

ECON4940. UNDERSTANDING AND INTERPRETING CHINESE ECONOMIC REFORM, SPRING 2007

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Lecture note 5: Drawing lessons from China-India comparisons

In this lecture we go beyond the saving-investment scenario of the previous lecture to examine some of the deeper underlying reasons for China's superior performance relative to that of India's in the post-Mao period. As an aide to this exercise we shall employ an endogenous growth alternative to the standard growth accounting approach, which allows for varying total factor productivity (TFP) growth rates.

5.1 *Introduction*

The standard growth accounting framework set out in the previous lecture, and the results from its application to China and India, indicated the varying contributions of TFP to the growth performance. This approach is informative. However, it does not elaborate on the sources of TFP growth, which is assumed to be an exogenous "residual". Furthermore the underlying standardized neoclassical assumptions, together with the assumption that knowledge is fully accessible, imply that growth rates will converge in the long run. But the empirical evidence for this is mixed.

In addition, assuming Cobb-Douglas constant returns to scale technology implies diminishing returns to increasing capital intensity, and this is problematic as it is not generally borne out by the data. In per capita terms output is a decreasing function of capital intensity

$$y = k^\alpha, 0 < \alpha < 1; \text{ i.e. } \frac{\partial y}{\partial k} = \frac{\alpha}{k^{1-\alpha}}$$

Yet indications from Chinese data are that the massive increase in capital per capita has led to little or no reduction in the return to capital. This is consistent with various other indicators such as FDI, which is attracted by high returns to capital, continuing to pour into China. It is also likely that India exhibits similar phenomenon, certainly in the IT sectors, but also to a lesser degree in others.

5.2 *An endogenous growth alternative*

The above problems of black box, convergence, and declining marginal product of capital can be resolved in an endogenous growth framework. The first task is to open the TFP black box, and examine some hypotheses as to what drives broadly conceived technological change. TFP refers to a process whereby output is increased and/or improved in a sustained manner for a given level of input use. It also refers to situations where new products are developed. These developments are the result of applying ingenuity and can take many different forms. In the broadest, macro, sense it can refer to

the overall economic organization. Does the economic system mobilize and give effect to the creative energies of individual agents? For example, economic systems organized on stringent central planning command and control lines exhibit, sooner or later, much lower rates of TFP growth than those based on the competitive market paradigm. An economic system based, say, on a dominant, intrusive, bureaucracy enforcing comprehensive regulations and applying steep formal and informal taxes (e.g. from corruption) can stifle private initiative and force stagnation. The latter system (so-called license Raj) might be viewed as characterizing much of post independence India. Examples of it are also to be found in Chinese dynastic history. Thus even though gunpowder was invented in China, its use there was little developed, since an appropriate framework of incentives for doing so appeared to have been absent, unlike with the pre industrial Europeans.

In general, and especially at the micro level, relevant issues would concern the availability of opportunities, and the scope for individuals to freely exploit them and to keep the fruits of their efforts. Incentives matter; enabling environments matter; and so do inner motivations and the social norms that condition them, for example the desire to acquire goods and make profits. High, sustained, TFP growth in post-Mao China points to fundamental advances in economic organization, both at the overall and individual agent levels. Before examining some of these it is useful to consider a “Schumpetrian” version of the endogenous growth model (see Aghion and Howitt’s book), which formalizes some of the underlying characteristics of TFP.

First, the production function is recast as follows:

$$y(t) = A(t)^{1-\alpha} k(t)^\alpha \quad (1)$$

This formulation restores the constant returns to scale assumption by introducing the concept of productivity enhanced capital. Output with respect to capital is still subject to decreasing returns but technological change occurs in a manner that restores constant returns to scale. This assumption appears to better accord with empirical findings.

The change in TFP is conveniently divided into two categories: new innovations that add to the stock of world knowledge, and innovations that take the form of imitation.

$$A(t+1) - A(t) = \eta(\gamma - 1)A(t) + \mu(\bar{A}(t) - A(t)) \quad (2)$$

Where $\bar{A}(t)$ is the global technological frontier
 γ is a multiple scaling factor for innovation
 η is the frequency of innovation
 μ is the frequency of imitation.

