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Pricing and Costing Issues In Railway Marketing

Introduction

1. **The Railways Problem** (**The Railways Problem**, Transportation and Water Department, the World Bank, January 28, 1982 - reissued November 29, 1982) published in 1982, was one of the Bank's more controversial documents. In part, this is because the report was written in strong terms aimed at provoking debate. More important, the report took direct aim at a critical railway issue: are railways only one of a number of alternative modes of transportation, to be selected if their characteristics best meet the shipper/customer requirements, or are they endowed (or burdened) with a special status in society fulfilling duties above and beyond moving goods and people?

2. The Bank strongly supported the first position. If the economic efficiency of the overall transport system is to be improved, there is simply nothing about rail service which places railways outside the competitive arena. Railways compete with other modes on many factors including cost, speed, shipment size, service frequency and reliability. With the possible, and unimportant, exception of the passenger who specifically buys the "view out the window", there are no direct consumers of rail transport per se nor, where adequate modal competition exists, is there any reason to interfere in the process whereby the customer determines the modal choice. Arguments are often made that railways offer unique advantages in energy efficiency, or environmental protection. While this is true, and energy efficiency will appear in the cost of moving the traffic, experience shows that energy costs are rarely a determinant of competitive position. Environmental issues can only be reviewed on a case-by-case approach.

9. In the simplest terms, business management requires the capability to produce products or services and to market them: both are problem areas for railways. Efficiency of production is far too complex to be handled in this discussion, but four observations may provide a useful comparison with the ensuing discussion of marketing issues.

a. Expert consultants can normally identify areas of operating inefficiency or deficiency, such as overmanning, poor dispatching, deferred maintenance, poor communications, inappropriate signal systems, etc.;

b. Most of these problems have alternative solutions which are susceptible to well-established methods of cost/benefit analysis;

c. Many, but not all, of these problems could be resolved within current management capabilities if afforded adequate time, money and expertise;

d. Some efficiency issues, especially bloated labor force costs, are well known to all, but are only resolvable (if at all) through bargaining at the highest political levels.

10. Marketing, by contrast, involves skills and issues which are wholly alien to the experience of most railways. This is not just because the intellectual challenges of good marketing are complex and lacking in precise solutions: most railways have simply not tried at all. Further, since marketing involves not offering services which are not profitable (and many railways have more than a vague suspicion that this would cover a significant part of their current activities) railways have a strong incentive to avoid the issue entirely if they are permitted to do so.

12. If we do want to encourage the development of business-led railway entities, then another dimension -marketing- must be added to the traditional operating efficiency objectives. This cannot be done solely in discussions with the railways: there must also be agreement with the cognizant government agencies. Absent such agreement, it is unlikely that the broader objectives will either be understood or acted upon. This is, of course, not a new observation; but, its importance has continually been reinforced by recent experience.

Essential Preconditions

13. Increased autonomy implies a number of changes in the relationship between governments and their railways. (The full scope of changes necessary for autonomy is the subject of other studies--see e.g., Huff Lee W. and Thompson, Louis S., Techniques for Railway Restructuring, The World Bank.) For the purposes of improved marketing, the essential change is for the government to grant rate "deregulation". In principle, deregulation means that railways should become free to set their own rates (along lines discussed below) without arbitrary intervention by governing authorities.

14. Governments have traditionally used rate regulatory controls to achieve three stated objectives: to control inflation; to promote "fair", or socially beneficial rates (i.e., rates which are aimed at a non-market objective, such as regional development); and to protect against the abuse (or potential abuse) of monopoly pricing power. This analysis will concentrate on the latter motive.

15. A recurrent theme among analyses of the Bank's rail borrowers is the financial damage done when rail rates are arbitrarily frozen while costs rise as a result of inflation or exchange rate changes, or both. At best, this strategy results in deferral of maintenance which raises operating costs in the short run and increases capital or maintenance costs in the longer run. More typically, with a government-owned railway operating at a deficit, holding down rates simply transfers the impact of the foregone rate increase from the railway's customers to the government account. Both cases damage the railway and neither measurably restrains inflation.

