# Chapter II
# Utilisation of Existing Potential - Case Studies

The design of an infrastructure financing strategy must necessarily be shaped in part by the character and magnitude of the capital investment to be carried out and by the size of the financing gap (*i.e.* the difference between investment needs and currently available finance). It is recognised that there is substantial variation among countries in the size of the gap between infrastructure needs and the resources plausibly available for investment. The present chapter tries to address issues related to the resource mobilization through better utilization of the existing potential in the Indian context. The present section focuses on two sectors : Indian Railways and the State Road Transport Undertakings in India. Both these examples reveals the linkages between the efficient utilization of resources, internal resource generation and external financing. Financing of transport services is critically linked to the strategies aimed at greater internal resource generation, removal of inefficiencies and appropriate pricing of services.

Case Study I

The Indian Railways – Improving Internal Resource generation

Given the predominant public sector presence in transport, the bulk of the investment in the sector has come from within either by way of internal resources or budgetary support. From Table 2.1, it is observed that budgetary support to the railways has been decreasing sharply since the 1980s but rose marginally in the recent past. Accordingly, the contribution of internal and extra budgetary resources (IEBR) has been rising steadily. The share of IEBR (mostly internal resources) was quite high in the First Plan and went down since the Second Plan only to be significant once again during the latter half of the 1980s.

In 1993-94, the dependence of the railways on the Central Exchequer was brought down to as low as 15 percent with 85 percent to be covered

**Table 2.1: Role of Internal Resources for Financing of Railways Plan**

(Rs. Crore)

| Plan | Internal Resources | | External ResourcesTotal | | | | Capital From Internal & External Resources | | Gen.exche quer | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Market borrowing (IRFC) | | Others | | | | | | |
| | AMT | % | AMT | % | AMT | % | AMT | % | AMT | % | |
| I | 280 | 66% | — | | — | — | 280 | 66% | 142 | 34% | 422 |
| II | 467 | 45% | — | | — | — | 467 | 45% | 576 | 55% | 1043 |
| III | 545 | 32% | — | | — | — | 545 | 32% | 1140 | 68% | 1685 |
| A | 320 | 42% | — | | — | — | 320 | 42% | 442 | 58% | 762 |
| IV | 397 | 28% | — | | — | — | 397 | 28% | 1031 | 72% | 1428 |
| V | 384 | 25% | — | | — | — | 384 | 25% | 1141 | 75% | 1525 |
| A | 316 | 25% | — | | — | — | 316 | 25% | 935 | 75% | 1251 |
| VI | 2783 | 42% | — | | — | — | 2783 | 42% | 3802 | 58% | 6585 |
| VII | 7089 | 43% | 2520 | 15% | — | — | 9609 | 58% | 6940 | 42% | 16549 |
| VIII | 18830 | 58% | 5565 | 17% | 596 | 1.8% | 24991 | 77% | 7311 | 23% | 32268 |

**Source:** Government of India, Ministry of Railways, Budget Documents, various years.

through IEBR. The gap between requirements (by way of Plan size) and available resources was covered by market borrowings whose share went up to 41 percent in 1999-2000. Thus, internal generation of resources failed to finance plan outlays in a significant manner while market borrowings which were expected to have only a limited role in closing the resource requirement gap, began to assume a dominant role in financing the railway budget.

In this context, the need for increasing efficiency of railway services to generate more internal resources assumes importance. In railways, increase in productivity arising from better utilisation of existing capacity by improved operating and scheduling practices can result in substantial cost savings and thereby increase internal resource generation. In the context of examining the extent of resource gap in rail freight services in the 1970s and 1980s, Rao and Sriraman (1985) observed that it would be very pertinent to concentrate on developing effective operating policies to augment the short and medium - run supply potential. More specifically,

it is necessary to:

a) keep loaded wagons moving for longer hours per day,

b) reduce the delays in loading, classification, unloading, etc., by imposing a tariff rate per wagon utilised per day rather than tonnage, and

c) improve wagon allocation procedures by appropriate scheduling and reduction in empty wagon movements. (Sriraman, 1988).

