

Synthesis of Sector Findings

Since growth in labour and capital productivity is the key engine of economic growth, our main objective in this study was to assess labour and capital productivity in India and identify the measures required to improve them. India has already witnessed the impact of labour productivity on GDP growth. Since 1993, increases in GDP per capita have come mainly from the higher productivity of the employed workforce. The fundamental link between productivity and output has been confirmed by the experience of other countries (*see* Chapter 3: Current Perspectives on India's Economic Performance).

In this chapter, we present our assessment of India's labour and capital productivity performance, based on our 13 case studies, and draw out the implications of these findings for India's growth. To summarise:

- ¶ Labour and capital productivity in India is well below its potential.
- ¶ India's agriculture and transition sectors, which account for around 85 per cent of employment, have limited potential for improving productivity.
- ¶ India's modern sectors have the potential to increase productivity from the existing 15 per cent to 63 per cent of US levels. The productivity level will reach 43 per cent of US levels by 2010 and can drive India's GDP growth. Therefore, unleashing this potential will become the main driver of India's GDP growth. Historically, key operational factors such as surplus labour, poor organisation of functions and tasks and lack of viable investments have kept India's labour and capital productivity well below potential in these sectors.
- ¶ The lack of competitive pressure is the main factor inhibiting productivity. It reduces pressure on Indian companies from trying to improve performance and allows less productive players to survive.
- ¶ External factors such as distortions in the product and land markets, together with government ownership, play a major role in limiting competition and thwarting productivity growth.

PRODUCTIVITY IS WELL BELOW POTENTIAL

In most of the sectors studied, we have found labour productivity to be low with most sectors achieving productivity levels, which are under 10 per cent of US levels (**Exhibit 4.1**). Extrapolating our findings to the rest of the economy shows that average productivity stands at around 5.8 per cent of US levels, compared to an average of 7 per cent estimated from official statistics.¹ Productivity is well below potential even in new and growing sectors such as software where productivity is 44 per cent of US levels. Moreover, in all the sectors studied, labour productivity can rise significantly even under current low labour costs. Similarly, capital productivity is well below potential in all sectors (**Exhibit 4.2**).

As mentioned in the case studies, we distinguish between three types of sectors: agriculture, transition and modern. These sectors differ substantially in their current productivity levels as well as in their potential labour productivity growth, given current factor costs (**Exhibit 4.3**).

- ¶ **Agriculture:** This sector has the lowest labour productivity, at 1.2 per cent of US levels on average, of all the sectors studied. Moreover, its productivity potential is “only” double its current level. Most of this growth will come from higher yield rather than investment in more mechanised equipment. For example in dairy farming, the largest employer in the agriculture sector, yield can improve six fold, but almost no mechanisation is viable.
- ¶ **Transition sector:** This sector, comprising entry-level jobs for people migrating from agriculture has a somewhat higher productivity at 6.9 per cent of US levels on average, but has very limited potential for productivity growth. Transition sectors are usually one-/two-person operations with very limited capital requirements, e.g., street vendors, rural counter stores, tailors. They usually provide goods of lower quality and have an inherently lower productivity than their modern counterparts. Their goods typically act as cheaper substitutes for products provided by the modern sector (e.g., mud houses instead of modern brick houses and loose flour at flour mills or *chakkis* instead of packaged flour).
- ¶ **Modern sector:** Comprising the bulk of the output and employment in developed countries but only 15 per cent of employment in India, the modern sector has the highest labour productivity of the three – around 15 per cent of US levels on average. But more importantly, productivity can be almost three times higher reaching 43 per cent of US levels by 2010, even at India’s low labour costs. Similarly, capital productivity in

¹ See Volume I, Chapter 5: India’s Growth Potential for details on the methodology used for this extrapolation.

the capital-intensive sectors can almost triple from 32 per cent to 88 per cent of US levels.

AGRICULTURE AND TRANSITION SECTORS HAVE LIMITED PRODUCTIVITY POTENTIAL

Current productivity in agriculture is very low at 1.2 per cent of the US levels and potential productivity at current factor costs is only slightly higher at 2 per cent of the US. Indian farming is characterised by three features. First, it follows a fragmented, joint dairy and field-farming model, with low levels of mechanisation and productivity. The average farm size is 4 acres and 78 per cent of farmers own farms of less than 10 acres in size (**Exhibit 4.4**). Second, 60 per cent of farming households are involved in dairy and, of these, 98 per cent engage in it on a part time basis. Third, the potential for further mechanisation is low. For example, in wheat farming almost 70 per cent of the land is already tilled using tractors and, further mechanisation, by way of combine harvesters and larger irrigation pumps, is not economically viable at the current low labour costs.

In short, most productivity gains will not come from mechanisation. At current factor costs, the use of tractors in wheat can increase to 90 per cent, while the scope for combine harvesters is limited to some regions in Punjab, constituting less than 3 per cent of total land in the state. The gains will come instead from the dispersal of extension and irrigation services, which will allow farmers to improve their yields and achieve their productivity potential (**Exhibit 4.5**). In the near future, most of the productivity improvements in dairy farming will come from the spread of better farming practices through higher coverage from Direct Collection Services (DCS) and private milk processors, which will facilitate the diffusion of optimal breeding and feeding practices (**Exhibit 4.6**). These practices will increase yield at least six fold and allow India to achieve its productivity potential of 3.1 per cent at current factor costs (**Exhibit 4.7**).

Unless other sectors of the economy absorb current idle hours, we expect wages in the agriculture sector to remain stagnant and rise only once yields increase. In a trend that is consistent with the agricultural evolution observed in other countries, Indian agriculture will continue to be largely non-mechanised with the “joint-farming model” likely to stay well beyond 2010 for the following reasons:

- ¶ Currently, part time dairy farmers have a significant cost advantage over full time farmers due to the negligible opportunity cost of labour and lower dry fodder cost.
- ¶ The opportunity cost of labour will continue to be negligible as long as rural under-employment continues to be significant.

- ¶ Once full-time dairy farming becomes viable, field and dairy farms will grow independently as there will be limited synergies in their operations. However, this will only happen when rural wages increase and allow dairy farming to be independently sustainable. This is not expected to happen in the next 10 years.
- ¶ The experience of other countries suggests that dairy continues to be a secondary occupation to farming for a fairly long period. In Thailand, a shift away from agriculture was driven by job creation in other sectors.

Today, the low-productivity transition sector is absorbing labour migrating from agriculture. The transition sector includes entry-level jobs requiring very little capital and skills (for instance, street vending, building of mud houses, wheat milling and tailoring) and can, therefore, be undertaken by rural workers. Moreover, since these transition jobs mostly involve self-employment, they allow migrant labour to return to agricultural activities during the harvesting season when manpower is in short supply.²

As mentioned earlier, the transition sector usually provides lower quality goods than those provided by the modern sector (for instance, mud houses instead of modern brick houses) and are, therefore, purchased by lower income consumers.

The labour productivity of this sector is also very low. Although currently higher than in agriculture (averaging 6.9 per cent of US levels), productivity is inherently low due to the materials (such as mud housing), technology (such as primitive flour mills or *chakkis*) or business formats (such as street vending and rural counter stores) used. To illustrate, mud and stones used for construction are less amenable to standardisation and scale economies than modern materials such as bricks (**Exhibit 4.8**). Most of our case studies show that the transition sector has already achieved its productivity potential in India.

INEFFICIENT OPERATIONS PREVENT MODERN SECTORS FROM ACHIEVING THEIR HIGH POTENTIAL

Excess labour, poor organisation of functions and tasks (OFT), lack of scale and lack of viable assets are the key operational reasons why Indian companies are not achieving high productivity despite their potential to do so (**Exhibits 4.9 & 4.10**). Poor OFT, and low capacity utilisation also explain why capital productivity is well below potential in modern sectors (**Exhibits 4.11 & 4.12**). Less important operational factors include inefficient format and product mix, poor suppliers. Contrary to conventional wisdom, we did not find poor labour skills and work disruptions arising from poor infrastructure to be significant factors.

² See Volume I, Chapter 5: India's Growth Potential for details on the wage dynamics for transition jobs and how they relate to agricultural wages.

Surplus labour is prevalent across sectors

Indian companies, especially government-owned ones, are plagued by redundancy in employment. Redundant workers are those whose labour is not required even before improvements are made in the way functions and tasks are performed. These workers are typically idle or under-utilised all day long. This problem exists in many of the sectors we studied:

- ¶ In the steel industry, excess workers account for around 30 per cent of the workforce in large integrated steel players.
- ¶ Over 50 per cent of employment in pre-liberalisation automotive plants is excess labour.
- ¶ In cooperative and government-owned dairy plants, over 50 per cent of employment is excess labour (**Exhibit 4.13**).
- ¶ Most managers in government-owned telecom companies readily acknowledge the presence of excess labour, with estimates ranging from 25 per cent to 50 per cent of the total workforce.
- ¶ In the power sector, overstaffing occurs in all areas. In support functions such as finance, administration, accounts and HR, there is one support staff per MW compared to 0.1 per MW in the US. In areas such as security, there are often over 100 people per plant compared to fewer than five in the US. Finally, each worker/operator in shift operations has a “helper”, a redundant function absent in US generation plants. In transmission and distribution, unnecessary helpers and artisans, comprising as much as 50-75 per cent of line staff, are employed.
- ¶ In public retail banks, redundant staff in front desk and back office clearing operations account for at least 10 per cent of total employment.

Poor organisation of functions and tasks is a major constraint

Poor OFT is the main operational reason why Indian companies do not achieve their potential labour and capital productivity levels. Improvements in OFT can almost double Indian labour productivity levels in modern sectors. We have observed four types of OFT problems:

- ¶ **Lack of multi-tasking:** Many Indian players have been following a “Taylor” model with a functional orientation and high task specialisation leading to significant downtime. To illustrate:
 - In steel shops, workers are typically assigned one role and conduct only those tasks defined as part of that role. For example, in the steel shop of an IBFP plant, there were 27 separately defined roles. Each person did only those tasks that were defined as part of their role.

- In the power sector, maintenance workers are organised rigidly by function (electrical, mechanical, control, instrumentation and so on) instead of being organised into multi-skilled crews by area.
 - In the retail sector, limited use of multi-tasking and a negligible use of part time help during peak hours lower the productivity of retail stores.
- ¶ **Lack of centralisation of common tasks:** Common and repetitive tasks are often performed at different locations, each working below capacity, as the examples that follow show.
- Control rooms in State Electricity Board plants are placed in each area of the main plant (e.g., boiler, turbine and boiler feed pump) instead of between different units with shared staff.
 - Bill collection in telecom is typically done through staffed booths where subscribers line up, make their payment and receive a receipt, instead of through drop-in boxes that save resources and increase customer convenience. Moreover, government-owned carriers usually assign maintenance personnel on a geographic basis instead of centralising them in one location to share fixed costs.
- ¶ **Low workforce motivation:** Poor management and lack of incentive payments reduce workers' motivation and hence productivity.
- Low motivation of workers in domestic apparel plants results in high absenteeism, high rejection levels, and a high percentage of delayed shipments (**Exhibit 4.14**). High absenteeism often results in slower, unskilled operators filling in for skilled labour.
 - In the power sector, low motivation and high job security reduces the managers' incentive to limit outages and maintenance time.
- ¶ **Poor managerial practices:** A range of poor managerial practices such as inefficient planning, poor design and lack of delegation combine to hamper productivity.
- Lack of centralised planning and maintenance at steel plants often result in massive load imbalances. Moreover, poor handling of existing automation diminishes the quality of the steel produced. Poorly trained personnel typically fail to optimise plant settings, resulting in substantial differences in the chemical composition and physical properties of the steel produced.
 - In the automotive sector, the late implementation of lean production techniques significantly hampers the productivity of pre-liberalisation plants. In these plants, a large proportion of cars leave the assembly

line with defects, which must then be remedied. The older Indian post-liberalisation plants also suffer from lower skill levels with over 20 per cent of their workforce consisting of trainees with little experience.

- In dairy processing, poor scheduling of cleaning time and idle time at process bottlenecks (such as unloading of milk) disrupt workflow and increase labour requirements (**Exhibit 4.15**).
- In housing construction, poor planning by contractors results in time and cost overruns. Material and equipment deliveries are not planned in advance and workers sometimes remain idle until the required resources are procured. Moreover, workers are not specialised: It is common to find masons in India doing both bricklaying and plastering. Moreover, in small cities and rural areas, houses are typically built one room at a time. Finally, owners choose to act as both developer and contractor despite having low skills and capability in planning and managing the construction process.
- Poor store layout in Indian supermarkets increases labour requirements by around 10 per cent.
- Managers of public sector banks do not delegate authority to branch employees, resulting in multiple approvals being needed to complete transactions. Cash withdrawals in cashier-based public banks can take three times longer than in teller-based private banks (**Exhibit 4.16**). Similar inefficiencies are found in operations such as clearing cheques, issuing demand drafts, making telegraphic and electronic funds transfers, opening accounts and approving retail credit.

Lack of investment in viable assets also inhibits productivity

A lack of investment in economically viable assets is another key factor limiting labour productivity in modern sectors. These investments can increase value added and optimise labour usage.

- ¶ Automation in steel melting shops and continuous casting machines will reduce the amount of labour required and improve the quality and consistency of steel produced (**Exhibit 4.17**). Moreover, investments in cold rolling facilities will increase the value of the steel produced to more than justify the investment required.
- ¶ Many domestic apparel manufacturers lack simple assets such as suitable ironing equipment and adequate washing and drying facilities. The common use of hand-washing and line-drying often results in fading or shrinking. Moreover, exporters lack specialised equipment such as

spreading machines. Instead, cloth for cutting is laid out manually, often stretching the fabric and distorting the size of the final garment.

- ¶ Automation in network and fault management systems can increase labour productivity in telecom by almost 50 per cent. The cost of interactive voice response hotlines, automated test procedures to localise faults and verify fault repair, and automated scheduling systems, is more than compensated for by the reduction in labour costs and improvements in the quality of service provided to customers (**Exhibit 4.18**).
- ¶ In the power sector, customers are not charged for over 30 per cent of the electricity produced, owing to a lack of metering or faulty meters (**Exhibit 4.19**). Investment in electronic meters will cost only 20 per cent of the annual savings it will yield. Furthermore, technical power losses are also greater due to under-investment in high-tension lines and lack of power capacitors. Besides electronic metering, viable investment in computerisation of inventory, billing and accounting as well as call centres will improve service levels and reduce labour requirements by over a third.
- ¶ In retail banking, a lack of automation and rationalisation of processes makes banking operations very inefficient. In an average public sector bank branch, a customer has to go to different windows where most of the tasks are carried out manually (**Exhibit 4.20**). Cheques are collected and dispatched to individual branches for signature recognition instead of using collection boxes and centralised signature databases. Automating and centralising key repetitive processes will more than double the productivity of public retail banks.
- ¶ In housing construction, workers lack even basic tools and small equipment. They carry material as “head loads” as opposed to the wheelbarrows used in other countries. Manual tools are used to prepare wood for shutters, instead of more efficient circular saws and electric surface planers. Large surfaces are painted with standard brushes instead of the more efficient roller brushes or spray-painting equipment.

