

Railways: Revenue Management

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Canadian Pacific Railway

- CPR (Canadian Pacific Railway) uses a system called MultiRail for freight business. It helped CPR turn itself around (Reported in June 2003)
- 35 to 40% improvement in railcar productivity, labour productivity and locomotive productivity.
- 16% reduction in fuel consumption.
- 19% increase in profits.

Canadian Pacific Railway

- Shift to fixed schedule from tonnage based
 - Operate trains even with low tonnage
 - Be able to adjust plans quickly
 - Block concept: a group of railcars from A to B
 - A car, from its O to D would be routed over multiple blocks
- Use of OR Modelling and software MultiRail
- 14000 miles of track, 250 rail yards, 10000 distinct pairs of O-Ds, 15000 people (including 5000 crew), 16000 locomotives, 65000 rail cars, 6000 customers, 7000 new shipments daily

SNCF

- SNCF (Societe Nationale des Chemins de Fer Francais) uses systems called RailRev, RailPlus and RailCap for its passenger business on the TGV (Reported in January 1998).
- Additional revenue is 110 m Francs (before Euros!) per year, with a reduction in operating costs.

SNCF

- RailRev forecasts traffic on a daily basis
- Based on this, RailCap suggests changes to train capacity for a three to fifteen day period (Add a second train unit, drop..., open an optional train etc)
- RailPlus then does the scheduling of trains, as a weekly cycle.

SNCF

- The SNCF TGV uses 300 train sets, for 3000 departure per week, across 140 cities, carrying over 50 million passengers
- Total TGV annual revenue was 10 b Francs in 1996/97