Since the mid-eighties, productivity increases have been observed on the Indian Railways both in terms of capital and labour inputs since the mid- 1980s (Dalvi, 1997). This has been achieved by better utilisation of assets like rolling stock, motive power, etc., as is indicated by the various indices. However, the accumulation of arrears of track renewals (see, GOI, 1990, 1998), rolling stock replacement and under investment in line-haul facilities, sets a limit to better utilisation of facilities (GOI, 1993). Wagon usage levels as measured by the turnaround time have gone up substantially ( turnround time has reduced to nearly 8 days in 1997-98 as compared to 12 days in 1990-91).

But an equally important issue is whether these operational improvements get converted into financial achievements? Subramaniam (1998) with the help of a correlation exercise points out that operational improvements on the Indian railways do not get reflected into the same degree of financial improvements primarily because tariffs are not in alignment with the movements of input costs. On the basis of notional adjustments (to take care of changes of input costs in tariffs), the fit between operational indicators and financial performance is found to be remarkable thereby supporting the argument in favour of tariffs being allowed to move in concurrence with input costs. We now turn to the pricing of railway services.

In determining prices for the outputs of multi-product firms like the railways, policy-makers have long faced a number of issues that flow inexorably from the basic economic characteristics of the industry. The endemic economies of scale and scope imply that straightforward measures of cost cannot be used to dictate pricing. Economies of scale imply that marginal cost pricing will not allow the firms to break even. Further, shared costs that are a concomitant of economies of scope cannot be unambiguously identified with individual products, so that any rule selected to associate shared costs with individual services will be arbitrary. Such arbitrary measures as fully distributed (or fully allocated costs), therefore, cannot substitute for marginal cost measurements as decision rules for proper pricing and the search for any purely cost based estimate is a remnant of inappropriate reliance on the model of perfect competition. Alternatively, there are sound pricing principles, which promote economic efficiency while simultaneously removing impediments to appropriate reforms for operators. These principles lead to differentiated prices, sometimes referred to as Ramsey prices, which apportion all unattributable fixed and common costs of a railway among its services on the basis of the value of those services to consumers - mathematically expressed as their elasticities of demand. By providing that each service is priced at a mark-up over marginal costs which is inversely related to the elasticity of demand for that service, economically efficient differential pricing combines cost and demand factors in an optimal manner (Baumol and Bradford, 1970). Hence, where the demand for a service is highly inelastic, a substantial addition must be made to the marginal cost. Where demand is perfectly elastic, revenue above the short-run marginal cost can be used to meet the financial target without distorting the allocation of traffic between services. These principles result in lower prices generally by establishing a set of rates, which encourage the purchase of more rail transportation

services thereby creating a larger base over which unattributable costs can be apportioned (Kessides and Willig, 1995).

Historically, these principles have served as the theoretical basis for what has been popularly termed the "value of service pricing principle" which has been adopted by a number of railway systems including the Indian Railways. But it must be noted that such an approach was feasible in the absence of any effective competing mode. However, the rapid expansion of road transport services, over a period of time, has severely limited the scope of discriminating pricing ( as it is based on the theory of price discrmination) which used to provide adequate returns to capital earlier. Essentially, the point is that railway user charges (especially on high-valued items) cannot be raised beyond the level at which the elasticity of demand for railway transport works against the interests of the railways. In other words, there is no evidence to bear out that the value of service pricing principle that is justified on theoretical grounds is the kind that is found to be practised on the Indian Railways. This is obvious from the observation that the rate-making process has been highly insensitive to changes in the relative advantages of modes (as reflected by elasticities) as is evident from the gradual diversion of high-valued as well as low-valued items from the railways to road transport. Following the recommendations of the Railway Tariff Enquiry Committee (GOI, 1980), there have been sharp increases in tariffs over the past two decades. For instance, the average rate per passenger km. rose from 4 paise in 1980-81 to 20 paise in 1998-99 while the average rate per tonne km. rose to nearly 70 paise from 10.5 paise during the same period. It was in this context that the Railway Fare and Freight Committee (GOI, 1993) observed "the scope for mobilising large-scale internal surpluses by raising tariffs is limited due to proven shift away from the railways" (p.189). It is obvious that passenger fares have risen much less when compared to freight tariffs. When viewed from

the perspective of cost recovery, Dalvi and Sriraman(1998) point out that there exist large gaps between costs incurred by the railways and prices charged by them especially in respect of passenger services.

