

Industry in India – A Look into the Next Quarter Century

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I. Introduction

Had economists been asked to undertake such an exercise a quarter-century ago, chances are that few would have been able to foresee the massive changes that have occurred in the fundamental attributes of what we collectively refer to as "industry". Computerisation, for example, was a visible phenomenon in the 1970s, although the age of the personal computer was yet to dawn. More generally, the use of technology across the board to expand the range of choices that consumers have in fulfilling both essential and discretionary needs has, by most standards, contributed enormously to enhancing welfare. International trade has expanded phenomenally, as countries in the developing world grasped market opportunities arising in the affluent economies, mostly to mutual benefit. Further, the nature of transactions between countries around the world, whatever their stage of development, has increasingly moved to areas beyond commodities. Services, capital and knowledge are the new loci of cross-border economic relationships.

In direct contrast, many things appear not to have changed at all. This is particularly so at the bottom end of the development ladder, a category in which many people in India would certainly fall into. In the last twenty-five years, the overall incidence of poverty has certainly declined. But we have steadfastly continued to measure poverty in terms of nutritional standards. Access to other services, which most people would consider an essential yardstick of the quality of life - housing, clean water, education, health care - are still beyond the purview of our "official" criterion of poverty. If these were to be included, it is difficult to say whether the bottom rung of India's socio-economic ladder are significantly better off than they were a quarter century ago. In a global economic environment in which there has been a fundamental redefinition of the role of the state, the Indian state continues to lurch from reform to reform, leaving in its wake several contradictions. Partially loosened shackles on private enterprise co-exist with gaping holes in areas in which private investors fear to tread.

The result is that India on the threshold of the millennium is, perhaps more so than at any point in its history, is, to succumb to the cliché, a land of striking contrasts. There is a large

and increasing number of people who are heavily integrated into the global economy. Correcting for purchasing power differentials, earnings of skilled professionals reflect global trends. Availability and affordability of goods and services are not very different from anywhere else in the world. Essentially, therefore, what happens to this segment of the population over the next quarter-century will closely mirror what is happening in the rest of the world.

Unfortunately, there is an even larger, and also increasing, segment of the population, whose economic condition is determined by the demand for and supply of unskilled labour in the rural and urban areas of the country. The sheer weight of numbers forces wages for this segment of the people down to subsistence levels, leaving little opportunity for either discretionary spending or savings. The benefits of the consumer revolution are clearly passing them by. From the perspective of quality of life, this is the segment that is most dependent on basic services provided by the state, which, as was suggested above, has proved to be increasingly incapable of meeting their needs.

It is against this backdrop of contrasts that we have to begin to think about the path that the Indian economy will take over the next twenty-five years. This is, of course, the concern of this entire project, whose other contributors may not agree with this perspective. However, I would argue that the perspective is valid and valuable even for the analysis of the industrial sector, with which this chapter is concerned. It is the manner in which these contrasts play themselves out over the next quarter-century that will determine the evolution of industry in the country. The reason for this assertion is that all the major forces acting upon the industrial sector, and whose combined effects will influence the eventual outcome, will themselves be influenced by the two segments of the economy, which are pulling in opposite directions.

Economists are quite comfortable doing linear (or at best, mildly non-linear) projections of past trends into the future. This is a convenient and reasonable tool for making assessments of the near future, when the basic structure is expected to remain intact. However, looking into the distant future is an activity that depends on the forecaster's abilities to spot "discontinuities" - sharp and significant departures from current trends, which bring about fundamental changes in the underlying structure itself. Data and statistical analysis are not much help here, because they are rooted in the continuity and stability of the structure.

Contributing to this project therefore requires a distinct departure from my professional affiliations. Not that this is done with complete abandon; later on in the chapter, there is an attempt to benchmark the anticipated structure of the Indian industrial sector by looking at the current structures of countries at levels of development today comparable to what India might be twenty-five years hence. However, in the spirit of this exercise, this is at best provides a limited frame of reference, precisely because the projections give far greater importance to the role of discontinuities, which are qualitatively different in nature than these countries themselves have experienced. In judging this chapter, or its companions, I would put far more weight on the insights and judgements being communicated in the qualitative discussion on discontinuities than on the quantitative sections.

Having established these priorities, the chapter is structured as follows. Section II contains discussions on the forces that are shaping the industrial sector today and attempts to identify the discontinuities within them. Section III provides quantitative comparisons between the industrial sectors of several countries, which are today at levels of per capita income that India might be at the end of the quarter-century. These comparisons provide a benchmark for anticipating the evolution of the Indian industrial sector, albeit in a scenario of continuity. Section IV draws on the patterns emerging from these two sets of discussions to make predictions about the future course of Indian industry. In doing this, it also addresses the several threats that lurk in its path. Section V concludes by summarising the main assertions of the chapter.

II. Trends and Discontinuities

II.1 The Basic Framework

It is conventional in economics to make a fundamental distinction between demand and supply. The evolution of an industry is determined by the interplay between these two sets of factors. Everything that is going on in the encompassing economic environment, which itself is influenced by broader social and political factors, is transmitted to the producers of a particular good or service through either an impact on the demand for that good or an impact on the cost of producing it. This is a simple verbalisation of the concept of “general equilibrium” that forms the basis of a particular genre of economic models. In the context of such an equilibrium approach, an important distinction can be made between “trends” and “discontinuities”.

Stable trends in economic variables, for example, the level of production of a particular commodity, of its price, reflect the tendency of the system to converge towards an equilibrium, which is part of a set of alternative outcomes defined with respect to certain constants. Carrying this example forward, we would legitimately look at trends in the production of, say, steel, in an environment in which the role of steel in various other sectors of the economy had not undergone any fundamental changes. Even while, at the margin, minor technological developments were providing cost-effective alternatives to steel, the bulk of the movement in steel production could then be explained by the performance of the major steel-using sectors. In this situation, the constraint being imposed on the set of possible equilibrium positions is via the assumption of a constant technology with respect to the use of steel.