16. "Fair" or socially beneficial rates are terms generally used to justify or maintain cross-subsidies. Indeed, a more or less explicit desire to cross-subsidize various socially favored groups (commuters vs. other passengers, passengers vs. freight, certain domestic industries etc.) has been a major motivation behind the actions of many rate regulatory decisions. Enforced cross-subsidies have been generally destructive, and the Bank has opposed them, for two major reasons. First, cross-subsidies do not work for long because, with the emergence of highway competition, the railways are often forced to keep the unprofitable traffic while the trucks and automobiles capture the most profitable traffic. Equally important, cross-subsidies conceal the true extent and cost of the subsidies, and prevent open and rational decision-making as to whether the subsidies are justifiable.

17. The issue of controlling the abuse of monopoly pricing power is not so easily resolved because there are circumstances under which at least the potential for abuse exists. The issue, of course, is whether the potential cost of an abuse of monopoly power justifies the cost of imposing regulatory controls especially where, as discussed above, the cost includes not just the direct cost of salaries, buildings and proceedings, but also the potential cost of regulatory abuse.

18. In general, where truck or bus competition exists, rail rate regulations are unnecessary (as are truck and bus rate regulation). Experience has repeatedly shown that trucks can offer very effective competition for a large portion of rail traffic, unless they are actively prevented from doing so. Several recent studies have also shown that buses could, and probably should, replace rail passenger service to many remote locations. The burden of proof should be carried by the proponents of rate regulation, for any mode.

19. In the limited situations where a monopoly does exist, e.g., massive, long-haul movements of minerals such as coal, governments may want to retain some power to review rates. In Canada and the United States, for example, recent regulatory practice has evolved into a two-stage process:

a. When railways earn an "adequate" rate of return (where "adequate" is a return equal to the cost of capital employed), authority exists to review most rail freight rate increases;

b. When railways do not earn an "adequate" rate of return, rail freight rates are essentially unregulated except in cases where effective competition clearly does not exist (where competition can include intramodal, intermodal, geographic and product competition) and where the rate can be shown to exceed a threshold ratio of the rate to the variable cost of the traffic in question. This "zone of reasonableness" extends from 100 percent of variable cost to 180 percent of variable cost in the US and 250 percent of variable cost in Canada. In practice, even rates which exceed these thresholds have rarely been reduced after all relevant considerations have been taken into account.

21. If maximum rate regulation is judged to be absolutely necessary, then, given the inherent imprecision of cost data and of cost measurement techniques and the need in any case to make qualitative judgments as to "reasonableness", there is much to be said for the adoption of an arbitrary standard similar to Canadian and US practice. The exact standard adopted should logically be related to the financial health of the railway (higher for weak railways), but should, in any case, be far enough above the target average ratio to permit pricing flexibility. Although there has been no recent regulatory experience in Canada and the US with rail passenger fares (U.S. intercity passenger fares are completely unregulated), there is no reason to believe that a similar approach would not work for passenger rates if a decision is made to continue some degree of regulation over passenger fares.

22. Another obvious requirement for rail marketing is the availability of adequate revenue and cost data. This requirements goes somewhat beyond the reports and controls necessary to obtain a clean audit report. In practice, developing country railways' management and accounting systems seem to fall into different quality gradations: unreliable; reliable, but so slow as to be useless for timely decision-making; or, reliable and timely for accounting purposes. Developing country railways have also tended to have reporting systems structured to fit the needs of a government agency and not an autonomous business-oriented enterprise.

23. Good decisions, be they marketing, investment evaluation or operations, cannot be made without good information. Compared with the major capital investments the Bank and its borrowers make, the cost of usable accounting and management information systems is not high, nor are the technical challenges insoluble. For the marketing purposes discussed below, but also for all normal management and control purposes, the provision and employment of an acceptable accounting and reporting system should be a matter of the highest priority.