Other operational factors also play a significant role

Apart from the major causes of low productivity listed earlier, inefficiencies across the value chain also constrain productivity. These include:

- ¶ **Poor marketing and inefficient product/service mix:** Poor marketing practices increase costs and reduce value added in service sectors. A lack of attention to product and service mix has the same effect. The examples that follow prove the point.

- In telecom, the lack of marketing efforts for call completion services (such as call waiting, voicemail) by government-owned telecom operators reduces usage and limits labour and capital productivity.
 - Modern retail channels account for only 2 per cent of Indian sales compared to 30 per cent in Indonesia and around 85 per cent in the US (**Exhibit 4.21**). Modern formats like supermarkets and specialty chains are two to three times more productive than the traditional ones even in India. Moreover, the larger volumes they can support raise productivity potential by lowering procurement, distribution and marketing costs. In addition, the higher skills of best practice supermarkets and specialty stores allow them to optimise merchandising and marketing as well as supply chain and inventory management.
 - A large share of the revenues of Indian software companies comes from low value added services. On average, Indian companies earn about 30 per cent of their revenues from the lower value added domestic services market. In global markets as well, Indian companies focus on inherently lower value added services. Moreover, lack of brand recognition and poor marketing is forcing average service companies to offer significant price discounts (25-30 per cent lower than prices of best practice companies) in order to induce clients to outsource business to them.
- ¶ **Low capacity utilisation:** Low capacity utilisation leads to considerable productivity loss. To illustrate:
- In the automotive sector, average plant utilisation is only 59 per cent compared to 80 per cent in the US (**Exhibit 4.22**). Lower capacity utilisation for plants producing mid-sized cars causes a productivity loss mainly in indirect and production support functions.
 - At dairy processing plants, capacity utilisation during the flush season is around 69 per cent compared to an average utilisation of 77 per cent in the US. Raising utilisation to US levels will require only a small increase in staffing of managerial and unloading functions.
- ¶ **Inefficient supply:** Inefficiencies in supply affect utilisation of labour, increase complexity and hence costs, and reduce quality of output. To illustrate:
- In dairy processing, due to seasonal variations in milk supply, plant utilisation during the lean season often falls below 60 per cent (**Exhibit 4.23**). To make up for the shortfall, dairy plants typically undertake liquid milk reconstitution from milk powder and fat during the summer months, thereby duplicating processing efforts. Moreover,

additional labour needs to be employed in the lean season to reprocess inputs previously processed in the flush season. Using crossbred cows can reduce these seasonal fluctuations in milk supply.

- In housing construction, the lack of standardised and pre-fabricated materials increases complexity and hampers task specialisation on construction sites. Brick sizes in India typically vary significantly even within the same lot, requiring additional levelling work when building and plastering walls. Furthermore, using pre-cut and pre-threaded plumbing (such as PVC plumbing) instead of the plain tubes currently used will reduce installation time and increase task repetition at the work site.
- In retail banking, the lack of credit bureaus forces branch employees to spend a lot of time making credit decisions. As a result, mortgage approvals can take up to 4 weeks compared to 2 days in the US. Similarly, the lack of a reliable postal system limits centralisation and automation of cheque clearing functions. As a result, clearing is done in small, decentralised centres for which investment in Magnetic Ink Character Recognition (MICR) reader-sorter machines is not economical.

¶ **Lack of scale:** Low scale operations in many manufacturing sectors add up to considerable productivity losses.

- In the steel industry, around a third of the output is produced in very small mini-mills with an average capacity of only 50,000 tons compared to the more than 1 million tons of average US mini-mills.
- In apparel, the average domestic manufacturer and exporter employs fewer than 50 machines, whereas producers in China and Sri Lanka often have 1,000 machines under one roof. Technically, a 500-machine factory is the minimum size needed for efficient functioning and larger factories are still more efficient.
- In housing construction, individual houses are typically built one at a time. In contrast, in best practice countries such as the US and the Netherlands, over 70 per cent of total single family construction is built in projects of over 20 houses each. Building on a larger scale provides savings through bulk material purchasing, less idle time, better equipment utilisation and more efficient use of prefabricated materials (**Exhibit 4.24**).

¶ **Poor design for manufacturing (DFM):** Design for manufacturing involves incorporating the optimisation of the production process into the product design without compromising on quality. As the two examples we elucidate show, DFM is not fulfilling its promise in India.

- In the automotive sector, post-liberalisation plants still produce old and outdated models. For example, we estimate that the largest selling small car in India could be assembled in roughly 15 per cent less time if it were totally redesigned today. Even new models in India do not reflect best practice DFM: Indian models require almost twice as many body panels and spot welds compared to global best practice models (**Exhibit 4.25**).
- In housing construction, non-optimal design and lack of modularity increases the amount of rework in construction projects (**Exhibit 4.26**). Bricks and tiles need to be broken to fit corners while windows and doors need to be custom built to fit the unique design of each building. Moreover, poor planning often results in disruption of tasks or rework. For example, to install electrical wiring, a builder often needs to cut and re-plaster walls, causing disruption in the masonry work.

Lack of skills and poor infrastructure have less impact on operations than estimated

Contrary to conventional wisdom, low labour skills and poor infrastructure do not have a significant effect on productivity. We found that with appropriate training and adequate managerial practices, even illiterate workers in sectors such as housing construction and retail could achieve best practice productivity levels.

In terms of infrastructure, although energy shortages and poor transportation conditions can potentially affect operations, their impact on Indian productivity is actually quite limited (less than 5 per cent) since companies have learnt to overcome infrastructure constraints. To overcome power shortages, for example, companies often build their own generation facilities with few efficiency losses. Similarly, automotive parts suppliers and apparel exporters overcome poor road conditions by locating their production facilities close to assembly plants and ports. Bottlenecks at ports, however, do constrain the competitiveness of Indian exporters.

Main causes of low labour productivity also lead to low capital productivity

The key factors behind the labour productivity gap, namely poor OFT, low capacity utilisation and lack of viable assets, are also responsible for low capital productivity.

- ¶ **Poor OFT:** Improvements in OFT alone can increase capital productivity by around 60 per cent. In the sectors we have studied, cost overruns, poor planning and over-invoicing considerably curtail capital productivity. To illustrate:

- Constructing a steel plant in India typically takes almost twice as long as it would to build the same plant in the US. Moreover, over-invoicing of imported equipment is reportedly common practice, mainly due to inadequate supervision by shareholders and bankers.
 - In telecom, managers typically lay lower than optimal capacity copper cable in order to meet their line growth targets for that year (**Exhibit 4.27**). This practice results in higher costs per subscriber as it does not take advantage of scale economies in cable capacity (lower cost per line of higher capacity cable) and in major work such as digging trenches (digging the trench only once for a higher capacity cable).
 - State Electricity Boards (SEBs) take over 5 years, on average, to construct large coal plants compared to 3-4 years by best practice Indian plants. Construction overruns arise due to lack of funds, delays in tendering and antiquated engineering, procurement and construction practices. Moreover, plant redundancies and the absence of standardised plant designs often result in over-engineering and increase capital costs.
- ¶ **Low capacity utilisation:** Small steel mini-mills run at round 31 per cent of their capacity. In contrast, mini-mills in the US run at 90 per cent. Similarly, a lack of focus on marketing efforts by telecom operators results in 18 per cent fewer minutes per installed line compared to US operators (excluding Public Call Offices). Improvements in capacity utilisation will increase capital productivity by over 30 per cent.
- ¶ **Lack of viable assets:** A lack of investment in viable assets also hampers capital productivity by reducing the value added per physical unit of production. As discussed earlier, investments in cold rolling facilities in steel and in electronic metering in transmission and distribution will increase the value added to more than justify the investment required.

LACK OF COMPETITION GIVES COMPANIES LITTLE REASON TO IMPROVE PRODUCTIVITY

The lack of competition in Indian industry is the main reason for the poor operational performance of Indian companies and hence for the low labour and capital productivity described earlier (**Exhibit 4.28**). In the absence of strong competition, managers can afford to ignore significant operational issues under their control (such as excess workers, poor OFT and inadequate equipment) and are able to earn high profits despite these inefficiencies. The lack of competition also shields companies from exposure to global best practices. Moreover, competition in some markets is distorted by unequally applied rules and

enforcement, allowing less productive players to thrive at the expense of the more productive ones.

The importance of competition in improving productivity and output growth is clearly seen in the Indian automotive industry. After the entry of Maruti Udyog Ltd and other foreign players, competitive intensity has increased dramatically, resulting in substantial market share loss for pre-liberalisation plants (**Exhibit 4.29**). The resulting lower prices and improved quality have boosted demand, thereby increasing employment despite the very high productivity growth (**Exhibit 4.30**).

Lack of competition leads to inefficiency and low consumer choice

The absence of competition creates monopoly power for incumbent players. This in turn results in low choice and higher prices for customers. The ill effects of low competition are evident in the examples cited.

- ¶ In dairy processing, the licensing regime ensures that new plants are not established close to existing plants (i.e., in the milk shed area of the existing plant). This practically ensures that the incumbent plants have a procurement monopoly, as it is not feasible for farmers to supply to plants located geographically far away from them. As a result, incumbent processors have little incentive to rationalise labour and improve OFT.
- ¶ Competitive pressure on small domestic apparel manufacturers is low because large players cannot benefit from economies of scale without modern retail formats. Furthermore, the reservation of this area for small-scale industry protects small manufacturers and limits the expansion of large modern producers.
- ¶ In telecom, government-owned incumbents still account for over 93 per cent of the market while private entrants in the local market have limited their operations to the more profitable business segment. Moreover, the prices of the long distance and international segments (currently a government monopoly) remain very high, when compared to countries such as the US. As a result, government-owned incumbents enjoy higher profits than their counterparts in the US who face greater competitive pressures (**Exhibit 4.31**).
- ¶ In power generation, there is very little wholesale competition (i.e., inter-utility buying and selling of electricity). Although private players were allowed to enter the market in 1991, very few have actually entered owing to contractual disputes and payment delays by SEBs. Furthermore, retail competition in generation (i.e., where customers can buy electricity from competing producers) is non-existent in India. The experience of

other countries shows that competition in the wholesale and retail segments results in lower prices and better supply.

- ¶ Developers in India's real estate sector are shielded from competition by the scarcity of land, which is available only to a few insiders. As a result, these well-connected players are able to keep their profits high by focusing their efforts on land procurement and clearing red tape and more or less neglecting productivity in construction (**Exhibit 4.32**).
- ¶ In food retailing, counter stores typically enjoy a captive clientele based on personal relationships and services like home delivery and credit. The choice available to customers is further limited by the low penetration of modern supermarkets.
- ¶ Finally, in banking, despite delicensing in 1993, competition is still not strong enough for the larger public banks. Private banks are still small and active only in select urban and metropolitan areas.

Exposure to global best practices is also limited in many sectors

Exposure to best practices increases pressure on managers to improve productivity. Furthermore, as recent experience in the automotive sector has shown, the presence of best practice companies also facilitates the dissemination of more efficient managerial practices.

One sector in which global best practice is almost totally absent is the apparel industry. Foreign firms often prefer to establish operations in countries such as China or Thailand where they can find sufficient good quality textiles as well as cheap labour. In retail, existing restrictions on foreign best practice players limit the diffusion of sophisticated sourcing and organisational practices, a key success factor in this complex business.

Unfair competition allows less productive players to survive

In a market economy, strong competition ensures that the more productive companies grow at the expense of the less productive ones. In India, however, the presence of a non-level playing field and uneven enforcement of regulation allow less productive players to thrive even when domestic competition is high.

In the steel industry, for example, uneven enforcement of taxes and energy payments allows sub-scale, inefficient plants to compete despite their lower quality and higher inefficiencies. In retail, lax enforcement of taxes and duties among small players helps unproductive retail counter stores and limits penetration of supermarkets.

In dairy processing, the subsidisation of cooperatives and government-owned plants allows overstaffed and inefficient government-owned cooperatives to stay

in business. In telecom, higher licence fees and interconnection agreements increase entry costs and limit the entry of telecom operators using wireless technology.

EXTERNAL FACTORS LIMIT COMPETITION AND THWART PRODUCTIVITY GROWTH

Widespread market distortions in India raise many barriers to high capital and labour productivity (**Exhibit 4.33 & Exhibit 4.34**). It has its most negative effect through product market barriers, that is regulation governing specific sectors. Land market barriers, government ownership and problems in related industries (mostly due to product market barriers in these sectors) are other important barriers to labour and capital. However, our case studies show that other widely discussed obstacles such as stringent labour laws, poor infrastructure and low literacy rates have a lower effect on productivity than assumed. Restrictions on labour laws were found to be overcome through use of voluntary retirement schemes (VRS).

Product market distortions are the most important barrier to productivity growth

On average, in our case studies, we have found that removing product market barriers will increase labour productivity by around 80 per cent. In contrast, government ownership lowers productivity in almost 40 per cent of labour in modern sectors. Moreover, removing product market distortions is a key prerequisite for reaping the productivity benefits from privatisation. As we showed in our report on the Russian economy, distortions to competition introduced by distortions in the product market will limit managers' incentives to improve productivity despite privatisation.³

Product market barriers also play a key role in limiting capital productivity in the sectors we have studied. For example, regulation on the rate of returns limits managers' incentives to cut capital costs and encourages over-engineering in power generation, transmission and distribution. Similarly, unequal tax enforcement and investment subsidies allow under-utilised small mini-mills to compete despite their higher capital costs per ton of steel produced.

Outright barriers to entry, differential rules and uneven enforcement play a major role in hampering productivity.

- ¶ **Outright entry barriers:** A number of regulations such as restrictions on foreign direct investment (FDI), high import tariffs and licensing and

³*Unlocking Economic Growth in Russia*, McKinsey Global Institute, October 1999.

small-scale reservations decrease competition and thus productivity in India.

- **Restrictions on FDI:** Three examples show the adverse effect of FDI restrictions on productivity. In the retail sector, current regulation restricts global retailers to wholesale trade and operating retail outlets through local franchisees. In apparel, FDI in domestic-oriented manufacturers is limited to 24 per cent of equity. This restricts the transfer of technology, skills and managerial knowledge from foreign best practice firms to local ones. In housing construction, restrictions on foreign ownership of land limit the entry of foreign builders and developers into the construction market. Foreign players face higher risks when operating in India, as they are unable to take land ownership as collateral for the capital they have invested.
- **High tariffs on imports:** In three of the sectors we have studied, high tariffs considerably depress competition and thus productivity. Import duties in the steel industry still protect Indian companies from price-based competition with global best practice players, reducing their incentive to increase the efficiency of their plant operations and make economically viable investments.

In the automotive sector, high import duties on mid-sized cars allow subscale and under-utilised automotive assembly plants to compete with productive foreign players. In apparel, quantitative restrictions prevent imports from more productive lower cost countries. As a result, India's domestic apparel industry faces less pressure to improve productivity. If quotas are removed, India's apparel sector will be forced to restructure in order to compete with China, which, unlike India, has already gained ground in markets not currently protected by the quota system (**Exhibit 4.35**).

