economies and darted forward.⁴ These countries, much smaller than the Indian elephant, managed to sprint ahead to arrive at relatively high levels of affluence during recent decades, while India was lagging behind. Its growth started late and has been accelerating only in the last few years. Was this due to policy choices or to system changes, namely the modification of economic institutions?

⁴ As for Japan - it was far ahead when India became independent and was not considered as a role model.

My aim in this paper is to examine this question from the point of view of an economic comparativist, and to look at the systemic and policy differences and similarities between these two giant countries and how they affected their development. To point out, in particular, those elements of the systemic institutions of India and China that shape the incentive of entrepreneurs, both inside and outside of the countries, and lead them to take very different choices in each country. It will use some elements of the Koopmans and Montias seminal model of economic systems (1971) and two versions of the hierarchy vs. polyarchy model by Sah and Stiglitz (1986, S&S below). The original model, denoted S&S-M where the M stands for market, it is claimed below, is a good representation of different forms of market organization, while S&S-G, where G stands for government, can represent some characteristics of governmental organization that may effect very different paths of development. In its focus will be the governmental institutions of these countries. Section deals with this theoretical introduction.

The economic histories of India and China, countries that were endowed with their present political regime at almost the same time - 1947 and 1949 respectively, is too well known to require detailed presentation. All that will be presented here is a brief set of stylized historical facts, a very concise picture of the history of the institutions of India in Section and those of China in Section . Section applies the modified Sah & Stiglitz model to China, the hierarchy, and India, the polyarchy. Section concludes with some comments on the relevance of the analysis to the study of economic systems.

2. The system as a polyarchy or a hierarchy

Let me recap the simple notation introduced by Koopmans and Montias in their seminal paper (1971):

$$o = f(e, s, p_s),$$

where e is the environment, s the system, and p the policy, and where the outcome vector o depends on the interaction between the three sets of arguments. We can think of the environment and the system as the state variables, and on system-dependent policies as control variables that affect the system's equations of motion. The latter, besides impinging on the simultaneous outcomes, also affect the environment. Investment and education change the amount of capital and production depletes resources. The system is changed by legislation. But not only: the manner in which rules are enforced may also be a system-changing factor, when enforcement does not conform to the principles that lie at the basis of the formal rules. Thus bribes to corrupt officials enable a party to thwart their enforcement. The perception of the outcomes of given policies, rather than the outcomes themselves, may also affect policies and the development of the system. These dynamic aspects can be put as follows:

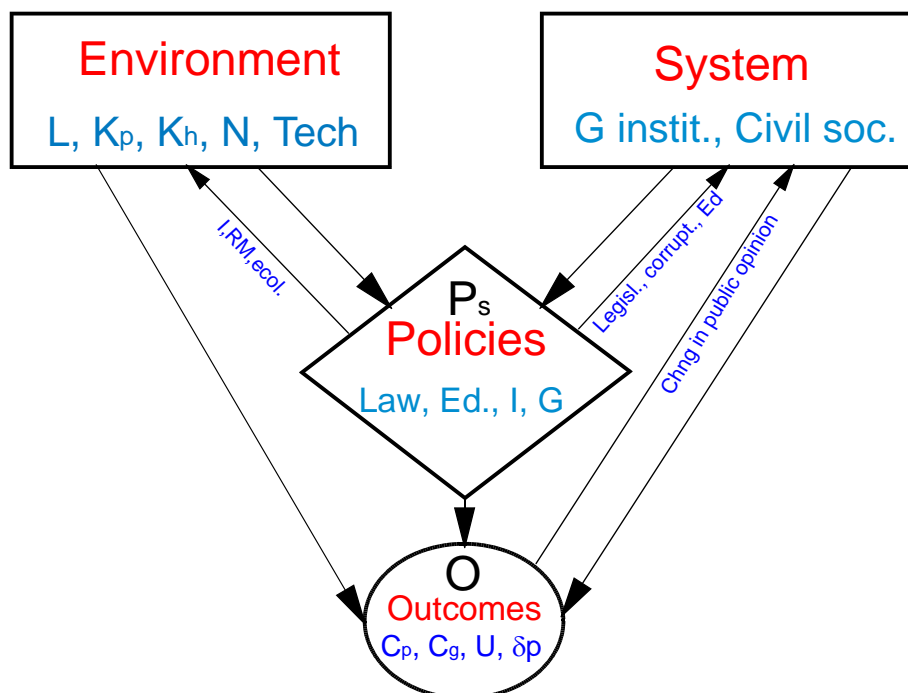
$$\dot{e} = \frac{de}{dt} = g(e, s, p_s),$$

and

$$\dot{s} = \frac{ds}{dt} = h(o, e, s, p_s).$$

That is, given the environment and the ruling system, policies determine, *inter alia*, the change in resources and system. Figure 1 depicts the Koopmans-Montias model.

The system is a set of interrelated institutions. We have learnt in the past few decades that the institutions that protect property are arguably the most relevant to our topic. They are the rules of the game that determine the relation between an actor's decisions and her payoff. Assured property rights and the ability to enforce contracts promise the entrepreneur that the fruits of her efforts and the risks she is taking will accrue to her and not to others who might without such protection gain control of her property.



Glossary: L=labor, K_p =physical capital, K_h =human capital, N=natural resources, Tech=technology, G=government, instit.=institutions, soc.=society, Ed.=education, I=investment, C_p =private consumption, C_g =government consumption, δp =policy change, RM=raw materials, ecol.=ecology.

Figure 1: The system

It is noteworthy that Koopmans and Montias tried to get away from property and ownership as primary system elements. They put the stress on custody instead, i.e., on the relationship of direct control of a resource rather than on its ownership. What we have learned, observing both the continuous attempts at meaningful reforms in communist countries (all of which, essentially, came to naught) and the process of transition in the Soviet sphere, is that ownership and its security are of primary importance. Reforms foundered because bonuses, which were to simulate profits, did not stimulate managers to behave entrepreneurially, and transformation required assured possession before it led to real change in behavior (Keren, 1992). In other words, the importance of the incentives which a system establishes has gained prominence since the pathbreaking work of Koopmans and Montias.

The definition and protection of property is the remit of governmental institutions, and these are the set of institutions that will be at the focus of this paper. They differ greatly between India - democratic and federal - and China - a communist autocracy. A modification of Sah's and Stiglitz's influential model (1986) will be used to characterize the governments of these two countries. Sah and Stiglitz considered two alternative types of organizations charged with selecting investment projects: a vertical organization, where a project would first be vetted by the lowest tier of the hierarchy and if accepted by it, be reexamined in strict hierarchical order by each and every one of its superiors. The project would be approved if and only if all hierarchical authorities found it worthwhile. See Figure 2. The alternative organization is a polyarchy, where the organization is horizontal and a project is examined by any of its members who then decide whether to accept or reject it. Each arriving project is either profitable or not, but the examining bureaucrats may err in their evaluation. As a result errors of type II, i.e., approval of a project that should not be accepted, are minimized under hierarchy and errors of type I, i.e., rejection of projects that should be implemented - under polyarchy. An important assumption is that the bureaucrats' interests are those of the organization, and that they themselves have no interests of their own. This model, denoted below the S&S-M model, is an apt description of the business world: larger firms and corporations, which are perforce structured hierarchically, may be good at weeding out poor projects. A collection of small independent firms may try many unpromising projects yet may hit upon projects which the giant corporation has missed. Different regimes, different systems, may encourage the growth of a different type of producing units (Qian and Xu, 1998).

