Reviewing the Impact of "Social Service Obligations" by Indian Railways

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1. Introduction

1.1 Indian Railways (IR) has consistently incurred losses in its passenger transport business. Several Railway Ministers have expressed their concern that the "social service" orientation of the passenger transport business impacts IR's flexibility to operate this business on commercial principles. The underlying reasons often cited for such losses by IR include charging fares well below IR's costs across all classes (possible exception being AC 3 class), granting a range of concessions to various categories of passengers (senior citizens, war widows, students, national sports awardees etc.), continued operations of uneconomic branch lines etc. IR also incurs some loss in the form of revenue foregone for its goods (freight transport) business. The Explanatory Memorandum to the Railway Budget generally includes a statement of revenue foregone due to concessional freight tariffs for certain commodities. However, at an overall business level, the goods business makes profits and ultimately ends up cross-subsidizing losses of passenger business.

1.2 IR divides the social cost obligation into four categories – essential commodities at lower than proper freight cost, low fares and other passenger concessions, uneconomic branch lines and new lines not yet profitable. Within that passenger component, you not only have across-the-board low fares for suburban and certain non-suburban classes, some types of passengers also have specific concessional fares. An IR list of who gets such concessions is: (i) senior citizens; (ii) recipients of gallantry awards; (iii) national sports awards; (iv) participants in national and State sports tournaments; (v) teachers honored with national awards; (vi) Shram awardees; (vii) war widows; (viii) patients suffering from cancer, tuberculosis and other serious diseases; (ix) handicapped persons; (x) press correspondents; (xi) film technicians. This isn't a complete list. Specifically, there are 53 such concessions.

1.3 Social costs are not only because of low passenger fares. However, low passenger fares represent the most visible aspect and also contribute quantitatively the most to "social costs". Social costs and the possibility of the General Exchequer funding them has been mooted in the past. This is Lal Bahadur Shastri, delivering the Railway Budget Speech of 1955-56. "We have been following in recent years a liberal policy .of giving concessions, particularly in connection with travel for educational purposes and other nation building activities. The financial effect of these concessions is partially reflected in the fact that the average amount earned per passenger during 1953-54 has decreased from 5.22 pies to 5.17 pies per mile." This is C. M. Poonacha, delivering the Railway Budget Speech of 1967-68. "It is difficult to estimate the amount of the concessions on passenger fares, but it will not

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be an insignificant amount. In some countries it is recognized that such social burdens are to be borne by General Exchequer and not by the Railways."

1.4 In 2014-15, IR's passenger business incurred a loss of about INR 33,000 crores as per its estimate, as a result of its social service orientation. The total revenue, attributable to the passenger business, was around INR 49,000 crores. Hence, the above loss essentially amounted to around 67% of its passenger revenues. Effectively, this meant that for every 1 Rupee earned in its passenger business, IR ended up expending Rupees 1.67. With the Government exploring the possibility of ending the present system of a separate Railway Budget speech in Parliament, a need is being felt to examine the financial impact of social service obligations in the passenger transport business.

1.5 With the above context, this note aims to critically review the financial impact of social service obligations of Indian Railways. While IR broadly attributes the entire loss in passenger business to social service obligations, the question that this note examines is whether the above principle of attributing the entire system loss to social service obligations of IR seems reasonable and warranted, so that appropriate actions to address this may be considered. For this purpose, the next section of this note sets the context by identifying and defining the social service obligations of IR. Estimates of financial impact of such social service obligations as made by IR are then discussed and the limitation to IR's methodology is presented. This is followed by an independent review and estimation at a broader level of such social costs. The note concludes by presenting the findings of the review exercise.

1.6 It may be noted here that this note should not be interpreted as an accurate grounds-up computation of the social service costs incurred by IR. This note is instead a commentary on the reasonableness of social service costs that end up impacting IR's finances in an adverse manner. When the Railway Regulator, christened as the Railway Development Authority, is established, a proper estimation can be carried out by this Authority, in consultation with CAG, a change in IR's accounting practices being a prerequisite.

2. Defining Social Service Obligations

2.1 This section aims at identifying and defining key activities under "Social Service Obligations" of IR.

2.2 Indian Railways (IR) states that it carries out various activities in the larger national interest which are not driven strictly by commercial principles. Most of these activities are essentially uneconomic in nature and IR is either not able to recover the costs (capital investments/operating costs) it incurs to deliver such services, or ends up foregoing revenues it should have captured otherwise. Such activities / services could broadly be defined as "Social Service Obligations" for Indian Railways.

2.3 The key heads/categories of Social Service Obligations for IR include broadly the following:

Table 1: Social Service Obligations – Key Activities

Sl.	Category	Item head	Impact to IR
1	**Non-Suburban Passenger Services**	Fares of various classes of tickets lower than system costs	Leads to under-recovery of costs
2		Concessions to various categories of passengers. The following key categories of passengers are given concessions in fares: • Senior citizens; • Students • Recipients of gallantry awards; • National Sports awards; • Participants of National and State sports tournaments; • Shram awardees; • War widows; • Patients suffering from cancer, TB, other serious diseases; • Handicapped persons; • Press correspondents; etc	Leads to revenue foregone
3		Concessions to military personnel North East etc.	Leads to revenue fore-gone
4	**Sub-urban Passenger services**	Fares of various classes of tickets lower than system costs	Leads to under-recovery of costs
5		Season Ticket Concessions to sub urban passengers	Leads to revenue foregone
7	**Goods Services**	Carriage of essential commodities at concessional rates	Leads to revenue foregone
8		Concessions to Postal traffic, military traffic, registered newspapers & magazines, North East etc.	Leads to revenue foregone
9	**Uneconomic branch lines**[3]	Continued operations of uneconomic branch lines	Leads to under-recovery of costs