- **Processing licences through Milk and Milk Products Order (MMPO):** This prevents new entry in dairy processing. Although the MMPO was set up primarily to ensure high levels of quality and hygiene, its ability to grant processing licences has become a way to limit the entry of new cooperatives and, in particular, private plants into particular milk shed areas. As a result, government-owned and cooperative dairy plants remain profitable and have little incentive to rationalise excess labour and improve OFT.
- **Reservation for small-scale industry (SSI):** In the apparel industry, reservation of specific areas for small-scale players limits entry and competition. Although removed for the woven segment since November 2000, reservations remain in place in the knitted and hosiery segments. With increasing trade in apparel products, SSI

restrictions are protecting subscale plants from competing with large-scale Chinese manufacturers.

¶ **Non-level rules and uneven enforcement:** Rules that sometimes irrationally differentiate between different kinds of players or the uneven enforcement of rules (e.g., on taxes and inputs payments) give some industry players an unfair advantage. Protected players have little motivation to improve productivity and are able to compete despite their inefficiencies. To illustrate:

- In the steel industry, small mini-mills frequently evade energy payments and taxes by under-reporting their sales. This gives them an unfair cost advantage of 15 per cent that allows them to survive and compete against larger, more “visible” players. Moreover, subsidies for new companies in underdeveloped areas have contributed to the proliferation of these small-scale players. The tax subsidy regime gives incentives to invest in several small plants rather than a single larger one. Similarly, large integrated players benefit from subsidised coal and iron ore prices obtained through preferential long-term mining leases. As a result, overstaffed and inefficient integrated players have a cost advantage over more efficient large mini-mills (**Exhibit 4.36**).
- Cooperative dairy plants have received large subsidies from state governments in the form of loss write-offs and soft loans. These subsidies have allowed them to survive despite their excess labour and poor OFT.
- For some products in the apparel industry, firms with investments of less than US\$ 200,000 are exempt from paying excise duty, thereby improving their cost position vis-à-vis larger manufacturers.
- Pro-incumbent regulation in telecom often inhibits the entry of new players, limiting competition. Moreover, even when entry occurs, differential regulation increases the costs for new private players. This allows government-owned incumbents to maintain market share despite their lower productivity. Besides paying a high licensing fee (17 per cent of revenues), new local telecom providers also face limitations on geographical coverage, delays in interconnecting and unequal access to long distance telephony. In the wireless market, recent legislation permits incumbent wireline operators to provide “limited mobility” mobile services without paying the additional licence fees that regular mobile providers are required to pay.
- Power wholesale tariffs protect SEBs and central government-owned generators from competition through capacity additions by private

players. Furthermore, the lack of independent regulators allowed SEBs to pass the costs arising from operating inefficiencies and energy losses/thefts on to consumers.

- In retail, unequal tax and labour laws give traditional counter stores a 15-20 per cent benefit in gross margins vis-à-vis supermarkets. Most traditional retailers evade most of their income tax as well as some of their sales tax. Moreover, traditional stores also pay lower rates for land and energy compared to modern formats. Frozen rents and lower residential power rates typically halve the land and power costs for some traditional counter stores.

¶ **Other product market barriers:** Productivity also suffers through restrictions on or practices in specific industries.

- In retail banking, interest rate restrictions hamper bank operations. India's central bank, the Reserve Bank of India, prevents banks from offering any interest on checking accounts (current accounts) for small businesses and limits interest on checking accounts for retail customers to 4.5 per cent. Similarly, the interest rates on small loans are limited to 12-13.5 per cent. Although these restrictions have not stopped new private banks from rapidly attracting wealthier customers on the strength of better service and higher rates for fixed term retail deposits, they could restrict their growth into the mass market which has a higher demand for liquidity.
- Cross subsidies in telecom limit operators' incentives to boost usage, lowering both labour and capital productivity. Moreover, under current conditions, cross subsidisation allows local incumbents to take advantage of artificially high long distance prices to finance their local operations, lowering their costs vis-à-vis new local providers not present in the long distance market.
- Inadequate standards for building and materials hamper DFM in housing construction and limit competition. Better building standards will facilitate the diffusion of best practice DFM (with competition among developers as a prerequisite), increase the information available to consumers, and facilitate housing financing. Moreover, enforcement of standards will compel contractors to focus on lowering labour costs rather than on sourcing cheap, lower quality materials.
- In software, weak enforcement of intellectual property rights increases software piracy rates to around 61 per cent compared to only 25 per cent in the US. As a result, product companies lose revenues that can increase their productivity by 88 per cent (**Exhibit 4.37**). While the

direct impact of this will be a virtual doubling of current productivity in products, the indirect impact is far higher. With the right protection, products companies will derive higher returns on their investments in research and development, gain scale and dramatically improve productivity.

Land market distortions also restrict productivity growth

Land market barriers, usually ignored in the public debate over economic reforms, critically affect large domestic sectors such as housing construction and retail. The important issues here are unclear titles, low property taxes, subsidised user charges, rent control and stringent tenancy laws and zoning laws.

¶ **Unclear titles:** It is believed that most, over 90 per cent by one estimate, of the land titles in India are “unclear”, leading to numerous legal disputes over property. The lack of clear titles affects price-based competition in housing construction and retail in several ways. First and foremost, it limits access to land to a few privileged developers who thrive in this environment, making their profits on the basis of offering clear titles as opposed to lower prices. Second, it makes collateral-based financing very difficult, restricting the number of transactions in both the primary and secondary housing markets. The lower number of transactions, in turn, limits price information for consumers and further reduces competitive intensity among developers. Finally, unclear land titles also limit the expansion of large modern retailers by limiting access to a few well-connected players.

¶ **Low property taxes:** Low property tax and its collection reduces the local governments’ incentives to build new infrastructure. Again, this restricts the land available to housing developers and retailers. Property tax collection, a key source of revenue for infrastructure financing in other countries, is low in India for two reasons. First, in city centres, property valuations for tax purposes are usually outdated and often linked to the controlled rents paid by existing tenants. Second, in city suburbs, where rents are not controlled, property tax collection is low since there is a larger amount of unauthorised construction (i.e., slums) and higher tax evasion due to corrupt officials.

The lack of infrastructure development restricts new construction to the city centres where only well-connected developers and retailers are able to acquire land. In particular, it severely limits the large-scale development of single-family homes, which require large land lots at the city edges. Moreover, the lack of suburban developments reduces the amount of price information available to consumers by reducing the size of the “built for sale” housing market.

- ¶ **Subsidised user charges:** As with low property taxes, heavily subsidised user charges limit the incentives for local governments to invest in new infrastructure and limit the land available for housing and retail developments. Water and sewerage services are typically government-owned and pricing decisions are often taken on political rather than economic grounds. Similar issues affect the electricity sector where, despite private participation, energy thefts and subsidised tariffs for certain segments of consumers greatly reduce collection.
- ¶ **Rent control and stringent tenancy laws:** Stringent rent control and tenancy laws reduce competition among housing developers and retailers. First, they freeze land in city centres, thereby contributing to the lack of “clear” land for construction and retail. Second, rent control directly hampers the size of the rental market. More and cheaper rental accommodation will increase competitive pressure on developers.
- ¶ **Zoning laws:** Zoning laws contribute to the lack of “clear” land and limit competition among housing developers and retailers. Local governments are often slow to convert rural land to residential land and this limits the supply of land in city suburbs. In other countries, the incentives offered to local government to convert rural land are linked to the future tax collection from new developments on this land. These incentives are severely restricted in India as a result of the low property tax and user charge collection in suburban areas.

Government ownership is a major restraint on productivity

Government ownership inhibits productivity in modern industries such as steel, power, telecom and banking. Government-owned bodies, which account for around 40 per cent of employment in modern sectors, exhibit substantially lower productivity than their private counterparts who, incidentally, also perform well below their productivity potential because of product market barriers (**Exhibit 4.38**).

Government ownership lowers productivity in three main ways. First, political interference and the compulsion to create jobs have led to massive over-employment, resulting in poor labour productivity at government-owned plants. Second, the constant bailing out of companies in financial trouble and the subsidising of operational inefficiencies allows these players to survive without restructuring. Finally, government ownership often induces regulation that protects inefficient incumbents at the expense of more efficient private entrants.

At the operational level, government ownership affects productivity in two ways. For one, it hampers labour productivity by reducing the managers’ incentives to rationalise the labour force, improve organisational practices and invest in viable assets, as is described in the instances that follow.

- ¶ Despite being vastly overstaffed and inefficient, subsidies and bail-out packages allow large government-owned steel producers to compete with more efficient private players.
- ¶ In the power sector, state-owned SEBs employ, on average, four persons per MW as against one person per MW at even the old private sector plants.
- ¶ In telecommunications, the government monopoly leads to very high long distance telecom tariffs and thus high revenues, reducing pressure on the management to improve operations. As a result, heavily overstaffed operators are able to compete with more efficient new private entrants. Moreover, the government's investment targets limit economically viable investment by favouring investment in new lines as the only performance target. Viable investments are further limited by the multiple layers of approvals required to obtain funds for items outside the annual budget.
- ¶ In banking, subsidised public sector banks have little financial incentive/pressure to automate branches and rationalise labour. Managers are also typically unwilling to confront powerful labour unions, which have imposed many internal barriers to increasing productivity.

At the external level, government ownership also hampers capital productivity. Public enterprise managers, with little reason to maximise profits, are complacent and often tolerate under-billing, construction time and cost overruns and over-invoicing of imported equipment. Similarly, the lack of shareholder vigilance from government-owned banks and insurance companies also leads to over invoicing.

- ¶ Corruption and lack of profit incentives often result in over invoicing of equipment and time overruns in building government-owned steel plants. Moreover, private steel plants, under the lenient eye of government banks and large state-owned institutional shareholders (e.g., insurance companies), incur similar time and cost over-runs.
- ¶ Government targets and bureaucratic delays hamper the capital productivity of government-owned telecom operators. First, viable investments are limited by the multiple approvals required to obtain funds for items outside the annual budget. Second, network planning becomes short sighted as the capacity in place only reflects current targets instead of anticipating future demand. Finally, corrupt practices sometimes result in over invoicing of capital equipment.
- ¶ Poor corporate governance in the power sector, primarily at SEBs, is the main external factor leading to low capital productivity in generation and transmission and distribution. In generation, SEBs have the longest construction overruns and the lowest capacity utilisation. In transmission

and distribution, they lose about 20-25 per cent of power (mainly due to theft) compared to the 2-3 per cent mainly technical losses of best practice private players

Distortions in related sectors have negative spillover effects

Distortions in related industries harm productivity in many of the sectors we have studied. Typically, these distortions are the result of product market barriers in these sectors, as the examples we have elucidated show.

- ¶ **The food value chain:** The underdeveloped supply chain of this sector is a critical barrier for global food retailers who will not invest in India unless they can source a large proportion of their requirements locally and at the right quality. This prevents the spread of best practice, for example, through contract farming or in streamlining the distribution chain and reducing downstream costs for processors.

Large players account for only 25 per cent of the food processing output in India. The small-scale industry (SSI) accounts for a third of the output and non-registered traditional manufacturers for another 42 per cent. While the SSI reservation is being progressively relaxed, some products remain restricted (bread, some confectionery, etc.) and the legacy effect is strong. As a result, food processors in India remain small and fragmented, and are unable to reap the benefits of scale or invest in brand building. The absence of large processors also limits the diffusion of contract farming, an efficient way to provide extension services to farmers. Extension services such as bulk buying of feed and fodder, provision of management information, and education about animal health and hygienic practices are very important if dairy farmers are to increase their productivity.

The absence of large retailers also increases distribution inefficiencies and reduces competition in wholesaling. In India, distribution of most food items involves multiple intermediaries, high cycle times and losses during transportation and storage (**Exhibit 4.39**). These distribution inefficiencies are the largest in the fruit and vegetable chain where the absence of a cold chain and convenient marketing channels leads to huge wastage.

- ¶ **The apparel value chain:** The apparel industry suffers from fragmented textile suppliers and retailers. Retailers are also constrained by the lack of large producers of branded apparel. Large mills that can produce significant quantities of quality fabric are scarce and export much of their production. One of the reasons is that small-scale reservation, the uneven enforcement of labour laws and non-level taxes allow powerlooms and handlooms to thrive despite their lower productivity (**Exhibit 4.40**).

Furthermore, zoning codes and labour laws make it difficult for the mills to move to cheaper land/labour cost areas.

The poor quality of local textile fabrics hampers the productivity of apparel exporters as well as domestic manufacturers. For exporters, poor quality deters FDI. All things being equal, investors prefer a country with a readily accessible supply of textiles to cut down on the turnaround time and minimise problems with customs clearance. Poor quality textiles affect domestic producers even more dramatically since they do not have the option of importing fabric at low duties. Small lots of faulty fabric push up complexity costs and prevent the adoption of new technology.

Finally, the fragmentation of domestic apparel producers increases the sourcing costs for retailers since it makes it difficult for large formats such as department stores to find sufficient brands and quality merchandise.

- ¶ **The steel value chain:** Here, government control on ore deposits acts against the market. Government long-term leases on iron ore and coal mines enable integrated players to source iron ore and coal at highly subsidised prices and thus compete with more productive large mini-mills and foreign imports. At the same time, a lack of concern for quality steel on the part of real estate developers and contractors helps many of the small mini-mills and rolling mills, which typically serve only their local construction market. Larger players would not produce sub-standard steel because it would damage their brand.
- ¶ **Power generation and transmission and distribution:** As mentioned earlier, the bankruptcy of the SEBs is one of the key reasons why entry into the wholesale generation market has been very slow. Private investors, fearing default on payments, attach a high risk premium to generation projects. In turn, SEBs are bankrupt mainly because of government ownership, which limits the incentives to improve operations and reduce rampant theft.
- ¶ **Credit rating systems and retail banking:** The lack of reliable credit information in India directly reduces productivity in retail banking. In the US, the Fair Credit Reporting Act of 1971 allows credit bureaus to release customer histories to entities with a legitimate need to determine customers' creditworthiness. In contrast, regulation on credit bureaus is not clear in India. Moreover, government-owned banks have little interest in improving their credit approval process. Consequently, most banks do not have access to credit data and hence have to spend a vast amount of time on the underwriting process (**Exhibit 4.41**).

Factors with less influence on labour and capital productivity

Despite a widely-held view that rigid labour laws, worker illiteracy, red tape and corruption and poor infrastructure are important causes of the productivity gap between India and the US, we found these barriers to be not as important as commonly believed.