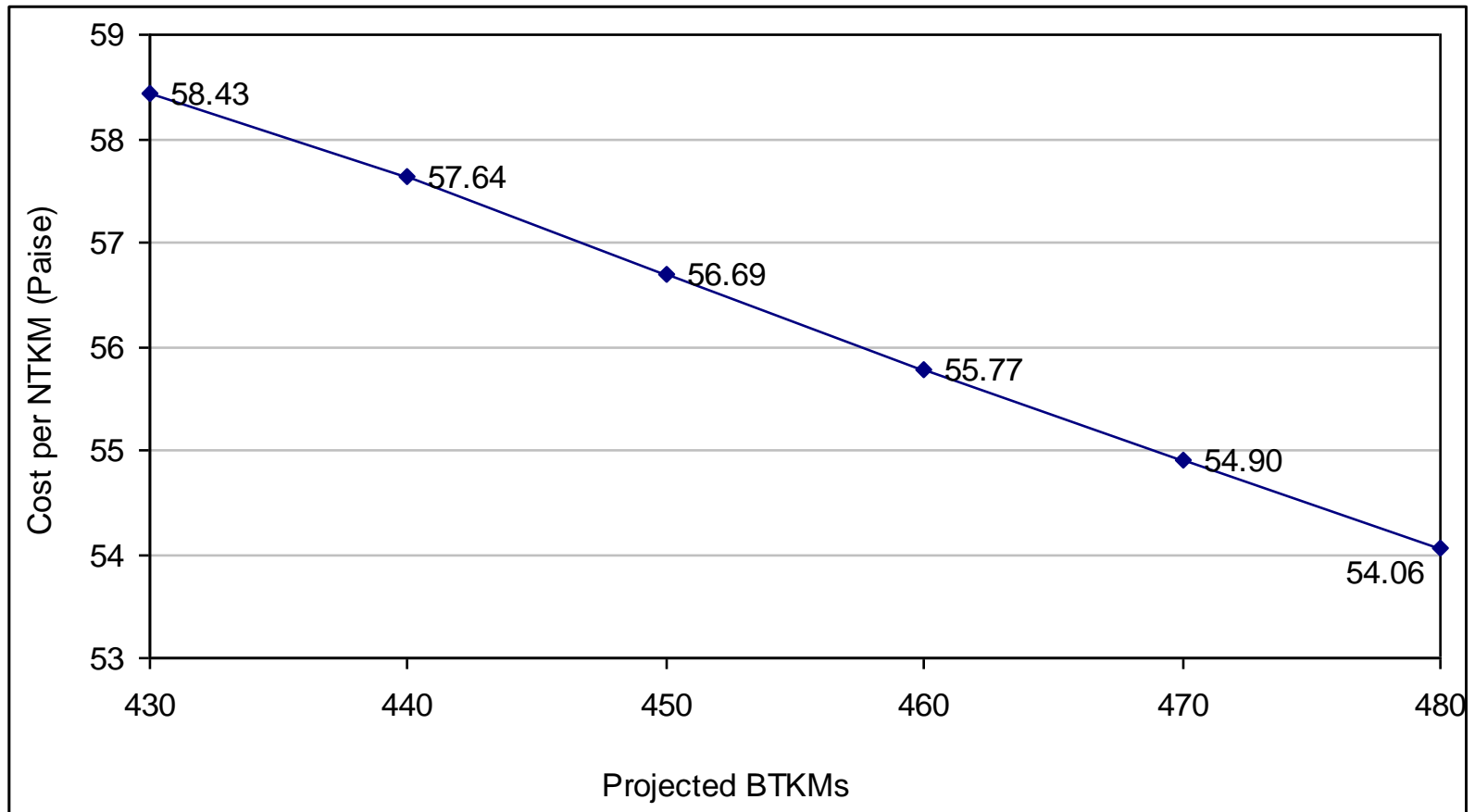
Indian Railways Earnings

Rs Crore

Year	2004-05	2005-06	2006-07	2007-08 (RE)	Growth (%)	
					2006-07 over 2005-06	2007-08 over 2006-07
Goods	30778	36287	41716	47743	14.9	14.4
Passenger	14113	15126	17224	20075	13.8	16.5
Other	2479	3078	3428	4837	11.3	41.1
Total	47370	54491	62370	72655	14.4	16.5