3. Indian Railways' estimates of Social Service Obligations

3.1 The objective of this section is to present and discuss IR's estimates of the financial impact of social service obligations. Impact of various elements of such obligations is also highlighted in this section. This section also assesses IR's

[3] Uneconomic Branch Lines Committee (1969) headed by Deputy Minister for Railways and comprising three members of Parliament and representatives of the then Planning Commission, Ministry of Transport and Ministry of Railways recommended that all Narrow Gauge Lines and Broad Gauge Lines and Meter Gauge Lines joined to the main system at one end only should be considered as Uneconomic Branch Lines (Source: Railway Board).

approach for estimating the above costs and lists out findings of this assessment and limitations to IR's approach.

3.2 But before doing that, we wish to dispose of the uneconomic branch line idea. In November 2014, IR issued sectoral guidelines for domestic and foreign private investments in the railways, and this included renovation, operation and maintenance of stand-alone passenger corridors like branch lines and hill railways. But what are branch lines? This is what Indian Railways Year Book (2013-14) stated. "Despite concerted efforts to enhance earnings on branch lines, most of these lines remain commercially unviable. The Railway Reforms Committee recommended closure of 40 such lines but due to stiff public resistance and opposition by state governments towards withdrawal of such services, only 15 lines have been closed permanently by the Railways. A review of the financial results of the existing 90 uneconomic branch lines for the year 2013-14 shows that, on an original investment on these lines of the order of Rs 2,617 crore, loss during the year 2013-14 amounted to Rs 1,681 crore." Intuitively, branch lines are feeders. In 1862, the Indian Branch Railway Company was formed to construct branch and feeder lines. There were also narrow gauge lines built by rulers of former princely states. These were never meant to be remunerative. After Independence, in 1969, there was a Railway Committee on uneconomic branch lines and we had some kind of definition of "branch line". Branch lines are narrow gauge lines and those broad and metre gauge lines that join the main network only at one end. There was also a double kind of definition of an uneconomic or unremunerative branch line - (a) it did not make profits; (b) it did not make profits more than the rate of dividend paid to the Union government. Note that if there is gauge conversion and switch from narrow to broad gauge, the number of branch lines (and uneconomic lines) declines. This doesn't mean those lines have been closed. The Railway Reforms Committee that recommended closure of 40 branch lines is one that goes back to 1983. As far as one can make out, at the turn of the century, there were 110 uneconomic branch lines - 44 broad gauge, 44 metre gauge and 22 narrow gauge. As the 2013-14 quote states, the number is now down to 90 (actually 89). Is this because some lines have closed down, become remunerative, or because of gauge conversion? IR continues to mechanically use the expression "branch line" and once upon a time, IR had classifications of routes as mainline, suburban and branch line. But that classification was scrapped in 1976 and based on multiple criteria, broad gauge routes are now classified as A, B, C, D and E. Metre gauge routes are classified as Q, R and S. A branch line can thus be interpreted as narrow gauge, metre gauge or D and E categories of broad gauge, and uneconomic branch lines will be sub-categories of these. However, with gauge conversion, uneconomic branch lines no longer seems to be an important issue to us. New lines that aren't yet profitable belong to a different category. But quantifying these also requires a better accounting system as a prerequisite.

3.3 As mentioned earlier, IR makes profits in goods business at an overall level, despite providing concessional rates for select commodities and goods transport services. However, at a business level, it makes substantial losses in passenger

business. Therefore, this note primarily focuses on reviewing the financial impact of social services in the passenger business.

4. Assessment of Overall estimates of Social Service Obligations

4.1 Broadly, IR attributes the overall losses it incurs on its passenger service business to the social service orientation of its passenger business. The principal argument being that for passenger services, IR charges fares across classes (more particularly for SL class and below and suburban services) which are well below its costs given its social responsibility as the national transporter of people. Further, IR also foregoes revenues due to various concessions listed earlier. Hence, at an overall level, the losses of passenger business are a result of combination of such social obligations and IR thus considers them as a reasonably proxy reflecting the financial impact.

4.2 Accordingly, for the purposes of the bulk of this note, the terms "Social Service Obligations costs", "Social costs" etc. refer to the financial impact from IR's passenger business due to its social service obligations listed in the table above. These terms subsume the financial impact of revenue foregone due to a range of concessions and revenue under-recoveries due to lower ticket costs across a range of services and classes within the passenger business.

4.3 Assessment of overall estimates of social service obligations can thus be undertaken by computing net losses in the passenger business. The general methodology followed for computing the net loss is also briefly indicated here. For each financial year, IR reports its financial performance in terms of breakup of earnings for its principal businesses and expenditure across key heads – Ordinary working expenses, Appropriation to Pension Fund, Depreciation fund etc. IR also maintains Statistical Statements (such as Statistical Statement no. 15) that helps it allocate costs on passenger and goods businesses separately. Using such allocation ratios, the revenues and expenditure attributable to passenger business is computed for assessing the net loss. The table below indicates the assessments of net loss incurred by IR for its passenger business as per the above methodology.