By contrast, a discontinuity is generated by a change in technology, which fundamentally shifts the balance between steel and competing materials. It could, of course, be in either direction, for or against steel, but the historical pattern has been to reduce the intensity of steel usage in many of its traditional applications, so we will focus on this direction of change to develop the example further. A change in the technological paradigm with respect to steel can come about for three main reasons. One is that the technology relating to the production and use of other materials, metallic or non-metallic, reaches a point where they provide better value-for-money. The second is that activities that use steel themselves go through broad-based technological changes, which results in an ability to economise on the requirements of steel. An important example of this is in the construction of high-rise buildings, in which improvements in design, construction methods and the capabilities of complementary products has led to a substantial decline in the steel intensity of the buildings. Part of this happens in the incremental fashion described above, but the role of specific inventions or innovations in generating substantial one-time effects is also very important. Both these factors obviously contribute to reducing the overall steel intensity of the economy.

The third factor relates to the competitive response of steel producers themselves, in terms of what they do to counteract these two factors. Better quality and lower costs of production will obviously help to offset some of the impacts of these two kinds of technological developments. Fundamental changes in the structural capabilities of steel may help to preserve its value-for-money in the face of rapid technological developments elsewhere. But,

there are obvious limitations imposed by the chemical and physical properties of the metal. No industry with this kind of constraint can be seen as having unlimited potential. Sooner or later, it will see a redefinition of its role in the economy (in the extreme, become obsolete), while other industries and technologies displace it. This is the essence of discontinuities. They change the constraints, which bind the range of outcomes that an economy tends to converge to.

II.2 Demand

Changing patterns of demand are key to understanding the evolutionary paths that particular industries might take. For a large, continental economy like India, it is important to separately consider the factors driving domestic demand patterns and the demand for the country's exports. There are unquestionably certain common factors at work, but enough distinct ones that make it very likely that the two components of demand do not necessarily move in tandem. With respect to how domestic demand for industrial product shapes up over the next couple of decades, two factors will play a key role.

The dynamics of household income distribution: One of the striking features of the Indian economy over the last decade is the absolute number of people who have moved from levels of subsistence to discretionary spending power. The policy debate in India has always tended to focus on the incidence of poverty. There have been several controversies over how poverty should be measured. But, if one goes by a fairly straightforward criterion, the number of people unable to buy enough food to provide some minimal nutritional intake, there is little question that the incidence of poverty has fallen quite substantially over the years. From over 40 per cent of the population in the early 1980s, this indicator has fallen to an estimated 26 per cent at the end of the 1990s, a period when the population of the country itself went up by more than 300 million people. In terms of the absolute number of people who thus have appeared to rise beyond mere subsistence to levels of income where they have some discretionary spending power, this is a very dramatic change.

Estimates of a 300 million strong middle class began appearing in the media during the mid 1990s and many companies drew up ambitious investment plans in hopes of tapping into this very large domestic market. With hindsight, it appears that to look at this market as a monolithic whole was not the right way of approaching it. Indian consumers are not, and perhaps never will be, driven by a common set of preferences and buying motivations. Therefore, companies following single product and market strategy found themselves

generally unable to make significant national gains. The lesson of the 1990 in this regard is that there is a lot of spending power, but each group of consumers has particular needs and preferences and therefore needs to be strategically differentiated. A large, heterogeneous mass of consumers poses major challenges to companies who want to compete on the basis of volume-driven cost reductions. These challenges may not have been successfully met so far, but there is no question that the future of consumer goods companies in India will depend heavily on how they address them.

The National Council of Applied Economic Research (NCAER) has been documenting the dynamics of household income by means of regular surveys of approximately 300,000 households beginning in the mid-1980s. The shifting distributions observed in these surveys over time, have been used to forecast the income distribution up to 2007. These forecasts are presented in a series of figures (Figures 1-3). They are based on assumptions of average annual GDP growth of around 6.5 per cent. It clearly indicates that, even with relatively conservative growth expectations (the government has set a target of 8 per cent for the Tenth Five Year Plan, 2002-07), the number of households who will command discretionary spending power will rise substantially in the coming decade. Even within this subset of households, the number in the higher income levels will show appreciable increases.

There is thus a two-fold impact on the demand for manufactured goods inherent in the dynamics of household income. The number of people in the middle-income segments will drive the demand for certain types of goods – kitchen conveniences, small electrical and electronic appliances and the lower-priced segments among two-wheeler vehicles. At the same time, the increasing number of people in the higher income groups will increase the potential for several varieties of premium consumer goods, larger and more sophisticated appliances and four-wheeled vehicles. As more of these households become homeowners, the linkages to the demand for manufactured goods – steel, cement, paints, and others – inherent in construction will also exert a strong demand pull.

The limiting factor in this very optimistic story is saturation. How soon will the Indian consuming class be saturated with all the goods he considers necessary at his particular income level? With certain goods, for example, automobiles, the recent experience is that it can happen rather quickly. As long as there is pent-up demand being satisfied by the large increase in availability and support facilities like financing, growth can be extremely rapid.

For two years, automobile production grew at rates approaching 40 per cent per year. It is clearly impossible for any activity to sustain such rates for very long periods of time, but a variety of factors will determine whether the sustainable rate will remain relatively high or come crashing down to the ground. Recent sales figures of automobiles indicate a virtual stagnation in the industry, but its growth prospects will depend on how many households each year perceive themselves as having crossed the threshold beyond which owning a car is considered reasonable. The household demand projections suggest that every year, a substantial number of households will probably be crossing this threshold. This, along with replacement buying by existing car owners, provides a reasonably fast growing market, but the benefits of pent-up demand that the industry was able to extract for a few years will clearly not return in the foreseeable future.

A direct contrast to the automobile story is that of motorcycles. The sales of this product have been growing at close to 30 per cent per year for the last few years and do not show signs of slowing down. Why has saturation not affected this market, and is it likely to very soon? The answer to this lies in the magnitude of the potential pool of buyers for this product. It generates demand from first-time vehicle buyers in the lower strata of households with discretionary spending power. This, as the forecast indicates, is a very substantial number. However, it also attracts custom from the more affluent households as a second or third vehicle for use by members of the household. With this range of potential buyers, the market appears far from being saturated and high rates of growth are likely to persist.

To sum up the main point being made here is that, even with relatively conservative expectations of economic growth over the next two decades, large numbers of people will transit across successive thresholds of perceived needs and spending ability. This suggests that domestic demand, much of which will be for various types of manufactured goods, will provide a major boost to the country's industrial sector. There is one major qualification to this rather optimistic prognosis, however, which will be discussed later in the section. Domestic producers must be able to compete effectively for this market.

