TRANSPORT DEMAND

PRAMOD UNIYAL
Deputy Director General

BIMSTEC COURSE

FINANCIAL MANAGEMENT and RESOURCE MOBILISATION

TRANSPORT DEMAND CONCEPTS

CONCEPTS

- A good analogy is the electric current which is directly proportional to the electric potential and inversely, to the electrical resistance between the points of flow
- Demand for transportation for a commodity at B is directly proportional to the potential for its demand at B and inversely proportional to its cost of transportation from A, its place of production

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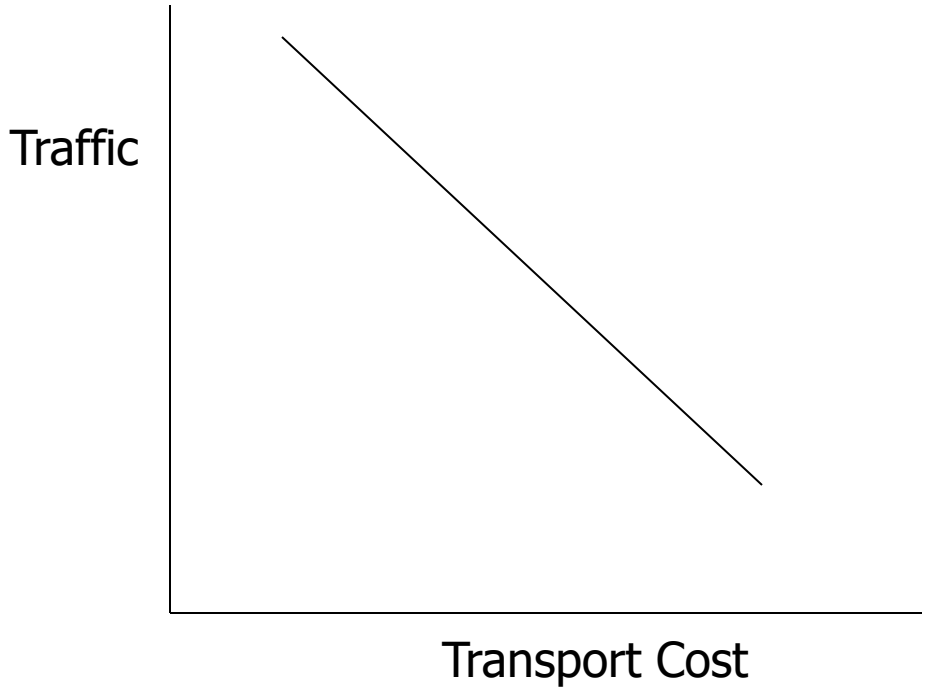


A WORD OF CAUTION

- Volume of commodity traffic flow between A and B no doubt is affected by
- i) reliability of transport system
- ii) transportation cost
- But without the existence of market for the commodity, being produced at A, at B, there would be no point in transporting it from A to B no matter what improvements are brought about in the above two conditions

DERIVED DEMAND

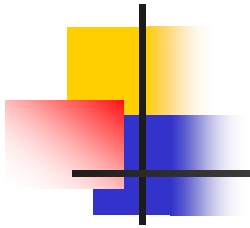
- The demand for transport is therefore derived from the demand for the commodity
- In general it is derived in the sense that spatial displacement of a commodity or person is desired due to socio economic activities.

ANALYSIS OF DEMAND

- Providing transportation consumes time and energy, thereby incurring a cost
- Traffic volumes that would occur at different level of costs represent the demand for transportation
- Service characteristics of the transportation facilities constitute its supply characteristics

CONTD,

- Transportation demand analysis is the relastionship between,
- i) traffic volumes
- ii) supply characteristics
- iii) socio economic activity trends
- Transportation investments are large and therefore projects have long gestation periods and therefore should be adequately factored in while analysing demand vis-à-vis its supply characteristics



ECONOMIC SCEANARIO AND INVESTMENTS IN TRANSPORT

PARAMETERS

- Role of transport in the economy
- Formulation of transport policy
- Decisions of investments within the sector on different modes
- Advances in technology