Table 2: Overall Assessment of Net Loss / Social Service Obligations

Assessment of IR Passenger Business Loss (All Figures in INR Crores)					
Sl . No.	**Particulars**	2011-12	2012-13	2013-14	2014-15
A	**Earnings**				
A1	Passenger	28246	31323	36532	42190
A2	Other Coaching	2717	3054	3679	3998
A3	Sundry and Misc Earnings	3643	4261	5721	5093
A3.1	Share of Goods*	1625	1878	2471	2020

A3.2	Share of Passenger*	2018	2383	3250	3073
B	**Total Earnings**	0.45	0.44	0.43	0.40
B1	Passenger and Coaching (A1+A2+A3.2)	32981	36760	43461	49261
C	**Expenditure**				
C1	**OWE (including Pension Fund)**	92270	104898	122985	135556
C1.1	Share of Goods**	40857	46837	54482	60417
C1.2	Share of Passenger and Coaching**	51413	58061	68503	75139
C2	**Appropriation to DRF**	6520	6850	7900	7775
C2.1	Share of Goods***	3148	3272	3682	3339
C2.2	Share of Passenger and Coaching***	3372	3578	4218	4436
C3	**Appropriation to Dividend (excluding subsidy)**	3622	3063	4638	5149
C3.1	Share of Goods#	1867	1558	2296	2459
C3.2	Share of Passenger and Coaching#	1754	1505	2342	2690
D	**Total Expenditure**	102412	114811	135523	148480
D1	Passenger and Coaching (C1.2+C2.2+C3.2)	56540	63144	75062	82264
E	**Net Loss for Passenger Business**				
E1	**Passenger and Coaching (B1-D1)**	**-23559**	**-26384**	**-31601**	**-33004**
E2	Passenger Loss as a % of Passenger Revenue (E1/B1)	71%	72%	73%	67%

Source: Railway Board, Ministry of Railways

Notes:-

* Allocation of sundry earnings between Coaching & Goods Services as per instructions laid down at Page 121 of MSI-Vol-II (2003 edition) (Part-II, Appendix-III of Annual Statistical Statement (ASS) No. 15);

** The apportion of ratio between Goods & Coaching are 44.28:55.72, 44.65:55.35, 44.30:55.70 & 44.57:55.43 for the years 2011-12, 2012-13, 2013-14 & 2014-15 respectively;

*** The apportion of ratio between Goods & Coaching are 48.28:51.72, 47.77:52.23, 46.61:53.39 & 42.95:57.05 for the years 2011-12, 2012-13, 2013-14 & 2014-15 respectively;

The apportion of ratio between Goods & Coaching are 51.56:48.44, 50.86:49.14, 49.51:50.49 & 47.76:52.24 for the years 2011-12, 2012-13, 2013-14 & 2014-15 respectively;

Source: Railway Board, Ministry of Railways

4.4 As can be seen from the table above, the following observations should be flagged:

(a) At an overall level for the period 2011-12 to 2014-15, IR has consistently incurred loss in its passenger and coaching business, which it attributes to the social obligations it undertakes;

(b) In FY 2014-15, the loss that IR incurred in its passenger and coaching business amounted to INR 33,000 crores, which was around 67% of the total passenger revenues for that year. This indicates that on an average for every 1 Rupee earned in passenger business, it ends up losing 67 paise (i.e it expends Rs. 1.67 as costs)

4.5 Paragraph 2 – Chapter titled "Social Service Obligation" of *IR Year Book 2014-15*[4] indicates that the Net Social Service Obligation borne by IR in 2014-15 is assessed at INR 25,346.94 Crores excluding staff welfare costs (INR 4797.50 crores) and law and order cost (INR 3415.43 crores). However, the Table 2 computes the overall costs of social service obligation as INR 33,000 crores at the business level. Accordingly, it is assumed, for representative assessments, that the exclusions (staff welfare and law order) are subsumed in the overall business costs.

4.6 As the above observations essentially average out the overall financial performance of passenger business, the next step is to segregate various heads/specific items that lead to build up of overall losses. For example, within passenger business, it is likely that some services of Indian Railways are profitable (such as AC3 class) while other classes/services are adding to the overall system loss. Accordingly, the category-wise breakup of the passenger business losses is listed below.

Category-wise break-up

4.7 The total system loss for the passenger business of railways is broadly categorized by IR into the following distinct heads/items:

(i) Operating loss from mail/express class of trains;
(ii) Operating loss from ordinary classes;
(iii) Parcel, Luggage and Postal Services;
(iv) Catering Services; and
(v) Losses in EMU – suburban services and Kolkata Metro.

[4] Source: http://www.indianrailways.gov.in/railwayboard/uploads/directorate/stat_econ/IRSP_2014-15/Year_Book_Eng/17.pdf

4.8 Using the fully distributed cost approach mentioned above, IR computes break-up of various components of losses (item-wise). The table below presents these estimates as arrived at by IR.