On dividing through by $A(t)$, the rate of growth of TFP is determined

$$g = \frac{A(t+1) - A(t)}{A(t)} = \eta(\gamma - 1) + \mu\left(\frac{\bar{A}(t)}{A(t)} - 1\right) \quad (3)$$

In general $\bar{A}(t) > A(t)$ i.e. the level of technology in a country is lower than the world level, which varies with the development of the country. Hence, the last term in (3) is positive and will contribute to TFP growth depending on the frequency and spread of imitation activities. For many developing countries, the contribution of the first term to TFP growth is likely to be small as this is a function of the availability of research institutions, both in academia and business, and the size of the research establishment. Hence, in the initial years TFP growth will tend to be dominated by imitative initiatives, which could result in very high rates of growth until the technological frontier is reached. As the country advances it will have to rely more on new innovations, which typically tend to flow at a lower rate thereby bringing TFP growth down.

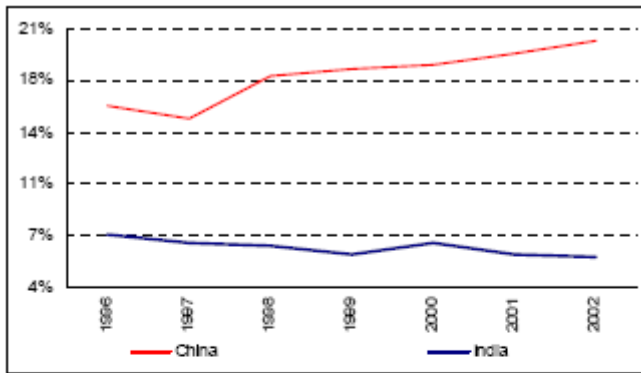
The frequency coefficients of innovation and imitation in the above formula can be derived from optimizing behaviour. In principal these solutions depend heavily on institutional characteristics and the prevailing “culture”, and the available infrastructure. Do social norms encourage competitive, acquisitive behaviour or cooperative, sharing modes? Does an effective system of property rights exist (which could even be informal as in China provided enforcement mechanisms are present) so that the innovator gets to keep some of the fruits of his or her innovations? A good legal system, reasonable taxes and the containment of corruption are supportive of property rights. Are costs of undertaking transactions sufficiently low? Good communications, cheap and regular power, adequate port facilities, etc are important. How healthy, educated and skilled is the labor force? How effective are the financial facilities for mobilizing and allocating capital to entrepreneurs?

The above are some of the critical enabling factors that help promote an entrepreneurial thrust to higher growth rates. Listing the broad ingredients does not however pin down the precise concrete forms they should take. Moreover, we should interpret innovation in a broad sense that covers not only techniques of production but also institutions that facilitate the more efficient use of resources. For example, the invention of joint stock, limited liability, companies helped diversify risk, which in turn stimulated the taking of entrepreneurial risks. Alternative solutions are possible as evidenced by the Anglo Saxon, Japanese, continental Europe, and other approaches. Here we look at the Chinese and Indian solutions.

5.3 *Chinese and Indian enabling factors*

It is instructive first to compare enabling factors, and to then ask why China was more successful than India in acquiring them. We begin with infrastructure investment in the next chart. China’s infrastructure outlays, both in absolute terms and as a share of GDP, is several multiples bigger than has been the case for India.