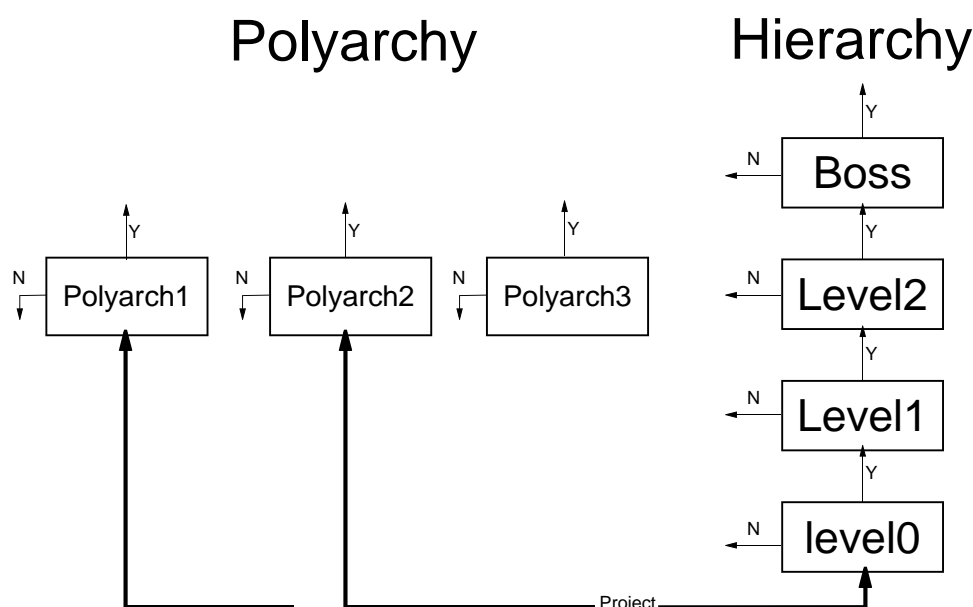


Figure 2: *Polyarchy vs hierarchy*

The S&S-M model is arguably less suitable for the analysis of different types of government. For this we use the modified S&S-G model, in which the two last assumptions are adjusted and altered. We know that members of organizations, any

organization, have their own interests, and we cannot just assume away the implicit conflict of interests between their own and the imputed interests of the organization at large. Thus different bureaucrats may agree about the objective characteristics of a given project, yet one may wish to adopt it while the other does all in her power to torpedo it. This is surely the state of affairs when we consider the differing interests and contrary behavior of central vs. local government. Furthermore, in a hierarchy not every project has to go through all of its tiers. Each project is presented at the relevant level, where relevance is determined by size or type of project, and then sent down for evaluation. Once accepted by the appropriate level all lower tiers are committed not to stand in its way. Once these modifications are agreed, the two alternatives' characteristics look quite different:

- Hierarchy: the decision that counts is that of the highest level of the administration that is involved - lower levels' task is to supply information and possibly state their own interests, but the superior makes her decision that may ignore and override those of the lower levels.
- Polyarchy: several overlapping instances, local authorities and various ministries, may have authority over the issue at hand, and a binding decision can be got only if all instances, governmental or civil, agree. Otherwise, as long as there are dissenting interests, the decision may be vetoed by a blocking party.

Once this is the case, it becomes clear that China, the hierarchy, can commit itself not to renege on commitments to investors, whereas in India the latter can never be sure that any agreement will be honored. Yet in China everything depends on government policy; once the policy decision is made to encourage non-state, including foreign, investment, investors can be assured that the predator-state will not touch their capital, as long as the policy remains in place. This means that transaction costs are relatively low. Not so in India, the polyarchy: there, in those spheres where governments, local, state and central, have authority or where their imprimatur or assistance is required, the investor may always fear that one of the involved bodies will wish to scuttle the potentially productive capital and turn it into a white elephant. Transaction costs are therefore very high. The effects of the two governmental regimes on the development path will be discussed in section , following concise histories of India's and China's economies.

3. India

The two great leaders of pre-independence India have, for many decades, left their imprint on the economic development of the biggest democracy. The heritage of the great prophet of the Indian Way, Gandhi, has led to the reservation of wide swathes of industry and services to traditional small-scale producers using traditional technologies. The first prime minister, Jawaharlal Nehru, has initiated a socialist path of development based on import substitution. Both have led to the sealing of the economy to imports by high and variable custom tariffs and the erection of paraphernalia of planning agencies and an extensive bureaucracy of controls and licensing, launching what has become known as the *License Raj*. This meant that the red tape that entrepreneurs had to undergo and the strict licensing requirements imposed on producers for any change in their production and employment were expensive and time

consuming. An important result of the economic regime has been very high obstacles in the way of both firm exit and new entry and a de facto support of monopolies and oligopolies, both private and publicly owned. To support loss-making firms that were not permitted to fire workers or cease operation a cost plus regime was instituted and subsidies paid. In many respects the economic policy differed on paper little from that of communist countries. What differed greatly was the political regime and its efficacy.

It is important to realize that this affected the incentives of both the suppliers of licenses and those who required them. The former learned to thrive on bribes and corruption. The latter learned that close relations with the bureaucrats in New Delhi and the various states were much more important than cultivating their customers. The effects on the business sector did not differ much from those of the Soviet environment: high cost, low quality production, little innovation.

The policy that imposed the license Raj led, through the law of unintended consequences, to important changes in the system and on the nature of the civil service. The latter, which used to be relatively efficient and clean during the British rule, soon became venal and corrupt (Pritchett, 2009). This is an element that increased transaction costs, by the uncertainty that it introduced to doing business in India and by the bribes that were required. A reversal of this system change will be a long and costly process.

India was and still is a democracy, and a federal democracy at that. Although the federal government in New Delhi has the right to depose state governments, and has used this authority extensively during several past periods, the power of state governments is real. Furthermore, the government bureaucracy is also a force to be reckoned with to derail projects that have not received its blessing. The country also has a very lively civil society and an open press. Unlike the single-party communist bloc country, India has many non-governmental power centers, from trades unions to local action groups that often have the power to block government policies (Economist, 2008b). They too are among the actors in the polyarchy.

These circumstances affected property rights. On the one hand, the courts enforce these rights even against government policy (as will be seen in the example of the Nano, below). On the other, the owner was highly restricted in her ability to dispose of her property, being unable to close down or shift at will to a different line of production, and being highly dependent on bureaucratic decisions in any policy choice she may care to make.

Policy change started in the 1991 and accelerated in the new century (Watkin, 1998). Tariffs were slashed - they fell from an average of 90% in 1991 to 30% in 1997 (Economist, 2009h) - and many restrictions and licensing requirements were abolished. Thus the range which was freed from the polyarchy's stifling control has been expanding, attracting non-governmental initiatives into wider fields, mainly into many services. This trend has continued (World Bank, 2009). Nevertheless, property rights are both too weak and too strong to favor entry. The Enron-Bhopal case, where poor coordination between state and central authorities allowed the foreign investors to impose very favorable conditions, have served as a lesson to both Indian authorities and potential investors that large FDI in utilities was all but impossible (Allison, 2001; IEO, 1997). The case of Tata's plans to produce the Nano, the world's cheapest car, in West Bengal that were thwarted by local agricultural interests that did not enable the local government to provide it with the land on which this project was to be built, is an

example of property rights that are too strong (Economic Times, 2009; Economist, 2008b).