An important point to note is that while passenger traffic as a whole is being cross-subsidised by freight traffic, there are wide differences in the level of subsidy accruing to, say, suburban and intercity (non-suburban) traffic. The total subsidy going to suburban services (mostly accounted by EMU services in the metropolitan cities) was around Rs.360 crores in 1998-99. On the other hand, losses on account of non-suburban services amounted to Rs.3952 crores. All these losses were accounted for by ordinary passenger trains (Sriraman, 2000). At present, it is estimated that only about a quarter of the railway costs are directly attributable to either passenger or freight traffic and 75 per cent expenses are joint costs which are distributed between passenger and freight traffic on the basis of certain performance factors. If we look at the total revenue of the railways in 1998-99, it is observed that passenger traffic earned only about 30 per cent of the railways' total earnings while freight traffic earned 70 per cent. In fact, according to GOI (1993), the entire social burden of the railways is fully borne by freight traffic. The freight rates are, therefore, pitched at a level higher than fully distributable costs. Thus, the fixed costs are almost wholly borne by freight traffic. Accordingly the average rate per tonne km. is nearly 3.5 times the rate per passenger km. Anand (1998) observes "since 1950-51, the quality of passenger services has improved and its standards progressively upgraded thus increasing the average cost per passenger km. On the other hand, Indian Railways has, as a policy, nearly eliminated the wagon load and part wagon load traffic and consequently done away with a large part of its costly marshalling and shunting operations at junctions, thus reducing the average cost per tonne km. Therefore, the ratio of rate per pass-km. to the rate per tonne-km should

have gradually appreciated over its initial value of 47 per cent in 1950-51. On the contrary it has gone down to 28 per cent in 1997-98" (p.126). Thus, he concludes that passenger services are increasingly being underpriced while freight services are overpriced. Considering a train as a rough unit of cost, he points out that the rate per passenger km. should be higher than the rate per tonne km. instead of being only a third as it is now. Accordingly, it could be suggested that freight rates should be brought down or at least not raised till the revenue per passenger km. exceeds the revenue per tonne km. There is, thus, definitely a case for raising passenger fares. This may be specifically true for traffic in the second class mail/ express component (mainly long-distance intercity non suburban). This segment accounted for nearly 50 per cent of the passenger-km. and 55 per cent of the revenue generation. Even a mere 10 paise increase per passenger-km. could result in additional earnings of around Rs.1800 crores. And it is widely believed that there would not be response to fare rise (in other words, inelastic demand). Preliminary market surveys ( Mckinsey Report as quoted in Thoopal, 1999) suggest that only 27 per cent of passengers travelling second class have annual incomes less than Rs.30000. Further, as much as 15 per cent of second class travel is represented by affluent passengers with incomes exceeding Rs.72000.

The Ninth Plan document (GOI, 1999) observed that the overall fare structure on the railways does not generate sufficient resources to generate the surpluses necessary for capacity expansion. Additional resources cannot be raised by increasing freight rates at the upper end where they are already too high. Railway budgets have attempted very little in the past decade by way of rationalising the tariff structure so as to provide a clear direction for the railways to formulate a dynamic tariff policy especially in the context of the new economic policy framework where they are required to operate on a commercial basis and generate adequate internal surpluses. Whatever

little has been attempted especially in the case of freight tariff has only contributed to upsetting the rate structure which is normally expected to be based on a certain perspective reflecting relative costs, class rates, traffic rates and socio-economic importance of different commodities. What is required is adjustment of passenger fares and fares on items of mass consumption to levels closer to the real cost of providing these services. A phased adjustment over a certain time period would, however, be essential.

Social Burdens of Railways

A major factor impacting upon the financial performance of the Railways is their social burden. Conceptually, the social burden on the Railways can be categorised into (a) losses on transport of essential commodities; (b) losses on coaching services; (c) losses on uneconomic branch lines; and (d) losses on strategic lines.