The dynamics of age distribution: The “demographic transition” is a well-known phenomenon. The typical path that the population of any country follows is characterised by three phases. First, both birth rates and death rates are high, leading to relatively slow growth in the number of people. Then, the death rate falls, for a variety of reasons, for example the

spread of preventive health programmes, while the birth rate persists at its previous level. During this phase, population begins to grow faster. Finally, the birth rate also falls, leading to a decline in the population growth rate.

As was suggested, this is well-known. The economic implications of this, however, are extremely significant. Recent studies (for example, Bloom and Williamson, 1999) show how important the transition was in providing impetus to the growth achievements of the East Asian economies. The factor driving the link between the demographic transition and economic performance is the age distribution of the population. As an economy moves from the second to the third phase of the transition, it finds itself with a with a rapidly increasing proportion of people in the working age group, roughly 20-60 years of age, described more tellingly by Bloom and Williamson as the “economically active population”. This is because the slowing of the birth rate means fewer children and the momentum of the second phase has not yet allowed the aging of the population.

The bulge of the economically active population leads to tremendous benefits to the economy (provided, of course, that the environment is conducive to appropriating them). This segment is, after all, the labour force. If a large proportion of it is productively employed, more is produced. This is also the age-group with the highest propensity to spend, leading to buoyancy in aggregate demand, other things remaining equal. Finally, because of the relatively low dependency of both children and the elderly, the earning segment of the population has a higher capacity to save. India’s population projections indicate that it is now entering the virtuous phase of the transition. Its share of economically active population is rising and will continue to rise for the next 15 years or so. It will peak at close to 50 per cent, before the economy has to confront the “greying” problem – a high proportion of the elderly – that many countries are now facing.

From this perspective, then, the next two decades offer the Indian economy the prospect of a significant boost in domestic demand from a relatively young population, which is productively employed and does not have too many dependents to worry about. The combination of the dynamics of age and income distributions represents India’s most powerful opportunity for industrial and service growth, as the products from these two sectors form an increasing proportion of the consumption basket. Of course, the entire basis for optimism on this score is the ability of the economy to make sure that this segment of the

population is actually economically active. There are reasons to be concerned about this ability, given the mixed signals and conflicting incentives that characterise the policy environment today. This issue will be addressed in Section IV.

Implications for the pattern of Industrial Activity: From the perspective of production, these trends have some fairly clear implications for the kinds of goods and services that will find favour with consumers. First, income mobility and relative youth will tend to favour relatively high-value, branded goods in the general category of expendables (or non-durables). These kinds of goods typically require significant efforts in marketing through product differentiation, which then has to be supported by tight quality control. All this means that relatively large organisations that can spread the costs of these activities over larger sales volumes will be at an advantage. It is true that such organisations will not always find it economical to produce everything themselves. Sub-contracting and out-sourcing may still be attractive arrangements in some, even many of these industries in which quality standards are not too difficult to enforce. But, the weight of this factor will tend to push the organisation of production and selling into larger and more formal organisational structures. Even though a large mass of relatively low-income consumers may still provide sustenance to the low-price, low-quality, informal sector for many goods, the pressure of demand will shift towards the former.

Second, in a similar vein, as more people cross affordability thresholds of various categories of consumer durables, the markets for these will expand significantly. In the lower price segments of such goods, the primary source of competitiveness is scale. This is partly attributable to scale economies in production, but also significantly due to the need to maintain an effective and reliable after-sales service capability. The price-quality combination that will sustain domestic producers in a marketplace relatively undistorted by discriminatory tax measures may not be achievable at the kinds of volumes that they typically produce today. This leaves them vulnerable to the increasing presence of very high-volume multinational producers, an issue, which is addressed in more general terms in the discussion on trade below. The point to emphasise here, however, is that increasing penetration of durable goods, particularly outside the highly concentrated metropolitan markets, can only be achieved by organisational structures that can provide the desirable level of after-sales service.

Akin to the argument advanced in relation to expendables, this does not necessarily rule out out-sourcing and sub-contracting to smaller entities, particularly in the components and sub-assemblies end of the business. However, the fact is that production quality is inversely proportional to the costs incurred in providing after-sales service. A viable trade-off between the two is more likely to be found in large and highly structured organisations. From the consumer's perspective, the larger the amount of money he is spending on a particular purchase, the greater the premium he would place on the credibility of the producer with respect to both quality and after-sales service.

A third implication of the emerging pattern of domestic demand is that there will be an increasing proportion of household income spent on direct consumption of services. Economists have traditionally viewed the demand for services as a "derived" demand – it is driven by the level of activity in the industrial and to some extent the agricultural sectors. One consequence of this is that services were never visualised as a leading sector, or in other words, an engine of growth, because they were not expected to sustain themselves in the absence of a dynamic industrial scenario. There are exceptions, of course, like a tropical island economy that thrives on tourism, but these do not apply to large and diverse economies.

However, if one looks at the consumption basket of relatively affluent individuals even today, it is quite easy to see an increasing proportion of expenditures on services. To some extent, these may be linked with the consumption of manufactured goods, but a significant, even dominant, share of the value to the consumer comes from the service component. For example, the proportion of income spent on eating out is increasing. In a dry, technical sense, this shows up in the household expenditure surveys conducted periodically by the government. In more vivid terms, it is reflected in the huge increase in the number and variety of eating establishments that have emerged in big as well as small cities. In eating out, for a given amount of money spent on the nutritional value of the food, the consumer is spending comparable or more on the service that the establishment provides. This pattern is visible in more and more categories of consumption, but it could still be argued that it is still essentially linked to the production of goods, i.e., the food itself.

However, there are significant examples of increasing consumption of services that are not so obviously linked. Tourism is one such, entertainment another. Health clubs, coaching classes

and private security services are becoming more and more visible on the consumer's platter. All these reflect a growing dissociation between tangible goods, which is the conventional description of manufacturing and intangible services. In this chapter, of course, it is appropriate to take a broad view of "industry" as a production process, which encompasses both tangible and intangible goods. Even with this perspective, however, the fact remains that a shift in favour of intangibles has major implications for the demand for raw materials and intermediate inputs, as well as the demand for different types of labour skills. Both these will have a significant impact on the evolving pattern of industrial activity.