The Marketing Function

24. As this paper defines it, marketing is the function which first determines the appropriate cost to be attributed to each amount and type of service to be offered, next evaluates the customer's probable demand response to alternative price "signals" which could be sent, then offers the set of prices best calculated to maximize the net income of the organization and, finally, continually reviews changes in cost (as a result of labor changes, material prices, technology, etc.), customer needs and competitive factors so that the organization rapidly adjusts to changes in its environment. Because it involves predicting future decisions without perfect information, pricing is inherently subject to some level of error. The same can be said for traffic costing where both methodological problems and lack of data will always make intelligent judgment necessary.

Pricing

25. As seen by the customer, railways offer an incredible variety of very different services. Literally every shipment could be a different product, depending on timing, direction and other factors. For example:

a. Ores are shipped from, not to mines;

b. Agricultural products move during, and just after the harvest, not before;

c. The consequences of late arrival of a shipment of "just in time" auto parts (or of molten sulfur) would be different from late arrival of a carload of gravel;

d. More passengers want to travel at 8:00 a.m. than at midnight.

Carried to its logical but extreme conclusion, every shipment or every passenger trip is literally a different product.

26. Different products typically have different values, compete in different markets and have different prices. Within the limits imposed by the complexity and expense of managing the pricing system, and by competition, there is no reason why each type of rail traffic should not be priced (revenue/ton-km) differently and there is no obvious reason why all rail rates should be made to bear the same, fixed relationship to their "cost".

27. Rational commercial marketing behavior (in the absence of regulatory intervention) will be to adjust the price for each service so that, when the relevant costs of providing the service are taken into account, the enterprise will have the maximum opportunity to cover the costs related to the service in question and to contribute to the fixed costs of the organization. Summed over all rates, the contribution earned by an autonomous enterprise (above relevant costs) should, at a minimum, cover the railway's fixed costs and provide for required replacement of capital assets. Depending on the degree of autonomy considered desirable for the railway, the earned contribution might also provide for a rate of return equal to the opportunity cost of invested capital and for an appropriate share of the capital required for expected growth of the railway. A greedy monopolist might try to extract economic "rents" as well.

28. The objectives of the railway's owner(s) should be quite similar, subject to several qualifications:

a. The railway's pricing structure should cause a minimum of distortion in behavior elsewhere in the economy;

b. The service should be provided efficiently;

c. The overall rate of return earned should not be excessive (i.e., no undue economic rents); and

d. The degree to which the railway's revenues are intended to furnish some, or all, of its required investments should be explicitly agreed between the railway and its owner.

29. Where the enterprise is fully autonomous (as in the US railways or the Canadian Pacific) the objective will be for revenues to provide for all capital needs. At the other end of the spectrum, many railways (whether "autonomous" or not) cannot even cover operating costs, much less make a contribution to past or future capital. For these, the issue is limited to deficit minimization (with the additional option of changes in scale, or "restructuring", if the deficits are too large).

30. There are, however, certain railways (India, China and the formerly planned economies) which <u>could</u> develop revenues sufficient to cover costs and contribute to capital. For these, the determination of the total revenue target should cover:

a. How much capital should be employed by the railway in the future considering the rates of return available in other sectors of the economy?

b. How should the required capital be made available (i.e., new equity, retained earnings or debt)?

c. To what degree does, or should, the government need to review and control the railway's capital budget?

d. In the extreme case of excess demand for rail service, should rail rates be used to ration use of capacity, with some excessive earnings taxed away to finance expansion of other modes or for other economic sectors entirely?

31. After the desired net revenue target has been defined, it is then possible to state the optimum pricing strategy succinctly:

a. The price should never be less than the costs which would be avoided if the (existing) traffic in question were not carried, or less than the added costs incurred if the proposed (new) traffic is carried. In both cases, as will be discussed later, the relevant time frame for the computation of cost should be determined by the terms of the decision being made: permanent addition of an entire unit train would have a long time horizon, whereas carrying one more (or less) passenger in an off-peak period, on one train, on one trip would have a very short term impact.

b. If the relevant costs can be covered, then the rate should be set at the level which permits the traffic under consideration to make a maximum contribution (above its relevant costs) to the total of the costs which are not avoidable or attributable to any of the individual traffic movements handled by the railway.