Table 3: Category-wise Contribution to Passenger Business Losses
(all figures in INR Crores)
(-ve figures indicate loss and +ve profits)

Sl.	Particulars	2011-12	2012-13	2013-14	2014-15
A	Operating Loss: Mail/Express Classes (Non-Suburban Services)*				
A1	AC 1	-39	-41	-47	-127
A2	First	-39	-61	-92	-70
A3	AC 2	-439	-348	-497	-496
A4	AC 3	499	495	411	882
A5	ACC	-13	-38	-148	-142
A6	Sleeper Class	-6532	-6853	-8408	-8510
A7	Second Class	-4238	-5168	-7134	-7642
A8	Sub-total (sum of all above)	-10800*	-12014*	-15917*	-16106*
B	Operating Loss: Ordinary Classes*				
B1	First	-48	-60	-70	-50
B2	Sleeper	-369	-403	-451	-530
B3	Second Class	-8476	-9321	-10584	-11094
B4	Sub-total (sum of all above)	-8893*	-9784*	-11105*	-11674*
C	Total Operating Loss(A8+B4)	**-19693***	**-21797***	**-27022***	**-27779***
D	Parcel, Luggage and Postal Services	-1867	-1863	-2394	-2453
E	Catering Services	-940	-1030	-952	-1016
F	Operating Loss - Suburban passenger services and Metro Kolkata	-2814	-3365	-4027	-4679
G	**Total Loss (for Passenger Business) (C+D+E+F)**	**-25314**	**-28056**	**-34395**	**-35928**

Source: Railway Board, Ministry of Railways

Notes :-

* These figures do not include contribution of the passenger share of Sundry and Miscellaneous earnings for Passenger & Coaching Business. Sundry Earnings include earnings from items such as renting, leasing of building, advertisements, interest etc. while Miscellaneous Earnings include earnings from items such as subsidy from general revenues towards dividend relief and other concessions, fees collected from Railway Recruitment Board etc. Given the nature of Sundry and Miscellaneous earnings, these sums cannot be distributed / allocated to the heads of various classes mentioned in the table above.

However, figures provided in Table 2 and Table 3 can be compared by adjusting the impact of passenger share of Sundry and Miscellaneous earnings. The figures in Table 3

would accordingly need to be added by the equivalent amount of the above earnings. For example, in the year 2014-15, the total passenger share of sundry and miscellaneous earnings as per Table 2 is indicated as Rs. 3073 crores (Row no. A4.2, Table 2 above). Now, to compute the total system loss for FY 2014-15 from Table 3, the data in Row C, Table 3 needs to be adjusted as INR -27,779 + INR 3073 (revenue) i.e INR – 24706. Accordingly, the Total Loss (Row G, Table 3 above) for FY 2014-15 would come down by an equivalent amount to INR -32855 or around INR -33000 crores which compares with the figures under Table 2.

Source: Railway Board, Ministry of Railways

4.9 The figures indicated in the above table subsume the net financial impact of various social obligations that IR undertakes as listed in the earlier section. This means that losses incurred due to fare concessions provided to various categories of passengers such as senior citizens, handicapped individuals, war widows etc., losses incurred due to ticket fares lower than system costs and operations of uneconomic branch lines (mostly passenger operations) etc. are already accounted for in the figures above. For example, over the period 2011-12 to 2014-15, operating loss from Mail/Express/Other ordinary classes contributed to the largest share of the total system losses in Passenger and Coaching business each year. The key contributors to this include: i) under-recoveries due to ticket costs lower than the system operating costs and ii) concessions in fares leading to revenue foregone.

4.10 IR also states losses in the form of revenue foregone due to various concessions in its Explanatory Memorandum to the Railway Budget. It is relatively simpler to quantify revenue foregone due to concessions. The methodology that IR follows to compute this is by multiplying the number of cases of concessions with the revenue foregone for each case. As an illustrative example, IR provides concessions to Senior citizens @ 40% for Men (age more than 60 years) for all classes and @ 50% for Women (age more than 58 years) for all classes. To compute revenue foregone for senior citizens, the total number of bookings done by senior citizens under each category is multiplied by the total concession given to each individual.

4.11 The details of the same are presented in the table below.

Table 4:
Revenue Foregone from Concessions to Various Categories of Passengers
(All Figures in INR Crores)

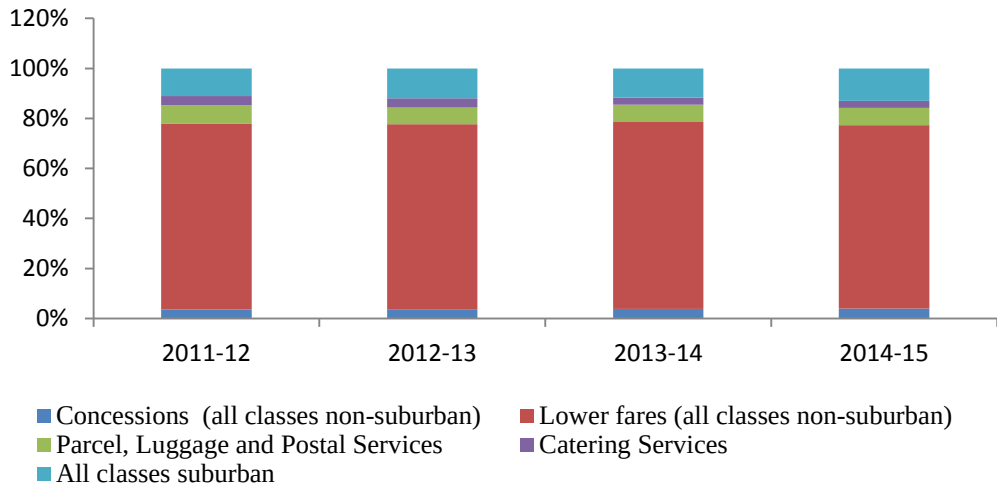
Sl No.	Particulars	2011-12	2012-13	2013-14	2014-15
A	**Concessions to various categories of passengers**				
A1	Physically Challenged persons	79	79	92	105
A2	Patients	35	45	59	71
A3	Senior Citizens	615	681	933	1149
A4	Izzat Monthly season tickets	115	151	96	8