II.3 Trade

The second factor that will drive the industrial structure and performance of India is international trade. Here again, there are likely to be certain critical discontinuities that will act in concert with the forces of domestic demand to exert a powerful influence on industry. The first significant discontinuity from the global trade environment of the past several decades is already upon us in the form of the various trade agreements administered by the World Trade Organisation (WTO). While these have been addressed in some detail in another chapter, the key factor in the context of this chapter is the issue of market access.

In the last couple of years, India has changed from protection based on quantitative restrictions to that based on tariffs for virtually all commodities. Technically, this means that the domestic market is contestable for all foreign producers. Those who have cost advantages that can offset the tariff protection on similar domestic products will penetrate successfully. Alternatively, they have to persuade consumers that they offer a better value proposition, even with the higher domestic price. Of course, tariff protection under the existing commodity trade agreements does not currently have any upper limits for many commodities. For example, imported garments are now subject to a high specific duty, in addition to the traditional *ad valorem* tariff, which renders them completely uncompetitive. This is because India did not agree to a ceiling or "binding" on the tariff rates for such commodities.

This loophole offers only a temporary reprieve, however. In the next round of trade negotiations, the agenda for which was initiated at Doha in December 2001, and in all following rounds, the freedom that developing countries have to impose these kinds of tariffs will inevitably be curtailed. Over the next decade, it is entirely likely that the tariff rates on

all commodities for the entire membership of the WTO will converge to very proximate levels. When this happens, two factors will determine the vulnerability of Indian industry to foreign competition.

First, as has already been suggested, the value-for-money proposition that imports offer, even though their prices may be higher, will drive consumer choice. This is as it should be, and there is no reason to bemoan the fate of domestic producers who are unable to persuade consumers that they offer good value. The WTO offers protective devices through the agreements on anti-dumping as well as subsidies and countervailing duties to reduce, if not eliminate, the prospect of unfair competition. Depending on the effectiveness of these mechanisms, the system should converge to a position in which the contest for the domestic market is reasonably fair.

Second, it is important to keep in mind that there is a large number of local factors that drive the consumer's decisions. Many of these will put imports at a natural disadvantage and allow local producers to capitalise on their proximity to the consumer and a better understanding of his needs and preferences. Of course, as producers from other countries gain familiarity with domestic consumers, they will begin to replicate successful strategies, but the point is that for many consumer products, local conditioning is a source of sustainable competitive advantage, provided that price and quality are within acceptable boundaries.

In this context, culture is obviously an important factor, but there are also many more mundane considerations at work. For example, in the case of some consumer durables, the quality of power supply entails design modifications and the building in of safety features that may not form part of the global product concept. Unless justified by large volumes, it may be difficult for large multinational producers to tailor their high-volume, low-cost product to meet these special requirements. Another factor that poses a very significant entry barrier for imports is the inherent nature of the domestic distribution system. For many years, American producers used to complain that Japan had very liberal import policies on paper, but made it very difficult for imports to reach consumers through a plethora of local laws and codes that governed its distribution and retail sectors. For better or for worse, the Indian distribution and retail system is also significantly different from the relatively streamlined networks in the developed economies. A producer may gain the attention of a consumer, but if he cannot get the product to him quickly and cheaply, it does not amount to very much.

The essential point is that the new global trading regime is going to significantly ease the access of foreign producers to the domestic consumer. While it is far from the truth that this will inevitably result in a whitewash of domestic industry, the fact of the matter is that this increased market access will pose a particularly severe threat in exactly the kinds of manufactured goods, which will experience a consumption boom over the next two decades. This puts enormous competitive pressure on domestic producers of these goods at a time when they are priming themselves to exploit the domestic market opportunity.

It was argued above that the distribution logistics of the Indian market would pose an enormous challenge to any multinational. Most of them will find ways around it eventually, either by acquiring established domestic networks or by devising innovative strategies to deal with local constraints directly. This apart, one factor that goes very much in favour of global brands and their owners in even relatively protected markets is the very significant internationalisation of the media, particularly the electronic media. The acceptance, however reluctant, of the Indian state of satellite television and the huge penetration of this medium amongst a very wide range of social and income categories in the country means that global brands have a relatively low-cost pipeline to the consumer's attention. The persuasive powers of television advertising are well-established and the costs of designing messages appropriate cultural contexts to maximise their effectiveness are insignificant when spread over growing volumes.

Here again, it is the timing that accentuates the importance of the discontinuity. The spread of cable television services, which carry the multinational channels and their messages to millions of Indian consumers came at a time when domestic producers were just gearing up to exploit the medium to reinforce their strategies in the new and relatively liberal environment. This opportunity proved to be short-lived, however, as the increased market access assured by the WTO agreements stimulated interest amongst multinationals for getting a foothold into the Indian market. Whether they chose to invest here or not, the fact remains that they are all acutely conscious of the fact that the virtuous combination of age and income dynamics will make India an extremely attractive market over the next couple of decades. The opportunity provided by spreading cable subscriptions to establish their profiles will significantly increase their competitive strength relative to domestic producers.

This discussion has so far focussed on the implications of the evolving trade regime on domestic markets. The thrust of the argument has been that the openness that the regime imposes on India, combined with the increased spread of cable television, gives multinationals a lot more ability to take on domestic producers in vying for the consumer's attention across a wide variety of goods. However, it is important to emphasise that the whole point of the world trading regime is that everybody is expected to achieve comparable degrees of openness. The access of foreigners to India's marketplace is accompanied by the access of Indian producers to other markets. Whether they can exploit these or not is another matter, which will be addressed in Section IV. In the context of this section, it is appropriate to merely underline the opportunity that greater openness worldwide offers Indian producers.

The implications of global openness are straightforward. Increasingly, production location decisions will be driven by the profitability that a combination of internationally mobile resources (e.g. capital) and cheap local resources (e.g. skilled labour, unskilled labour, natural resources) can generate. When one refers to "cheap" local resources, it is important to take into consideration that the quality of the "environment" in terms of governance, regulation and contract enforcement significantly impacts on the cost of the resources directly used in production. But, if the state is reasonably successful in dealing with these factors, then the relative competitiveness of India in terms of many of these resources will significantly add to its attractiveness as a global sourcing location for many products and services.