The costs of public service obligations carried by railways have been estimated to be Rs.3, 050 crore in 1997-98, (GOI, 1997-98). The RFFC (GOI 1993) had estimated that the cost of such obligations for the period 1975-93 was Rs. 18,729 crore. For the period 1980-93, the cost of social burdens is estimated to have ranged between 13 percent and 20 percent of the railway's gross traffic receipts and 13 percent to 21 percent of their total working expenses, Indeed the RFFC (GOI 1993) quoting a statement of the railways observed that if the railway were relieved of their social burden, they would not have to depend upon budgetary support to finance outlays of the eight plan. Alternatively, it was argued that the level of tariffs could have been lower even after meeting the dividend liabilities, if the burden was taken off their shoulders. Generally, the railways carry their social burdens by providing services below their average unit costs- in some instances- (for example, in operating new railway lines) even below their short-run marginal costs.

Losses are covered, as observed, earlier by a process of cross-subsidisation. The existence of considerable cross-subsidisation, as happens extensively in infrastructure, exposes public operators to selective private competition, which greatly deteriorates the supplier's financial position. The policy of cross subsidisation on the railways has resulted in the freight rates of several commodity groups reaching unreasonably high levels, resulting in diversion of traffic to other modes, especially road transport with attendant social costs in terms of higher energy consumption and environmental damage. The continually increasing levels of subsidisation in passenger fares are also generating excessive demand leading to extreme congestion and deterioration of services. Excessive demand for passenger traffic displaces freight and reduces the speed at which freight can be transported by the railways. The benefit of subsidised services also does not always accrue to genuine passenger but is appropriated as ' rent' by the intermediaries. (Govt. uses cross- subsidies to help the poor but these groups tend to lack access to the subsidised facilities).

Economists are unanimous in their view that the social burdens carried on equity distribution grounds (such as provision of subsidised services to students, suburban travelers or even to remove regional imbalances) have no justification on allocative efficiency grounds. It is normally argued that these burdens should be properly quantified and, in all fairness to the railways, passed on to the exchequer to bear them. The same point can be made about obligations borne because of the 'public good ' characteristics of railways (to meet defence needs, or to maintain law and order)- there is no conceivable logic why railways should support losses incurred by the railways on these movements. However, there could be an externality argument which introduces an altogether different dimensions in the case for cross subsidisation; if the railways are causing less environmental

damage vis-à-vis other transport modes of transport such as road transport, railway services could be under priced and resultant losses met by increasing the prices charged by environmentally more damaging modes of transport and not by the railways (as a cross-subsidy) or general body of tax payers. It is a fairly widely accepted proposition that losses incurred on suburban rail services should be met by charging road users the full costs including pollution costs of the road services.

Thus a systematic pruning of railway's social burdens would help a great deal in improving internal resource generation by the railways. This can be done through

a) reducing cross subsidization by introducing appropriate user charges on underpriced passenger fares;

b) bringing the freight rates to competitive levels, to a level that enables them to compete with freight on road transport;

c) losses incurred on suburban rail services should be met by charging road users the full costs including pollution costs of the road services.

The Expert Group on Railways set up by the Ministry of Railways in 1998 identified that the main cause of the financial problems of the Railways as the absence of adequate productivity increases that are in line with real wages over time. In this context, the Group has recommended, *inter-alia*, (i) a "High Growth Strategy" that well entail "focussed remunerative investment and corresponding organizational restructuring of the Indian Railways internally and in relationship with government, including corporatisation"; (ii) stop unremunerative investments; and (iii) setting up of the Indian Rail Regulatory Authority to regulate tariffs. The Railway Budget 2002-03 was a positive step towards the much needed rationalisation of the tariff structure. The Budget, while resisting any

across-the-board increase in freight rates, proposed a higher relativity index for upper class travel (except first class AC, where the relativity index was lowered to make it more competitive vis-à-vis air travel). The minimum fare of passenger travel went up marginally from 15 to 16. In other words, there was a policy signal to eventually correct the existing imbalances between freight rates and passenger rates. The momentum in the Railway Budget of 2002-03 was fortunately sustained. The rationalization of the tariff structure by appropriate revision in passenger fares, providing incentives to bulk freight movements and rebates to slack season freight rates contributed in effectively tackling the challenges posed by low cost airlines and the flexible road network ( Sriraman,2005). The Integrated Railway Modernization Plan introduced in Railway Budget, 2005-06 aimed at upgrading existing capacity and ensure better maintenance. All these measures contributed to a dramatic fall in operating ratios from 98 to 2004 to 86.6 per cent in 2006-07. There was a fall in the per unit cost of freight from 61 paise per net tonne Km in 2001 to 56 paise per net tonne km in 2005. While Indian Railways is still saddled with a number of problems, including, raising sufficient capital for project expansion, effective use of public-private partnerships and improving the efficiency of freight movements a turnaround has occurred, mainly due to reforms from within. This demonstrates how internal reforms and proper utilization of existing capacity can contribute towards growth and efficiency of infrastructure sectors.