Although polyarchy in many spheres has been weakening, it has been strengthening until recently in the highest sphere, in the government. The political weakness of the government, due to the splintering of the political parties and unstable coalitions, means that it is difficult to tailor policies to recognized needs. The weakening of the License Raj has been slowed, yet it has been advancing in small steps toward its dismantlement.⁵ Yet its most dangerous effects have been in the budgetary sphere. It has proven too hard for the weak coalitions that ruled India to balance the budget, to collect taxes from the agricultural sector, and to collect payments for electric power and to stop its theft. The result has been a very low investment in infrastructure that hobbles the economy and hampers private investment (Economist, 2008d, 2009a).

4. China

Present day China was born a couple of years after India became independent. Mao shaped her first three decades, and the following three were devoted to the undoing of his heritage in the economic sphere while keeping intact the political structure he left behind (yet with fewer system changing policy tsunamis than he was wont to unleash from time to time). The system of resource allocation under Mao became more and more similar to that of the Stalinist blueprint, yet with a more decentralized organization, and with an agricultural system that though fully nationalized had not completely erased the marks of the past.

The dismantling of Mao's economy was not done in accordance with a pre-arranged grand design, but in a series of hesitant steps. These were launched by Deng Xiaoping at the end of the 1970s with a gradual freeing of agriculture (the introduction of the so-called system of responsibility in agriculture) and a breakup of the huge communes that were erected in Mao's times. The essence of the freeing of industry was to allow the entry of non-state entities, starting with the so-called Township-and-Village Enterprises (TVEs) and their rapid expansion in the 1980s, which gave some autonomy to the peasantry and increased the authority of local government. This was followed by the permission of joint ventures with foreign investors and later to freer foreign investments, conjoined with a slow build-up of a market economy which coexisted side-by-side with state-owned industry (Xu and Zhang, 2009). Next came attempts to subordinate the latter too to market discipline, the sale of some enterprises and the closing down of others, smaller ones (Economist, 1996c, 1996d). These changes did not weaken the hierarchical nature of the economic regime. They delegated the authority to make investment decisions to lower levels, yet maintained the full authority of this level over all its subordinates, allowing no parallel body, such as courts of law, challenge its decisions. One of the important results of these changes was a change in the mix of investments, from government initiated, often by its highest reaches, to fairly decentralized decision makers, whose nature was changing with the progress of reforms. Private investors, mainly foreign ones, could even shop around and locate the regional authorities which were most amenable to their requirements.⁶

⁵ See Alfaro (2009), for the effects of reforms on the business sector.

⁶ See Li and Putterman for a more extensive discussion of the reforms.

Yet all these reforms were sanctioned by the strong central government, i.e., by the party. The central authorities in Beijing always have the last word, and an undertaking by any given level of government in China will always be honored by subordinate authorities. This is an important difference between China and India: China does not have the alternative loci of power that India has in both the government and the civil society. This means that the Chinese government is a true hierarchy, and any outside body, e.g., a potential investor, can be sure that an undertaking by the competent authority can be depended upon, as long as the FDI encouraging policy is maintained.

But there is also a cost to the unrestricted strength of the government. Property rights are assured as a matter of policy, and if policy ever changes there is no constitutional guarantee against dispossession; unlike India, with its strong legal institutions, in China legal protection against the state is inconceivable. The courts are gaining effectiveness in litigation between private parties, but are powerless where the state is involved.⁷ Yet property rights are ill-defined, and locals' rights are murkier (Economist, 2003).⁸ Enforcement of judgments is another matter (Economist, 2005c). Furthermore, the state at all levels imposes its industrial policy on the state-owned sector, which is still very large, and large parts of the ostensibly private sector. And the strong central control by a leadership that does not change, as in a democracy, even a centralized one, leads to some rigidity. An example will be met in section below.

5. India and China: the outcomes

This section maps the effects of the institutional portraits of India and China on the economic outcomes. They are based, as far as possible, on statistical data, most of which cover the period of 1970 to the present. They are usually displayed as ratios between China and India. This emphasizes, for any given indicator, both the differences between the two countries at any given point of time, as well as their trend over time. The most obvious outcomes concern total investment, both local and FDI, and the nature of entrepreneurship.

5.1. Rate of investment

In India, high government deficits lead to a low rate of investment, while the stronger government in China enables it to maintain the desired budgetary position and free resources for investment. As a result the ratio of investment in GDP should be higher in China than in India. This is most obvious in the comparison of shares of GDP devoted to investment, whose share in GDP is throughout the period of nearly four decades higher by roughly 40 per cent (Panel B of Table 2 and Figure 3). It is noteworthy that per capita investment can be seen to diverge significantly only after the

⁷ A judgment against a state agency in a trademark case is an exception that does not disprove the rule. This related to a mere procedural question, namely who may apply to the government's trademark bureau in the name of the trademark seeker (Economist, 2004b).

⁸ "...Local government's seizure ... of hundreds of privately controlled oil wells into which hundreds of millions of dollars have been sunk" (Economist, 2003) reports on dispossession of local investors, but new legislation that restricted competition with the post office hit locals and giant foreigners alike (Economist, 2009g). See also (Economist, 2008c).

end of the 1980s (Panel A of Table 2 and). The resulting growth of GDP accelerates at about the same time, indicating perhaps that private, particularly foreign, investment was much more productive than state investment that predominated up to the Deng reforms (section). This can be seen in the sharp take off of the ratio of China's GDP per capita to that of India in the 1990s. The ratios of per capita physical and total investment in China to that of India also shows an increase from this time, but it is much less steep than the relative rise in GDP per capita. The latter grew from rough equality with that of India, in 1970, when the ratio is just under 100%. The GDP ratio has been growing until the start of the current decade, and by 2006, China's GDP pc level was over two and a half that of India. The share of investment in India has been rising in the last few years, but it is still only 70-75% of the Chinese share in GDP.

Table 2: China-India ratios - GDP and investment 1970-2006, selected years

	1970	1975	1980	1985	1990	1995	2000	2002	2003	2004	2005	2006
Panel A												
GDP pc	1.0	1.1	1.2	1.0	0.9	1.6	2.1	2.5	2.4	2.4	2.5	2.6
Gross capital formation pc	1.0	0.9	1.1	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.2	1.2
Gross fixed capital formation pc	1.0	1.1	1.0	1.0	0.8	1.0	1.3	1.3	1.4	1.4	1.3	1.3
Panel B												
Gross invt, GDP share	1.5	1.3	1.5	1.4	1.3	1.4	1.5	1.5	1.6	1.5	1.4	1.3
Gross fixed invt, GDP share	1.6	1.6	1.4	1.3	1.0	1.3	1.5	1.5	1.6	1.6	1.5	1.5

Source: <http://stats.unctad.org/Handbook/ReportFolders/reportFolders.aspx>.