32. This principle, often called the "inverse elasticity rule", or "Ramsay Pricing" (or "charging what the traffic will bear") is clear: the railway will earn the greatest total contribution when, for each individual piece of traffic, the degree of departure of price from variable cost is inversely proportional to the price elasticity of demand for shipment of the product or passenger service). In general, customers who can afford, or can be required, to pay more, do; traffic which would only move at low rates pays less. As Ramsay recognized, this principle also minimizes the distortion caused to the economic decision-making by shippers.

33. There are crude indicators of the likely degree of price elasticity of demand for transportation, such as the value of the product and the overall degree of intermodal competition. There is, however, no substitute for good economic and business analysis, at least of the major products carried by the railway, to determine exactly what the customers need and can pay for in terms of service cost and quality. Optimally, the railway needs to know as much about the competitive position of the freight customer's product as the customer does. Customers never offer to pay more than asked, so it is up to the railway to prepare its bargaining position effectively.

34. An interesting actual case can be found in the mining and export of a basic commodity such as copper.

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          +-----+  World Price
          ¦     ¦
          ¦     ¦  available for contribution to railway or mine
          ¦     ¦
          +-----¦
          ¦     ¦  Port  charges and shipping cost
          +-----¦
          ¦     ¦
          ¦     ¦  Rail cost to haul to port
          ¦     ¦
US$/kg.   +-----¦  Production cost total
          ¦     ¦
          ¦     ¦
          ¦     ¦  Mining cost
          ¦     ¦
          ¦     ¦
          +-----¦
          ¦     ¦
          ¦     ¦  Cost of hauling ores and concentrates
          +-----+
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In this example, it would be nonsensical for an autonomous railway to set its rates at avoidable cost because that would leave all the surplus to the mine. It makes equally little sense for the railway to demand a rate which would absorb all the available contribution (profit) because that would put the mine out of business. There is simply no exact answer as to who should get what share of the contribution: an arm's length bargain reached by informed parties is the best that can be reached. Also important is the fact that none of the factors in the example would necessarily be constant over time. As these factors fluctuate, the appropriate amount and share of the contribution earned by the railway should change as well.

35. The example illustrates another important characteristic of many industrial products--the railway is part of the cost of <u>production</u> of the product as well as a potential distributor of the product. Decades ago, when railways dominated traffic into and out of most mines, there was a tendency to become careless about underpricing the haulage of raw materials (ores and concentrates) on the assumption that the deficit could be recovered on the rates for the movement of the finished product. This was wrong, even at

the outset, because it distorted the tradeoff decisions as to the proper location of mines, concentrators and smelters, and encouraged the movement of more ores, and a lesser degree of concentrating, than might otherwise have been the case. It has become even more damaging now, because, with finished product rates necessarily overpriced, competition from other modes is unduly encouraged. Even in this case, no rates should be below cost.

36. Although the determinants of demand are different for passenger service than for freight, the same basic principles should apply: the railway should not offer any service when it is not compensated for at least its avoidable cost, and prices should be highest on price-insensitive passenger services. Passenger services offer some uniquely complex issues, such as peak/off-peak pricing and multiple classes of service between the same end points (and on the same train) which require different treatment, but still fit within the basic principles.

37. While each rail movement is a different product, and could hypothetically be priced accordingly, the expense and complexity of such an approach would be prohibitive. In practice, the actual rate structure must be a combination of carefully calculated rates applied to major shippers and major products and simpler "class" rates, which vary primarily according to commodity, shipment size and distance, applied to smaller shippers. Contract rates have become increasingly important for most railways because they offer a better way to plan and manage the use of capacity. The shipper's benefit is usually a lower rate, or better service, or both.

38. Practical fare structures for passenger service should also be a mixture of relatively complex rates for major origin-destination pairs combined with simpler rates based on class and distance (sometimes with peak period surcharges) for less important markets.