¶ **Labour market distortions:** Stringent labour laws are not significant barriers to high productivity. This is because rigid labour laws are only applicable to the manufacturing and government sectors. Even in these sectors, it is possible to gradually prune the workforce. Thus labour market rigidities may slow down productivity growth in some cases, but they do not generally prevent an industry from achieving its potential labour productivity over time. Although it is difficult to dismiss workers except on disciplinary grounds, the workforce can still be rationalised using VRS. For example, large private steel plants have already reduced their labour force by 10 per cent in one year using VRS. Similarly, overstuffed government-owned companies now facing competition from best practice private entrants have recently offered VRS and over 10 per cent of the employees have applied for it. Labour laws do, however, affect India's attractiveness as a manufacturing destination for exports to global markets. This has been the experience in the apparel sector, where global players have chosen to locate their sourcing bases in other Asian countries.

¶ **Poor transportation infrastructure:** We have not found poor transportation infrastructure (i.e., roads and ports) to be as significant a constraint on productivity and output growth in our case studies as the top three factors, belying the common belief that poor infrastructure represents a serious bottleneck. Indian road and railway coverage appears to be well in line with that of other developing countries (**Exhibit 4.42**). Road shipping delays are due in part to the poor quality of roads and also to poor traffic management. Similarly, delays in ports are mainly a consequence of red tape and inadequate and poorly managed material handling facilities rather than the shortage of berthing capacity.

Best practice companies usually find ways of overcoming the operational effects of infrastructure inefficiencies. For instance, automotive suppliers tend to locate themselves close to the assembly plants and best practice supermarkets typically use small generating facilities to cope with the energy shortages during peak demand.

¶ **Low labour skills or literacy rates:** We did not find India's current low literacy rates to be a constraint on productivity growth. In all the sectors we studied, we found that Indian blue collar workers could improve their performance if on-the-job training were provided and managerial best

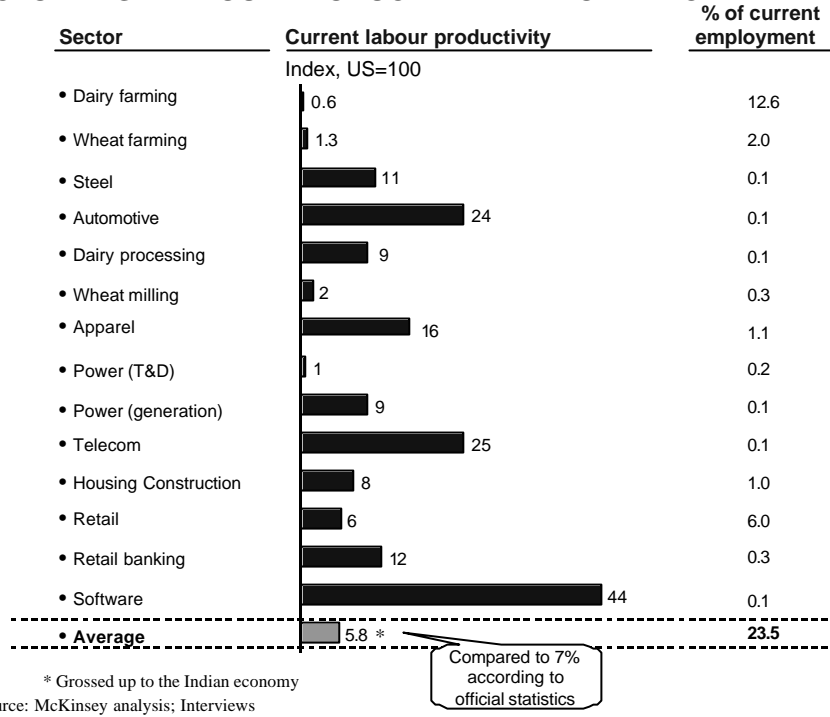
practices put in place. We found similar examples in the US as well.⁴ A Houston-based housing builder achieved best practice productivity with illiterate Mexican ex-agricultural workers who were not fluent in English. Similarly, a Richmond food processor trained his employees, many of whom had difficulties in reading and writing, to fulfil complex work within a highly automated plant.

Where labour skills are more important is in the software sector whose future growth may be hampered by the expected shortage of experienced software professionals. Although the availability of English-speaking software professionals has not been an issue in the past, increased sourcing of software professionals by companies in developed markets might limit the Indian industry's ability to continue growing at its current rate. Public and private training institutions that have increased their output of specialised engineers over the past few years, however, are already addressing this issue.

- ¶ **Red tape and corruption:** These are factors that do have a negative effect on productivity, albeit not as great as assumed. Red tape and corruption directly affect productivity by disrupting workflow and making planning difficult. Moreover, red tape and corruption can also discourage entry, especially by foreign players, thereby limiting competition for domestic as well as foreign best practice players. Two examples prove the point:
- In housing construction, frequent site inspections and harassment by government inspectors often cause work stoppage, making it difficult to plan work.
 - In apparel, red tape and corruption in Indian ports is a strong deterrent to FDI. Delays in ports critically affect exporters by increasing transportation costs and making “time to market” difficult. As a result, foreign investors prefer to establish their operations in China, where higher labour costs are more than compensated for by lower transportation costs.

⁴ *Productivity – The Key to an Accelerated Development Path for Brazil*, McKinsey Global Institute, March 1998.

SECTOR-WISE LABOUR PRODUCTIVITY PERFORMANCE



SECTOR-WISE CAPITAL PRODUCTIVITY PERFORMANCE

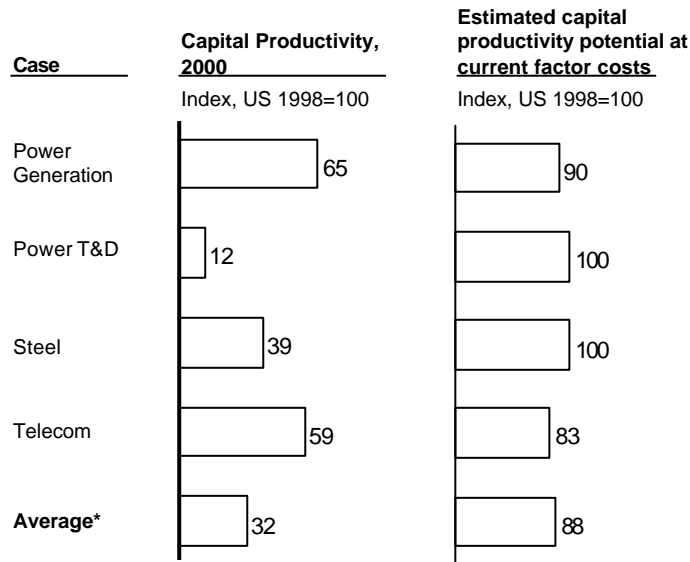
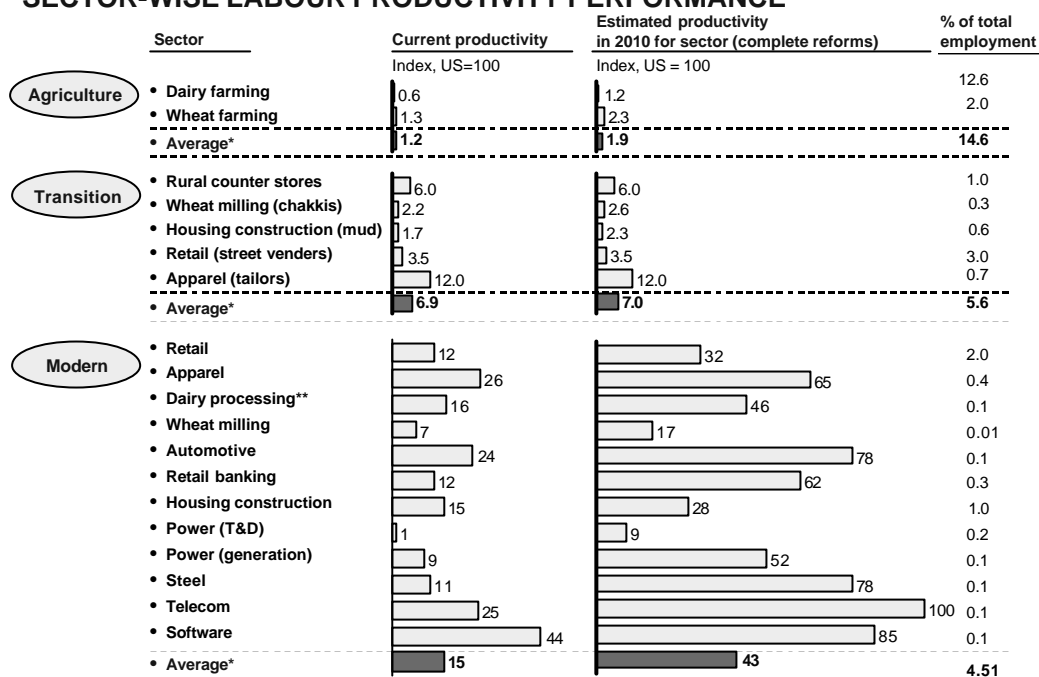


Exhibit 4.3

2000-08-31MBZXJ151

SECTOR-WISE LABOUR PRODUCTIVITY PERFORMANCE



*Grossed up to the overall economy

**Organised sector only

Source: Interviews; McKinsey Analysis

Exhibit 4.4

2000-08-31MBZXJ151

COMPARATIVE DEVELOPMENT OF INDIAN AGRICULTURE

Country	PPP adjusted GDP/ capita	Employed in agriculture	Key characteristics of farming model		
			Average landholding size	Level of mechanisation	Farming model
	% of US	%	Hectares		% integrated*
USA	100	2.2	197	• Combine • Air spraying	• Low
Japan	83.9	4.6	1.4	• Combine	• Low
France	76.4	3.7	31.5	• Combine	• Low
Mexico	27.9	22.7	41.4	• Combine	• Low
Thailand	22.3	58.0	3.4	• Combine	• Medium
Turkey	22.2	47.7	5.8	• Combine	• Low
Brazil	21.8	17.8	72.8	• Combine	• Medium
India	5.7	60.5	1.6	• Tractorised • Limited (<5%) use of combine	• High

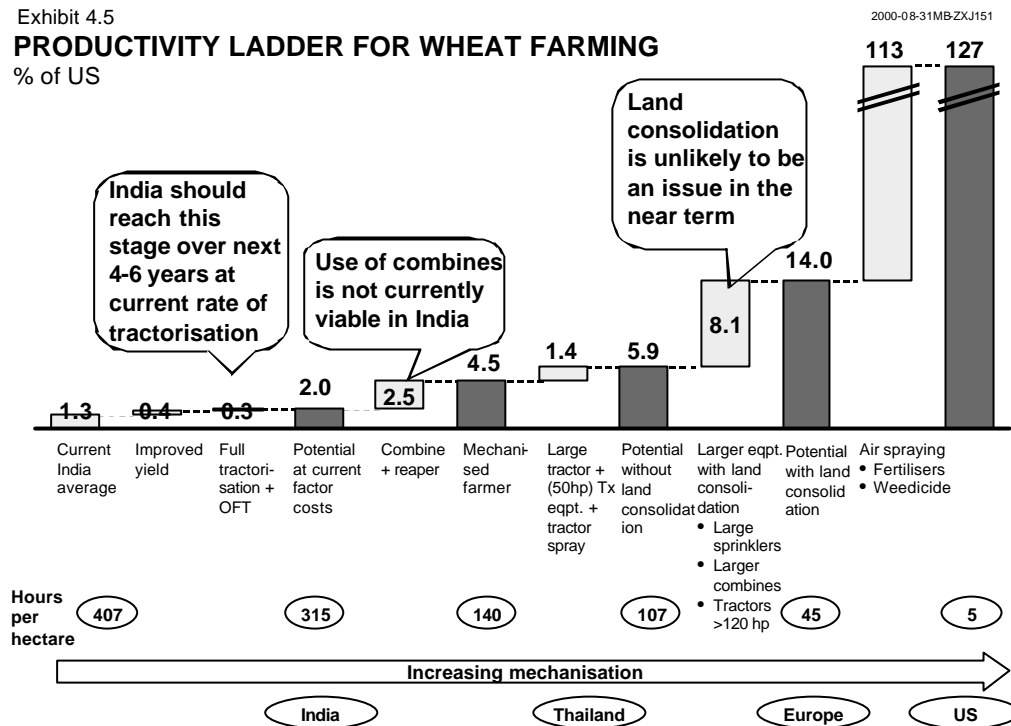
* High: >66%; Medium: 33-66%, Low: <33% where % integrated = per cent of cattle raised by part-time farmers

Source: *The Economist* (2000); FAO Handbook, 1998

Exhibit 4.5

PRODUCTIVITY LADDER FOR WHEAT FARMING

% of US

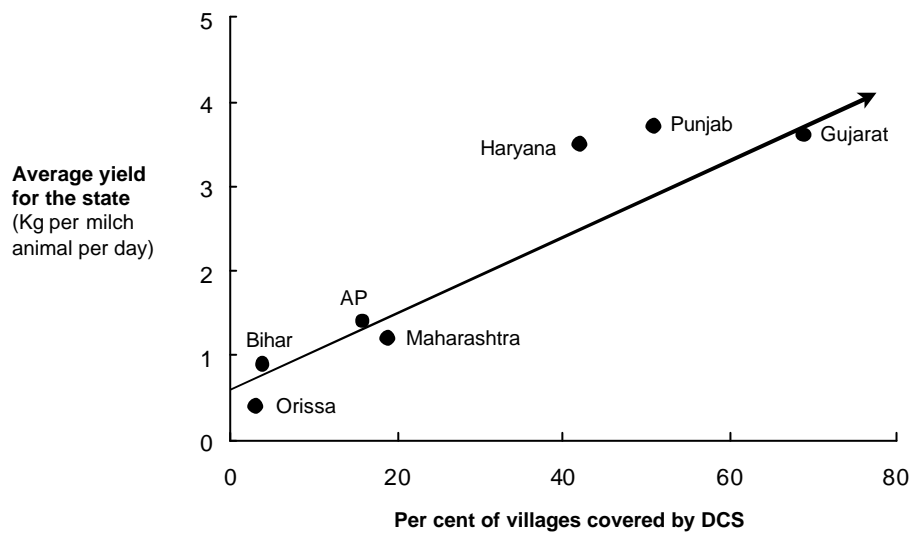


Source: Team analysis; Interviews

Exhibit 4.6

DCS COVERAGE AND DAIRY YIELD FOR STATES, 1994-95

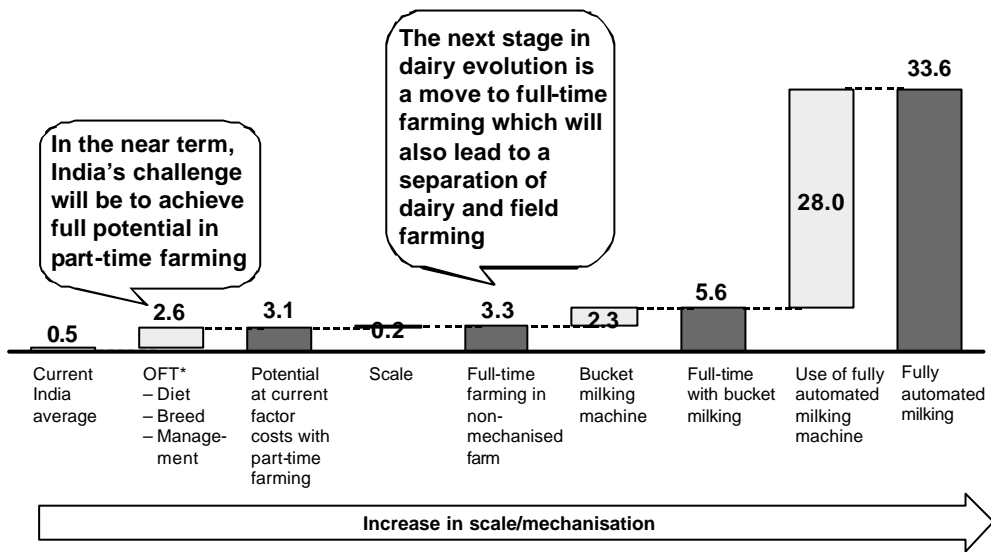
2000-08-31MBZXJ151



* Other factors that affect yields b/w states and climatic conditions and difference is animal mix
 Source: Basic animal husbandry data 1999; Census of India 1991