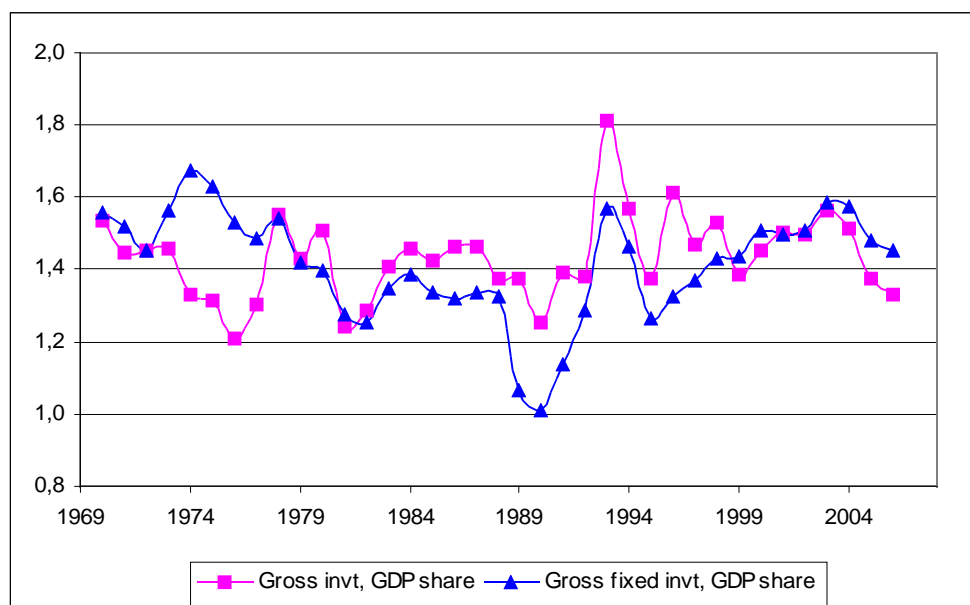


Figure 3: China-India - investment ratios (Share in GDP)

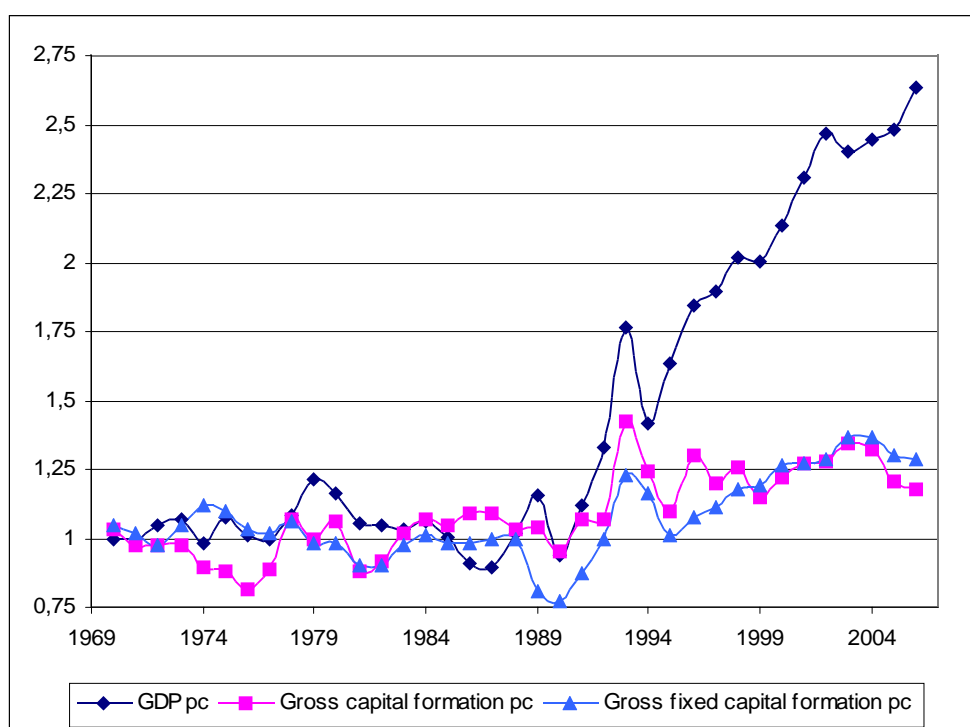


Figure 4: China-India - GDP and investment ratios (1990 US\$)

5.2. Foreign direct investment

In spite of the attraction of the potentially huge market, FDI in India has been low due to hurdles imposed by India and investors' high transaction costs, whereas in China the lure of a billion consumers and cheap labor has drawn in a flood of FDI. Actual experience can be gleaned from Table 3,⁹ and Figure 5 and Figure 6. The flow of FDI to China in the years around 1990 was nearly 35-40 times that to India (Figure 6).¹⁰ The difference has been declining, yet even in 2006 the flow to China was still over 2.5 times greater. The stock of FDI shows similar trends, although here the differences are slightly smaller: it was over a 20 times larger in the mid-1990s, and even the latest figures are still put it at three times larger (Panel B of Table 3). It is interesting to note that despite its low level, the flow (and stock) of FDI as a share of total capital formation and of GDP was higher in India than in China during the most recent years, because of the low share - relative to China - of investment in GDP.¹¹

⁹ Hong Kong has also been listed in Table 3, because it is clear from the enormous level of FDI that it has been used as a conduit for investment in China. It has not been included in Panel B and the two figures, because shifts of FDI from Hong Kong to China in the latest reports of the World Investment Report show that UNCTAD have tried to take care of this problem and correct their figures.

¹⁰ For an indication that FDI is indeed growth promoting in China and India see Baek and Won (2009).

¹¹ Some of the figures in the table, those relating to the final couple of years were computed out of others in the same series. The large jumps in stocks in recent years are hard to comprehend. Thus the increase in stocks in 2007 compared to previous years exceeds the sum of investment in the intervening years.

Table 3: FDI flows, China, Hong Kong and India, 1979-2008, selected years (Current US\$m)

	1979	1984	1989	1994	1999	2002	2005	2007	2008
Panel A: inward FDI flow									
China	0	1,419	3,393	33,767	40,319	52,743	72,406	83,521	108,312
Hong Kong	648	1,288	2,041	7,828	24,578	9,682	33,618	54,365	63,003
India	49	19	252	974	2,168	5,627	7,606	25,127	41,554
China / India	0.0	73.8	13.5	34.7	18.6	9.4	9.5	3.3	2.6
China / India, inflow % GDP	0.0	50.7	8.8	19.4	7.7	3.2	3.4	1.3	0.7 ^a
China / India, inflow % gross I	0.0	36.5	8.3	13.2	5.4	02.02.00	2.3	0.9	0.6
Panel B: inward FDI stock									
China	..	4,104	17,204	74,151	186,189	216,503	272,094	327,087	378,083
Hong Kong	..	183,487	198,378	221,319	405,266	336,278	523,186	1,177,461	835,764
India	..	641	1,420	3,490	15,426	25,419	44,458	105,429	123,288
China / India, total stocks	..	6.4	12.1	21.2	12.1	8.5	6.1	3.1	3.1
China / India, stock % GDP	..	4.4	8.0	11.9	5.0	3.0	2.2	1.1	0.9
China / India, stock % gross I	..	3.2	7.5	8.1	3.5	2.0	1.5	0.9	0.7 ^a

a. Computed. Source: UNCTAD, World Investment Report 2009,
<http://stats.unctad.org/FDI/TableViewer/tableView.aspx>.