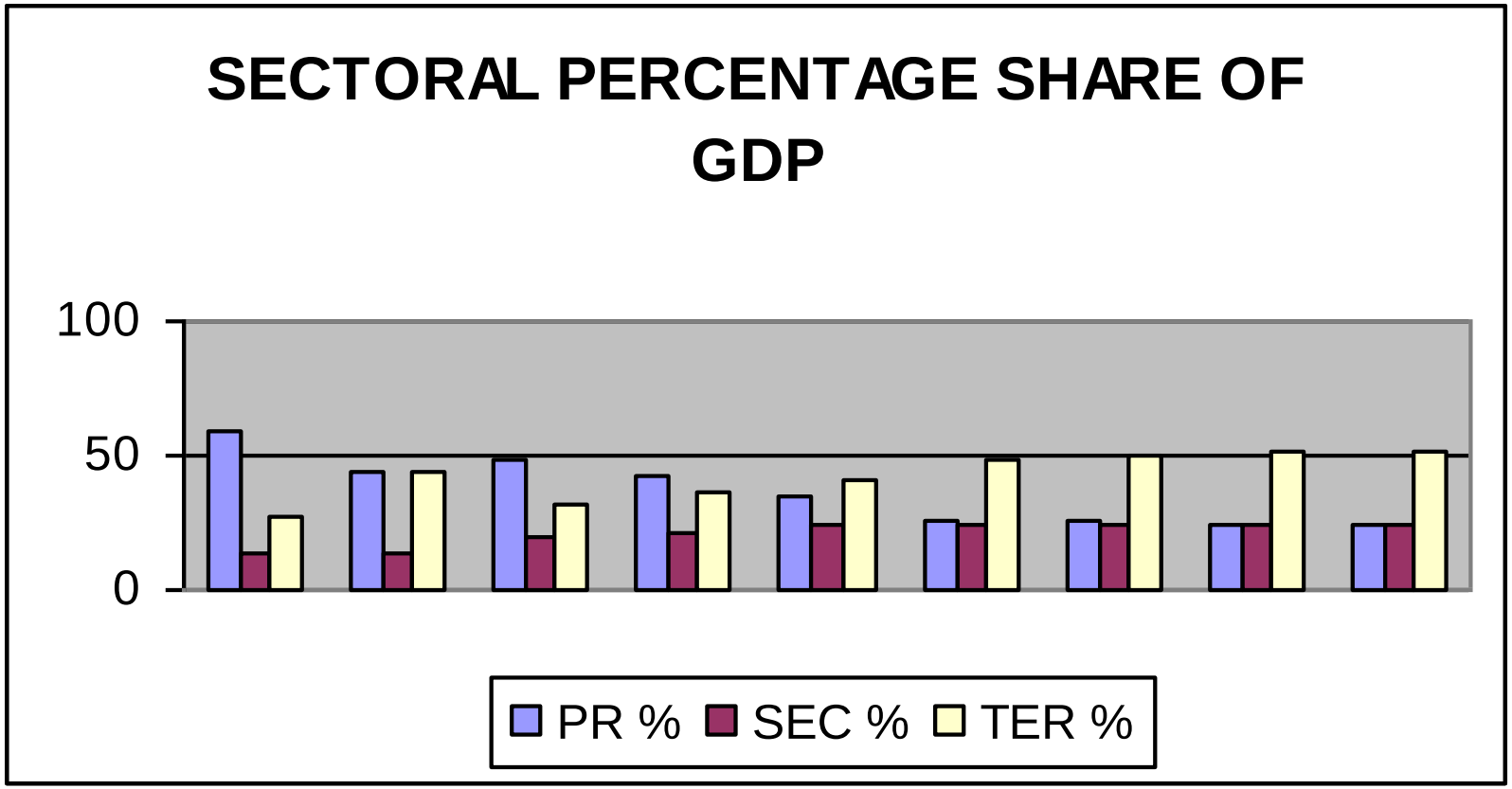
Role of Transport

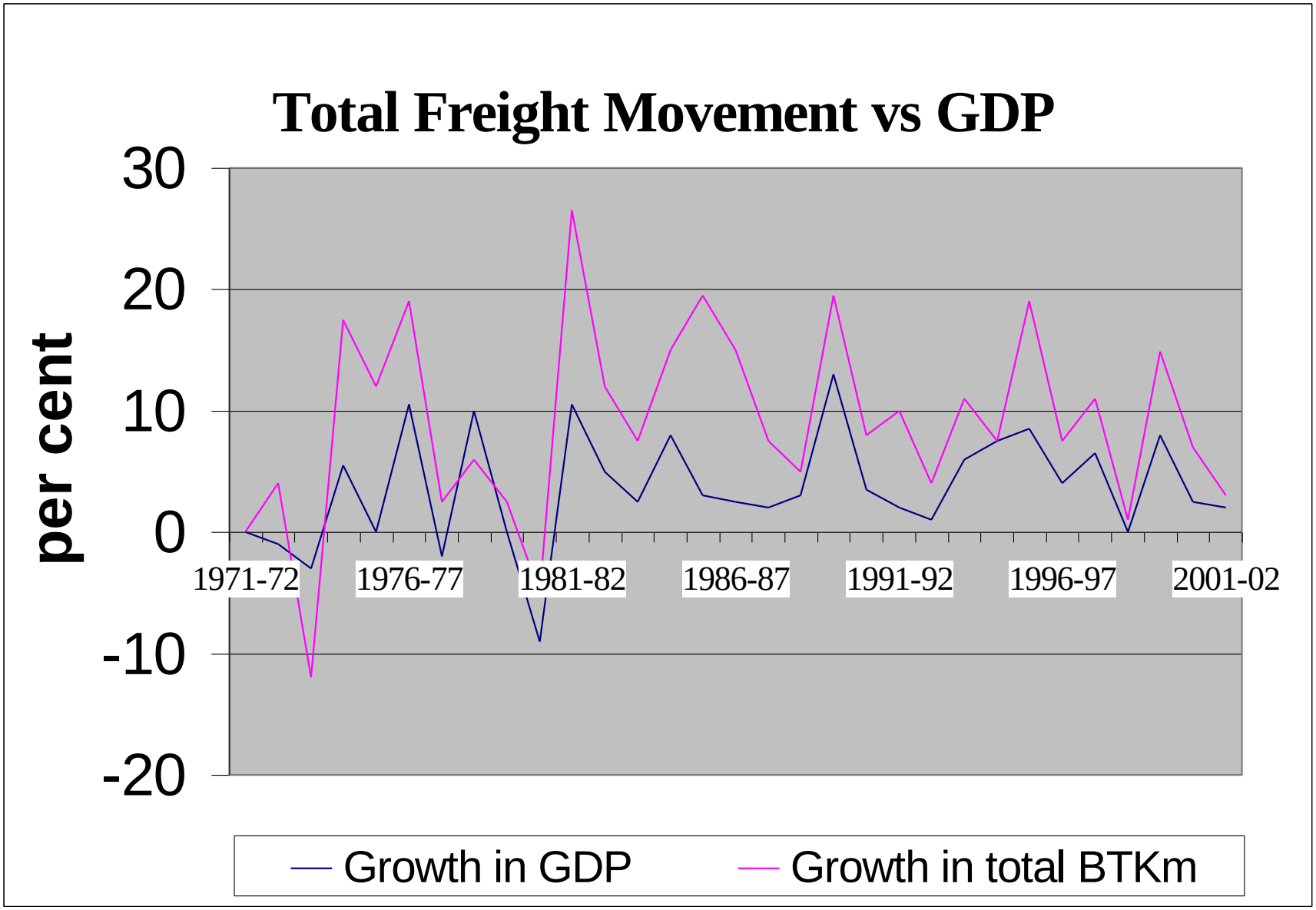
- Direct correlation with the economic growth
- Changing requirement of types of transport with the changing relative shares of different sectors of economy

SECTORS OF ECONOMY

- **PRIMARY** Agriculture, forestry and logging, fishing, mining and quarrying
- **SECONDARY** Manufacturing, construction, electricity, gas and water supply
- **TERTIARY** Trade, transport, storage, communication, financing, insurance,etc.

DECADAL GROWTH OF THE SECTORS OF ECONOMY OF INDIA 1950-51 to 2003-04




Total Freight Movement vs GDP
per cent
30
20
10
0
-10
-20
1971-72
1976-77
1981-82
1986-87
1991-92
1996-97
2001-02
Growth in GDP
Growth in total BTKm

Formulation of Transport Policy

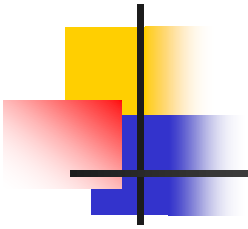
- Need for allocative efficiency
- Need for financial sustainability
- Need for safety
- Need for environmental protection
- Need for accessibility

Advances in technology

- Increasing expectations
- Directing and sustaining research and development for optimal growth of different modes

Investments in different transport modes

- Handling of the crests and troughs of demands
- economies of scope
- price regulatory policy
- introducing contestability



TRANSPORT DEMAND CHARACTERISTICS

NATURE

- Derived in the sense that spatial displacement of a commodity or person is desired due to socio economic activities.
- It does not generate utility per se and can be thought of generically as an opportunity cost to be incurred as a component of the total cost of the consumption activity, or whatever socio economic activity is involved

Contd.