PRODUCTIVITY LADDER FOR DAIRY FARMING

% of US



* Organisation of functions and tasks

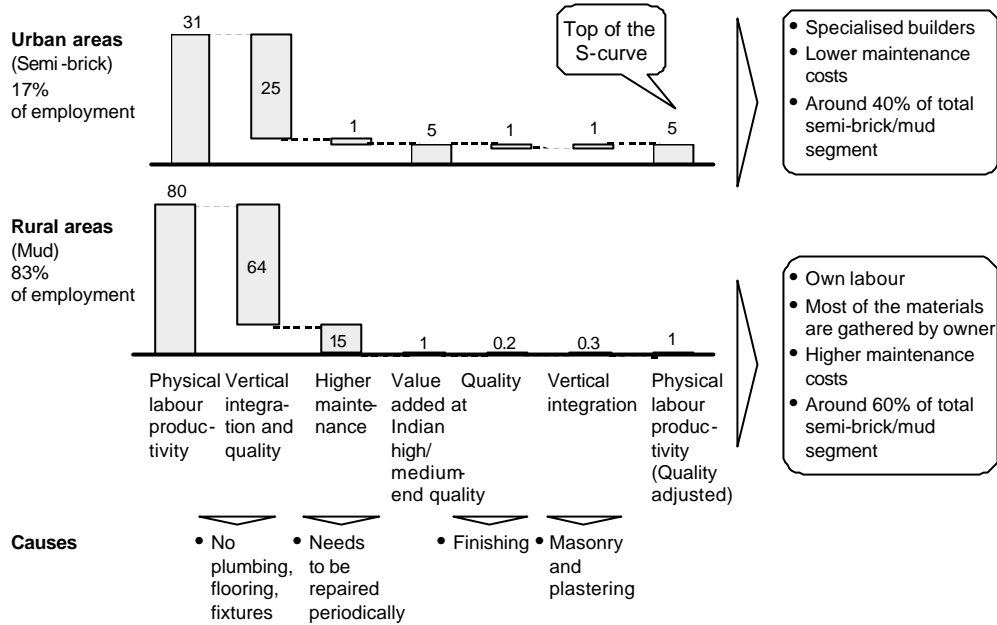
Source: Team analysis; Interviews

Exhibit 4.8

2000-08-31MB-ZXJ151

LABOUR PRODUCTIVITY IN RESIDENTIAL HOUSING CONSTRUCTION

Indexed to US=100; Sq m per '000 hours



Source: Interviews; McKinsey analysis

Exhibit 4.9

2000-08-31MB-ZXJ151

SUMMARY OF OPERATIONAL FACTORS LEADING TO LOW LABOUR PRODUCTIVITY IN MODERN SECTORS

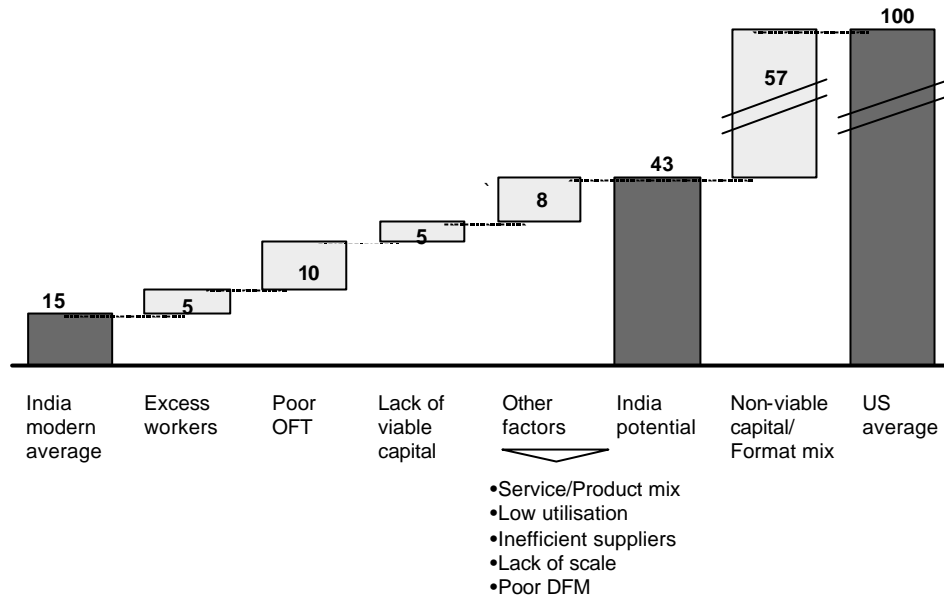
● Important
○ Less important
→ Not important

	Steel	Auto-motive	Food Processing		Power		Housing	Banking	Retail	Software	Total	
			Wheat	Dairy	Apparel	Telecom	Gen. T&D					
Operations												
- Excess labour	●	●	→	●	→	●	●	●	○	→	●	
- OFT	●	●	●	●	●	○	●	●	●	●	●	
- DFM	→	○	→	→	→	→	→	●	→	→	○	
- Capacity utilisation	○	●	→	●	→	→	→	→	→	→	○	
- Supplier	→	○	→	●	○	→	○	→	●	○	○	
- Marketing	→	→	→	→	→	●	→	→	→	○	○	
- Labour trainability	→	→	→	→	→	→	→	→	→	→	→	
Product/Format mix	→	→	→	→	●	→	→	→	○	○	○	
Technology												
- Lack of scale	●	●	→	→	●	→	→	→	●	→	○	●
- Lack of viable investment	○	→	→	○	●	●	●	●	○	●	→	●
- Non-viable investment	○	○	●	○	→	→	●	●	○	→	●	●

Source: Team analysis; Interviews

CAUSAL FACTORS FOR LABOUR PRODUCTIVITY DIFFERENCES IN MODERN SECTORS

Indexed to US=100



Source: Team analysis; Interviews

SUMMARY OF OPERATIONAL FACTORS LEADING TO LOW CAPITAL PRODUCTIVITY

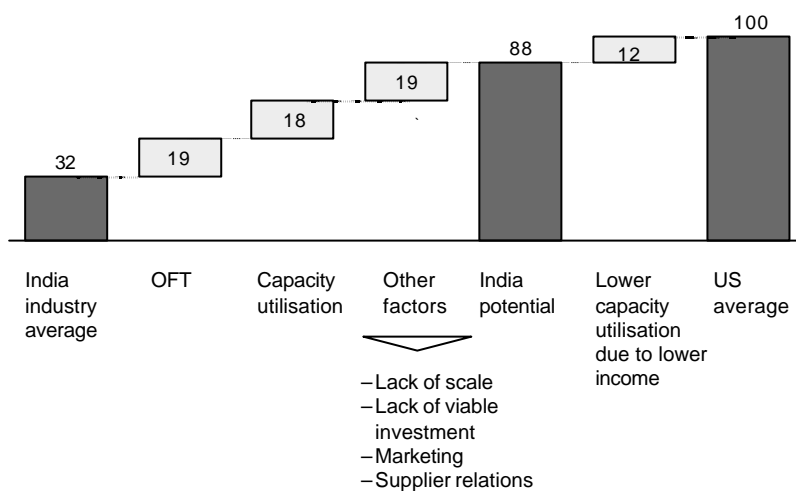
● Important
○ Less important
— Not important

	Power		Steel	Telecom	Average
	Generation	T&D			
• Operations					
– OFT	●	●	●	○	●
– DFM	—	—	—	—	—
– Capacity utilisation	●	—	●	●	●
– Supplier	○	—	—	○	○
– Marketing	—	—	—	●	○
– Labour trainability	—	—	—	—	—
• Product/Format mix	—	—	●	—	○
• Production factors					
– Lack of scale	●	—	●	—	●
– Lack of viable investment	○	●	○	—	○

Source: Team analysis; Interviews

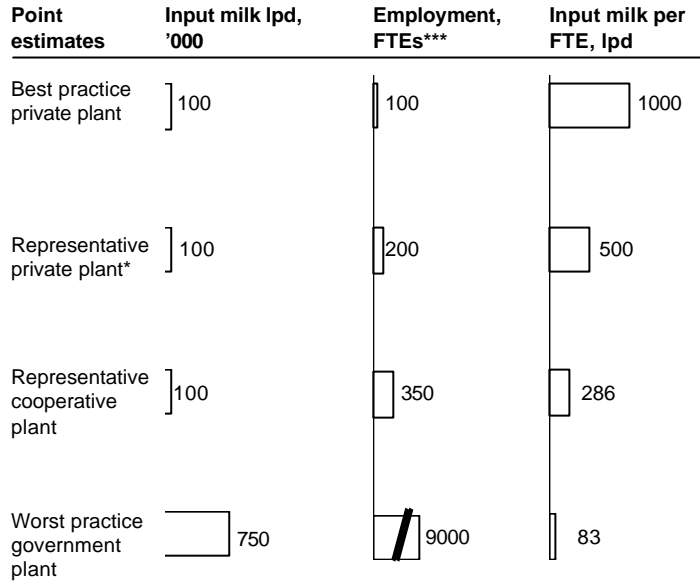
CAUSAL FACTORS FOR CAPITAL PRODUCTIVITY DIFFERENCES IN MODERN SECTORS

Indexed to US=100



Source: Team analysis; Interviews

STAFFING LEVELS IN DIFFERENT TYPES OF MILK PROCESSING PLANTS



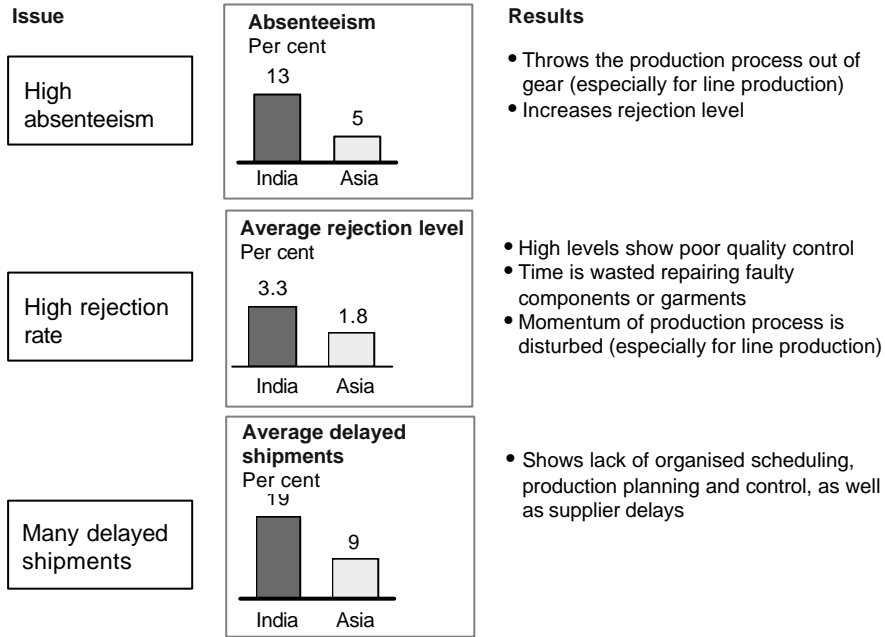
* Estimates

** Large scale plant (some economies of scale)

*** Full time equivalents

Source: Interviews; Team analysis

IMPACT OF POOR O&T IN APPAREL

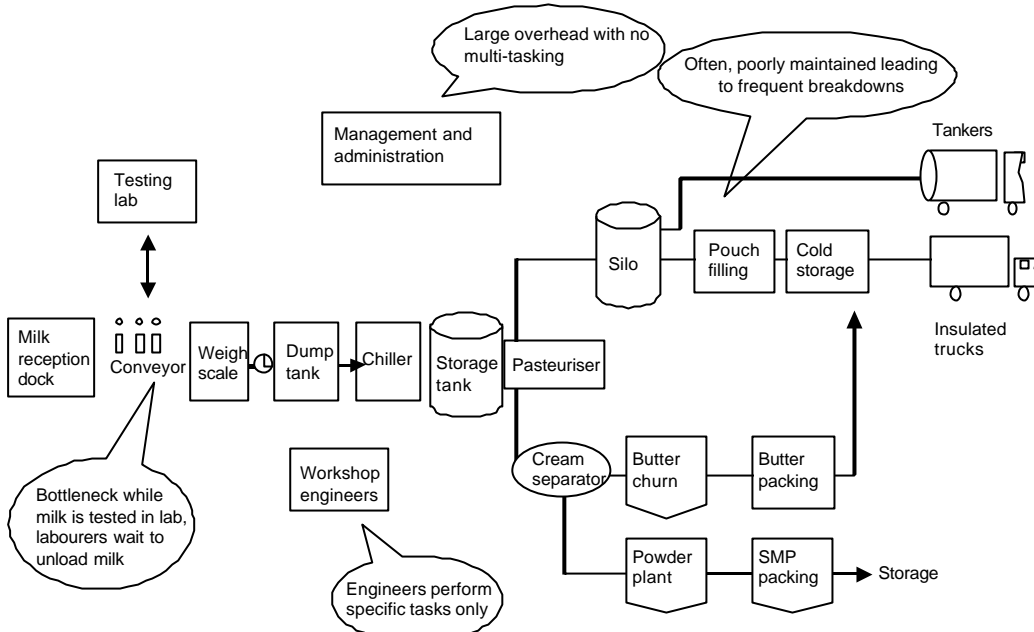


Results

- Throws the production process out of gear (especially for line production)
- Increases rejection level
- High levels show poor quality control
- Time is wasted repairing faulty components or garments
- Momentum of production process is disturbed (especially for line production)
- Shows lack of organised scheduling, production planning and control, as well as supplier delays

Note: Asia includes Sri Lanka, Thailand, Malaysia, Indonesia, Hong Kong, South China, Bangladesh
 Source: NIFT survey; American Apparel Manufacturers Association