A5	Others (students, press correspondents, sports persons, war widows etc.)	77	89	133	89
A6	**Total (sum of all above)**	**921**	**1045**	**1313**	**1423**

Source: Explanatory Memorandum to the Railway Budget 2015-16 and 2016-17

4.12 Having presented estimates of the overall loss for Passenger business and category-wise break-up of the same, the graph below indicates the contribution of each distinct category to the overall operating losses in passenger business. The graph clearly indicates that, over the period 2011-12 to 2014-15, approximately 75%-80% of the losses in passenger service business (for any given year) are contributed by non-suburban (non-EMU) operations (mail/express/ordinary classes). Similarly, concessions to various categories of passengers contribute to about 4% of the total loss and operating losses under sub-urban services (EMU) contributed to another 12% for any given year.

Figure 1: Item-wise Contribution to Operating Losses in Passenger Business



Source: NITI Analysis

Summary

4.13 To summarize, a review of the tables and figures in this section indicate the following key points:

(a) At an overall system level, social service obligations have accounted for consistent losses in passenger business for the period 2011-12 to 2014-15;

(b) While there are some differences in the estimates of Social Service Obligation costs - IR Annual Year Book estimates the costs as around INR 25,347 crores, the overall system losses indicate these costs as INR 33,000 crores etc., for the purpose of this note, the overall estimates have been considered as all-inclusive estimates of social service costs.

(c) In terms of % break-up, approximately 77%-80%[5] of the total losses in passenger service business (for any given year) are contributed by non-suburban operations (mail/express/ordinary classes). Out of this, around 4% of the losses are accounted for by various concessions (listed out under Table 4) while the balance (73%-76%) could be attributed to IR charging fares lower than the costs it incurs;

(d) Similarly, losses on account of running sub-urban services account for around 12-13% of the overall losses in passenger service business. Impact of lower ticket fares and concessions (passes, season tickets etc.) are subsumed in this.

(e) In terms of class-wise assessment of non-suburban operations, IR incurs loss for all AC classes except AC3. Losses incurred in SL and second class account for the bulk of operating loss (more than 75% of the entire passenger business loss on an average during the 4-year period).

(f) The above points clearly indicate that at a unit level (Paise/PKm) the expenditure for every class (except AC3) across sub-urban and non-suburban services exceed the revenue (Paise/Pkm) for the same class. The same has been pointed out in IR's statistical statements and expert reports such as the Report of the High Level Committee on improving Financial Health of Indian Railways headed by Shri D. K. Mittal.

Limitations in IR's approach

4.14 To understand limitations in IR's approach, it is important to quickly list the key drivers of IR's finances. Revenue side first, for passenger business, revenue earning is driven by volumes (number of passengers) and tariff rates (class-wise). On the other hand, costs are driven by a gamut of direct and indirect input factors that include manpower expenses, pensions and other staff expenses, tractive power costs (fuel/electricity consumed), asset maintenance expenses, infrastructure depreciation costs and other expenditure heads such as dividend etc.

4.15 Ideally, the tariffs charged by the Railways should have direct basis to costs (both direct and indirect) incurred. And therefore, any resultant gap between revenues earned and expenditure incurred (the net profit or loss) could arguably indicate the net financial impact of social service obligations which constrain IR to charge commensurate fares. Hence, IR computes the loss incurred by passenger business (category-wise and also at the overall level) and attributes the same towards social service obligations. However, there are few limitations to this method as argued below.

4.16 First, it is difficult to state with certainty that the tariff levels are scientific reflections of system costs given the data collection approach currently being followed. This means that it is difficult to precisely compute unit costs of various

[5] Representative analysis as per figures under Table 3 excluding contribution of the passenger share of Sundry and Miscellaneous earnings for Passenger & Coaching Business.

classes. IR computes costs of delivering service across classes through fully distributed cost approach. This approach essentially captures the entire direct and indirect system costs of a railway system and then the system costs are distributed or allocated to various heads on the basis of ratios and drivers of such heads. It does not reflect the marginal cost approach that would indicate the cost IR incurs for providing a particular unit of service. For example, it is difficult to compute precisely the unit cost IR incurs to provide AC1, AC2 or AC3 class of services. Hence, in the absence of scientific data related to marginal costs, it is difficult to compute accurately the levels of under-recoveries across various services/classes.

4.17 Second, the above assumption also does not take into account the efficiency of expenditure related inputs. This would include aspects such as operational efficiencies – whether fuel/electricity consumed is optimal, whether maintenance practices and hence maintenance related costs are reasonable, need of reducing/optimizing costs etc. - few of these could as well be contributing to the gap in revenues and expenditure by pushing expenditure levels. The hypothesis essentially being that for a fixed level of system expenditure inputs, an inability to recover expenses due to external constraints lead to losses in passenger business. The above method does not question the reasonableness of the system costs itself per se.