So far, the realisation of this potential is most visible in the information technology enabled services (ITES) such as call services and transcription services. With an appropriately enabling environment, this can easily extend to a variety of manufacturing activities, which will do to the less-educated, traditionally trained blue-collar worker what ITES are doing to the formally educated, English-speaking one. Since the number of the former is far more than the number of the latter, it is absolutely essential to push for the realisation of this potential in the manufacturing sector.

To sum up the several propositions advanced in this section about the nature of discontinuities associated with the global trade regime: first, compliance with the rules of the regime increases the access of foreign producers to domestic markets very significantly. This comes at a time when domestic demand for mass-produced, low cost manufactured goods is poised to grow at very rapidly. This poses a very severe threat to domestic producers, who

nevertheless can take advantage of local peculiarities of consumption patterns to enhance their competitive position. Meanwhile, the rapid penetration of cable television gives multinationals a relatively low-cost means of exposing their products to domestic consumers. Clearly, domestic producers have to devise effective strategic responses to increased market access for foreigners

Second, the flip side of this threat is the opportunity provided by the global increase in market access. The emerging global trade regime will drive location decisions so that internationally factors can be combined with cheap local factors for maximum profitability. The industrial structure (in the broader sense, including services) of countries like India, which do have abundant and potentially cheap local resources, will be significantly influenced by this factor.

II.4 Technology

The last few years have seen advances in the application of information technology (IT), which brought about significant discontinuities in the way in which economic activity is organised. These have both positive and negative implications for Indian industry. Three potential impacts are discussed here.

The first relates to the impact of IT on organisational structure. As is quite evident in most organisations now, the effective implementation of internal systems has allowed them to disperse their resources geographically far more than before. This means that activity is located closest to where it is optimal from a profitability point of view. Organisations are no longer bound by the need to have large numbers of people under the same roof to facilitate co-ordination.

The growing incentive to fragment organisations may have significant consequences for the Indian economy. If locating close to a market is an important driver of profitability in any industry, because of, for instance, the premium on local knowledge, close contact with customers and so on, then multinationals looking at India as a growth area over the next couple of decades will be encouraged to put up production facilities here. However, for products in which such proximity is not so important, the development of the world trading system will encourage location of plants in the lowest cost regions, who will then export to markets like India. There is little question that India's ability to exploit the opportunities

provided by organisational restructuring and the global dissipation of production facilities will depend heavily on how attractive a production location it can make itself.

Recent trends, which are likely to intensify during the coming years, indicate that India as a production location is quite attractive for the ITES sector. Whether it is able to extend this attractiveness to a broader range of manufacturing activities, which will make more prodigious use of its labour resources, depends on a number of changes in the environment that do not at this point appear very likely. Nor is it obvious that the factors driving the location of ITES in India will persist. There is some room for optimism on this account though, because of two factors. One, the telecom sector, which is critical to the success of ITES, has been amongst the most dynamic in the country. From a commercial perspective, access has increased and costs have come down to globally comparable levels. Given the rapid expansion of highly competitive private providers, either individually or through strategic alliances, this factor is not likely to reverse itself. It is, however, easily replicable by other countries.

The second factor will not be so easy to replicate by most, if not all, countries, which can offer human resources at comparable cost. This is the facility with English that is relatively easy to acquire in India, virtually across the socio-economic spectrum, at least amongst the urban population. For a long time to come, the international language of commerce will remain English and the global dispersion of ITES will be driven by the ease with which potential locations can begin to operate in this language. China is the only major competitive threat when it comes to the sheer numbers of reasonably educated people available at relatively low costs. But, most accounts of the Chinese IT and related sectors suggest that language continues to be an impediment in their bid to globalise their activity. Of course, globalisation of a domestic IT sector to the extent that India has achieved it is not an entirely unmixed blessing. This dilemma will be discussed a little later in this section. But, for the moment, it appears that India will be able to derive significant benefits from the impact of IT on organisational structure, in terms of the freedom it provides for dispersing activity to maximise profitability.

A second implication of the dominant role that IT is poised to play across a variety of activities, both in manufacturing and services, is that the nature of skills that are required by these activities will fundamentally change. Two kinds of impacts can be foreseen. On the

white-collar front, IT allows a complete de-hierarchising of organisations. Just as it facilitates geographic dispersion, it also obviates the need for layers of clerical and middle management cadres, whose basic function within the traditional paradigm was to organise, retrieve and process information for decision making by senior management. Now that all these functions are completely automated, senior management typically has real-time access to operating information and simultaneous processing capacity to be able to analyse the information in whatever way it may choose. The flattening of organisational hierarchies that this implies means that a long-standing channel of economic mobility – the clerical cadre – is fast on its way to obsolescence.

This has enormous implications for the higher education system in the country. There is, of course, a visible trend towards professional education, even amongst the typically rigid and slow-moving university system. Because of their speed of response, a large space in the professional education domain has been occupied by commercial interests. Although this is most visible in IT education, it is also prevalent in a host of other professional, or more broadly, job-oriented disciplines. Universities continue to cater to more generalist educational requirements, which may well be important from the point of view of maintaining social diversity and a breadth of views among individuals, but will become increasingly unattractive from an employment perspective. The trend that is visible today of post-secondary educational decisions veering away from universities and towards a variety of commercial training programmes will only intensify. Private education has all the characteristics of the “lemon” problem, articulated by George Akerlof. Consumers typically do not know what they are getting in to. There is need for regulation in this sector if the integrity and productivity of this parallel system of higher education is to be sustained. If effective regulation does not emerge, untested and suspect qualifications could well jeopardise the economy’s comparative advantage in the kinds of activities in which these people gravitate towards.

There is a very significant blue-collar dimension to this issue as well, one which was commented on in the introduction to this chapter and which will again appear in the subsequent discussion on India’s current policy environment. This testifies to the importance of the problem in my assessment. The problem can be simply stated. Just as IT obsolesces a certain category of white-collar workers, it also makes redundant certain types of blue-collar workers as well. Many processes are completely automated and, more than working with

hands using craft skills acquired either through traditional means or through formal education, the emphasis now and in the future will be on the ability to use IT to make the production process more efficient and defect-free. Even in conventional manufacturing activities, the number of people it will take to run factories is shrinking dramatically. In effect, the line between blue-collar and white-collar workers is blurring rapidly. From the training perspective, this has major implications for the kinds of skills that people need to be provided to sustain competitiveness in traditionally labour-intensive activities.