Costing

39. The discussion above has frequently used the term "cost" as a deduction from revenue to yield contribution. Revenue (though it be generated through the operation of a very sophisticated rate and fare structure) is relatively easy to measure and record: a reasonable accounting effort will produce accurate revenue reporting. By comparison, rail costs are incurred as a mixture of short term, long term, direct variable and joint variable <u>and</u>, for traffic purposes, they must be related to a very large number of discrete shipments.

40. As a result, railway traffic costing is <u>always</u> an exercise in estimation which requires the use of judgment. Although, as discussed below, there are various formulary approaches to costing, the accuracy of the computed results can be more apparent than real. Blind application of any costing approach is guaranteed to lead to questionable decisions.

41. Fortunately, traffic costing serves only a single function in railway marketing--it determines the floor. So long as the demand elasticity permits a rate sufficiently above cost as to be outside the range of error in calculation, cost calculations are not vitally important. The same can be said of rates or services which clearly fall below the range of error in their calculated cost. In either case, great precision in the calculation does not change the decision.

42. Questions of time horizon, scale and sequence must be answered in producing specific cost estimates. Time horizon is obviously a major determinant of cost variability, especially with respect to the attribution of capital costs. In the very short run, capital facilities (wagons, wagon types, locomotives, track configuration) are essentially fixed and the appropriate facilities charge, if any, is the opportunity cost of revenue foregone if capacity is used at the expense of other activities. In many cases, these opportunity costs are small because the railway has surplus capacity. In others, for example the deliberate decision to run fast, short passenger trains when locomotives are scarce and the line is congested, even the short run opportunity cost is quite high.

43. At the other end of the time horizon are multi-year contract rates which involve the purchase of dedicated and specialized equipment. These capital costs would clearly be attributable to a decision to undertake such a contract and should form a part of the revenue-cost comparison.

44. The degree to which costs can change, especially in the longer run, is also related to the scale of the decision. The addition, for example, of one extra carload of traffic per week on a line not operating at capacity would add very little to the overall cost of running the railway. Closing a major branch line could, on the other hand, lead to reorganizing workshops, re-routing major traffic flows, reducing total management staff, closing stations, etc. A decision to open a new coal mine and haul several million tons per year to a port could require not just the building of port and mine related facilities but also rebuilding of the entire line over which the traffic will travel. If so, at least some of the rebuilding costs are attributable to the new traffic.

45. A third dimension which frequently confuses costing issues is the sequence in which services are added or subtracted. One minute before departure, on a train with empty seats, the cost effect of adding one more passenger (or discouraging one passenger) is virtually nil. Although freight train energy consumption is essentially linear with respect to added gross tons, the energy consumption curve has a positive intercept resulting from locomotive idling and the weight of the locomotive itself, among other factors. The average energy consumption for the train (per net ton-km) is greater, sometimes substantially so, than the incremental energy consumption for the added (or subtracted) wagon.

46. Another variant of the "last increment" issue is the "lumpiness" problem.

For example, one locomotive can pull about 1,200 trailing tons which might equate to a 20 wagon train. At some point beyond 20 wagons, an added wagon will cause a second locomotive to be added to the train. Should the entire cost of the added locomotive be imputed to the last wagon? Or should the last minute passenger be carried free because he or she adds no additional cost?

47. In most cases under current railway costing and pricing practice the answer is no: the last increment receives no special treatment for reasons of stability in decision making. Today's last wagon may be tomorrow's first wagon, but the customer would not accept radical rate fluctuations based on such arbitrary decision. Also, rewarding last minute customers would encourage everyone to try to be a last minute customer and the orderly planning and management of the use of capacity would become impossible.

48. Overall, prices and costs must be based on the <u>expected</u> impact of a decision, averaged over all the traffic affected. There can, however, be a reasonable case made for costing and pricing allowances for the "first" customer or the "steady" customer. Predicable and/or constant business can lead to significant improvements in equipment scheduling and utilization and in switching costs. Some, or all of the resulting service improvements and cost benefits can be passed along to the customer.