- Attribute of the transportation system that affect the resources that must be committed to the trip, can be incorporated as a component of the utility function.
- Possible to use the utility maximisation model subject to budgetary constraints.

Contd.

- (a) PASSENGER
- variety of characteristics going into individuals travel decision making--- complicate and obscure any utility maximisation model, especially at the aggregate market level.

Contd.

- (b) COMMODITY
- shipping can be considered as an integral part of a production process. Optimisation of production process provides powerful tools for analysing commodity transportation demands.

Contd.

- (c) Non-storability of transportation also poses some limitation in analysing the need for it as it can always be overstated or understated

DETERMINATION OF DEMAND

PASSENGER URBAN

- Three approaches:
- **FOUR STAGE TRANSPORT APPROACH**
- Aggregate approach used for large scale long range transport planning and focuses on zones as generators of travel and as destination for travel
- **Consists of four stages**
- (a) **Trip generation**, attempts to predict the total quantity of travel based upon attributes of that zone, but handicapped by not capturing the hidden demand released by transportation improvements

Contd.

- (b) **Trip distribution**, attempts to predict how many trips of a particular type originating in a zone terminate in the specific zone, depending on its attractiveness and the inhibiting effect of separation from the trip generation zone.
- (c) **Modal split**, attempts to predict the trips mode wise and provides useful information for transport policy in general and in particular for investment decisions.

Contd.

- (d) **Trip assignment**, attempts to predict the best route for trips between two zones based on the assumption that travelers are sufficiently familiar with the network---quite reasonable for work and shopping trips but questionable for recreational trips
- Absence of feedback between the various stages of the travel demand forecasting process, in the model, will compound the error in the output.

Contd.

- **TRAVEL CHOICE MODEL**
- A disaggregated demand modeling attempting to capture the need to travel at the level of the individual and incorporating the random utility choice models based on revealed and stated data and of great use in specialised policy analysis of car pooling, parking taxes, transit fares and housing taxes to finance public transport;evaluation of travel time.

Contd.

- **ACTIVITY BASED APPROACH**
- A broader more comprehensive framework in which travel is analysed as daily or multi-day patterns of behaviour to understand its complexity rather than mere prediction.

INTERCITY TRAVEL DEMAND

- **Trip purpose**
- i) **business**, not the same as work travel in urban areas; cost inelastic, however, time and other convenience-related attributes such as schedule, frequency and reliability of service, elastic

INTERCITY TRAVEL DEMAND

- ii) **recreation**, highly cost elastic and lower time and inconvenience elasticity
- iii) **personal business or visiting friends and relatives**(vfr), high transport cost elasticity

INTERCITY TRAVEL DEMAND

- **Trip length**
- can be divided as short and long; dividing point traditionally taken as 1000Km.
- long haul usually less elastic with respect to the attributes of the transportation system than short

A THOUGHT

- " Time tabling of passenger trains is very important for getting more traffic. The passenger traffic opinion survey conducted by us, as well as our discussions with Passenger Associations, clearly show that in selection of any mode of transport, convenience of timings of departure and arrival often outweigh the disadvantage of fares. Similarly, overall speed of a train or a bus, which determines the total travel time of a passenger, is a very weighty consideration."
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- **REPORT of RAILWAY FARES AND FREIGHT COMMITTEE for Indian Railways 1993**

COMMODITY

- **THREE BASIC APPROACHES**
- (a) Basic unit of analysis is the firm and transportation as one of the inputs into the production and marketing processes.
- (b) Aggregate in nature to explain the movement of commodities from areas of surpluses to deficits using gravity and optimisation models

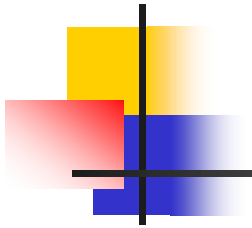
Contd.

- (c) Macroeconomic, analysing interrelations between sectors of economy using input-output model. Transportation being one of the sectors it is possible to to analyse the transportation requirements of the other sectors and then to translate these into flows of commodities. This can also lend itself to multiregional demand analysis

A THOUGHT

- " Planning at such macro level is just indicative,----------Unless the forecast is field based, it cannot be realistic and it cannot be subjected to any purposeful monitoring and evaluation.------- Railways will do well to take care of likely developments which may affect future prospects of the offering of the seven top commodities."

- **REPORT of RAILWAY FARE AND FREIGHT COMMITTEE for INDIAN RAILWAYS, 1993**



THANK YOU