TYPICAL DAIRY PLANT* LAYOUT AND EXAMPLES OF OFT PROBLEMS**

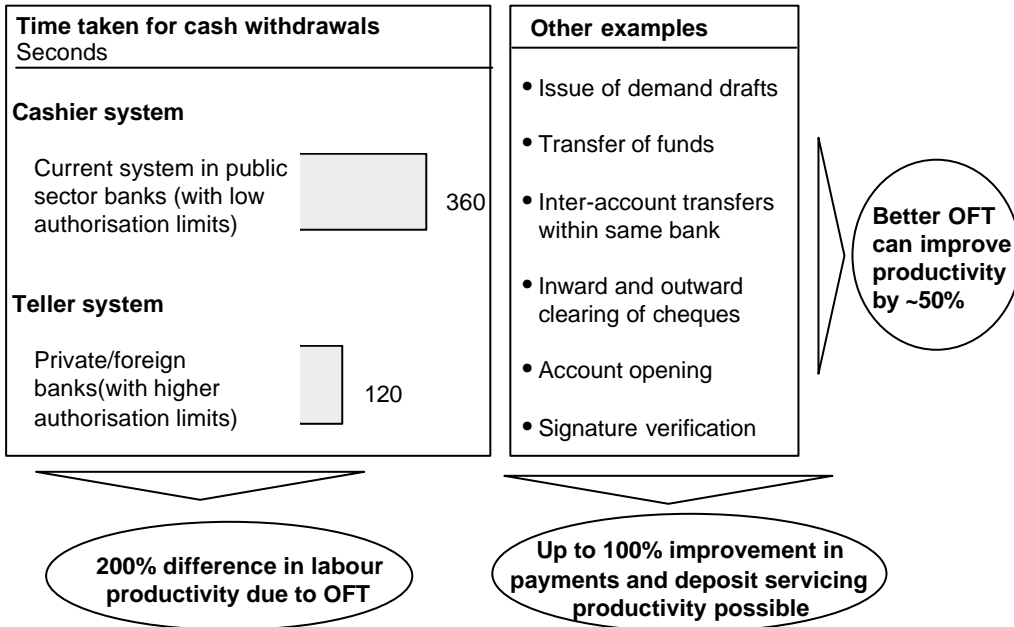


* 100,000 lpd plant making toned milk, SMP, and butter

** Organisation of functions and tasks

Source: Interviews

POOR OFT* IN RETAIL BANKING



* Organisation of functions and tasks

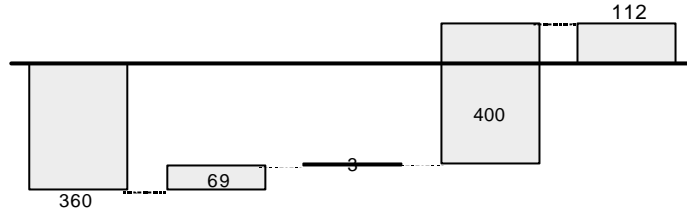
Source: Bank Survey, McKinsey Analysis

LACK OF VIABLE INVESTMENT IN STEEL

Rs crore

Concaster

- Cost of equipment Rs 360 crore
- 7 years until major revamp
- Savings of 0.05 hours per tonne
- Quality improvement of 1.5%



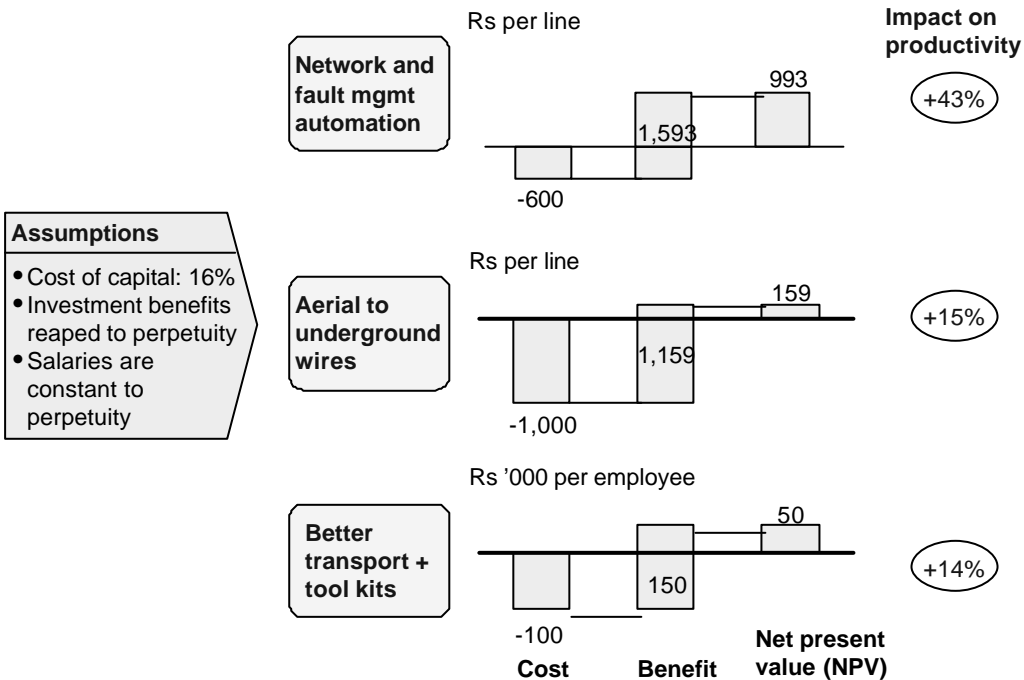
Steel shop automation*

- Cost of equipment 202 crore
- 20-year life
- Quality improvement of 2% (conservative)
- Capacity of steel shop of 2 mtpa
- Reduce labour from 2500 to 500 (extreme)



* Includes control system for LD converters, subblance in LD converted, combined blowing
 Note: Assumes WACC of 16%; cost of labour Rs42/hour

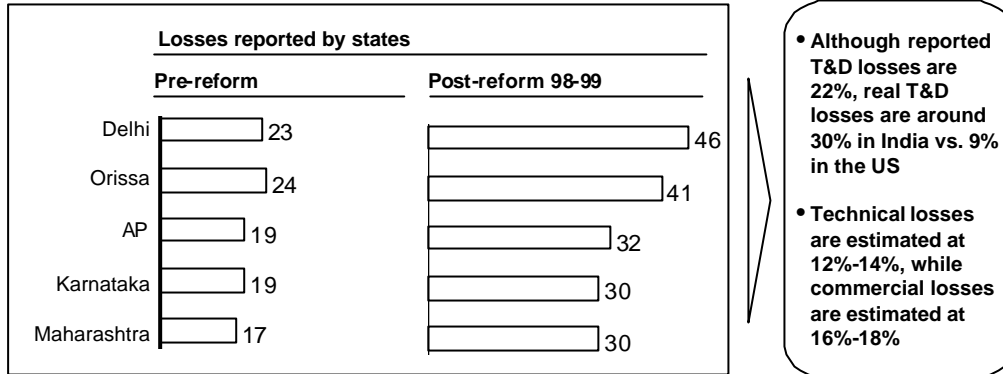
LACK OF VIABLE INVESTMENT IN TELECOM



Source: Interviews; McKinsey estimates

Exhibit 4.19
LOSSES IN POWER T&D
 Per cent

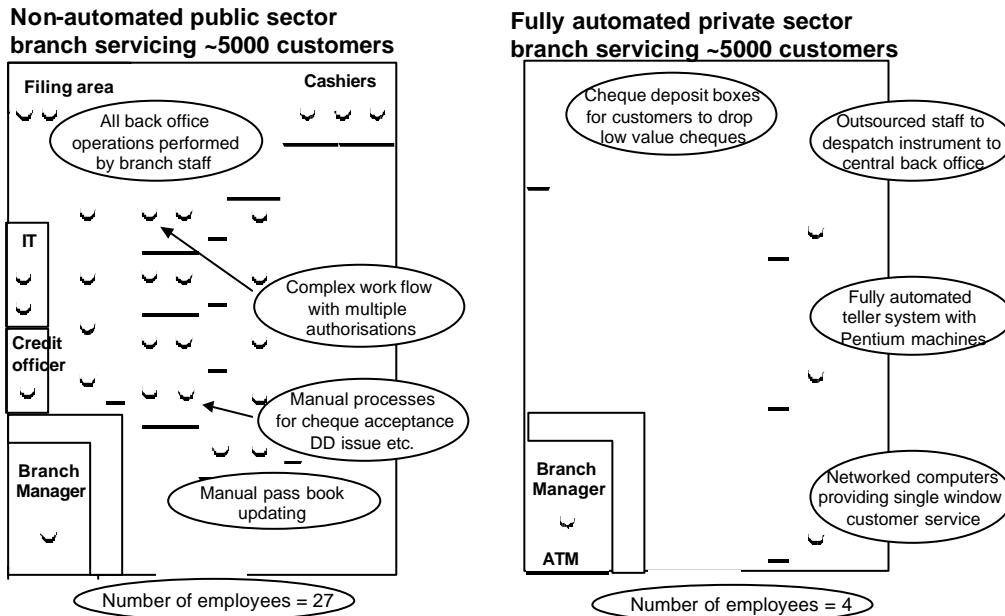
2000-08-31MBZXJ151



Source: Powerline; Press clippings; Interviews

Exhibit 4.20
COMPARISON OF OPERATIONS IN AUTOMATED AND NON-AUTOMATED BANK BRANCHES

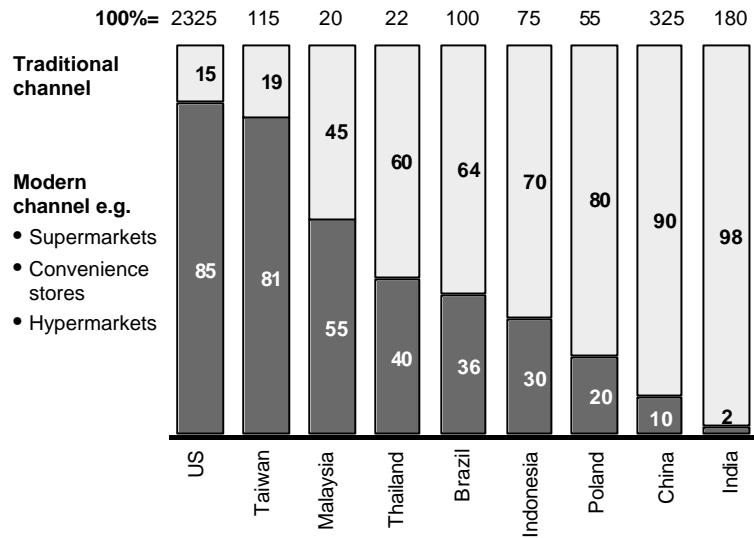
2000-08-31MBZXJ151



Source: Team analysis; Interviews

PENETRATION OF MODERN RETAIL FORMATS

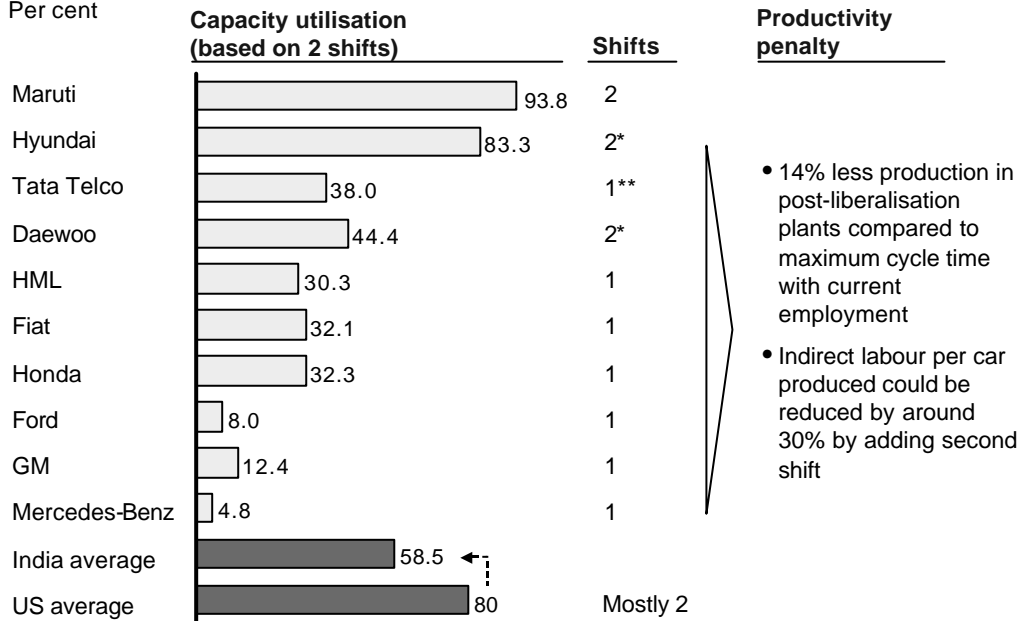
Per cent; US\$ billion



Source: Euromonitor

CAPACITY UTILISATION OF AUTOMOTIVE PLANTS, 1999-00

Per cent

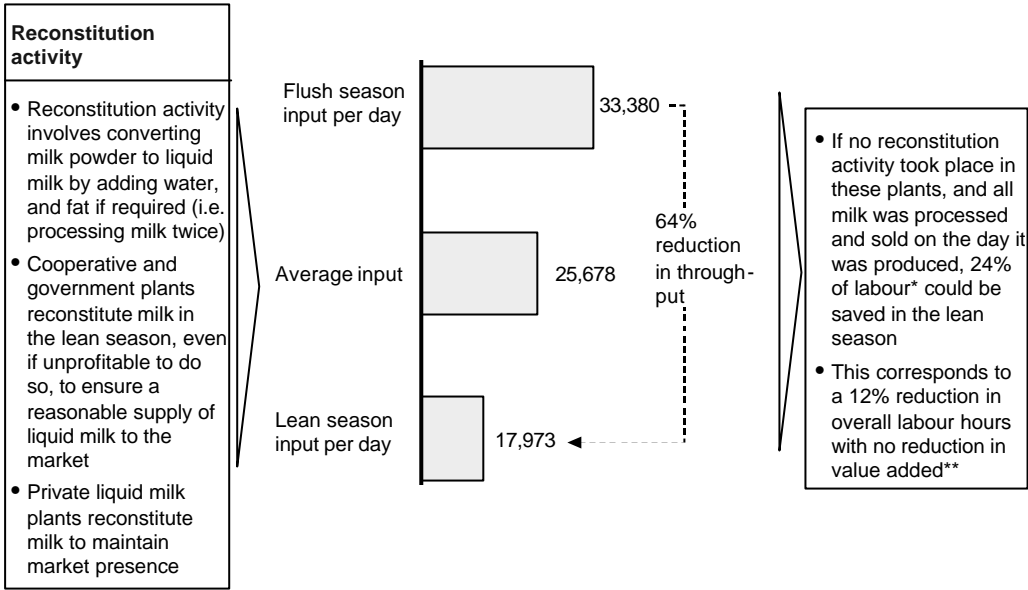


* Started 2nd shift during 1999-2000

** 2 shifts in press shop

Source: Interviews; Harbor Report; McKinsey Automotive Practice; SIAM; Press clippings