49. Faced with all these known problems, the question remains "Are there cost estimating techniques available which, while not perfect, provide answers which are better than nothing?" Canadian, US and many European railways now use costing systems which do provide usable cost estimates. These systems are far too complex to discuss in detail here, but the principles can be usefully summarized. There are a multitude of rail costing texts. See, <u>inter alia</u> Canadian Transport Commission, <u>Railway Costing: State-of-the-Art</u>, prepared for the World Bank, November 1984, or Fredrick Sander, <u>Railway Traffic Costing</u>, Report No. 472, The World Bank, April 1974. More recently, in the course of the Sub-Saharan Africa Transport Project (SSATP), somewhat simplified costing models have been developed and implemented in both Francophone and Anglophone countries. Similar models have also been developed in Spanish-speaking countries, although their application is not as well established. The availability of such "off the shelf" systems for all Bank borrowers is now relatively easy: the only effort required is the adjustment of one of the systems to the particular conditions and accounting practices in the country.

50. The Canadian and US systems (and the others discussed above) effectively begin with the division of costs between passenger and freight. This separation was originally attempted within the overall costing system. In the 1970's, however, both countries elected to separate the two operations so that AMTRAK (US) and VIA (Canada) are now independent entities which pay, in general, variable (or "avoidable") cost plus a modest profit for services provided to them by the freight railway.

51. There is much to be said in favor of such a separation because passenger

and freight are very distinct activities requiring different management techniques and raising very distinct marketing and costing issues. Separation raises its own issues--especially dispatching and scheduling coexistence on the same rail line--but these are not impossible to resolve (they arise anyway, even under common management). Where feasible, railways should consider either the formation of separate entities or, at the least, the clearest possible separation in the management and accounting of the two types of services. Passenger service in the US has been further separated between intercity and commuter. In general, commuter services have been spun off from both AMTRAK and the freight carriers, and are operated by public authorities. Where significant commuter services exist, the Bank is moving toward a policy of urging that they be separated as well, both from freight and from intercity passenger.

52. If the ownership of passenger and freight services is separated, and if one or the other cannot price at levels much above its variable costs, the question will arise as to which is the "avoidable cost" user. In Canada and the US, the approach has generally been to declare passenger service to be the "avoidable" user except, of course, in areas such as stations and workshops where only passenger operations are conducted. In fact, an attempt has been made to transfer ownership and operation of as many "solely related" facilities as possible (such as stations or reservation systems) in order to facilitate direct charging of costs. Passenger service is the minority user of most North American trackage, so there is a basis for charging it avoidable cost.

53. Railtrack in the UK and the Japanese railways have adopted the opposite approach of declaring freight traffic to be the marginal user which should be required to bear only avoidable costs. Since passenger services are the dominant traffic in these countries, this approach is quite reasonable.

54. There is no need to decide in advance whether passenger or freight is the dominant user: this can be left as an issue to be resolved by the facts of the individual railway. In fact, so long as basic ownership of the two types of services remains unified (albeit autonomous), pricing behavior should remain the same no matter how fixed costs are allocated, so long as variable costs are properly reckoned. The basic emphasis should be placed on the need for separation, not necessarily on the exact terms and on the need for the best possible identification of variable costs.

55. The next step (for both passenger and freight) is to define the activities involved in performing rail services and to develop cost estimating relationships (CER) which describe the way costs change as activities change. Without being totally inclusive, the basic activities or outputs performed in freight service are weight loaded, distance hauled, and ancillary services such as special packaging, guaranteed deliveries, en route servicing, etc. Activities which generate costs include wagon km, locomotive km, fuel consumed, train labor required, marshalling effort, type of wagon used, likelihood of empty back-haul, etc.

56. Basic activities or outputs performed in passenger service are similar: outputs are passengers hauled, distance moved; activities are equipment types, crew wages, coach and locomotive distance, etc.

57. Next, the cost categories of the railway are related to activities by use of a variety of techniques including statistical regressions (primarily linear using both adjusted time series and cross-sectional data), engineering analyses and, where necessary, informed judgment. The result is a comprehensive set of formulae (CERs) which, within confidence limits, measure how costs change as traffic changes, along with its required outputs.