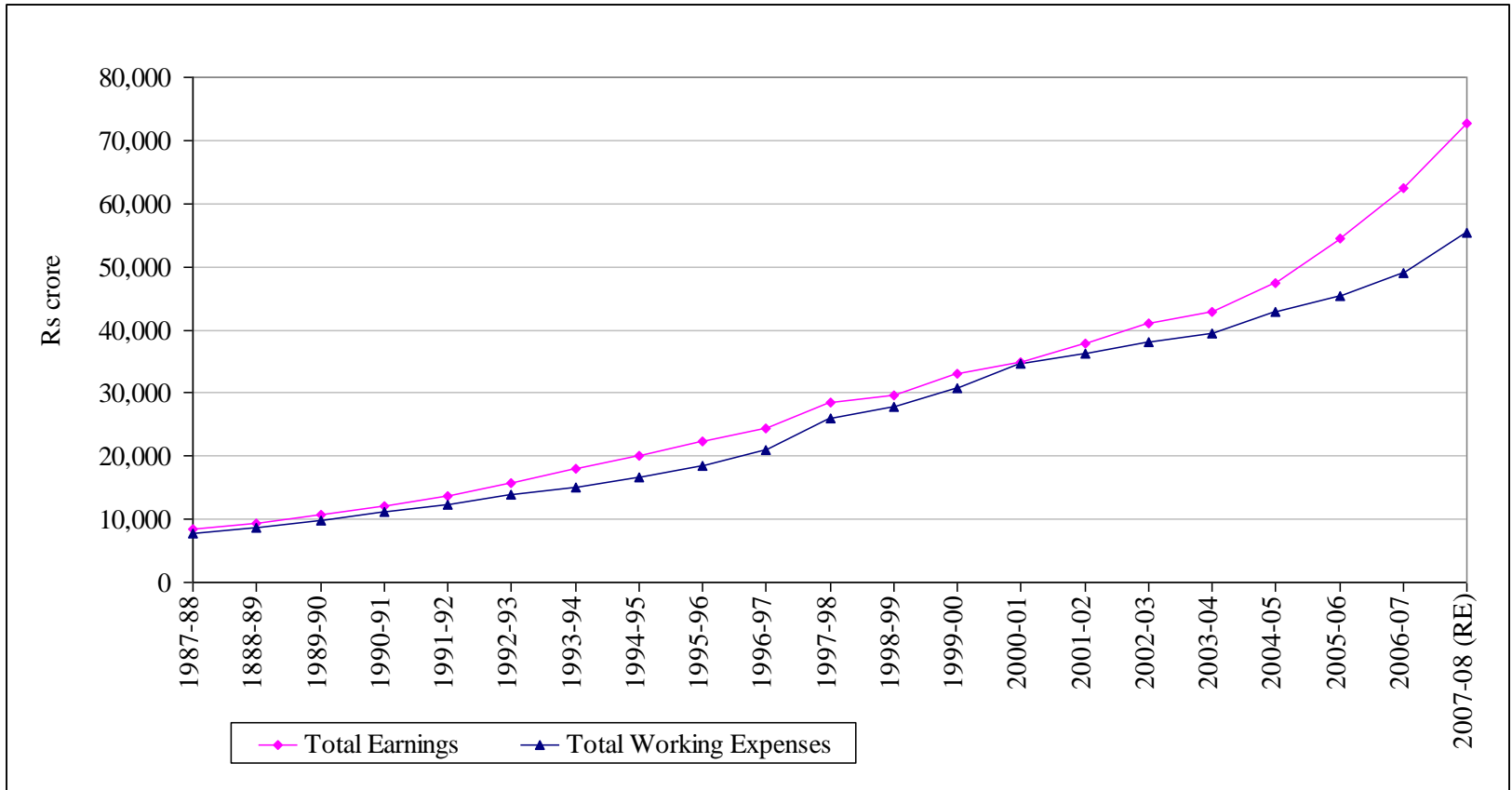
Volume Play: Marginal Net Revenue Analysis for Freight

Cost per NTKM (Base Year 2005-06)