PRODUCTIVITY PENALTY DUE TO MILK RECONSTITUTION IN FLUSH SEASON



* Since 37% of labour is variable

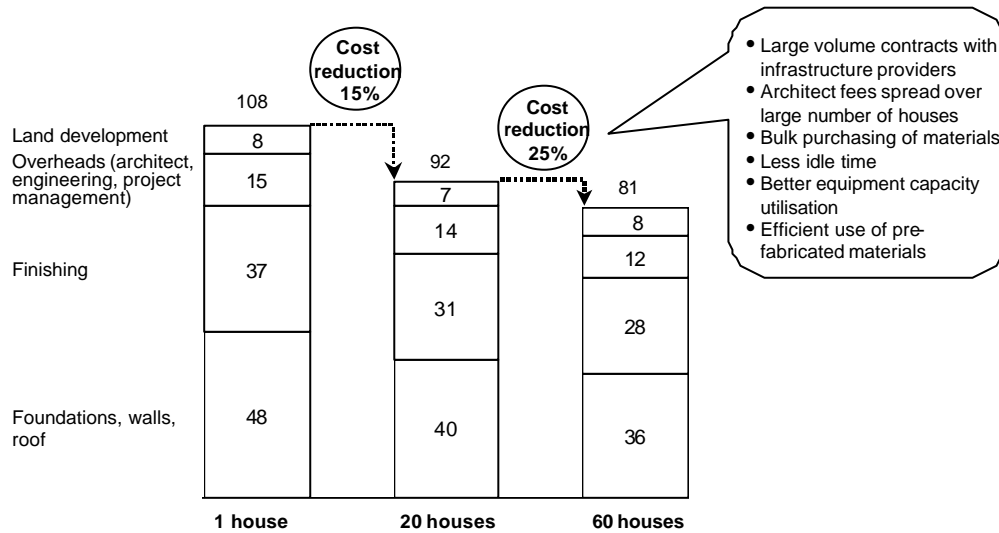
** Assuming there is no demand constraint for liquid milk in the flush season

Source: Interviews

LACK OF SCALE IN SFH* (BRICK) CONSTRUCTION

Total cost**; US\$ '000 at GDP PPP

FRANCE/GERMANY EXAMPLE



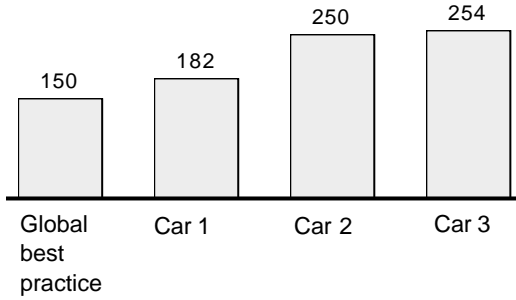
* Single family homes

**Example: "row" house, 110 m²

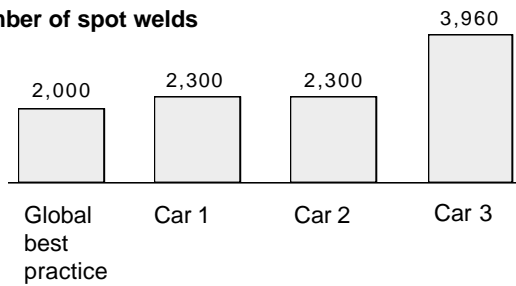
Source: MGI France/Germany report

DFM OF SELECTED INDIAN SEGMENT-A CARS*

Number of body panels



Number of spot welds



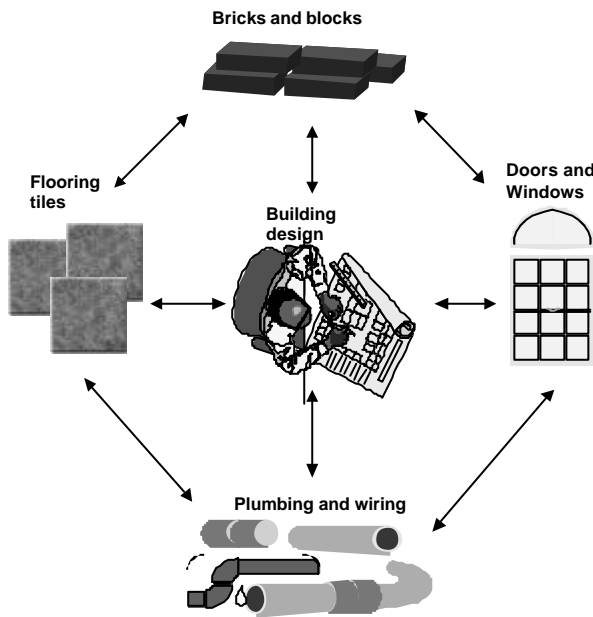
Productivity penalty

- Press: 31% (represents 4% of total employment)
- Body shop: 25% (represents 19% of total employment)

* According to DRI-segmentation

Source: Interviews; McKinsey Automotive Practice

BUILDING DESIGN AND MATERIALS IN HOUSING CONSTRUCTION



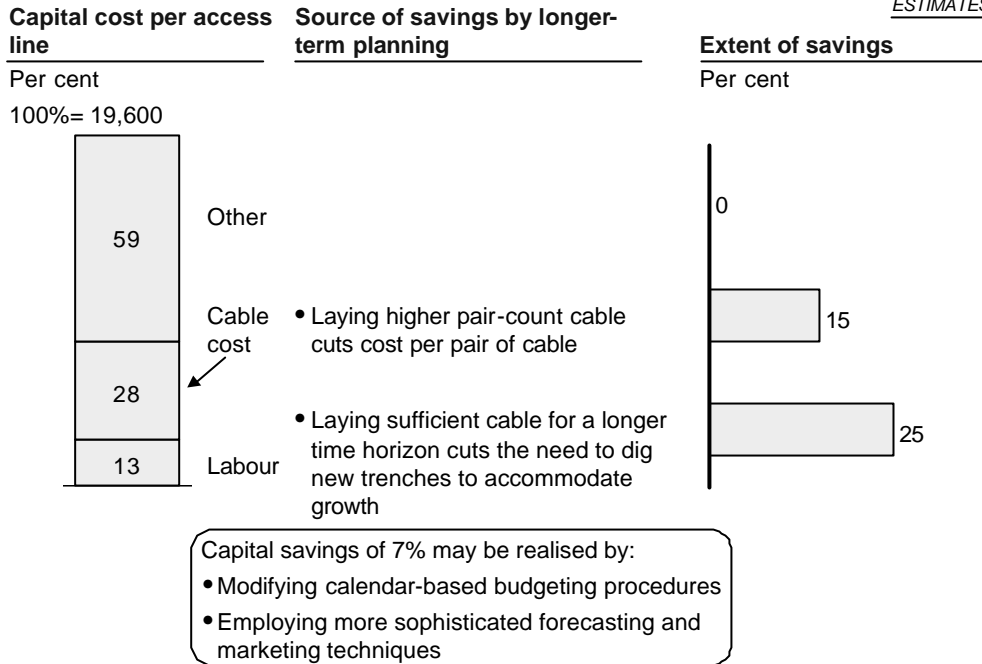
Effect on productivity

- Change in the way the contractor approaches construction: Assembly vs. craftsmanship
- Reduction of unnecessary re-work on site (e.g. breaking bricks, cutting through walls to install electrical wiring, etc.)
- Improves planning and reduces idle time as it limits interference across tasks (e.g. structural work and finishing work)
- Improves task specialisation and facilitates incentive-based payments

Source: Expert and company interviews

EFFECT OF SHORT-SIGHTEDNESS IN TELECOM NETWORK PLANNING

ESTIMATES



Source: Interviews; McKinsey estimates

SUMMARY OF INDUSTRY DYNAMICS FACTORS LEADING TO LOW PRODUCTIVITY IN MODERN SECTORS

● Important
○ Less important
— Not important

	Steel	Auto Assembly	Food Processing Wheat	Dairy	Apparel	Telecom	Power Gen.	T&D	Housing	Banking	Retail	Software	Total
• Domestic competitive intensity	—	—	—	●	●	●	●	—	●	●	●	○	●
• Exposure to global best practice	○	○	—	—	●	—	—	—	—	○	●	—	○
• Non-level playing field	●	—	—	●	○	●	—	—	○	—	○	—	○

Source: Team analysis; Interviews

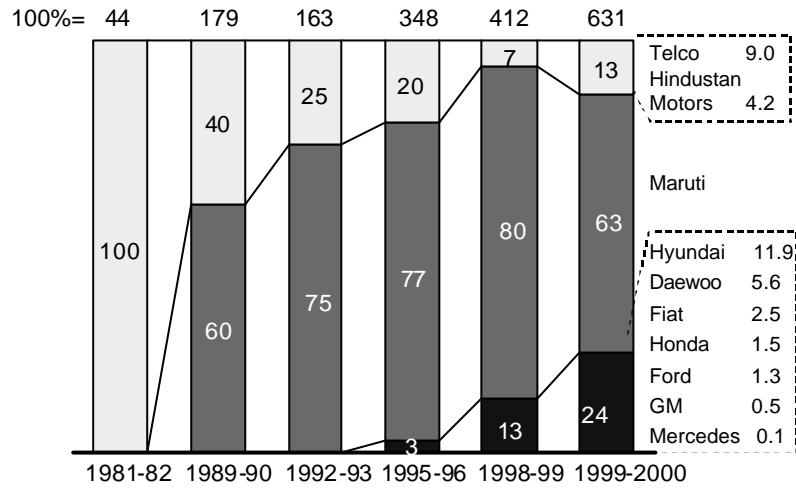
Exhibit 4.29

PRODUCTION OF PASSENGER CARS

Per cent; 100% in '000 vehicles

2000-08-31MBZXJ151

- Indian players*
- Maruti
- Foreign players



* Includes collaborations between Premier/Peugeot and Hindustan Motors/Mitsubishi

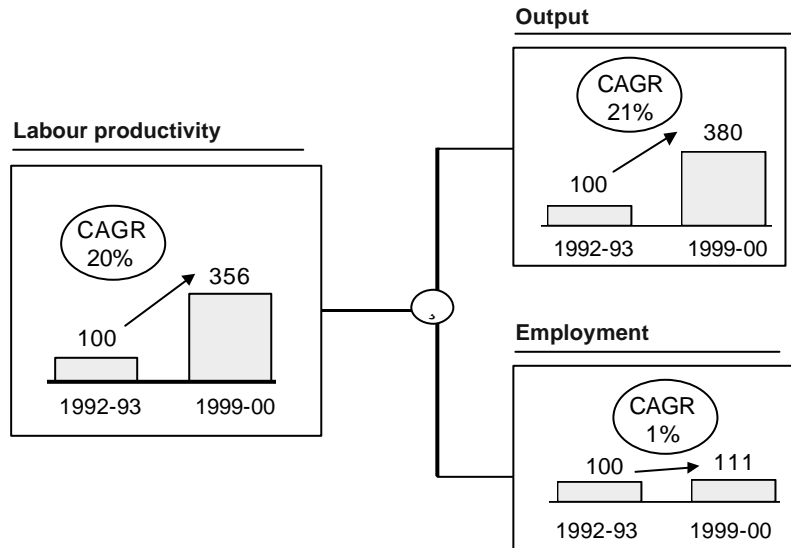
Source: SIAM; Press clippings

Exhibit 4.30

PRODUCTIVITY GROWTH IN INDIAN PASSENGER CAR ASSEMBLY INDUSTRY

Equivalent cars per equivalent employee; Indexed to India=100 in 1992-93

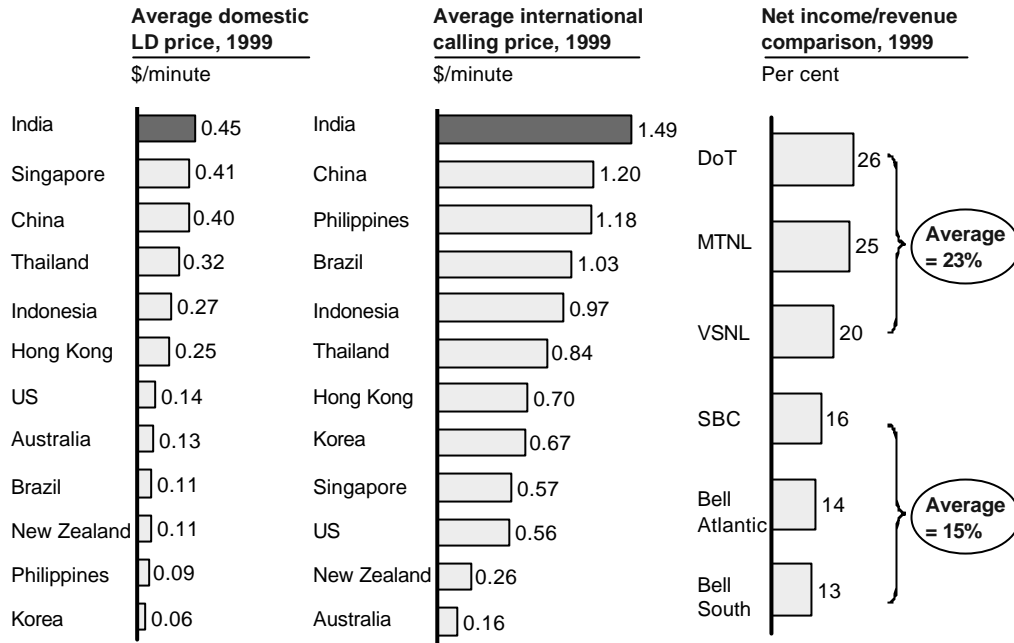
2000-08-31MBZXJ151



Source: Interviews; SIAM; Annual reports

PRICES AND PROFITS IN TELECOM SERVICES

ESTIMATES

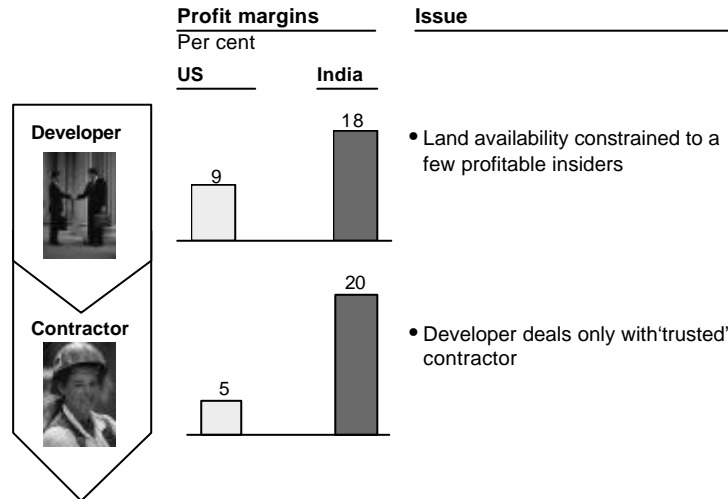


Source: MSDW; ITU; Pyramid Research; FCC

PROFITABILITY IN HOUSING CONSTRUCTION

MFH EXAMPLE

Per cent; Net profit margin



Source: Interviews; McKinsey analysis

Exhibit 4.33

SUMMARY OF EXTERNAL FACTORS LEADING TO LOW CAPITAL PRODUCTIVITY

2000-08-31MBZXJ151

- Important
- Less important
- Not important

	Power				Average
	Generation	T&D	Steel	Telecom	
• Macroeconomic barriers	—	—	—	—	
• Capital market barriers	—	—	○	—	—/○
• Government ownership	●	●	●	●	●
• Labor market barriers	—	—	—	—	
• Product/land market barriers	●	●	●	—	●
• Related industry barriers	○	—	○	—	○
• Infrastructure	—	—	—	—	