Case Study II

State Road Transport Undertakings in India

A scrutiny of the financial performance of State Road Transport Corporations (SRTCs)(CIRT, 2001) in India for the year 1999-2000 revealed that the total losses of all SRTCs taken together was around Rs.1950 crores. Only 87 per cent of the costs could be recovered through revenue

receipts. Table 2.2 portrayed the then existing scenario for rural, hill-based and urban SRTCs. This classification is based on the consideration of pre-dominance of rural, hill-based and urban routes in respect of the different Corporations - following the practice of the Central Institute of Road Transport, Pune. The situation has hardly changed in recent years.

Losses are partly attributable to inefficiency and partly due to the uncompensated burden of social obligations such as concessions, unremunerative routes, failure of prices to keep up with input costs, etc. The fundamental issue is that there are no quantitative estimates of the losses segregated in this manner especially those relating to inefficiencies and failure of tariffs to be in alignment with costs.

In a study undertaken for the Eleventh Finance Commission (Govt of India), Sriraman (1999) examined these issues in detail within the framework of an analytical model which investigated the impact of physical performance on the financial performance of SRTCs. The study noted that there are optimal pricing strategies with specific goals to be achieved (Button, 1993). The optimal price to achieve profit maximisation will differ from that needed to maximise social welfare or sales revenue. If there is more than one objective to attain, some of these are treated as goals while

**Table 2.2 Magnitude of Profits and Losses 1999-2000**

(in Rs. crore)

| Total Costs | Rural | Hilly | Urban |
|---|---|---|---|
| 13151.24 | 10370.88 | 357.12 | 2424.23 |
| Revenue | | | |
| 11187.25 | 9065.22 | 243.15 | 1878.71 |
| Profit/Loss | | | |
| -1963.99 | -1350.66 | -113.97 | -545.35 |

**Source :** 'State Transport Undertakings : Profile and Performance', 1999-2000 Central Institute of Road Transport, Pune.

others are treated as constraints. The split of the objectives between goals and constraints is usually a political decision. It is within this framework that publicly owned transport systems have been allowed to operate commercially, but, at the same time, they are required to bear certain social obligations laid down for them by the Govt. (Dalvi and Sriraman, 1998). According to Gwilliam (1987), "payments made by political authorities, either for specific transport services, or as global sums for the maintenance of the network, or as supplemental payments related to the carriage of passengers at concessionary rates, count as subsidy. Subsidy thus does not necessarily represent a lack of value in the product but may result from a conscious political decision that a valued product should be paid for in a particular way" (p.6). Thus the problem of the SRTCs, for example, is one of constrained maximisation where the objective is revenue maximisation based on fares while the constraints spell out, among other things, the social obligations. In practice, Government approval is necessary for tariffs can be implemented. The Government has the power to modify the recommended tariffs and even if no modifications are made, its approval, it is observed, is accorded after a long delay. The delay in approval often means that the relationship between costs and tariffs on which recommendations were made are no longer valid (the case of the Indian Railways is different since tariffs automatically come for review at the time of the preparation of the Railways Annual Budget).

In the context of an emerging competitive market, an essential requirement for these Corporations to function on "business-led principles" (as directed in the RTC Act of 1950) is for them to enjoy complete autonomy to set prices in line with costs but wherein efficiency considerations would also be of primary importance. And these are the two factors that emerge as being significant in influencing the financial performance of the SRTCs. We now consider the analytical model now.