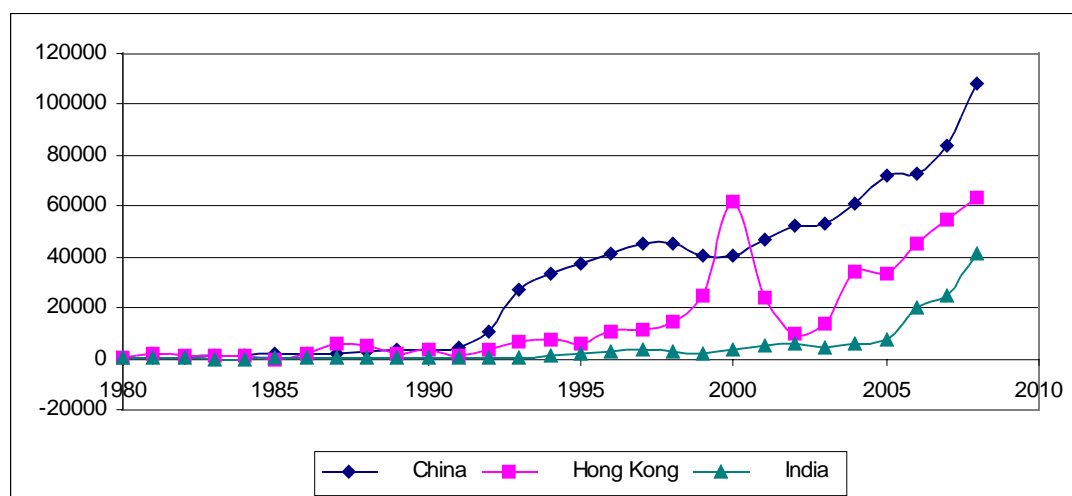


Figure 5: China, Hong Kong and India, FDI inflows, current US\$m, 1980-2008

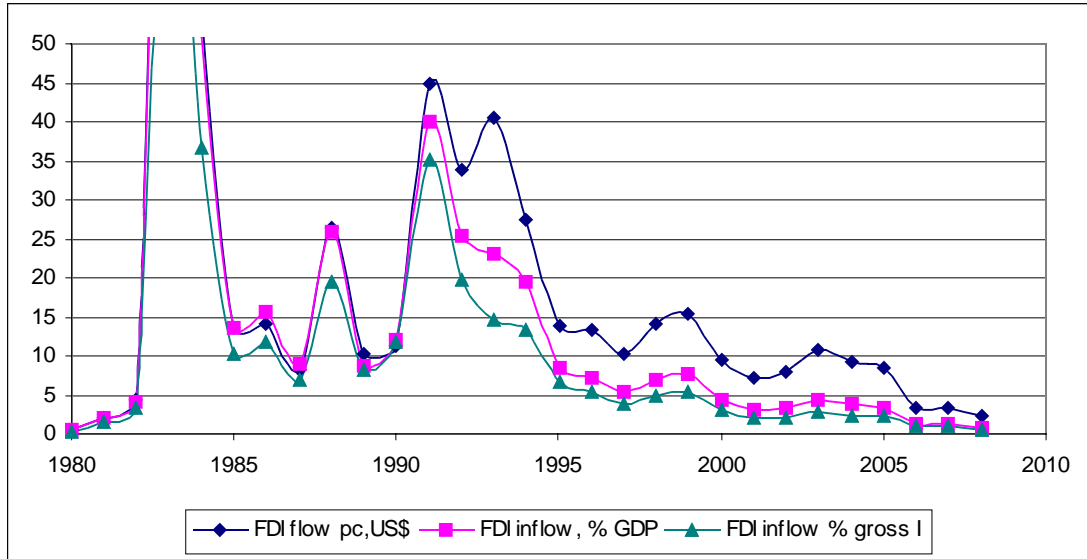


Figure 6: China-India FDI inflow ratios, per capita, per cent of GDP and gross capital formation, current US\$, 1980-2008

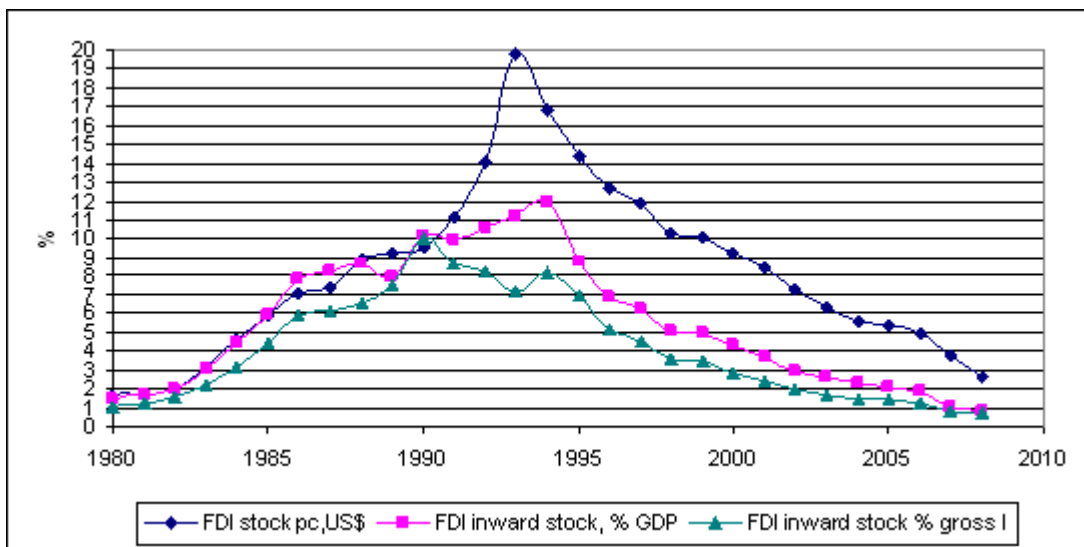


Figure 7: China-India inward FDI stock ratios, per capita, per cent of GDP and gross capital formation, current US\$, 1980-2008

5.3. Entrepreneurial efforts

India's entrepreneurial efforts are directed mostly toward fields in which neither the government's help is required nor its interference feared, i.e., in services. Investment in manufacturing is therefore relatively low, as can be seen in Table 5 and Figure 8, which compare the industrial structure in both countries. Whereas the share of manufacturing in China has exploded, exhibiting the advantage taken of its low labor costs and large market, India's is low and shows little growth over the past four decades. Furthermore, the protection of traditional sectors can be seen in the slow decline of agriculture and other primary industries and very large 'other industries' that include the traditional trading sector. This difference is accentuated in Table 4, which shows how low production of hi-tech industries in India is, lower as a share of total industrial production than in any of the listed countries, whereas China's equals the average share in all countries listed in the NSF table (where the data originate). Among the countries selected for this table it is lower only than the share of hi-tech in the US.¹² In India their share in the past dozen years has hardly budged, and in this it is joined only by Japan, whose freeze is explicable by the slowdown in its growth over the past couple of decades. Yet there are a few areas in which developments in services seem to have had an effect on industrial growth: office and computing machinery, and communication equipment (see below). China advanced on a broad front, and its presence among in the hi-tech industries has increased from nearly India's present day level in 1980 to over four times this share early in this century (Table 4). Combining this with the information about the relative size of the industrial sector (Table 5), puts the share of hi-tech industries in China's GNP at roughly 9%, while India's is under 1% of its (much lower) income level.