4.18 Third, the above approach also discounts the potential need to leverage existing assets (infrastructure assets such as land, stations, trains etc.) to capture other sources of revenue besides fare collections. For a given level of inputs, IR could draw up appropriate plans to leverage its assets and enhance revenues thereby reducing the revenue and expenditure gap in passenger business.

4.19 The above points indicate the critical assessment of IR's approach to quantify financial impact of social services obligation. As can be seen, the key point that the above approach does not account for is the reasonableness of expenditure inputs which have an impact of pushing up unit costs of delivery thereby leading to sub-optimal recoveries through ticket fares.

4.20 With this in mind, the section below aims to review key elements of IR's social service costs.

5. Review and Analysis

5.1 Figure 1 in the earlier section indicated item-wise contribution to total losses in passenger business of IR. As can be seen, for the year 2014-15, under-recoveries due to lower fares in non-suburban accounted for 73% of the total losses; concessions (all classes non-suburban) accounted for another 4% and the balance 23% being accounted by all other items including suburban services, catering services and parcel, luggage & postal services. Generally, as mentioned earlier, financial costs due to concessions in non-suburban services are estimated with reasonable accuracy due to the nature of this cost. It is difficult to review and validate losses of other items - suburban services, catering services etc. due to the quality of comparable data available. Hence, attempt has been made to review the

reasonableness of the largest item – i.e under-recoveries due to lower tariffs for non-suburban services that explain about 73% of the total social service obligation costs.

5.2 Accordingly, the key objective of this section is to review and assess whether, in broad terms, IR estimates of financial costs of tariff related under-recoveries for non-suburban services reasonably represent the same and that IR's approach does not lead to substantial over-estimation or under-estimation of such costs. For this purpose, the following methodology is adopted:

(a) **Step 1**: Review of fares of competing modes of transport assuming that demand for rail transport is elastic;
(b) **Step 2**: Review of under-recoveries (if any) in IR's fares for its key classes (AC and Non-AC sleeper);
(c) **Step 3**: High level estimates of potential under-recoveries due to lower tariff levels;
(d) **Step 4**: Key insights of this analysis;
(e) **Step 5**: Limitations to the above framework.

5.3 Starting with Step 1, it is important to note here again that IR treats its actual expenditure as cost inputs. Based on its total expenditure, IR allocates cost to various classes such as AC 1, AC 2, AC 3, Sleeper (M&E) etc. and unit costs in INR/Pkm are computed. Similarly, class-wise revenues in INR/PKm are computed based on actual revenues earned. The difference is then treated as under-recoveries or fares below cost. So, if you want to break-even, you would need to increase fares till the per unit revenues through fares match per unit cost. This means that, for IR, per unit fares and the resultant under-recoveries are driven by per unit costs and not by other market determined factors.

5.4 However, from the perspective of an end-consumer in a competitive market, transportation demand exhibits elasticity to prices for comparable service quality levels. For a transport demand from Point A to Point B, in case a competing mode (say bus or air-service) offers lesser per unit fares than Railways, it is likely that the consumer may not opt for Railways to fulfill its demand. With ongoing investments in improving access of competing modes of transport connectivity (Roads, Air transport – regional connectivity, Metros etc.), it is likely that Rail, as a mode of transport, may lose its dominant monopolistic character to other competing modes.

5.5 What this implies essentially is that:

(a) IR may not be able to determine the appropriateness of its fare structure (i.e revenue side) based on its costs. Instead, fares would primarily be determined by competition and market forces.

(b) For a given class of service, in case competition offers a fare which is above IR's cost levels, IR will have to address such situations through alternate cost optimization/reduction strategies and not necessarily through fare increases.

5.6 Using the above conceptual approach, an attempt to review the quantum of social cost obligations with reference to broader fares charged in competing modes has been made. This means that how much IR can charge (in INR/Passenger/Km) for any particular class is determined by tariff levels for competing modes. As quality of service levels is an important input, air transport has been kept out as a competing mode. Accordingly, tariff levels (INR/Passenger/Km) for AC bus service is used to arrive at a comparable fare that IR could ideally charge for AC class of service, a non-AC deluxe bus service is used for Non-AC sleeper and an ordinary bus fare for second class service in IR.

5.7 Some sample routes have been considered to compute indicative average fare levels for railway and bus services. The fares of train for a particular route have been taken from the Passenger reservation website of IR and that for bus have been taken as per information available in secondary domain (redbus.in, makemytrip.com etc.). The table below indicates the average fares (in INR/Passenger/Km) for various classes in rail and bus services.