Methodology for Analysis of Financial Performance of SRTC's

The financial performance of any organisation is closely linked to its physical performance which, in turn, depends on the efficiency of operations and policy related variables. In this section, the methodology for analysing the financial performance of SRTCs based on physical performance and related policy variables is spelt out. The same methodology was adopted for projections relating to financial performance in terms of Profits/ Losses for the period 2000 - 2005. The relationships used in the methodology are given below. Physical productivity measures as reflected through Fleet utilisation (FU), Vehicle Utilisation (VU), Fuel Efficiency (KMPL) and Staff/ Bus ratio (S/B) are the major supply -level parameters while Load factor (LF) is a significant demand variable. The average fare charged is taken to be a policy variable since it is almost always fixed exogeneously.

The Model in brief
FU (%)= [(Number of buses on road) / (Number of buses in fleet)] * 100
(VU - Kms) = ( Total Effective Km. operated on a day) / (Total buses on road an average day)
(LF)(%) =[( Passenger Kilometres ) / (Capacity Kilometres) ]* 100
Dead Kilometrage (%) =[( Dead Kilometres ) / (Total Effective Km)]*100
Average Wage per employee (Rs.) = Personnel Cost / (Staff Strength)
Average fare (paise) = Traffic Revenue/ (Passenger Kilometres)
Staff Bus ratio (S/B) = Staff Strength /(Number of buses held)
Buses on Road = Average buses held * Fleet Utilisation
Effective Kilometres = Buses on road * Vehicle-Utilisation rate.
Gross Kilometres = Effective- Kilometres + Dead Kilometres.
Diesel Consumption = Gross- Kilometres/KMPL
Traffic Revenue = Average- fare *( Capacity* Effective-Kms* Load-Factor)
Total Revenue = Traffic-Revenue + Non-Traffic-Revenue
Personnel Costs = Buses held* (S/B)* (Average Wage/Employee)
Diesel Cost = Price of Diesel* Diesel Consumption.
Passenger tax rate = Passenger tax/Traffic Revenue
Break- even fare = Total cost/Passenger-Kilometres.
Passenger Kilometres = Load factor* Capacity* Effective Kilometres.
Other Material Cost rate = Other Material costs/ Traffic Revenue.

The model provides for a disaggregate look at the costs in terms of fixed and variable costs. The fixed cost components are the interest and depreciation provisions. The variable cost components include wages, diesel costs, other material costs and passenger taxes. The model provides variable cost and fixed cost per Effective (bus) Kilometre. As far as projections are concerned, fleet expansion, wage increases, interest and depreciation provisions are assumed on the basis of past trends. Tax levels are assumed to remain at 1997-98 levels. Diesel costs, which form a significant part of the total costs, are computed on the basis of recent and expected revision of the price of fuel.

Scenario Simulations

Exercises based on simulation of the base-year model for the different SRTCs revealed three scenarios. The first scenario related to the case of Undertakings in Tamilnadu where there were 20 such Corporations that were registered as Companies under the Companies Act. Almost all of them achieved a high level of physical efficiency in terms of the physical efficiency parameters and have high Load factors. This performance did not get reflected in the financial performance since price levels are low. A uniform tariff for units across the State inspite of varying sizes and characteristics and low levels of such tariffs ( 15 to 16 paise per pass.km. compared to 25 to 30 paise or more in the case of Corporations in Maharashtra, Karnataka, etc.) have resulted in huge losses of these units despite high levels of efficiency. On the other hand, under Scenario 2, high fare levels but low physical efficiency performance have contributed to losses in states like Maharashtra, Gujarat, etc. Improvement of performance to optimal levels could see the emergence of huge surpluses. For example, an increase in Load factor in Maharashtra State Road Transport Corporation(MSRTC) could bring in an additional revenue at 1997-98 levels. Under Scenario three, Corporations needed take care of

both price increases as well as measures to promote efficiency. Thus, this analysis revealed that the Load factor (LF) (efficiency) and a critical fare level (prices) are significant influences on the financial performance of an SRTC. Given the emerging liberalised economic framework, SRTCs would need to effective tackle the problem of low load factors in a variety of ways. It must be understood that while LF is mostly demand -driven, it is also supply-induced. Once this is realised, an appropriate fare strategy is required to set the organisation on a long-term growth path.