The growth of the IT sector in India is too well known to deserve elaboration. It seems to have supported the relative growth of the communications and computing machines industries. Another surprising sector is medicine: India is becoming an exporter of high quality health services (Economist, 2009f). Yet this has left no trace on the pharmaceutical and medical instruments industries, whose share in manufacturing has shrunk.¹³ In China, although the inward flood of FDI which indicates trust in China's respect for private property, at least foreigners', this is the case once contracts have been signed, yet coming to an agreement is not simple since state authorities are often involved in negotiations with firms, and these seem to aim at restricting of foreign investors' profits (Economist, 2004a), and investors who planned to sell in the local market need partners for joint ventures (Economist, 1996a). The poor definition of property rights may lead to disappointments, when authorities disregard assumed rights. Local firms are subject to the government's industrial policy (Economist, 1996b, 1997b, 2005a, 2005b). The original plan was to create champions, chaebol-like conglomerates (Economist, 1997d, 2005a), and several Chinese firms, such as Haier in household electric goods and Lenovo in laptop computers, have gained a foothold in foreign markets.

¹² Observe that the figures in Table 4 report total output levels, not value added, and can therefore not easily be compared to any national accounts data.

¹³ Given the known strength of India's generic drugs industry, this is surprising.

Table 4: Share of hi-tech industries in industrial production, selected countries, 1980-2003, selected years

	1980	1985	1990	1995	2000	2003
Share of High technology industries in total industrial production						
Total production ^a	8.1	9.5	10.6	11.2	16.5	17.7
United States	10.2	11.2	12.4	12.2	25.4	30.3
Expanded EU	3.7	4.2	4.5	4.2	5.0	6.6
Japan	6.8	11.8	14.1	14.7	16.3	14.9
China	4.2	5.8	6.3	6.8	12.9	17.7
India	2.0	2.0	3.7	4.8	4.9	4.9
Share of industry in total hi-tech industries:						
Aircraft						
Total production	23.7	18.5	17.7	11.7	8.1	7.9
United States	39.5	35.3	37.1	20.9	8.4	6.7
Expanded EU	11.6	9.8	8.6	8.7	7.4	4.3
Japan	1.5	1.3	1.2	1.6	2.1	3.7
China	11.3	10.5	9.8	14.2	11.9	9.3
India	4.1	5.1	2.3	2.5	2.0	1.8
Pharmaceuticals						
Total production	19.3	17.8	18.1	18.7	13.3	14.1
United States	16.0	16.0	17.7	18.6	9.3	8.9
Expanded EU	31.8	32.6	29.9	24.9	18.7	12.7
Japan	19.8	12.2	12.7	14.8	14.2	16.7
China	38.0	24.3	24.3	18.5	11.2	9.5
India	72.6	61.9	44.4	50.9	38.1	36.9
Office and computing machinery						
Total production	8.3	11.5	13.2	15.9	19.2	18.7
United States	1.1	3.3	5.2	12.8	18.1	15.7
Expanded EU	3.8	3.4	3.6	6.9	7.4	19.3
Japan	20.0	23.3	26.0	23.3	20.3	14.7
China	10.9	4.9	5.0	9.3	34.6	40.2
India	1.3	1.8	6.5	7.3	14.6	16.8
Communication equipment						
Total production	23.8	28.9	31.1	36.0	47.7	48.6
United States	9.6	9.2	7.8	16.6	51.1	57.5
Expanded EU	31.6	31.4	30.1	31.1	39.9	43.7
Japan	42.7	50.6	49.3	52.1	56.0	58.2
China	31.6	50.0	53.9	50.5	36.8	36.8
India	6.5	20.9	32.3	30.3	36.4	35.2
Medical, precision, & optical instruments						
Total production	25.0	23.2	20.0	17.7	11.7	10.7
United States	33.8	36.2	32.3	31.0	13.1	11.2
Expanded EU	21.2	22.9	27.8	28.4	26.6	20.1
Japan	16.0	12.7	10.9	8.2	7.3	6.8
China	8.2	10.2	7.0	7.6	5.5	4.3
India	15.4	10.3	14.5	9.0	8.9	9.2

a. NOTES: Production is total gross output in 70 countries or economies.

Source: Science and Engineering Statistics, <http://www.nsf.gov/statistics>.

Table 5: GNI breakdown at constant 1990 prices in US Dollars

Industry - share in GNI (per cent)	1970	1980	1990	2000	2007
China					
Agriculture, hunting, forestry, fishing	52.9	35.8	26.9	14.5	11.1
Manufacturing	26.6	35.8	36.7	49.9	52.9
Transport, storage and communication	5.3	5.7	6.1	7.5	8.1
Other industries	15.1	22.7	30.2	28.1	27.9
India					
Agriculture, hunting, forestry, fishing	42.7	36.8	30.2	22.2	18.1
Manufacturing	12.7	14.0	16.9	17.5	17.5
Transport, storage and communication	4.2	5.7	6.5	8.3	10.9
Other industries	40.3	43.6	46.4	51.9	53.5
China / India ratio					
Agriculture, hunting, forestry, fishing	1.24	0.97	0.89	0.65	0.62
Manufacturing	2.09	2.56	2.17	2.85	3.01
Transport, storage and communication	1.26	1.01	0.95	0.89	0.74