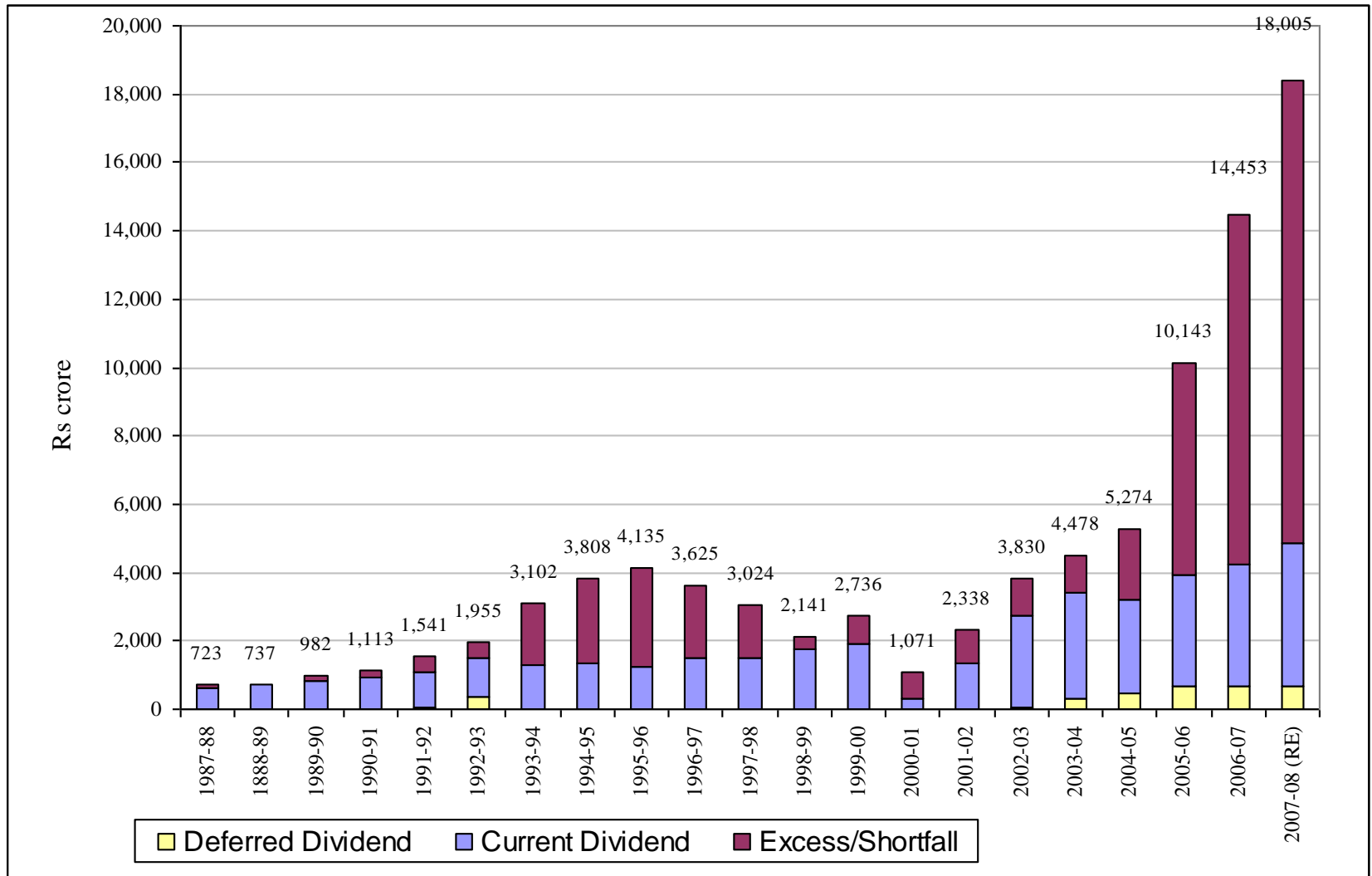


[Source: Sudhir Kumar, 2005]

Total Earnings and Total Working Expenses



Net Revenue Receipts



Freight Re-classification: Increased

Commodity	Coal	Fertilizer	Food-grains	Limestone & Dolomite	Iron Ore for Exports	Iron Ore for Steel Plants
2001-02	130A	85-115	95M		120	120
2002-03	130	95			120	120
2003-04	130			120	120	120
2004-05	140	100	100	140	120 130 (29/10-26/11) 140 (27/11-31/03)	120 130 (29/10-26/11) 140 (27/11-31/03)
2005-06	140	110	110	160	160 (01/04-30/11) 180 (01/12-31/03)	160 (15/05-31/03)
2006-07	140	110 (01/04-31/05) 120 (01/06-)	110 (01/04-31/05) 120 (01/06-)	160 (01/04-30/06) 170 (01/07-)	180	160 (01/04-30/06) 170 (01/07-)
2007-08	140	120	120	160	?	?
2008-09	140	120	120	160	200X (22/05/2008 -)	170 (22/05/2008 -)

Freight Re-classification: Decreased

Commodity	Cement	POL	Iron and Steel
2001-02	145A	270-290	200A
2002-03	140	280 ¹	190
2003-04	135	250 ¹	180
2004-05	140	220-250	180
2005-06	140	240	180
2006-07	140	220	180
2007-08	140	210	180
2008-09	140	200	180

Market Share of Output

(In %)

Year	Coal	Iron Ore	Cement	Food-grains	Fertilizers	POL products
2001-02	65.98	70.75	41.17	15.26	74.28	33.28
2004-05	65.94	63.05	40.87	23.29	74.17	24.68
2005-06	66.04	65.39	41.39	19.80	74.03	25.07
2006-07	65.85	64.14	45.28	19.03	72.48	20.54