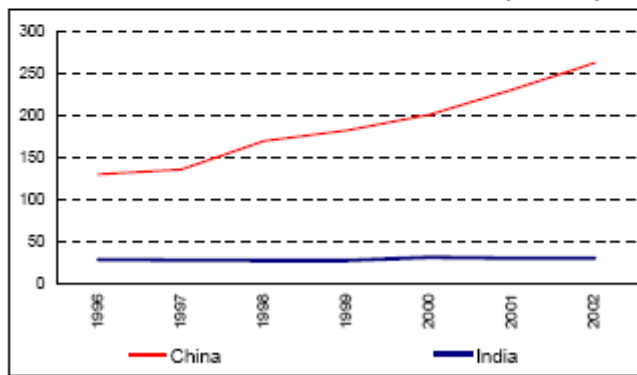
China and India: Infrastructure Investment* (% of GDP)



Source: China Statistical Yearbook, RBI, Morgan Stanley Research

Exhibit 57

China and India: Infrastructure Investment* (US\$ bn)

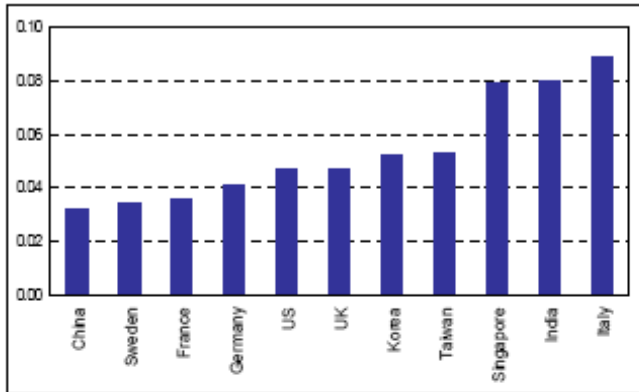


* We have used the gross capital formation in electricity, construction, transportation, telecom and real estate as a proxy for infrastructure spends.

Source: China Statistical Yearbook, RBI, Morgan Stanley Research

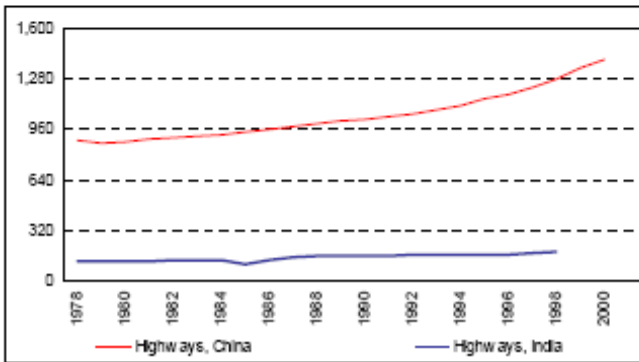
The higher infrastructure outlays in China take the form of roads, airports, railway lines and stock, ports, telephone exchanges and lines, power plants and so on. They have resulted in a marked lowering of key cost components, especially favoring manufacturing. For example, electricity costs in China for industrial clients are among the lowest in the world and are around some one-third of what they are in India as is indicated in the immediate chart below. The charts and table that follow describe different aspects of the infrastructure and are self explanatory.

Electricity Costs for Industrial Clients, US\$/KWH, 2002



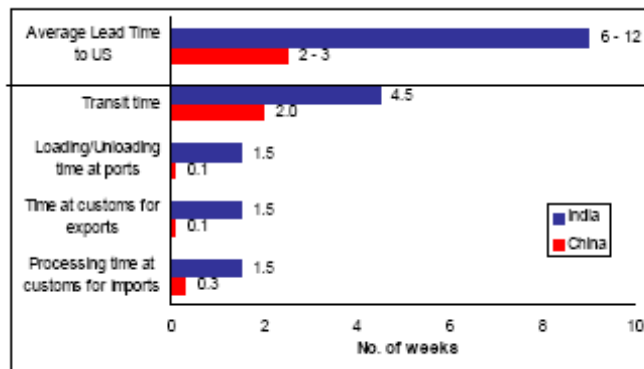
Source: IMD

**Exhibit 59
China and India: Road Creation Has Lagged In India
(Length of Highways 000 km)**



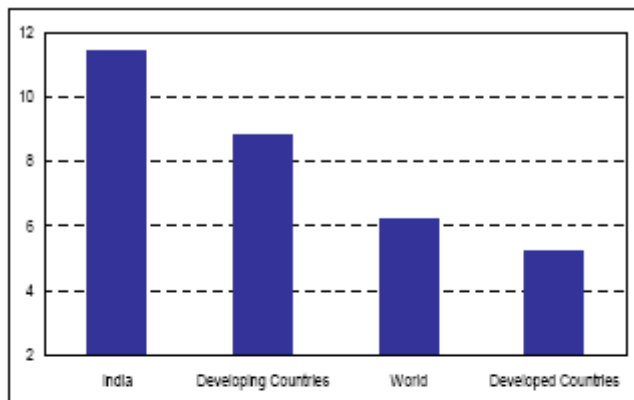
Source: China Statistical Yearbook, Morgan Stanley Research