Source: <http://unstats.un.org/unsd/snaama/dnllist.asp>

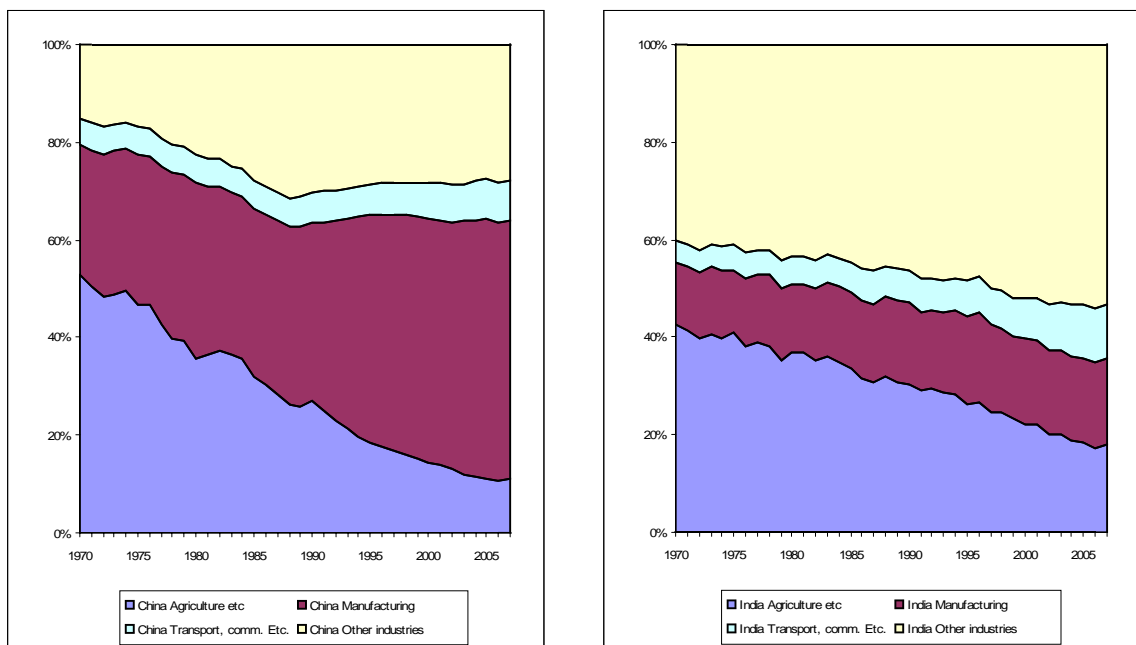


Figure 8: China and India, industrial structure, 1970-2007

5.4. The nature of entrepreneurship

The nature of entrepreneurship differed greatly. In China, the direction of development of state-owned enterprises and even private firms - which often are state connected (Economist, 1997b, 2005b, 2009j) - is guided by government industrial policy. The evidence on this score can, unfortunately, not be put in statistical tables. The Chinese, as befits firms guided by official industrial policy, usually copied foreign business plans and foreign technologies (Economist, 2009b). Even where there is a local break-through, as in the case of lithium car batteries, it is tied into the government's plan to make China the leader in the production of the electric car (New York Times, 2009; Economist, 2009i). Successful Indian entrepreneurs developed new business plans and even new products (Economist, 2009b). This is true for the automobile industry (Richet, 2008). Tata's Nano is one example (Economist, 2008a,c, 2009c,e,g). Designed to be the world's cheapest car and ideally suited to its home market, it may of course fail either because of the world-wide crisis that started just as the firm was gearing up for production or because its attempt to start operations in West Bengal was foiled, after considerable investments on the site, by the inability to acquire the needed land (Economic Times, 2009; Economist, 2009e).

6. Conclusions

At first glance China seems to have solved the problem of transition: starting off as a strong centralized autocracy, nationalizing and mobilizing all national resources, breaking up conservative change-hindering social bonds, and then, at just the right moment, transforming itself into an open capitalist economy that draws in an avalanche of foreign investments and grows at a rapid rate to become soon, it is averred by all knowledgeable observers, the largest economy in the world (e.g., Maddison, 2009, p. 436). India seems not to have a chance of ever coming near, given the great difference between their present level of development and speed of growth.

The problem with this, to China, optimistic prophecy is only that the state has not entirely withdrawn from micro-management of the economy, and continues to try to nudge Chinese firms to develop in accordance with centrally dictated prescriptions. Now the wisdom of one chapter of this policy can surely not be disputed: the development of an infrastructure that serves as a generic growth catalyst that supports growth in all branches of the economy. The attempt to cultivate winners, chaebol-like champions, is more dangerous. There are even reports of imposition of technological solutions, e.g., the attempt to force communication network producers to integrate an independent 3G standard (whose only effect seems to have been to raise development costs and delay the introduction of the equipment of some firms [Economist, 2009j]). Now the jury is still out on whether MITI in Japan, and parallel institutions in Korea and Taiwan, helped or hindered development, yet, given the rapid technological changes of our times, any governmental attempts to guess the course of future development has surely become hazardous. China may nevertheless succeed because of its culture of commercial entrepreneurship and its enormous size that will continue to draw in investors from around the globe, but this may happen in spite of and not thanks to the government's industrial policy.

The case of India is different. Here the heart of the matter is that the government is too weak, and the saying goes that "[the Indian] economy grows at night when the government is asleep" (Das, 2009). The government is unable to balance the budget, to invest in infrastructure,¹⁴ Yet Indian entrepreneurship is more daring than the Chinese and leads to novel strategies and products, and may, once the central government becomes stronger and manages to free itself from the shackles of polyarchy, sprint ahead. Although the probability is low, India may yet draw nearer to China, the front runner.

Let me repeat the word of caution with which I opened this paper: the mechanisms behind the growth process of India and China are more complex and multidimensional than any partial analysis of the institutional-related investment processes can account for. For this reason, the partial perspective of the analysis should be borne in mind when these conclusions are drawn.¹⁵

¹⁴ The recent elections that have for the first time in decades permitted the formation of a government that is not cobbled together from disparate parties with conflicting policies *may* create a stronger administration that *may* be able to balance the budget and start some investment in power generation (which cannot be left to FDI ever since the Enron fiasco) and transport. But given the past, some scepticism is justified (Economist, 2009d).

¹⁵ I am grateful to an anonymous referee for the wording of this reservation.

Appendix A: Did the European socialist countries grow faster in the post-WW2 period?

The end of the Soviet economic system exposed the great difference between productivity in East and West, between the socialist countries of Europe and the western market economies. It also exposed the weakness of socialist statistics, and led to some attempts at recalculation of the size of those economies and their post war growth. The *Economic Survey of Europe 2000* (UN-ECE, 2000) compares several of these attempts, and reports one of these estimates. I have chosen to rely on the Maddison estimates which are reported in the cited source because it had the clearest documentation, and because it built upon the CIA and Alton estimates, which at their time tried to use all available information to recalculate the economic output of the Soviet Bloc.¹⁶

Table A1: Estimates of rates of growth of GDP pc in the European socialist countries, 1951-2000

	1951-60	1961-70	1971-80	1981-90	1991-2000
Bulgaria	6.2	5.1	2.4	-0.1	-3.0
Czechoslovakia	4.2	2.4	2.1	0.8	1.8
German Democratic Republic	4.0	3.3	3.0	0.2	1.4
Hungary	4.3	3.3	2.3	0.4	3.9
Poland	3.1	3.2	2.6	-0.6	3.0
Romania	4.9	4.5	3.7	-1.1	2.8
SFR of Yugoslavia	4.8	4.3	4.9	-0.3	-2.7
Soviet Union	3.7	3.5	1.5	0.8	-4.6
United States	1.6	2.9	2.2	1.9	1.9
European Union	4.1	4.0	2.5	2.1	1.6

Source: Table 5.4.2, Chapter 5: "Catching up and falling behind: economic convergence in Europe", UN-ECE, *Economic Survey of Europe, 2000 No. 1*.

¹⁶ See citations of these sources in Chapter 5: "Catching up and falling behind: economic convergence in Europe" in (UN-ECE, 2000).

Western European growth rates, represented by the EU in the table, serve as the baseline in the table: the growth rate of those countries that exceeded the EU's in a given decade is printed in bold italics. As can be seen, five socialist countries grew faster than the EU in the 1950s, three in the '60s, four in the '70s, none in the '80s, but then again five in the post-socialist decade of the 1990s. This does indicate that the thesis on the whole is correct: growth at the start was faster in some members of socialist world than in the west, but it stopped in the fourth decade of the 1980s, when four countries experienced negative growth, shrinkage. Yet the thesis holds only marginally: the excess of East over West in the 1950s is slight, and the leader of the Bloc, the Soviet Union, is never among those whose growth is fast.