Source: Team analysis; Interviews

Exhibit 4.34

SUMMARY OF EXTERNAL FACTORS LEADING TO LOW PRODUCTIVITY IN MODERN SECTORS

2000-08-31MBZXJ151

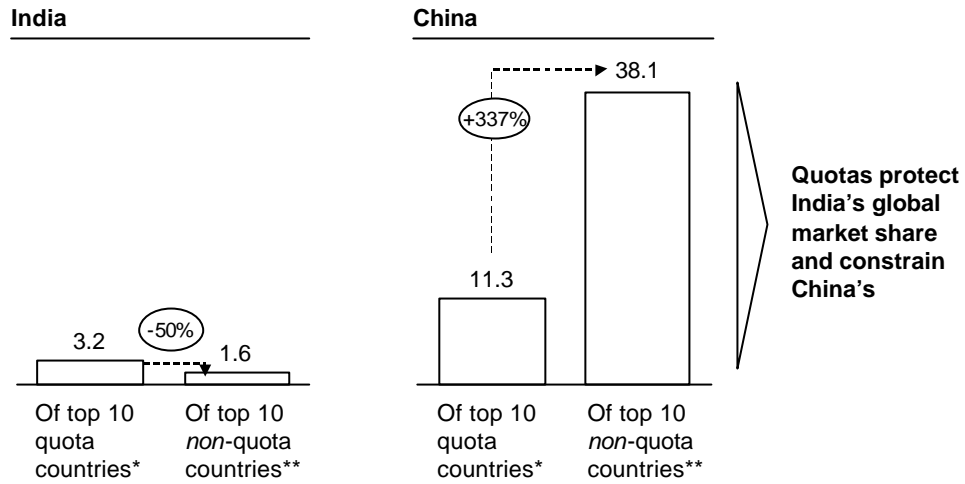
- Important
- Less important
- Not important

	Auto		Food Processing			Power			Banking	Retail	Software	Total	
	Steel	Assembly	Wheat	Dairy	Apparel	Telecom	Gen.	T&D					Housing
• Product market barriers	●	○	—	●	●	●	●	●	○	○	●	○	●
• Land market barriers	—	—	—	—	—	—	—	—	●	○	●	—	●
• Government ownership	●	—	—	●	—	●	●	●	—	●	—	—	●
• Labour market barriers	●	●	—	●	○	○	●	○	○	○	○	—	○
• Infrastructure	—	—	—	—	○	—	—	—	—	○	—	—	—
• Macroeconomic barriers	—	—	—	—	—	—	—	—	—	—	—	—	—
• Capital market barriers	—	—	—	—	—	—	—	—	—	—	—	—	—

Source: Team analysis; Interviews

DISTRIBUTION OF APPAREL IMPORTS: 1998

Per cent of total imports



* U.S., Germany, UK, France, Italy, Belgium, Canada, Spain, Austria, Denmark

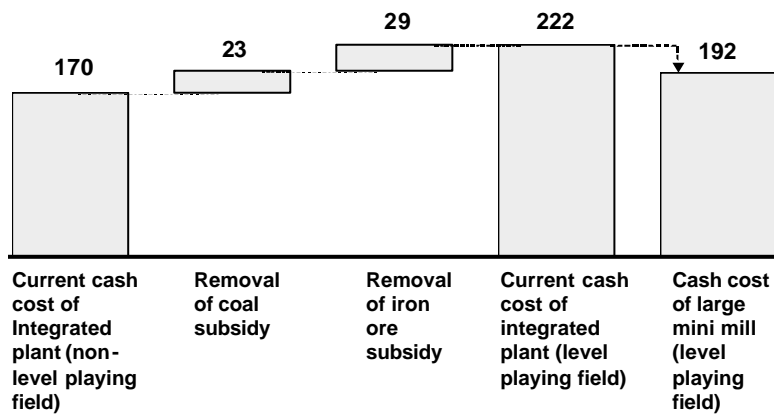
** Japan, Netherlands, Switzerland, Sweden, Australia, Norway, Singapore, Poland, Korea, Chile

Source: UN International Trade Statistics

NON-LEVEL PLAYING FIELD IN STEEL: COAL AND IRON ORE SUBSIDIES

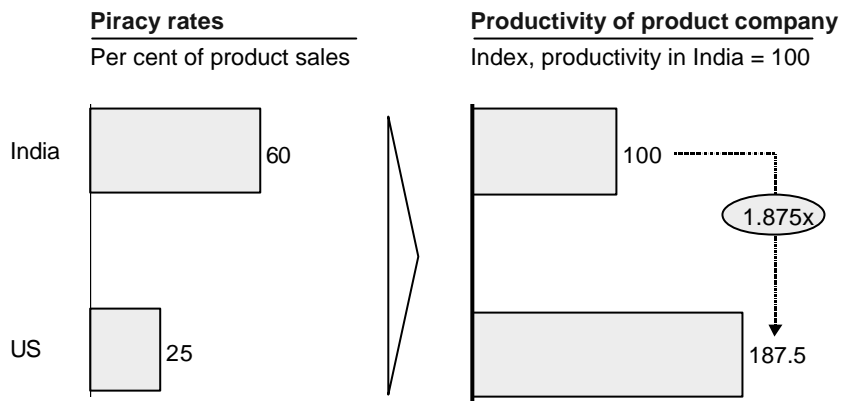
ESTIMATES

US\$ per ton of slab



Source: McKinsey analysis; Interviews

IMPACT OF PIRACY ON PRODUCTIVITY OF PACKAGED SOFTWARE



If Indian piracy rates went down to US levels, productivity of Indian software companies would rise by 88%

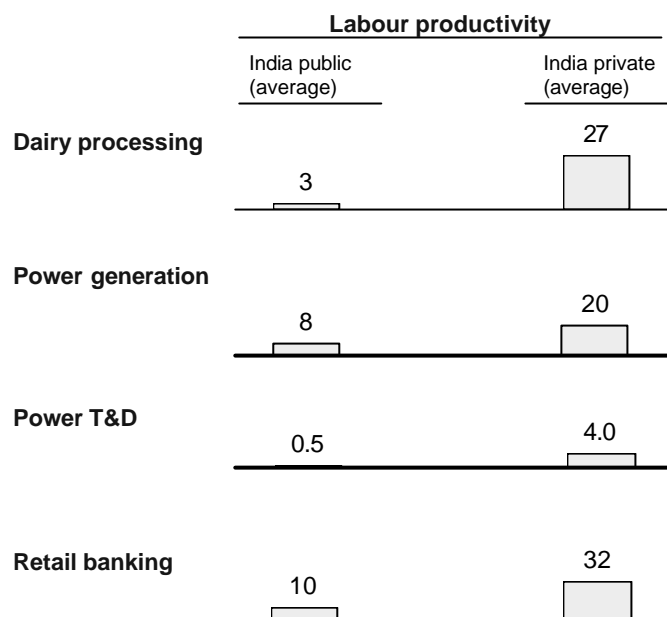
Source: NASSCOM; Press reports; McKinsey analysis

Exhibit 4.38

2000-08-31MBZXJ151

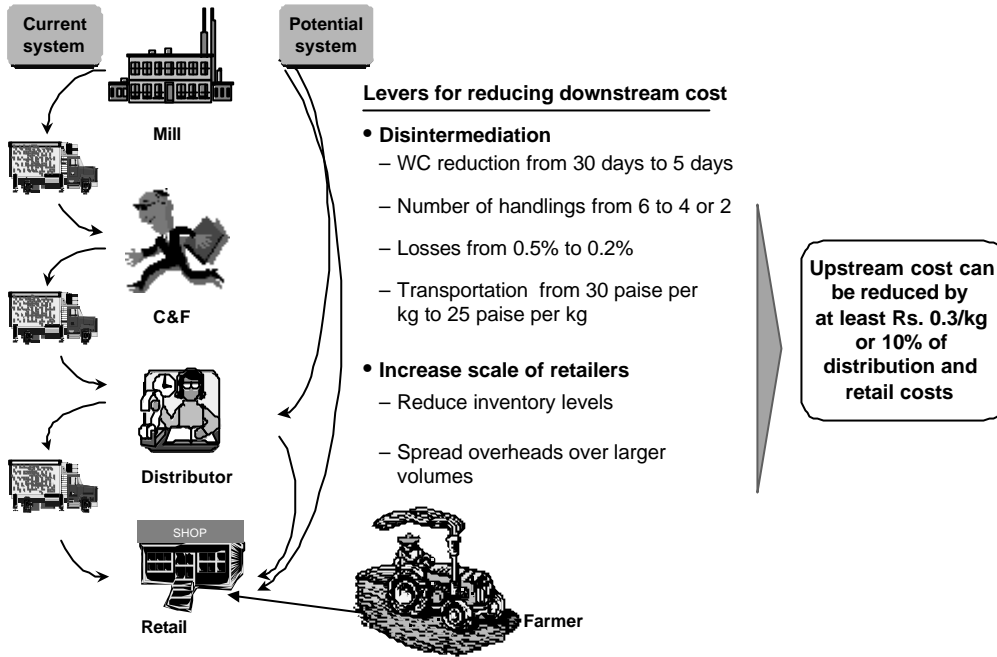
GOVERNMENT OWNERSHIP HINDERS PRODUCTIVITY

Indexed to US=100 in 1998



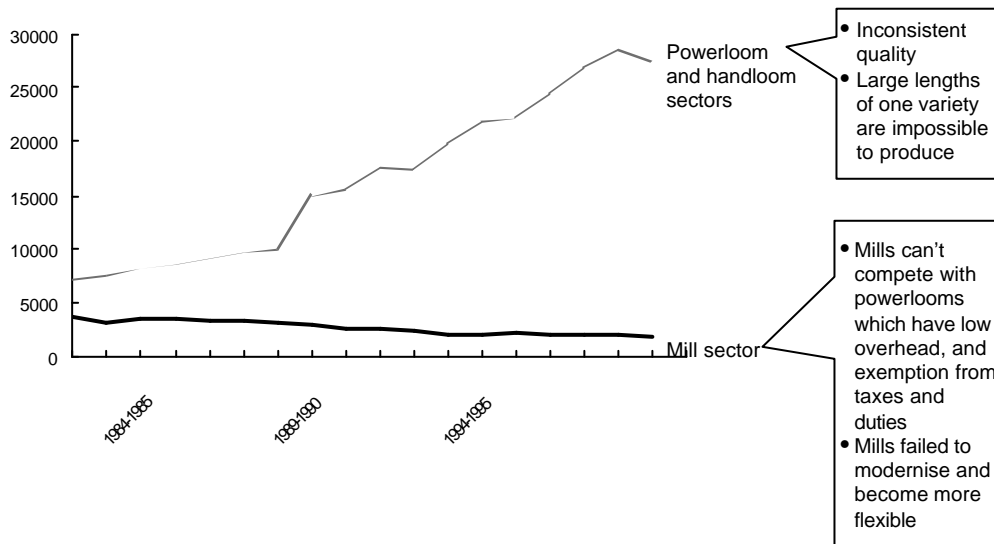
Source: Bank source; CEA, Ministry of Planning; Interviews; McKinsey Analysis

DOWNSTREAM INDUSTRIES IN WHEAT MILLING

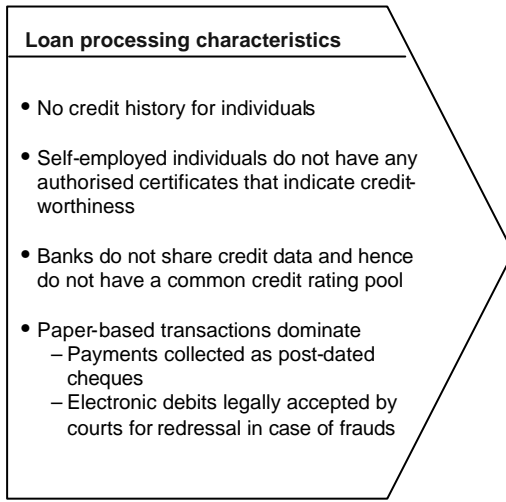


SMALL-SCALE RESERVATION IN TEXTILES

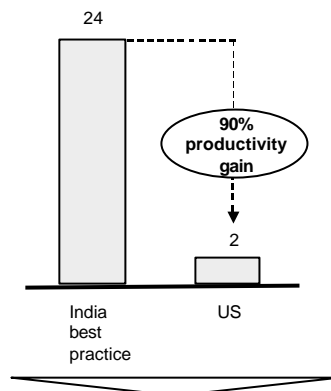
Million sq m



POOR CREDIT RATING SYSTEMS IN RETAIL BANKING



Average processing time for loans
Employee hours per loan



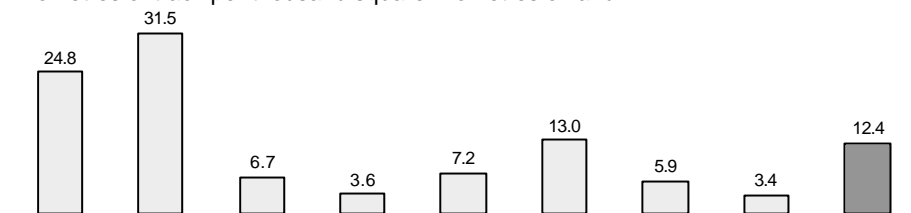
Given that 12% of all jobs are in credit verification, productivity can improve by ~11%

Source: Bank Survey; McKinsey analysis

INTERNATIONAL INFRASTRUCTURE BENCHMARKS

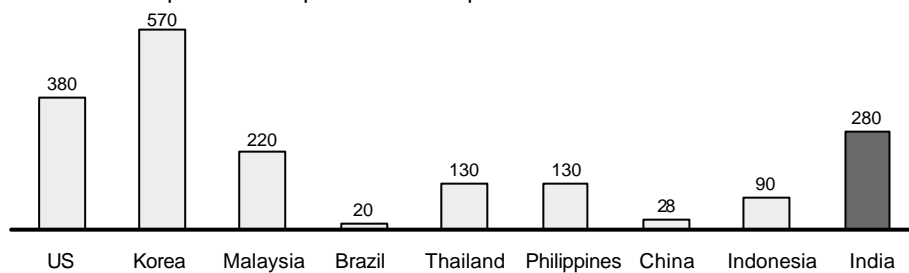
Railroad density

Kilometres of track per thousand square kilometres of land



Road density

Kilometres of paved roads per thousand square kilometres of land



Source: *The Economist*; World Development Indicators 1999.