China and India: Lead Time of Exports to US



Source: CII McKinsey

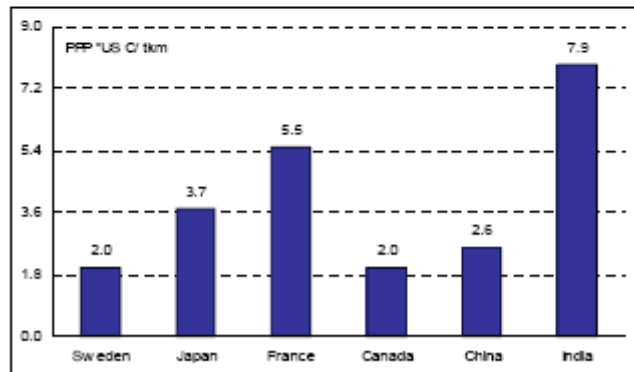
Ports: Average Cost of Freight for Imports



Source: CII McKinsey

Exhibit 62

Railways: Comparatively Higher Tariffs in India



Source: TISCO

Infrastructure (As of 2002)				
	India		China	
Cost				
Railways (PPP US C/TKM [^])		7.9		2.60
Electricity Costs for Industrial Clients, US\$ per kwh		0.08		0.03
Spending				
	US\$bn	% of GDP	US\$bn	% of GDP
Energy*	8.7	1.4%	54.2	3.8%
Construction*	1.4	0.2%	4.8	0.3%
Transport,				
Storage and Telecom*	9.7	1.6%	73.5	5.2%
Real Estate*	10.9	1.8%	129.8	9.2%
Total	30.6	5.1%	261.9	18.6

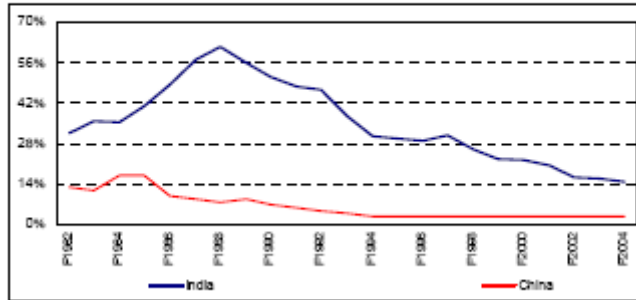
* For India, F2003 numbers represent the numbers for the period 2002.

[^] US Cents per Ton Kilometer

Source: TISCO, IMD, CSO, CEIC, Morgan Stanley Research

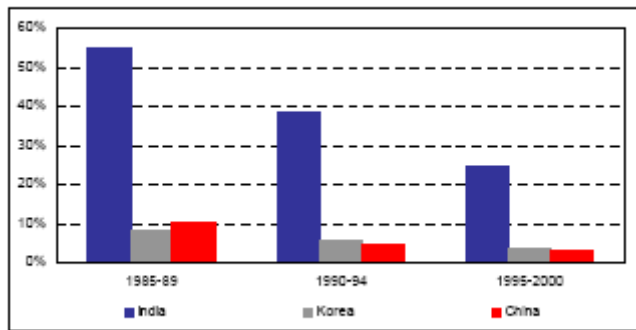
Another important enabling factor is taxation. As the next chart shows India relies much more on collections of customs duties than does China. In general, China's tariff regime is more import friendly than India's. A characteristic of the other taxes in India not shown here is that they are levied on a narrower base than in China.