The third implication of the growing role of IT is that the traditional product cycle is shrinking rapidly. The time-lag between idea, concept, design and manufacture has been hugely reduced through the use of computer-aided design and manufacturing. This means that products become obsolete much faster than their useful life would warrant. There are “new and improved” models of virtually all products coming out every few months. With regard to consumer non-durables, consumers will not have major problems switching, but with regard to durable goods, the story is obviously different. Having bought a television set this year, for instance, the incentive that I have to replace it within a few months just because I am promised superior product characteristics is not very great. Besides the normal replacement cycle by consumers, the survival of new products is highly dependent on the growth in the population of first-time buyers.

This is the kind of market scenario that was projected for India on account of the virtuous combination of household income and age distributions. This is why India is such an attractive market from a long-term perspective as far as consumer durables, in particular, go. But to fulfil its potential, young people need to be earning incomes. As has been pointed out repeatedly in the course of this chapter, that is proving to be a stumbling block now and is likely to continue to do so in the future.

To sum up the major points in the discussion on technology, the spread of IT offers India a large number of potential benefits from the geographical dispersion of global organisations and its sustainable competitive strength in many activities that will be dispersed in the coming years. However, the IT revolution is also going to fundamentally change the nature of domestic organisations and, as a result, shake up some established channels of socio-economic mobility. A stagnant and non-responsive university system is being out-competed by commercial providers of the most desirable skills. These suffer from the classic lemon

problem and therefore need to be regulated effectively. Traditional manual skills are also being rendered obsolete, putting enormous pressure on an economy, which has to put so many millions of people with these skills to work. Finally, from a consumer perspective, shortening product cycles engendered by IT make the large volume of first-time buyers in India a very attractive target for global producers, particularly of durable goods. But, of course, these potential first-time buyers need to be earning incomes before they can buy anything.

III. Cross-Country Comparisons

The previous section contained a largely qualitative analysis of the major factors shaping Indian industry over the next couple of decades. Within three broad sets of issues, it tried to identify the most important changes that were either visible today or were likely to manifest in the near future, which would influence the structure and performance of industry and services. The emphasis was clearly on the discontinuities, which, in my opinion, are far more important to capture when making any guesses about very long-term prospects.

In this section, the analysis returns to a more traditional and conservative approach, which essentially emphasises the role of stable trends in projecting even into the very long-term future. In asking a question as to what India's industrial sector would look like 25 years hence, one needs to look at countries that are today at levels of development that India is likely to be 25 years hence, if it is assumed to grow at reasonable rates over this period. This approach obviously assumes stable and predictable patterns across countries in the evolution of their industrial sectors.

Apart from the emphasis on "trend" rather than "discontinuity", the cross-country approach poses all kinds of other problems. Various characteristics of the country, with respect to its resource endowments, its size, which reflects the absence or presence of a large domestic market will obviously influence its industrial structure. One can get round this to some extent by choosing comparator countries with similar endowments, which obviously reduces the sample size considerably and makes inferences that much more hazardous. However, a far more important consideration is the policy framework that the country has historically followed for its industrial sector. Undoubtedly, policy incentives in trade, finance and domestic entry barriers will have a significant and persistent impact on the structure and performance of the industrial sector in an economy. Finding comparator economies that not

only have similar physical characteristics as well as similar policy histories is doubly difficult.

Notwithstanding all these limitations of a cross-country comparisons, particularly when making projections, they do offer some insights into the growing importance of some broadly classified industrial sectors as an economy moves up the income ladder. In the exercise that follows, a combination of quantitative analysis and judgement was used to select a set of countries, which even after the initial screening, do not represent an entirely satisfying set of comparators. The first criterion was to assume a per capita growth rate for India over the next 25 years. This was set at 4.5 per cent per year. Based on this assumption, India's per capita income (in Dollar Purchasing Power Parity terms) was projected 25 years ahead. A set of countries with current per capita incomes in a range around this number was selected. From this larger set, some countries, which were judged to be inappropriate were eliminated. The final set of countries selected were Brazil, Chile, Malaysia, Poland, Russia, South Africa, Thailand and Uruguay.

For these countries, data on the distribution of value added and employment across industries (here, narrowly defined to reflect manufacturing only) were obtained from the UNIDO database. South Africa and Poland were dropped from the sample, because the data were not complete. For the remaining countries, including India, the distributions of value added and employment across the SIC 3-digit industries are displayed in Tables 1 and 2 respectively.

Keeping in mind all the reservations that were expressed about the value of cross-country comparisons, looking at these distributions, it is tempting to conclude that very little, if anything at all, can be deduced about the possible evolutionary path of India's industrial structure. However, the purpose of this exercise is to lead us to some reasonably defensible conjectures. In keeping with the overall tone of this chapter, with its concerns on how to provide jobs to so many people, when several major economic forces are moving against this objective, three kinds of patterns are important. Further, despite having selected a reasonably large number of countries, Brazil's similarity with India in terms of relative size, resource endowments and policy development strategies (though not in terms of macroeconomic management) makes it natural to focus a little more on its structure than on some of the others.

The first is that there appears to be a tendency for agriculture-linked industries to expand their presence. The most obvious case is with food processing and related activity. This is understandable, because as per capita incomes increase, the proportion between processed and raw food that people consume goes up. A more general point that can perhaps be made, particularly in the Indian context, is that economic growth tends to support higher degrees of value addition to agricultural products, be they edible or not. For example, India's cotton resources are likely to support a significant move up the textiles and clothing value chain if the overall industrial environment facilitates it. For a large country, with a large agricultural sector, then, it is quite easy to predict that adding value to agricultural products will make an important contribution to the evolving industrial structure.

The second generalisation is with respect to the share of mineral (or more generally, natural resource based industries) in the distribution, particularly of value added. Again, focussing on the Brazilian experience, it appears that the pure power of comparative advantage stemming from resources could not have achieved this. Developing countries building up significant capacities in these kinds of products, steel being an important example, have relied on relatively high protective barriers. Over time, of course, these barriers have increasingly become redundant in a fair trading regime, as many of these countries have achieved global competitiveness in these industries. Since countries like India will constitute an increasing share of global consumption (again, steel is an important example), competitive domestic capabilities will favour the expansion of these sectors. The option of high protective barriers is being eliminated by the trading regime, so they will have to rely almost entirely on their inherent efficiency. Recent trends certainly support the prediction of a significantly expanding mineral resource-based sector in India, even without a highly protective trade regime.