58. These formulae are then used to provide the initial rough measure of the "variable cost" of a potential increment of traffic. Although laborious (there are some 50 input variables and 40 types of cost categories produced in a typical US case), all Canadian and US railways have their systems installed on interactive computers and a number of consulting firms offer "canned" programs for use on minicomputers or even personal computers. The user specifies in detail the output parameters for a particular shipment, including weight, distance hauled, type and capacity of wagon, type of commodity, route followed and expected back-haul ratio, among others. The models then translate these outputs into cost generating activities such as wagon-km, locomotive km, fuel, labor, etc. assigns a cost to each activity, and produces total variable cost. Both the railways <u>and</u> shippers are well versed in basic cost calculations and both use the calculations in negotiations or regulatory hearings.

59. However complex, there are many aspects of these cost models (energy consumption, track maintenance, yard marshalling effort) which are necessarily based on system average performance. If the potential traffic increment is at all significant, the models are <u>always</u> supplemented by special studies which replace system averages with route or traffic specific measures. These special studies also clarify the treatment of capital investment costs which are attributable to the traffic increment.

62. The equivalent passenger models were developed and function in much the same way as the freight models. The AMTRAK costing system has repeatedly been examined by outside agencies or consultants and all have concluded that the results are useful for management purposes (though various improvements have been suggested).

63. None of these models can be directly plugged into a developing country's rail operation where the operations and mix of services are often different. Also, input costs (labor, fuel, etc.) are different, the intensity of use of inputs is different and, in any case, detailed and accurate historical data are often not available. In most cases, what is needed is an effort to:

a. Tailor (usually simplify) existing models to fit local conditions and local marketing needs;

b. Develop local CERs by judgment or engineering analysis supported, where possible, by accounting data;

c. Modify the basic accounting system so that it will, over time, collect and report accurate data in a format which will permit improvement in the initial cost models.

Again, experience with the SSATP traffic costing effort indicates that this process of "localization" is not particularly difficult, nor is it very expensive. In other words, neither time nor cost should be allowed to serve as excuses for not developing and installing traffic costing models!

64. Despite the difficult intellectual challenges, and the need for models to evolve over time, the development of a usable traffic costing model is a manifestly achievable task within a reasonable period of time and at disproportionately small cost considering its importance and compared with the typical capital programs the Bank finances.

65. There are other important uses for traffic costing systems which go beyond traffic pricing. Three uses deserve particular mention: cost analysis, measurement of branch line deficits, and estimation of subsidy payments.

66. Costs cannot be controlled until they are understood, especially in the direct relationship between activity inputs and traffic outputs. Use of a costing model immediately answers not just the question of "how much does it cost?", but also "what are the major determinants of the costs?" and "how do we start to try to reduce costs?". In this sense, after the deregulation of British, Canadian and US freight rates, the use of cost models has probably had as great an impact on costs as on prices.

67. Cost models can also be used as a tool in going beyond traffic to look at facility profitability. For example, analysis of the profitability of a given branch line is a hybrid question based on the direct revenue and costs of the branch in conjunction with estimation by models of the "off branch" costs of the traffic which originates or terminates on the branch.

68. Autonomy implies that the railway should have the option to refuse to provide any service which does not result in revenue at least sufficient to cover its costs. Governments may well decide, for a number of reasons, that services should be offered at prices to the consumer which are below the railway's costs, with the government directly compensating the railway for the difference. Traffic costing models play an essential role in determining what that compensation should be.

69. Traffic costing systems also serve to improve the discussion of railway

inefficiency because the models offer a direct measurement of the impact of possible changes in operating practices such as crew consist and other staffing practices. Costing models do this because:

a. They verify that costs, however "inefficient", are incurred and must be compensated (or reduced);

b. They can highlight the degree to which inefficiencies are the result of government policies and raise the possibility of compensation; and

c. They force the railway, government and customer (which is often the government as well) to continually reassess what the customer really needs (i.e., is willing to pay for) as compared with what the railway would like to provide.