Exhibit 53
China and India: Customs Duty Collections as % of Imports



Source: RBI, Morgan Stanley Research

Exhibit 54
Weighted Import Tariff Trends



Source: IMF, Morgan Stanley Research

Information on FDI, the lead time of exports above, the low freight costs, low import tariffs, and the major enabling device of special economic zones (SEZ), indicate the strong outward orientation of China compared to that of India. This helps explain the exceptional export performance of China. An additional contributory factor is the less rigid labor environment, where the rights of labor are less entrenched than in India. It is

both easier to employ and fire labor and to set their wages.

Labor Reforms in China

Freedom of choice	In 1980, urban job seekers were allowed to find work in SOEs, collectives or the private sector. Enterprises were given more autonomy in hiring decisions. Instead of unilaterally allocating workers to manufacturing units, labor bureaus began introducing workers to units.
Wages	Firms were allowed to give bonuses to employees. The employer's discretion on wages was increased in 1994.
Contract labor	In the mid-1980s, it introduced a labor contracting system, a step change from the earlier life-time employment system. There were further reforms in 1994, which enabled the share of contract labor to increase.
Retrenchment	In the mid-1990s, the state enterprises were allowed to retrench labor but had to establish re-employment centers (RECs) to provide retraining, job search assistance and unemployment benefits to these laid off workers for three years. From 2004, the system of RECs will be phased out.

Source: IMF, Morgan Stanley Research

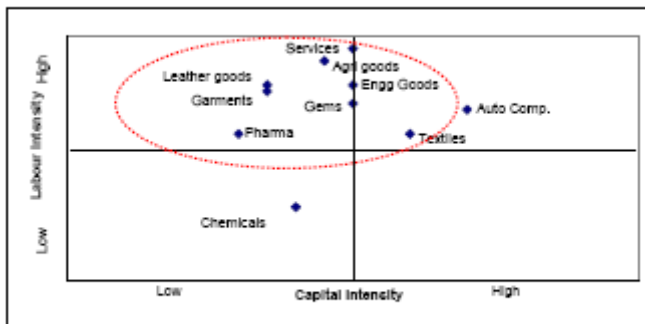
The following quote from Morgan Stanley report (p. 23) is noteworthy:

In comparison, India's labor laws remain restrictive. Indeed, the World Economic Forum's global competitiveness report (2003-04) ranks India 96th out of 102 countries on hiring and firing policies compared with a 26th ranking for China. Currently, any factory employing more than 100 people needs to go through a rigorous approval-seeking process not only for closing down but also for firing employees. Recent attempts to relax labor laws have met with stiff opposition from trade unions. These laws are effectively working only for the protection of labor employed in the organized sector, which accounts for only 10% of the total work force. In fact, to avoid these restrictive laws, a large majority of factories use 'casual' labor. Factories prefer to employ people on contract instead of taking them directly onto their payroll. However, the relaxing of labor laws by itself will not help unless some of the other relevant structural changes are made to ensure adequate growth in investment.

The resulting saving on labor costs, combined with easier and cheaper access to capital as a result of the extremely high savings rate in China and favorable infrastructure, provides a basis for high profit margins for private enterprises and attracts FDI.

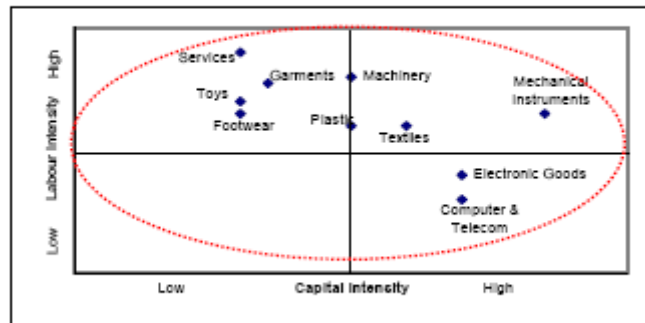
High infrastructure related costs help explain the concentration of India's exports on labor-intensive products such as software development, engineering goods and gems. In China the range of manufacturing is generally much more extensive as the next two charts indicate.