A Sum Up

Inefficiency of services and improper pricing are two major causes affecting adequate internal resource generation in the transport sector. In the case of Indian railways, budgetary support has been decreasing sharply since the 1980s and the share of internal and extra budgetary resources (IEBR) has been rising.In the absence of increasing internal resource generation,the share of market borrowings has increased. The study notes that market borrowings should be used within prudential limits in financing the resource gap. Increased financing of the railway system through market borrowings can be unsustainable in the long run. Internal resource generation can be enhanced if effective operating policies are adopted. It is necessary to: a) keep loaded wagons moving for longer hours per day, b) reduce the delays in loading, classification, unloading, etc., by imposing a tariff rate per wagon utilised per day rather than tonnage, and c) improve wagon allocation procedures by appropriate scheduling and reduction in empty wagon movements. Given the accumulation of arrears of track renewals, rolling stock replacement and under-investment in line-haul facilities, it is also necessary to recognise that there is a limit to the better utilisation of facilities.Pricing of railway services has been insensitive to changes in the relative advantages of modes (as reflected by elasticities) as is evident from the gradual diversion of high-valued as well as low-valued

items from the Railways to the highways. At the same time, the scope for mobilising large-scale internal surpluses by raising tariffs is limited due to proven shift away from the Railways. Consequently, there exist large gaps between costs incurred by the Railways and prices charged by them especially in respect of passenger services. Passenger traffic earned only about 30 per cent of the Railway's total earnings while freight traffic earned 70 per cent. Thus, the entire social burden of the Railways is almost entirely borne by freight traffic. The freight rates are, therefore, pitched at a level higher than fully distributable costs. Accordingly the average rate per tonne km. is nearly 3.5 times the rate per passenger km. Thus, passenger services are increasingly being underpriced while freight services are overpriced. Consequently, the rail is losing competitiveness vis-a-vis the road transport sector.Accordingly, it is suggested that freight rates should be brought down or at least not raised till the revenue per passenger km. exceeds the revenue per tonne km. There is, thus, definitely a case for raising passenger fares. This may be specifically true for traffic in the second class mail/ express component (mainly long-distance intercity non-suburban). This segment accounted for nearly 50 per cent of the passenger-km. and 55 per cent of the revenue generation. Even a mere 10 paise increase per passenger-km. could result in additional earnings of around Rs.1800 crore. And it is widely believed that there would not be an adverse revenue impact to passenger fare increase (in other words, inelastic demand). The study thus recommends systematic pruning of those subsidized services that will not reach the target groups.

In the context of the State Road Transport Corporations (SRTCs), the study observes that

- the financial position of SRTCs has been under strain. During 1999-2000, the total losses of all SRTCs was placed at around Rs.1,950 crore.

| Financial Performance | Physical Performance | |
|---|---|---|
| | High | Low |
| High | Karnataka, Himachal Pradesh, Andhra Pradesh.TamilNadu, Punjab | |
| Low | | Maharashtra,Gujarat |

- The losses are attributable to a variety of factors such as inefficiency in operations and management, uncompensated burden of social obligations and uneconomic pricing of services.
- The Study notes that the financial performance of an SRTC is closely linked to its physical performance which, in turn, depends on the efficiency of operations and policy related variables.

Through a modeled including physical and financial variables, the SRTCs can be categorised in the following manner:

The model revealed that in the case of Tamil Nadu, for instance, SRTCs achieved a high level of physical efficiency and have high Load factors. This performance, however, did not get reflected in the financial performance since price levels are low. On the other hand, high fare levels but low physical efficiency performance have contributed to losses in states like Maharashtra and Gujarat.Thus, this analysis revealed that the Load factor (LF) and a critical fare level are significant influences on the financial performance of a SRTC. Given the emerging liberalised economic framework, SRTCs would need to effectively tackle the problem of low load factors in a variety of ways. In the Indian context, demand for transport services are price inelastic and at times supply induced. Therefore, an appropriate fare strategy alongwith efficiency enhancement is required to set the organisation on a long-term growth path.

Since 1950, when the Road Transport Corporations Act was passed, 70 State road transport undertakings have been created all over the country. During 1999-2000 these undertakings incurred a total loss of around Rs.

2,000 crores, forcing States to embark upon restructuring exercises. Not many studies are available to indicate recent improvements in this sector. However, this sector remains another classic case study of how lack of proper utilisation of physical resources, can put strain on financial performance.