The third inference, although this is the most tenuous, is that there appears to be an increase in the proportion of employment in industries that one would consider relatively labour-intensive in the represented range of per capita incomes for some of the countries. This is consistent with the fact that growth can only be sustained if people are being put to work productively. More jobs will be created for given growth rates of these kinds of industries. More jobs implies higher aggregate as well as more dispersed spending power. Obviously, abundant labour is a requirement for this pattern to develop, but it also points to the importance of labour market flexibility and the process of determination of wages, which are

key determinants of the willingness of producers to employ more labour. The employment distributions do indicate the difference in patterns between the East Asian representatives in the sample, which did have reasonably flexible labour market policies and the Latin American ones, whose policies were relatively more restrictive. The former show a labour-intensive oriented distribution, while the latter show a greater presence of what would be considered capital-intensive industries.

To sum up the messages from the cross-country comparisons, keeping in mind all their limitations, India's industrial sector is likely to see an increase in the presence of agriculture-linked and mineral-linked products. Whether it achieves an increase in the share of labour-intensive products in general (some of the agriculture-linked products are also relatively labour-intensive) depends on the conditions prevailing in the labour market.

IV. Structural and Policy Constraints and Recent Performance

The Industrial sector in India has had a very mixed record of performance during the last five years. Growth accelerated during the boom years of the mid- 1990s, but ever since the slowdown of 1997-98, this sector has been in the doldrums despite a mild recovery in the economy during 1999-2000. What is true of the aggregate is also true of virtually all the segments in the sector. From being a leading sector - an engine of growth - for a brief period during the mid 1990s, the industrial sector, largely manufacturing, has turned into a laggard; a burden on the growth prospects of the economy.

The message from this record of performance is clear. The Indian industrial sector is rapidly losing its competitiveness. The expectations from sector in the new economic environment, considering the range and depth of the reforms aimed at it have gone sadly unrealised. There is no question that India has a potential comparative advantage in many manufacturing activities. First, there is the substantial natural resource endowment. In an investment regime driven by cost and efficiency considerations, this would have been the foundation of a competitive mineral-based industrial sector. Second, there is the agricultural sector as a source of raw materials, both food and non-food commodities. Downstream processing of these commodities provides a substantial foundation for competitive manufacturing activity, given the right environment. Third, there is the oft-repeated abundance of relatively low-cost labour, much of which are endowed with craft skills emerging from the tradition of occupational castes. Manufacturing is really the only activity that can translate this resource

into relatively high-productivity employment, thus setting the stage for a virtuous circle between growth, employment and poverty alleviation. In short, sustainable and equitable growth of India's economy is inextricably tied to the manufacturing sector.

The following analysis of the performance of the sector is based on a simple conceptualisation of the sources of manufacturing competitiveness. Essentially, it is based on the ability of producers to procure as many inputs as they can at as low a price as they can. We can categorise inputs into two groups: tradable and non-tradable. Tradable inputs can be sourced from anywhere in the world, the only consideration being their landed price. Clearly, the industrial and trade policy reforms initiated during the early 1990s directly addressed this source of competitiveness. Producers were free to import low-cost inputs, putting enormous competitive pressure on domestic suppliers, which was re-inforced by the freedom of entry of new producers as a result of delicensing. The combination of the two forces would have substantially lowered the input costs of the typical Indian producer. In doing so, the reforms were serving to put him on an even footing with his competitors from other countries, who generally had access to the world's cheapest inputs.

Non-tradable inputs, on the other hand are referred to as such because they cannot be procured from just anywhere. These are an integral part of the existing system and the producer has to pay the price that the system imposes on him. The higher the proportion of these inputs in the total cost of production, the more vulnerable the producer is to a system that delivers these inputs with great inefficiency and high cost. It is precisely with respect to these inputs that the promise of Indian manufacturing has been betrayed. The reforms that we have had so far have, by and large, failed to address the critical issue of improving the supply and lowering the costs of these inputs. This failure has contributed significantly to the inability of Indian manufacturing to sustain, let alone enhance, its competitiveness over the past decade.

We can categorise non-tradable inputs into three broad categories, on the basis of the impact that have on competitiveness or lack of it. The first is the category of infrastructure services. There is a virtual consensus on the fact that the power situation all over the country is far worse at the end of the decade than it was at the beginning. The reasons for this are well known and need not be repeated here. It would be no exaggeration to say that Indian industries pay inordinately high prices (when they do) for inordinately low-quality power

(when they receive it). This immediately imposes a severe constraint on production and would inevitably affect the investment decisions of new entrepreneurs. It also leads to an enormous wastage of capital as producers have to seek private solutions by way of captive power plants and generators to keep their processes going. Transport, by any mode, is relatively expensive and because of infrastructural constraints, hugely unpredictable in terms of transit time. Intense competition in the road transport sector may have driven tariffs down, but for many producers, this is hardly compensation for the time that their shipments spend in traffic gridlock or waiting for entry and exits from cities because of movement restrictions.

The second category of non-tradable inputs, in the presence, of course, of significant restrictions on the legal movement of people across borders, is labour. A producer has to employ his workers from those who are available. As was pointed out above, the Indian tradition of occupational castes have provided the modern industrial establishment with a ready-made pool of skills, which need to be integrated into the modern technological and organisational context. This essentially requires that the labour market functions with a reasonable degree of efficiency. Subject to the constraint that all employees have certain rights that must be protected, market efficiency implies that workers will be hired or retrenched as the demand for their particular skills expands or contracts. Wages of those who remain employed will also adjust to changing market conditions. In the organised sector of the Indian economy, the second condition is generally satisfied, as most employers build in a substantial variable component in their wage agreements with unions, which is a model replicable in non-union establishments as well. However, the first condition is not satisfied, because an employer has to seek permission to lay off workers from the state government, which is never given in practice. For practical purposes, once a worker is hired, his costs have to be borne by the employer whether he is contributing to revenues or not. In a risky business environment, and there is no question that the policy changes have all contributed to enhancing business risk, this imposes a cost of hiring on the employer, which goes beyond the cost of wages. This has to impact adversely on an already precarious competitive position. It is small wonder then that during a decade in which we have seen the highest average annual growth rate of GDP since Independence, we have seen an abysmal growth rate of about 0.5 per cent per year in the organised sector. The government has drastically reduced its intake of people, and the private sector just doesn't seem inclined to take up the slack for the reasons advanced above.