Source: Indian Railways, Year Book 2006-07

Production and Railway Loading Growth

In Percent

	Production Growth (1991-92 to 2003-04)	Railway Loading Growth (1991-92 to 2003-04)	Production Growth (2003-04 to 2005-06)	Railway Loading Growth* (2003-04 to 2005-06)	Production Growth (2004-05 to 2005-06)	Railway Loading Growth* (2004-05 to 2005-06)
Low Rated Commodities						
Coal	3.61	4.25	5.6 ¹	8.1		8.4
Food Grains	1.22	4.24		-3.3		-10.9
High Rated Commodities						
Cement	7.86	4.37	11.7	11.4	9.3	13.7
POL	8.02	2.88	4.7 ¹	2.9		5.6
Iron & Steel	8.28	1.09	6.0 ²	8.1	7.4	12.2

[Source: CRISIL, 2005; CMA, 2006; MOS, 2006; MOPNG, 2006; *MOR, Internal Correspondence;]

Freight Circulars Issued

Year	No of Freight Rates Circulars Issued	
	Total Notifications	Rates Circulars
2008 (till 31st Aug)	58	45
2007	149	111
2006	123	114
2005	81	76
2004	58	55
2003	37	35

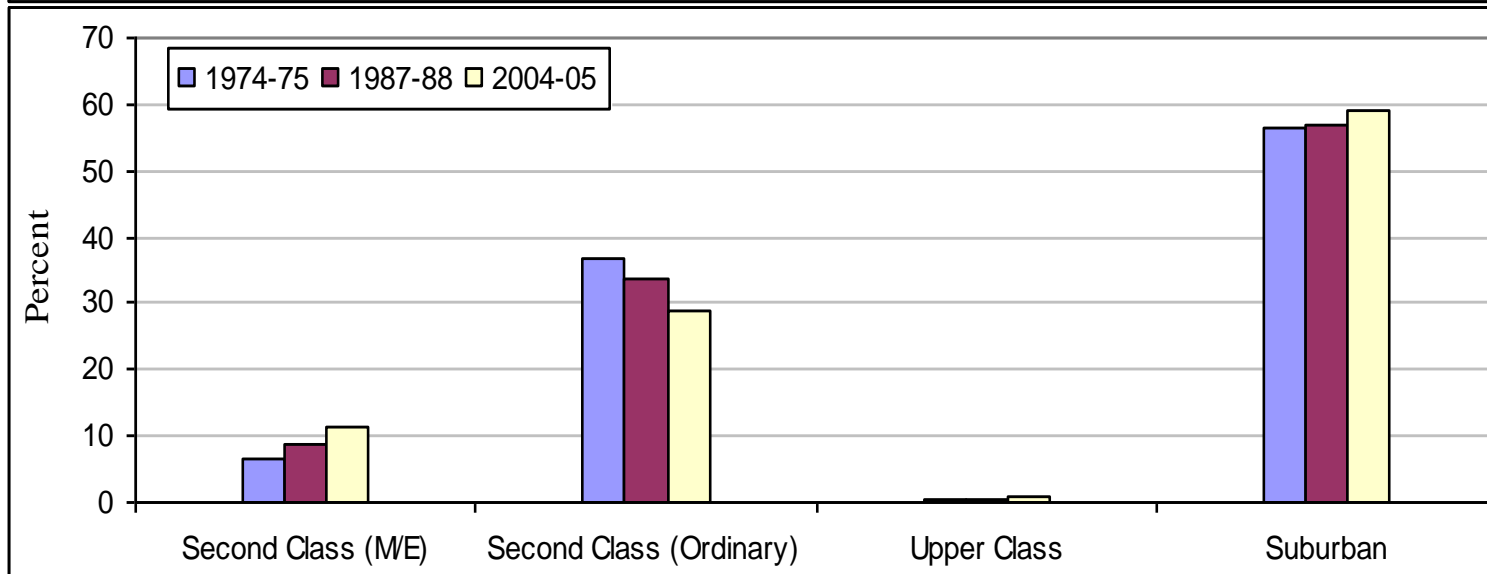
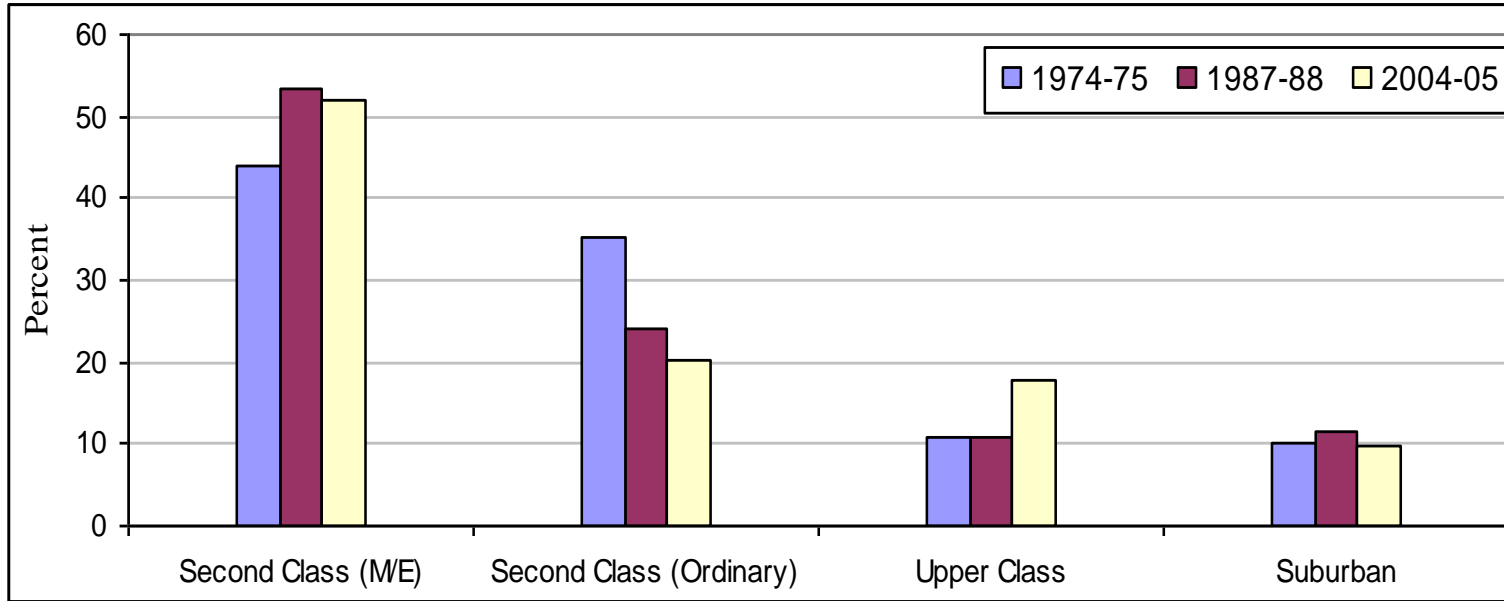
Indian Railways

- Passenger Business
 - What is a train? Origin-Destination, Schedule
 - Capacity and Composition
 - Type (Special, superfast, mail/express, passenger)
 - Tatkal, Summer/Winter

Volume Play

- More OD pairs served by direct trains
- More coaches per train
- Automatic upgradation
- Add on charges

Earnings and Numbers



Superfast Trains

Reclassification

Average speed between origin and destination: 55 kmph.

Charges:

Rs 20 per ticket more in second class and sleeper
Rs 30 more per ticket in the upper classes.

Issues

- **Benchmark of 55 kmph?**
- **Approach:** rescheduling of trains
- **Inconsistencies:** common route

Thank You