Table 5: Indicative Average Fares (INR/Passenger/KMs)

Route/Mode	Avg Fare (INR/Passenger)			Kms	Fare/Passenger/Km (INR/Passenger/Km)		
Delhi - Lucknow	AC Class* (1)	SL/Non AC** (2)	2nd Class/ Ordinary*** (3)	(4)	AC Class (1)/(4)	SL/Non AC (2)/(4)	2nd Class/ Ordinary (3)/(4)
Train	1140	285	185	560	2.04	0.51	0.33
Bus	900	600	420		1.61	1.07	0.75
Delhi - Chandigarh							
Train	740	185	110	260	2.85	0.71	0.42
Bus	650	240	200		2.50	0.92	0.77
Delhi - Ahmedabad							
Train	2270	455	NA	940	2.41	0.48	NA
Bus	1500	750	NA		1.60	0.80	0.75
Mumbai – Nagpur							
Train	1880	445	NA	820	2.29	0.54	NA
Bus	1200	620	NA		1.46	0.76	0.75
Hyderabad - Bangalore							
Train	1725	355	NA	570	3.03	0.62	NA
Bus	1000	600	NA		1.75	1.05	0.75

Source: Secondary Research

Notes:-

* For Train, AC2 fares of Rajdhani or equivalent trains are considered. For Bus, AC Volvo or equivalent is considered. There is a wide variation in bus fares and hence average levels of fares have been considered.

** For Train, Sleeper fares of Mail/Express trains are considered. For Bus, normal deluxe non-AC service or equivalent is considered. There is a wide variation in bus fares and hence average levels of fares have been considered.

*** For Train, 2nd class/2S fare of ordinary train is considered where-ever available. For Bus, fare structure[6] of state transport buses ordinary class has been considered for indicative ranges.

5.8 In Step 2, using the figures in the table above, average tariff rates (INR/KM/Passenger) have been computed to examine the level of under-recoveries across classes. The table below indicates the average fares (in INR/Passenger/Km) for various classes in rail and bus services.

Table 6: Potential Under-Recovery in Rail Fares across Classes

Average Fare (figures in INR/Passenger/Km)	AC Class	SL/ Non-AC	2nd Class / Ordinary
Bus	1.78	0.92	0.75
Rail	2.52	0.57	0.38
% of potential under-recovery in Rail fare	NA	60%	99%

5.9 The Table below indicates essentially indicates the following:

(a) In AC class of service, broadly, fares in rail mode are in fact more than fares in bus mode of transport. It is therefore likely that any under-recoveries in AC class of service is explained probably more by IR's cost inputs than by its fare structure;

(b) For Sleeper and 2nd class services, the fare structure of IR is on an average lower than that of similar bus services. Particularly, for 2nd Class service, average bus tariffs are almost twice that of rail tariffs. Therefore, lower rates of tariff do contribute to under-recoveries in SL and 2nd class services.

5.10 Under Step 3, it is now attempted to estimate the potential under-recoveries due to lower tariff levels across various service classes. For this the following methodology is adopted:

(a) The Explanatory Memorandum to Railway Budget 2016-17 lists actual revenues in FY 2014-15 for each class of service. Using the numbers given, revenues for AC Class, Sleeper Class (Mail, Express and Ordinary) and Second Class (Mail, Express and Ordinary) is computed;

[6] Source: http://hartrans.gov.in/fare.htm and http://www.upsrtc.com/default.aspx?fare-calculation

(b) Table No. 6 above indicated the extent of under-recovery in tariffs as per the above analysis. For example, based on the existing tariff levels for Sleeper Class, IR is charging about 60% lower fares than equivalent service offered by bus. This means that the under-recovery for IR in Sleeper class is computed as 60% of the total revenues it is collecting for Sleeper Class.

(c) Using the above estimates, potential under-recoveries for each broad classes of service is computed and compared with under-recoveries as estimated by IR (presented in A and B rows of Table 3 above, figures for FY 2014-15 taken for this analysis).

(d) The results of this analysis are given below:

Table 7: Analysis Results for Non-Suburban (Figures in INR Crores)

Non-Suburban Classes	Earnings (1)	Potential Under-recoveries as per analysis (2)	Under-recoveries estimated by IR (3)	% Over/ Under-estimation (4) = 1-((2)/(3))	Key Inferences
AC Class (All combined)	12736	0	117	NA	Losses likely due to higher cost base of IR
Sleeper (M&E & Ordinary)	11825	7132	9040	~20% over-estimation	80% of losses explainable through lower ticket costs. Balance potentially attributable to higher cost base of IR
Second Class (M&E & Ordinary)	15092	14954	18736	~ 20% over-estimation	80% of losses explainable through lower ticket costs. Balance potentially attributable to higher cost base of IR
Total		22086	27893	NA	Sum of the figures in the table.

Source: Analysis

Notes:-

- Column (1), Source: Explanatory Memorandum to Railway Budget 2016-17. Figures for FY 2014-15;
- Column (2): (% in Table 6) X Column (1);
- Column (3): A and B rows of Table 3 above. Figures taken for FY 2014-15;
- Column (4): 1 – (Figures in Column (2) / Figures in Column (3))

Step 4: Key Insights of this Analysis

5.11 The following are the key insights of this analysis:

(a) At an overall level, IR's estimates indicate that financial impact of under-recoveries due to lower tariff in non-suburban services is expected to be around INR 28,000 crores, while the review indicates that this could more reasonably be around INR 22,000 crores considering the competitive market dynamics in estimation.

(b) For AC classes, the average tariff levels are higher than equivalent fares for AC bus service. Hence, it is likely that losses in AC class are attributable to higher base cost structure of IR than to its fare structure. IR would accordingly need to explore alternate cost optimization and expenditure control strategies to recover such losses.