Furthermore, I have some doubt regarding these figures: they are based on the national accounts of the socialist countries, and no attempt has been made to check the extent of a possibly varying hidden inflation which may have affected these figures to a different extent in different periods. Extant purchasing power comparisons have not been used to check these calculations. A paper by the present author (Keren, 1987), which tried to use comparisons of the purchasing power of the GDR's Ost Mark against the Federal Republic's DM, shows that such inflation, or price drift, was strong in the 1950s and then again in the 1970s, but disappeared during the '60s. In other words, while official growth rates were overstated in the 1950s and '70s, they were much less so in the 1960s, the decade of the New Economic System of 1963-1970. By this reckoning the reduction in growth between the 1960s to the '70s was much sharper than the 0.3 percent of Table A1, and closer to 2 per cent. If the same applies to more Eastern European economies, than the decline in competitiveness of the socialist economies was sharper and started in the 1970, not the '80s.

References

- Alfaro, Laura, and Anusha Chari (2009), "India Transformed? Insights from the Firm Level 1988-2005", <http://ssrn.com/abstract=1490071>.
- Allison, Tony, (2001), "Enron's eight-year power struggle in India", *Asia Times Online*, 18 January, 2001; <http://www.atimes.com/reports/ca13ai01.html>
- Alton, Thad, et al. (various years), *Economic Growth in Eastern Europe*, New York: Research Project on National Income in East Central Europe.
- Baek, Jungho, and Won W. Koo (2009), "A Dynamic Approach to the FDI-Environment Nexus: The Case of China and India", <http://purl.umn.edu/6508>.
- Boltho, Andrea, and Maria Weber (2009), "Did China Follow the East Asian Development Model? *European Journal of Comparative Economics*, present issue
- Das, Gurcharan, (2009), "The Next World Order", *The New York Times*, January 2, 2009.
- Economic Times (2009), "Tata Motors fails to pay vendors, suppliers", 5 Feb 2009.
- Economist (1996a), "Keeping cool in China", 6 Apr 1996.
- Economist (1996b), "The excellent chicken-feed of Liu Yonghao", 6 Jul 1996.
- Economist (1996c), "The money and the muck: China's enterprising villages", 16 Nov. 1996.
- Economist (1996d), "Condemned to live China's great contradiction", 14 Dec. 1996.
- Economist (1997a), "Beijing rules: China's state-owned enterprises", 3 May 1997.
- Economist (1997b), "Business: The benign ghost of Lu Zoufu", 4 Oct 1997.
- Economist (1997c), "The long march to capitalism", 13 Sep 1997.
- Economist (1997d), "China and the chaebol: China's would be chaebol". 20 Dec 1997.
- Economist (2003), "China: Boom town blues", 10 Jul. 2003.
- Economist (2004a), "Doing business in China: Fools rush in" 5 Aug. 2004.
- Economist (2004b), "Business in China: Manacled the mandarins", 19 Aug. 2004.
- Economist (2005a), "China's champions: The struggle of the champions", 6 Jan. 2005.
- Economist (2005b), "Telecoms equipment: See Huawei run", 3 Mar. 2005.
- Economist (2005c), "China's courts: Winning is only half the battle", 23 Mar. 2005.
- Economist (2008a), "The one-lakh car. No lakh of daring", 10 Jan 2008.
- Economist (2008b), "India's car industry: A new home for the Nano", 9 Oct 2008
- Economist (2008c), "Land reform in China: Promises, promises", 16 Oct. 2008.
- Economist (2008d), "Special Report. Creaking, groaning", 11 Dec 2008.
- Economist (2009a), "India's economy: Bridges to somewhere". 5 Mar. 2009.
- Economist (2009b), "Special Report: Entrepreneurship. The more the merrier", 12 Mar. 2009.
- Economist (2009c), "Tata's new car: Hello Nano", 23 Mar 2009.
- Economist (2009d), "Inside the Tata Nano: No small achievement", 26 Mar 2009.
- Economist (2009e), "Emerging-market multinationals: Not so nano", 26 Mar 2009.
- Economist (2009f), "Health care in India: Lessons from a frugal innovator", 16 Apr. 2009.
- Economist (2009g), "Logistics in China. Return to sender", 30 Apr 2009.
- Economist (2009h), "Economics focus: Opening the floodgates", 7 May 2009.
- Economist (2009i), "Cost-cutting in Asia: A snip at the price", 28 May 2009.
- Economist (2009j), "Special Reports: Up, up and Huawei", 24 Sep., 2009.

-
- IEO (1997), "Commentary: Enron Power Project", *Indian Economy Overview*,
<http://www.ieo.org/enron.html>
- Keren, Michael (1987), "Consumer Prices in the GDR since 1950: The Construction of Price Indices from Purchasing Power Parities", *Soviet Studies*, **39(2)**, pp. 247-268.
- Keren, Michael (1992), "The New Economic System, the New Economic Mechanism, and the Yugoslav LMF: Bureaucratic Limits to Reform", *Economic Systems*, **16(1)**, pp. 98-111.
- Koopmans, Tjalling C. and John Michael Montias (1971). "On the Description and comparison of economic systems." In: Alexander Eckstein, Editor, *Comparison of Economic Systems: Theoretical and Methodological Approaches*, Univ. of California Press, Berkeley (1971), pp. 27-78.
- Li, Weiye, and Louis Putterman (2008), "Reforming China's SOEs: An Overview", *Comparative Economic Studies*, 50, 353-380
- Maddison, Angus, (2009), "Measuring the Economic Performance of Transition Economies: Some Lessons from Chinese Experience", *Review of Income and Wealth*, Series 55, Special Issue 1, 423-441.
- New York Times (2009), "China Vies to Be World's Leader in Electric Cars", 2 April 2009
- Pritchett, Lant, (2009), "Is India a Flailing State? Detours on the Four Lane Highway to Modernization", <http://ssrn.com/abstract=1404827>.
- Qian, Yingyi, and Chenggang Xu (1998), "Innovation and Bureaucracy Under Soft and Hard Budget Constraints", *Review of Economic Studies*, 65, 151-164.
- Richet, Xavier, and Joel Ruet (2008), "The Chinese and Indian Automobile Industry in Perspective: Technology Appropriation, Catching-up and Development", *Transition Studies Review*, 15,3, pp. 447-465, www.springerlink.com/index/G7376141433N4878.pdf
- Sah, Raaj Kumar, and Joseph E. Stiglitz (1986), "The Architecture of Economic Systems: Hierarchies and Polyarchies", *The American Economic Review*, **76(4)**, pp. 716-727.
- UNCTAD (2007), *World Investment Report 2007*, United Nations: New York and Geneva, 2007.
- UN-ECE (2000), *Economic Survey of Europe*, 2000 No. 1.
- World Bank (2009), *Doing Business in India 2009*,
http://www.doingbusiness.org/Documents/Subnational/DB09_Subnational_Report_India.pdf
- Xu, Chenggang, and Xiaobo Zhang (2009), "The Evolution of Chinese Entrepreneurial Firms. Township-Village Enterprises Revisited",
<http://www.ifpri.org/pubs/dp/ifpridp00854.asp>
-