India Has Done Well In Exports of Labor-Intensive Products



Source: Morgan Stanley Research

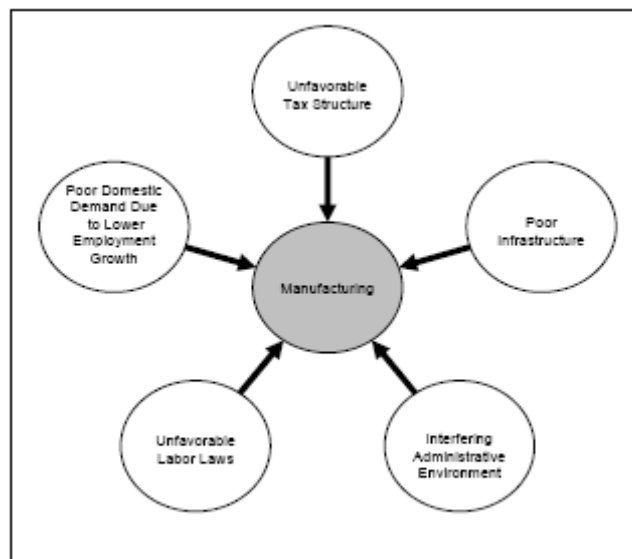
Exhibit 70 China Has Done Well in Almost All Manufacturing Sectors



Source: Morgan Stanley Research

Putting the various factors discussed above together shows how the manufacturing

Manufacturing Environment in India



environment in India is hampered. *Source: Morgan Stanley Research*

5.4 *Why has India lagged in implementing adequate enabling factors?*

It is not that India is completely behind China with regard to potential enabling factors. Areas where India scores better include the financial sector and many would also argue the legal system, the tradition of higher education, widespread use of English, and democracy. But these potentially important factors can be thwarted. Thus the legal system could be the source of endless and unnecessary litigation, while higher academic education could restrict the supply of skilled workers. As Virmani (2005) pointed out democracy can blunt the national focus on economic growth. A government in a democracy has to be a welfare maximizer, taking account of the interests of many different groups. In China in contrast, the dominance of the communist party facilitates a more single-minded devotion to the goal of economic growth. Despite the fuzziness of goals and instruments in a democracy, de Long (2001) argues that India's economic performance has been respectable, and that as a result of liberalizing reforms in recent years its growth rate is accelerating.

Nonetheless, it is important to note that China's performance was way above the average, as a result of which it managed to drastically reduce illiteracy, poverty incidence, malnutrition - UNICEF estimates that in India nearly one-half of children under 5 years are malnourished whereas in China it is only a small fraction – and increase life expectancies. These are outstanding achievements, and many of the beneficiaries would presumably argue that if democracy has to be curtailed and deferred in order to achieve them they would be willing to pay that price.

However, it is not clear cut that democracy has to be sacrificed to attain Chinese rates of economic growth. Erroneous beliefs as to what “works” can hamper outcomes. In this regard what differentiates China is the extent to which it relied on home-grown solutions after Deng took power, abandoning ideology, whether Marxism or the Washington consensus, for pragmatic solutions. Of course, when combined with a powerful state apparatus, the implementation is easier, but China's approach appears to have relied more on a heavy dose of persuasion based on the principle of ensuring that nobody suffers from a proposed reform – the so-called dual track approach. Nonetheless, a powerful state mechanism is important for promoting reforms. For example, changing the urban-rural terms of trade in favor of agriculture was crucial to the rapid development of that sector in the initial phase. Owing to extensive control over wages and benefits it was possible to do this without crippling opposition from the urban sector. Such a solution is much more difficult to implement in India. Another example would be the restructuring of state- local entity relations in China in an incentive compatible manner, which is less likely in India with its entrenched constitutional provisions. Above all what is needed is an efficient bureaucracy whose interests are more closely aligned with those of the state. This appears to have been more the case in China than in India with its “permit Raj”, the dismantling of which is now contributing to much higher rates of growth in India.