(c) Both for Sleeper and Second class of services, IR over-estimates the quantum of losses that could be attributable to lower tariff levels. About 80% of losses in these classes could be attributable to lower tariff levels, while the balance 20% are more likely to be attributable to the cost structure. IR would accordingly need a combination of fare increase and cost optimization and expenditure control strategies.

(d) The above table clearly indicates that inefficiency in cost structure also contributes significantly to the losses in passenger service business and hence tariff increase cannot be the only principal strategy to address such social costs. It has to be necessarily complemented by cost optimization and non-fare box revenue enhancement strategies.

Step 5: Limitations to the above analysis

5.12 The above analysis is intended to be an indicative commentary on IR's estimates of financial impact of social service obligations. As explained earlier, it is not a detailed grounds-up exercise for computing such costs and hence is approximate / indicative in nature.

5.13 The above analysis reviews the reasonableness of the biggest contributor to IR's passenger losses i.e under-recoveries due to lower tariffs for non-suburban services with reference to the tariff levels for equivalent classes of competing bus-service available to potential customers. Tariff levels for bus services depict a wide range of variation for various routes and therefore average representative tariff levels have been considered for estimation.

5.14 Further, it can also be argued that Railway provides comparable to better services than bus transportation for various classes. For example, AC and Sleeper class in railways is generally considered better compared to the equivalent class in bus transport. For second class, train services are more or less comparable and possibly better for many cases than bus transport. Hence, in an ideal competitive environment, IR should be able to charge a commensurate premium in its tariffs reflecting service level differences. However, given that the intent of the above exercise is to assess the reasonableness of IR's estimates at a higher-level and to draw conceptual insights, such service level differences have not been taken into account for the base-case assessments. As a follow up to this exercise, next steps may include preparing alternate scenarios to account for service differences.

5.15 The above analysis does not comment on the reasonableness of under-recoveries / losses in suburban services, parcel or catering services due to unavailability of comparable data in public domain.

5.16 On an average, IR charges lower than par tariffs for passengers and higher than par tariffs for freight. Focusing on one at the expense of the other is at best partial. Unfortunately, it is not easy to obtain comparable freight rates by alternative modes of transport on the freight side. Were that to be done, because freight rates are higher than par, the figure would be reduced from the computed INR 22,000 crores.

6. Conclusion

6.1 In the first section of this note, it was indicated that IR principally attributes the losses it makes in passenger services to its social service obligations as national transporter meaning inability to charge adequate fares to all classes of passengers and revenues foregone due to a gamut of concessions.

6.2 The limitation to this method of estimating social service obligations is that any likely inefficiencies in cost structures, impact of competition, quality of data collection etc. are not adequately taken into account. While lower tariffs and concessions substantially contribute to losses in passenger business and hence account for social service costs, they are not the only factors. In a competitive market where demand for transport is elastic, IR will have a limitation on increasing fares (i.e revenue side) which would be driven by competition. Hence computation of under-recoveries will have reference to IR's ability to charge fares in a competitive market rather than its cost structure determining its under-recoveries.

6.3 Considering that, the intent of the above analysis is to pick up a test case and examine if IR ends up over-estimating or under-estimating the impact of lower tariffs while computing its social service obligation costs. Data indicates that in FY 2014-15, lower tariff levels in non-suburban services (across all classes – AC, SL, 2nd class etc.) accounted for about 73% of the total social service obligation costs. Further analysis indicates that while tariff levels of SL and 2nd class service is substantially lower than competing service offerings (equivalent bus fare rates), AC services are reasonably higher than the bus fares.

6.4 Accordingly, losses in AC class could potentially be attributable to higher base cost structure of IR than to its fare structure. Similarly, for sleeper and second class services, IR over-estimates the quantum of losses that could be attributable to lower tariff levels. Analysis indicates that about 80% of losses in these classes could be attributable to lower tariff levels while the balance 20% are more likely to be attributable to IR's cost structure.

6.5 Therefore, arguably, inefficiency in IR's cost structure also significantly contributes to the losses in passenger service business and hence tariff increase cannot be the only mechanism to address such social costs. It has to be necessarily complemented by cost optimization and non-fare box revenue enhancement strategies with varying levels for various classes.

6.6 Finally, while this note focuses on passenger business, it is worth highlighting the impact of goods business. Table 2 above indicated revenues and costs attributable to IR's goods business as well. As per the data in the table, for the year 2014-15, while IR's passenger business incurred a net loss of about INR 33,000 crores, its goods business made a profit of about INR 44,500 crores. The White Paper on Indian Railways published February 2015 indicated the extent of imbalances / tariff distortions in goods business. Table 16 of the White Paper (Page 20 of 66) shows that for the year 2012-13, IR recovered about 164% of the cost it incurred per NTKM from its goods business. This implies that for every Rupee 1

spent on goods business, IR recovered Rupees 2.64 from goods' customers. This continues even today.

6.7 Effectively, IR ends up treating its goods business as a tool to more than make up for its passenger business losses to manage overall financial situation. This practice of "overcharging" goods customers is actually unhealthy for the net economy as higher goods tariffs are eventually passed on to common public in the form of higher electricity cost, higher cement, steel costs etc. This unfair practice also distorts the inter-modal share leading to customers preferring sub-optimal choice of modes such as roads. Therefore, looking at this matter in a holistic manner, it is suggested that measures to address social costs of passenger service business should necessarily be taken along with measures to rationalize goods tariff distortions.