Whether we have seen an increase in employment in the unorganised sector is as yet difficult to discern. However, if this is the consolation that is being sought for the sluggishness of the organised sector, then it is rather small. As important as the organised sector may be to the development process of a labour-abundant, low-income economy, it cannot be viewed as anything more than a transitional phase. The fact of the matter is that employees in this sector do not get anything more than the subsistence wages that market forces dictate. The sheer pressure of excess supply means that they cannot claim any of the rights that, as a society, we have deemed to be their right. Given the financial and technological conditions in which this sector operates, there is little opportunity for productivity growth and as a consequence income increases in the typical enterprise in this sector. In short, it is a necessary source of subsistence for a large number of people, but hardly a mechanism for the kind of improvement in earnings potential and working conditions that is concomitant to growth and development.

The third category of non-tradable inputs can be broadly labelled as governance. The difficulties that entrepreneurs have in dealing with the multifarious agencies of government - and in the Indian scenario, these include purveyors of supposedly tradable inputs like banks and insurance companies - are well known. These involve direct pecuniary costs as well as a dissipation of entrepreneurial and managerial energies. Failure of governance is not just confined to transactions with the state; it also applies to the problems that the system creates for the enforcement of commercial contracts. Doing business in India is fraught with risks over and above the normal uncertainties associated with a competitive marketplace. And, in such an environment, staying afloat has as much to do with the ability to manipulate the system - "manage the environment" as it is sometimes put - as with the ability to produce high-quality goods at low cost.

The issue of governance also encompasses the patently bad policies that still remain, holdovers from the regime that was sought to be dismantled by the reforms. The foremost example of this in relation to the industrial sector is the policy of reservation of commodities - numbering about 800 - for production by the small-scale sector. It supports and sustains weak and inefficient producers, it hinders the assimilation of technology, it perpetuates sub-optimal scales of production; in short it does everything to make the producers who derive benefits from it uncompetitive. This is not to say that reservation has been a tightly binding constraint on Indian industry. Exemptions based on export obligations (currently 50 per cent

of production, but the S.P. Gupta Committee on Small Scale Industry has recommended lowering this to 30 per cent), which are, by all accounts, hardly monitored, are one way in which back-door entry by large producers into the manufacture of reserved products. However, it would be fair to say that a back door that is ajar is far less effective as an inducement for competitive entry than a front door that is fully open.

To sum up, the broad premise of this exercise is that India has enormous potential as an industrial power, given both its natural resource (including agriculture) abundance and its labour force, much of which is steeped in an enduring tradition of craft skills being passed on from generation to generation. However, to translate this potential into real achievements, the various constraints described above need to be removed as soon as possible. In a Business as Usual scenario, the potential will remain untapped and industry in India two decades from now will be no larger a part of the economy than it is today. If the constraints are removed with decisive policy changes on at least the labour and infrastructure fronts, the forces of comparative advantage will propel this sector into its legitimate role as the engine of growth – sectoral growth rates leading GDP growth rates by perhaps 4 or 5 percentage points. Sustained growth performance at these levels over the next two decades will take Indian industry to over 40 per cent of GDP. The impact of this on labour productivity and earnings will completely transform the poverty scenario in the country.

V. Conclusions

Every conclusion reached in this exercise is heavily dependent on a series of assumptions made about the relative importance of trends and discontinuities influencing the evolutionary path of Indian industry. To attempt to summarise them without reference to these qualifications would be futile. However, if the reader is willing to accept that the assumptions are generally reasonable without looking too closely at them, a short story of Indian industry 25 years hence may be told.

India is at a rather unfortunate juncture when the emergence of its comparative advantage based on agriculture, natural resources and craft skills appear to be coming into conflict with some fundamental technological forces. Based on its advantages alone, one would expect to see the evolutionary path observed in some other countries being replicated. Agricultural linkages with industry would increase in the sense that more value would be added by industry to natural products. Mineral-based industries would achieve and sustain global

competitiveness without high protective barriers. And, given the right environment for labour, there would be an increase in the absorption of craft skills into the organised manufacturing sector.

The growth in employment is the piece of the puzzle needed to sustain the positive demand side forces that were discussed early in the chapter. Without a large number of new jobs being created, potential young consumers would remain just that, unable to translate their aspirations into actual consumption. The importance of large-scale employment generation in the traditional blue-collar category of jobs is of huge importance in translating potential into real.

However, technology makes this somewhat more difficult than it already is. The spread of IT certainly opens up some significant opportunities of its own as far as employment is concerned. But, these opportunities require a certain set of skills that are obtained through formal systems of education and will exclude from direct employment opportunities those who do not have access to these systems. The problem of generating blue-collar jobs, which is best done in the manufacturing sector, remains.

This is not to say that the problem is insurmountable. There is probably a virtuous combination of policies, which will support the growth and competitiveness of both sets of activities in parallel. Many of the ones relating to manufacturing have been spelt out in detail in the previous section. Some of these, particularly with respect to restructuring the educational system, have been discussed in earlier sections. This puts the onus squarely on government to bring about the necessary changes in the environment, that will facilitate the simultaneous growth in competitiveness-driven manufacturing and service activities.

The record of the government on this front has been rather disappointing so far. If one is to work on a trend projection, one wouldn't hold out much hope for any significant changes in the future. This is why looking at India's future through trends may lead to major disappointments.

A more positive future requires thinking in terms of discontinuities. The first discontinuity that is needed is by government itself – to begin dealing in a creative way with the many obstacles that prevent the economy from exploiting its comparative advantages. The other

discontinuities may help or hinder the progress of industry, but dealing with those in the most favourable manner is the job of the entrepreneurial forces that will emerge to take advantage of opportunities. The state of Indian industry 25 years hence is crucially dependent on what the Indian government does right now.